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This document's normative language is English. Translation into other languages is permitted.

CONTENTS

- 1 Overview 8
 - 1.1 Who should read this document? 8
 - 1.2 How can I provide feedback? 8
 - 1.3 Where can I find more information? 8
 - 1.4 Related documents 9
- 2 Using this guide. 11
 - 2.1 URI listings 12
- 3 Common properties. 13
 - 3.1 Properties that all Redfish schemas define 13
 - 3.2 Frequently used properties 13
 - 3.3 Payload annotations. 14
- 4 Common objects 18
 - 4.1 Actions 18
 - 4.2 Capacity 18
 - 4.3 Condition 20
 - 4.4 Identifier 21
 - 4.5 IOStatistics 22
 - 4.6 IPv4Address 23
 - 4.7 IPv6Address 24
 - 4.8 IPv6GatewayStaticAddress 25
 - 4.9 IPv6StaticAddress 26
 - 4.10 Location 26
 - 4.11 Message 33
 - 4.12 Redundancy 34
 - 4.13 RedundantGroup 35
 - 4.14 ReplicaInfo. 37
 - 4.15 Schedule 46
 - 4.16 Status. 48
- 5 Resource collections 52
 - 5.1 Collection capabilities annotation (#CollectionCapabilities) 53
 - 5.2 Resource collection URIs in Redfish v1.6 and later 55
- 6 Reference Guide 78
 - 6.1 AccelerationFunction 1.0.3 78
 - 6.2 AccountService 1.14.0 80
 - 6.3 ActionInfo 1.4.0 95
 - 6.4 AddressPool 1.2.3 98
 - 6.5 Aggregate 1.0.1 115
 - 6.6 AggregationService 1.0.2 120
 - 6.7 AggregationSource 1.3.1 124
 - 6.8 AllowDeny 1.0.1 131
 - 6.9 Application 1.0.0 134

| | |
|--|-----|
| 6.10 Assembly 1.4.0 | 137 |
| 6.11 AttributeRegistry 1.3.7 | 143 |
| 6.12 Battery 1.2.1 | 153 |
| 6.13 BatteryMetrics 1.0.2 | 159 |
| 6.14 Bios 1.2.1 | 164 |
| 6.15 BootOption 1.0.5 | 167 |
| 6.16 Cable 1.2.1 | 169 |
| 6.17 Certificate 1.8.0 | 176 |
| 6.18 CertificateLocations 1.0.2 | 186 |
| 6.19 CertificateService 1.0.4 | 187 |
| 6.20 Chassis 1.24.0 | 193 |
| 6.21 Circuit 1.7.0 | 210 |
| 6.22 ComponentIntegrity 1.2.1 | 227 |
| 6.23 CompositionReservation 1.0.0 | 239 |
| 6.24 CompositionService 1.2.1 | 242 |
| 6.25 ComputerSystem 1.21.0 | 250 |
| 6.26 Connection 1.3.0 | 282 |
| 6.27 ConnectionMethod 1.1.0 | 288 |
| 6.28 Container 1.0.0 | 290 |
| 6.29 ContainerImage 1.0.0 | 293 |
| 6.30 Control 1.4.0 | 296 |
| 6.31 CoolantConnector 1.0.0 | 303 |
| 6.32 CoolingLoop 1.0.1 | 307 |
| 6.33 CoolingUnit 1.1.0 | 312 |
| 6.34 CXLLogicalDevice 1.1.0 | 317 |
| 6.35 Drive 1.17.1 | 320 |
| 6.36 DriveMetrics 1.1.0 | 337 |
| 6.37 Endpoint 1.8.0 | 340 |
| 6.38 EndpointGroup 1.3.2 | 350 |
| 6.39 EnvironmentMetrics 1.3.0 | 353 |
| 6.40 EthernetInterface 1.11.0 | 361 |
| 6.41 Event 1.9.0 | 371 |
| 6.42 EventDestination 1.13.2 | 375 |
| 6.43 EventService 1.10.0 | 386 |
| 6.44 ExternalAccountProvider 1.7.0 | 394 |
| 6.45 Fabric 1.3.0 | 400 |
| 6.46 FabricAdapter 1.5.1 | 404 |
| 6.47 Facility 1.4.0 | 414 |
| 6.48 Fan 1.5.0 | 419 |
| 6.49 Filter 1.0.0 | 424 |
| 6.50 GraphicsController 1.0.0 | 428 |
| 6.51 Heater 1.0.0 | 431 |
| 6.52 HeaterMetrics 1.0.0 | 436 |

| | |
|---|-----|
| 6.53 HostInterface 1.3.0 | 441 |
| 6.54 Job 1.2.2 | 446 |
| 6.55 JobService 1.0.4 | 449 |
| 6.56 JsonSchemaFile 1.1.4 | 451 |
| 6.57 Key 1.3.0 | 453 |
| 6.58 KeyPolicy 1.0.0 | 456 |
| 6.59 KeyService 1.0.0 | 460 |
| 6.60 LeakDetection 1.0.0 | 461 |
| 6.61 LeakDetector 1.0.0 | 466 |
| 6.62 License 1.1.1 | 471 |
| 6.63 LicenseService 1.1.0 | 475 |
| 6.64 LogEntry 1.15.1 | 478 |
| 6.65 LogService 1.5.1 | 490 |
| 6.66 Manager 1.18.0 | 496 |
| 6.67 ManagerAccount 1.11.0 | 511 |
| 6.68 ManagerDiagnosticData 1.2.1 | 516 |
| 6.69 ManagerNetworkProtocol 1.9.1 | 521 |
| 6.70 MediaController 1.3.0 (deprecated) | 528 |
| 6.71 Memory 1.18.0 | 533 |
| 6.72 MemoryChunks 1.6.0 | 556 |
| 6.73 MemoryDomain 1.5.0 | 560 |
| 6.74 MemoryMetrics 1.7.1 | 563 |
| 6.75 MemoryRegion 1.0.0 | 567 |
| 6.76 MessageRegistry 1.6.1 | 570 |
| 6.77 MessageRegistryFile 1.1.3 | 574 |
| 6.78 MetricDefinition 1.3.2 | 576 |
| 6.79 MetricReport 1.5.0 | 583 |
| 6.80 MetricReportDefinition 1.4.4 | 585 |
| 6.81 NetworkAdapter 1.9.0 | 591 |
| 6.82 NetworkAdapterMetrics 1.0.1 | 600 |
| 6.83 NetworkDeviceFunction 1.9.0 | 601 |
| 6.84 NetworkDeviceFunctionMetrics 1.1.1 | 615 |
| 6.85 NetworkInterface 1.2.1 | 618 |
| 6.86 NetworkPort 1.4.1 (deprecated) | 620 |
| 6.87 OperatingConfig 1.0.2 | 626 |
| 6.88 OperatingSystem 1.0.0 | 629 |
| 6.89 OutboundConnection 1.0.0 | 634 |
| 6.90 Outlet 1.4.1 | 638 |
| 6.91 OutletGroup 1.1.1 | 651 |
| 6.92 PCIeDevice 1.12.0 | 657 |
| 6.93 PCIeFunction 1.5.0 | 666 |
| 6.94 PCIeSlots 1.6.0 (deprecated) | 671 |
| 6.95 Port 1.10.0 | 675 |

| | |
|--------------------------------------|-----|
| 6.96 PortMetrics 1.5.0 | 699 |
| 6.97 Power 1.7.1 (deprecated) | 706 |
| 6.98 PowerDistribution 1.3.2 | 720 |
| 6.99 PowerDistributionMetrics 1.3.0 | 727 |
| 6.100 PowerDomain 1.2.0 | 730 |
| 6.101 PowerEquipment 1.2.0 | 733 |
| 6.102 PowerSubsystem 1.1.0 | 735 |
| 6.103 PowerSupply 1.5.2 | 737 |
| 6.104 PowerSupplyMetrics 1.1.0 | 752 |
| 6.105 PrivilegeRegistry 1.1.4 | 761 |
| 6.106 Processor 1.18.0 | 768 |
| 6.107 ProcessorMetrics 1.6.2 | 789 |
| 6.108 Pump 1.0.0 | 796 |
| 6.109 RegisteredClient 1.1.0 | 801 |
| 6.110 Reservoir 1.0.0 | 803 |
| 6.111 ResourceBlock 1.4.1 | 808 |
| 6.112 Role 1.3.1 | 814 |
| 6.113 RouteEntry 1.0.1 | 816 |
| 6.114 RouteSetEntry 1.0.1 | 818 |
| 6.115 SecureBoot 1.1.0 | 820 |
| 6.116 SecureBootDatabase 1.0.1 | 823 |
| 6.117 SecurityPolicy 1.0.0 | 825 |
| 6.118 Sensor 1.8.0 | 832 |
| 6.119 SerialInterface 1.2.0 | 845 |
| 6.120 ServiceConditions 1.0.0 | 849 |
| 6.121 ServiceRoot 1.16.0 | 851 |
| 6.122 Session 1.7.0 | 859 |
| 6.123 SessionService 1.1.8 | 861 |
| 6.124 Signature 1.0.2 | 863 |
| 6.125 SimpleStorage 1.3.1 | 864 |
| 6.126 SoftwareInventory 1.10.0 | 867 |
| 6.127 Storage 1.15.0 | 872 |
| 6.128 StorageController 1.7.1 | 889 |
| 6.129 StorageControllerMetrics 1.0.1 | 909 |
| 6.130 Switch 1.9.1 | 914 |
| 6.131 SwitchMetrics 1.0.0 | 924 |
| 6.132 Task 1.7.2 | 927 |
| 6.133 TaskService 1.2.0 | 930 |
| 6.134 TelemetryService 1.3.2 | 932 |
| 6.135 Thermal 1.7.1 (deprecated) | 938 |
| 6.136 ThermalEquipment 1.1.0 | 950 |
| 6.137 ThermalMetrics 1.3.0 | 952 |
| 6.138 ThermalSubsystem 1.3.0 | 959 |

6.139 Triggers 1.3.2 962

6.140 TrustedComponent 1.2.0 967

6.141 UpdateService 1.12.0 970

6.142 USBController 1.0.0 976

6.143 VCATEntry 1.0.1 978

6.144 VirtualMedia 1.6.2 980

6.145 VlanNetworkInterface 1.3.0 (deprecated) 986

6.146 Volume 1.10.0 987

6.147 Zone 1.6.2 1013

7 Redfish documentation generator 1019

8 ANNEX A (informative) Change log 1020

1 Overview

The Redfish standard comprises a set of specifications maintained by the Redfish Forum, a working group within DMTF. The standard defines a protocol that uses RESTful interfaces to provide access to data and operations associated with the management of systems and networks. One of the strengths of the Redfish protocol is that it works with a wide range of servers: from stand-alone servers to rack-mount and bladed environments to large-scale data centers and cloud environments.

The Redfish standard addresses several key issues for infrastructures that require scalability. Large infrastructures often consist of many simple servers of different makes and types. This hyper-scale usage model requires a new approach to systems management. The Redfish protocol addresses these needs by providing a standard protocol based on out-of-band systems management.

With these goals in mind, the Redfish protocol was designed as an open-industry standard to meet scalability requirements in multi-vendor deployments. It easily integrates with commonly used tools, using RESTful interfaces to perform operations and using JSON for data payloads.

1.1 Who should read this document?

This document is useful to people are consumers of the Redfish interface and want to understand the Redfish data model. These users might not be developing Redfish-enabled software.

1.2 How can I provide feedback?

Feedback on all Redfish specifications and documents is encouraged. Feedback can be directed to DMTF and the Redfish Forum by the following means:

- **Redfish User Forum:** <http://www.redfishforum.com> User forum monitored by DMTF Redfish Forum personnel to answer questions about any Redfish-related topics.
- **DMTF Feedback Portal:** <https://www.dmtf.org/standards/feedback> Formal submission portal for enhancements or proposals to DMTF and the Redfish Forum.

1.3 Where can I find more information?

The following web sites provide more information about the Redfish standard:

- **Redfish Developer Hub**

Resources for developers who use Redfish to build applications. Contains an interactive schema explorer, hosted schema, and other links.

- **Redfish Specification Forum**

DMTF Redfish-monitored user forum. Answers questions about Redfish-related topics.

- **DMTF GitHub repositories**

Open source tools and libraries for working with Redfish.

- **Redfish standards**

Schemas, specifications, mockups, white papers, FAQ, educational material, and more.

- **DMTF Redfish Forum**

Working group that maintains the Redfish standard. Site lists member companies, future work and schedules, charter, and information about joining.

1.4 Related documents

The following documents are part of the Redfish development effort. They can be accessed or downloaded from DMTF's Redfish Standards web site: <http://www.dmtf.org/standards/redfish>

- DSP0218 - Platform Level Data Model (PLDM) for Redfish Device Enablement Specification - Binary-encoded JSON (BEJ) and dictionary-based mapping of Redfish schemas and properties into PLDM messages.
- DSP0266 - Redfish Specification - Main Redfish Specification.
- DSP0268 - Redfish Data Model Specification - Normative descriptions and additional text for every schema defined in DSP8010 and example payloads for every resource.
- DSP0270 - Redfish Host Interface Specification - "In-band" or "OS-based" Redfish host interface.
- DSP0272 - Redfish Interoperability Profiles Specification - Structure and JSON document that is used to define and publish an interoperability profile that checks an implementation's conformance to a defined minimum set of functionality.
- DSP2043 - Redfish Mockups Bundle - Set of mockups that can be used as sample output from GETs from a Redfish service. Informative in nature, it was used to develop the schema. A person can set up an NGINX or similar server and configure it to output JSON format and then use this directory for demonstration purposes.
- DSP2044 - Redfish White Paper - Non-normative document helping those new to Redfish understand how to interact with the Redfish service and understand common functions and tasks.
- DSP2046 - Redfish Resource and Schema Guide - Informative documentation regarding common Redfish resource properties and a listing of properties that can be found in each of the Redfish resources.
- DSP2053 - Redfish Property Guide - Informative documentation providing an index to individual

property definitions across all Redfish schema.

- DSP2065 - Redfish Message Registry Guide - Informative documentation providing details regarding the messages defined in Redfish standard message registries.
- DSP8010 - Redfish Schema - Redfish schema definitions. These files are normative in nature and are normatively referenced by the *Redfish Specification*. The three schema formats are CSDL (OData Common Schema Definition Language format, which is in XML), JSON Schema, and OpenAPI schema. These schema definitions should be functionally equivalent, thus specifying the schema in two different languages.
- DSP8011 - Redfish Standard Registries - Redfish registry definitions. This bundle of Redfish registries includes message registries used for Redfish-defined messages including events and privilege maps.
- DSP8013 - Redfish Interoperability Profiles Bundle - Bundle of published Redfish interoperability profile documents and supporting schema and sample documents used for creating profiles.

2 Using this guide

Every Redfish response consists of a JSON payload containing properties that are strictly defined by a schema for that resource. The schema that defines a resource can be determined from the value of the `@odata.type` property returned in every Redfish response. This guide details the definitions for every Redfish standard schema.

Each schema section contains:

- The name, current version, and description of the schema.
- The release history of the schema. Lists each minor schema version and the DSP8010 release bundle that included it.
- List of the possible URIs where schema-defined resources can appear in a Redfish service following specification version v1.6 or later. See [URI listings](#).
- Table that defines each property. Shows additional details for those properties when needed.
- List of available actions defined for the schema.
- Example JSON payload for a resource using the schema.

The property-level details include:

| Column | Purpose |
|---------------|--|
| Property name | <p>The case-sensitive name of the JSON property as it appears in the JSON payload.</p> <p>Lists the schema version in parentheses when properties were added to or deprecated in the schema after the initial v1.0.0 release.</p> |
| Type | <p>The JSON data types for the property, which can include boolean, number, string, or object.</p> <ul style="list-style-type: none"> • The <code>string (enum)</code> tag identifies enumerated strings. • String types with a <code>(URI)</code> tag will contain a URI • Number types may specify the units, which are usually included as part of the property name. • Number types specifying "%" units or including "Percent" in the property name will have values typically in the range of <code>0 - 100</code> • Boolean types will have a value of <code>true</code> or <code>false</code> |

| Column | Purpose |
|-------------|---|
| Attributes | Designates whether: <ul style="list-style-type: none">The property is read-only or read-write, if supported by the implementation.The property is <code>required</code> to be returned in the resource payload or is required when creating a resource of that typeThe service might return a <code>null</code> value if the property value is temporarily unavailable. |
| Description | The description of the property, as copied directly from the schema's definition of the property. |

2.1 URI listings

The *Redfish Specification v1.6.0* added mandatory support for the *OpenAPI Specification v3.0*. As part of this support, the URIs for every Redfish resource are defined to appear at known, fixed locations. Resource collections also appear at fixed locations, with the members of each collection appearing at URIs constructed by using a fixed path structure, with appropriate path segments equal to the value of `Id` properties of members along the path.

Support for v1.6.0 and OpenAPI can be determined by comparing the value of the `RedfishVersion` property in the service root (`/redfish/v1/`). Services that report a `1.6.0` or higher value, such as `1.6.1` or `1.7.0` , adhere to the URI definitions.

The URI listings do not apply to Redfish services that support specification versions earlier than v1.6.0. For those services, clients must use the hypermedia features of the API to discover hyperlinks from the service root to each resource. While services typically match the URIs listed in this document for many of their resources, this match is not guaranteed and results in errors.

3 Common properties

3.1 Properties that all Redfish schemas define

The following properties are defined for inclusion in every Redfish schema, and therefore may be encountered in any response payload. They are documented here in this guide to avoid repetition in the [Reference guide](#) property tables.

Note: Several of these properties are payload annotations but appear here because they are required for all Redfish resources.

3.1.1 Properties

| Property | Type | Attributes | Notes |
|----------------|--------------|--------------------|---|
| @odata.context | string (URI) | read-only | The OData description of a payload. |
| @odata.etag | string | read-only | The current ETag of the resource. |
| @odata.id | string (URI) | read-only required | The unique identifier for a resource. |
| @odata.type | string | read-only required | The type of a resource. |
| Description | string | read-only | The description of this resource. Used for commonality in the schema definitions. |
| Id | string | read-only required | The unique identifier for this resource within the collection of similar resources. |
| Name | string | read-only required | The name of the resource or array member. |
| Oem {} | object | | The manufacturer- or provider-specific extension moniker that divides the oem object into sections. |

3.2 Frequently used properties

In addition, the following properties are frequently defined in Redfish schemas. Their definition and usage is the same throughout the Redfish data model.

3.2.1 Properties

| Property | Type | Attributes | Notes |
|---------------------------|-----------------|------------------|--|
| Actions {} | object | | The Redfish actions available for this Resource. |
| Links {} | object | | The links associated with the Resource, as defined by that Resource's schema definition. All associated reference properties defined for a Resource are nested under the Links property. Find all directly referenced, or subordinate, Resource properties from the root of the Resource. |
| RelatedItem [{ | array | | An array of links. Each link points to a Resource or part of a Resource as defined by that Resource's schema. This representation is not intended to be a strong linking methodology like other references. Instead, it shows a relationship between elements or subelements in disparate parts of the service. For example, fans might be in one area of the system and processors in another. The relationship between the two might not be obvious. This property can show that one is related to the other. In this example, it might indicate that a specific fan cools a specific processor. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

3.3 Payload annotations

Payload annotations are a mechanism in which a service provides additional information about a given property or object. Redfish limits usage of these annotations to OData core terms, Redfish extensions, or Redfish messages.

3.3.1 Property-level annotations

A payload annotation for a single property takes the form of an additional property named `Property@Schema.Term`, where `Property` is the JSON property being annotated, `Schema` is the schema file where the definition for the annotation is found, and `Term` is the name of the annotation.

3.3.2 Properties

| Property | Type | Attributes | Notes |
|--|-------------------|------------------|--|
| @Message.ExtendedInfo {} | object | | The additional information for a set of message structures for a property. These messages can be useful when a property is <code>null</code> due to an error condition and the service wants to convey why the property is <code>null</code> . |
| @odata.count | integer | <i>read-only</i> | The number of items in a collection. |
| @Redfish.AllowableValues [] | array (string) | <i>read-only</i> | The string values that a service accepts for a property or action parameter. |

In the following example, the property `ResetType` is annotated with the `Redfish` schema-defined `AllowableValues` term. `Redfish` is an alias for `RedfishExtensions`. This term indicates to the client that the service supports the values `on` and `ForceOff` for `ResetType`.

```
{
  "ResetType@Redfish.AllowableValues": [
    "On",
    "ForceOff"
  ]
}
```

3.3.3 Resource-level or object-level annotations

A payload annotation for an entire Resource or a JSON object takes the `@Schema.Term` form, where `Schema` is the schema file where the definition is found and `Term` is the name of the annotation. These payload annotations are used to provide further information about the object itself.

3.3.4 Properties

| Property | Type | Attributes | Notes |
|---|-----------------|------------------|--|
| @Redfish.ActionInfo | string (URI) | <i>read-only</i> | The URI to an ActionInfo Resource, which describes the parameters that this Action instance supports. |
| @Redfish.CollectionCapabilities {} | object | | The reference to the Resource that represents the POST capabilities of a collection. For property details, see <code>CollectionCapabilities</code> . |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------------|------------|--|
| @Redfish.MaintenanceWindow {} | object | | The maintenance window configuration that defines when to apply settings or operations to a Resource. For property details, see MaintenanceWindow. |
| @Redfish.OperationApplyTime | string (enum) | read-write | The client's requested apply time to complete a create, delete, or action operation. <i>For the possible property values, see @Redfish.OperationApplyTime in Property details.</i> |
| @Redfish.OperationApplyTimeSupport {} | object | | An indication of whether a client can request a specific apply time for a create, delete, or action operation for a Resource through the OperationApplyTime term. For property details, see OperationApplyTimeSupport. |
| @Redfish.Settings {} | object | | The reference to the Resource that represents the settings to apply to this object. For property details, see Settings. |
| @Redfish.SettingsApplyTime {} | object | | The configuration settings that define when to apply the settings to a Resource. For property details, see PreferredApplyTime. |

3.3.5 Property details

3.3.5.1 @Redfish.OperationApplyTime

The client's requested apply time to complete a create, delete, or action operation.

| string | Description |
|----------------------------|---|
| AtMaintenanceWindowStart | The requested operation is applied within the administrator-specified maintenance window. |
| Immediate | The requested operation is applied immediately. This value might result in an immediate host reset, manager reset, or other side effects. |
| InMaintenanceWindowOnReset | The requested operation is applied after a reset but within the administrator-specified maintenance window. |
| OnReset | The requested operation is applied on a reset. |
| OnStartUpdateRequest | The requested operation is applied when the StartUpdate action of the update service is invoked. |

This example annotates the object with the `Redfish` schema-defined action info term. `Redfish` is an

alias for `RedfishExtensions` . This term indicates that the client can find more information about the `#ComputerSystem.Reset` action at the `/redfish/v1/Systems/1/ResetActionInfo` URI:

```
{
  "#ComputerSystem.Reset": {
    "target": "/redfish/v1/Systems/1/Actions/ComputerSystem.Reset",
    "@Redfish.ActionInfo": "/redfish/v1/Systems/1/ResetActionInfo"
  }
}
```

4 Common objects

Redfish schemas frequently define the following JSON objects. Like the individual common properties listed above, these objects share a common definition that is shown here to avoid repetition in the [Reference guide](#) property tables.

4.1 Actions

The `Actions` object contains the available for a resource.

4.1.1 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|--------|------------------|--|
| #<code>{action name}</code> { | object | | A single Redfish action. |
| @Redfish.ActionInfo | string | <i>read-only</i> | The URI for an ActionInfo Resource that describes this action. |
| target | string | <i>read-only</i> | The target URI for the POST operation to invoke the action. |
| } | | | |

4.2 Capacity

4.2.1 Description

This is the schema definition for the Capacity of a device. It represents the properties for capacity for any data store.

4.2.2 Properties

| Property | Type | Attributes | Notes |
|-----------------------|-----------------|--------------------------|--|
| Data { | object | | The capacity information relating to the user data. |
| AllocatedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes currently allocated by the storage system in this data store for this data type. |

| Property | Type | Attributes | Notes |
|--------------------------|-----------------|--------------------------|---|
| ConsumedBytes | integer (bytes) | <i>read-only (null)</i> | The number of bytes consumed in this data store for this data type. |
| GuaranteedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes the storage system guarantees can be allocated in this data store for this data type. |
| ProvisionedBytes | integer (bytes) | <i>read-write (null)</i> | The maximum number of bytes that can be allocated in this data store for this data type. |
| } | | | |
| IsThinProvisioned | boolean | <i>read-only (null)</i> | Marks that the capacity is not necessarily fully allocated. |
| Metadata { | object | | The capacity information relating to metadata. |
| AllocatedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes currently allocated by the storage system in this data store for this data type. |
| ConsumedBytes | integer (bytes) | <i>read-only (null)</i> | The number of bytes consumed in this data store for this data type. |
| GuaranteedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes the storage system guarantees can be allocated in this data store for this data type. |
| ProvisionedBytes | integer (bytes) | <i>read-write (null)</i> | The maximum number of bytes that can be allocated in this data store for this data type. |
| } | | | |
| Snapshot { | object | | The capacity information relating to snapshot or backup data. |
| AllocatedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes currently allocated by the storage system in this data store for this data type. |
| ConsumedBytes | integer (bytes) | <i>read-only (null)</i> | The number of bytes consumed in this data store for this data type. |
| GuaranteedBytes | integer (bytes) | <i>read-write (null)</i> | The number of bytes the storage system guarantees can be allocated in this data store for this data type. |
| ProvisionedBytes | integer (bytes) | <i>read-write (null)</i> | The maximum number of bytes that can be allocated in this data store for this data type. |
| } | | | |

4.3 Condition

4.3.1 Description

A condition that requires attention.

4.3.2 Properties

| Property | Type | Attributes | Notes |
|-------------------------------|-----------------------|-------------------------------------|---|
| LogEntry { | object | | The link to the log entry created for this condition. See the <i>LogEntry</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogEntry resource. See the Links section and the <i>LogEntry</i> schema for details. |
| } | | | |
| Message | string | <i>read-only</i> | The human-readable message for this condition. |
| MessageArgs [] | array (string) | <i>read-only</i> | An array of message arguments that are substituted for the arguments in the message when looked up in the message registry. |
| MessageId | string | <i>read-only</i> <i>required</i> | The identifier for the message. |
| OriginOfCondition { | object | | A link to the resource or object that originated the condition. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| Resolution (v1.14+) | string | <i>read-only</i> | Suggestions on how to resolve the condition. |
| Severity | string (enum) | <i>read-only</i> | The severity of the condition. <i>For the possible property values, see Severity in Property details.</i> |
| Timestamp | string (date-time) | <i>read-only</i> | The time the condition occurred. |

4.3.3 Property details

4.3.3.1 Severity

The severity of the condition.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

4.4 Identifier

4.4.1 Description

Any additional identifiers for a resource.

4.4.2 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|-------------------------------------|--|
| DurableName (v1.1+) | string | <i>read-only</i> (<i>null</i>) | The world-wide, persistent name of the resource. |
| DurableNameFormat (v1.1+) | string (enum) | <i>read-only</i> (<i>null</i>) | The format of the durable name property. <i>For the possible property values, see DurableNameFormat in Property details.</i> |

4.4.3 Property details

4.4.3.1 DurableNameFormat

The format of the durable name property.

| string | Description |
|--------|---|
| EUI | The IEEE-defined 64-bit Extended Unique Identifier (EUI). |

| string | Description |
|--------------------------------|---|
| FC_WWN | The Fibre Channel (FC) World Wide Name (WWN). |
| GCXLID (v1.15+) | The globally unique CXL logical device identifier (GCXLID). |
| iQN | The iSCSI Qualified Name (iQN). |
| MACAddress (v1.14+) | The media access control address (MAC address). |
| NAA | The Name Address Authority (NAA) format. |
| NGUID (v1.10+) | The Namespace Globally Unique Identifier (NGUID). |
| NQN (v1.6+) | The NVMe Qualified Name (NQN). |
| NSID (v1.6+, deprecated v1.12) | The NVM Namespace Identifier (NSID). <i>Deprecated in v1.12 and later. This value has been deprecated due to its non-uniqueness and NGUID should be used.</i> |
| UUID | The Universally Unique Identifier (UUID). |

4.5 IOStatistics

4.5.1 Description

The properties of this type represent IO statistics.

4.5.2 Properties

| Property | Type | Attributes | Notes |
|--------------------------|-----------------------------------|--------------------------------------|---|
| NonIORequests | integer (<code>{tot}</code>) | <i>read-write</i> (<i>null</i>) | Count of non IO requests. |
| NonIORequestTime | string | <i>read-write</i> (<i>null</i>) | The time that the resource is busy processing write requests. |
| ReadHitIORequests | integer (<code>{tot}</code>) | <i>read-write</i> (<i>null</i>) | Count of read IO requests satisfied from memory. |
| ReadIOKiBytes | integer (KiBy) | <i>read-write</i> (<i>null</i>) | Number of kibibytes read. |
| ReadIORequests | integer (<code>{tot}</code>) | <i>read-write</i> (<i>null</i>) | Count of read IO requests. |

| Property | Type | Attributes | Notes |
|---------------------------|-----------------------------|--------------------------------------|---|
| ReadIORequestTime | string | <i>read-write</i> (<i>null</i>) | The time that the resource is busy processing read requests. |
| WriteHitIORequests | integer (<i>{tot}</i>) | <i>read-write</i> (<i>null</i>) | Count of write IO requests coalesced into memory. |
| WriteIOKiBytes | integer (KiBy) | <i>read-write</i> (<i>null</i>) | Number of kibibytes written. |
| WriteIORequests | integer (<i>{tot}</i>) | <i>read-write</i> (<i>null</i>) | Count of write IO requests. |
| WriteIORequestTime | string | <i>read-write</i> (<i>null</i>) | The time that the resource is busy processing write requests. |

4.6 IPv4Address

4.6.1 Description

This type describes an IPv4 address.

4.6.2 Properties

| Property | Type | Attributes | Notes |
|----------------------|------------------|--------------------------------------|--|
| Address | string | <i>read-write</i> (<i>null</i>) | The IPv4 address. |
| AddressOrigin | string (enum) | <i>read-only</i> (<i>null</i>) | This indicates how the address was determined. <i>For the possible property values, see AddressOrigin in Property details.</i> |
| Gateway | string | <i>read-write</i> (<i>null</i>) | The IPv4 gateway for this address. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SubnetMask | string | <i>read-write</i> (<i>null</i>) | The IPv4 subnet mask. |

4.6.3 Property details

4.6.3.1 AddressOrigin

This indicates how the address was determined.

| string | Description |
|---------------|--|
| BOOTP | A BOOTP service-provided address. |
| DHCP | A DHCPv4 service-provided address. |
| IPv4LinkLocal | The address is valid for only this network segment, or link. |
| Static | A user-configured static address. |

4.7 IPv6Address

4.7.1 Description

This type describes an IPv6 address.

4.7.2 Properties

| Property | Type | Attributes | Notes |
|----------------------|------------------|------------------------------|---|
| Address | string | <i>read-write (null)</i> | The IPv6 address. |
| AddressOrigin | string (enum) | <i>read-only (null)</i> | This indicates how the address was determined. <i>For the possible property values, see AddressOrigin in Property details.</i> |
| AddressState | string (enum) | <i>read-only (null)</i> | The current RFC4862-defined state of this address. <i>For the possible property values, see AddressState in Property details.</i> |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PrefixLength | integer | <i>read-only (null)</i> | The IPv6 address prefix Length. |

4.7.3 Property details

4.7.3.1 AddressOrigin

This indicates how the address was determined.

| string | Description |
|-----------|---|
| DHCPv6 | A DHCPv6 service-provided address. |
| LinkLocal | The address is valid for only this network segment, or link. |
| SLAAC | A stateless autoconfiguration (SLAAC) service-provided address. |
| Static | A static user-configured address. |

4.7.3.2 AddressState

The current RFC4862-defined state of this address.

| string | Description |
|------------|---|
| Deprecated | This address is currently within its valid lifetime but is now outside its RFC4862-defined preferred lifetime. |
| Failed | This address has failed Duplicate Address Detection (DAD) testing, as defined in RFC4862, section 5.4, and is not currently in use. |
| Preferred | This address is currently within both its RFC4862-defined valid and preferred lifetimes. |
| Tentative | This address is currently undergoing Duplicate Address Detection (DAD) testing, as defined in RFC4862, section 5.4. |

4.8 IPv6GatewayStaticAddress

4.8.1 Description

This type represents a single IPv6 static address to be assigned on a network interface.

4.8.2 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|---------|---|---|
| Address (v1.1+) | string | <i>read-write required (null)</i> | A valid IPv6 address. |
| Oem (v1.1+) {} | object | | See the Oem object definition in the Common properties section. |
| PrefixLength (v1.1+) | integer | <i>read-write (null)</i> | The IPv6 network prefix length, in bits, for this address. |

4.9 IPv6StaticAddress

4.9.1 Description

This type represents a single IPv6 static address to be assigned on a network interface.

4.9.2 Properties

| Property | Type | Attributes | Notes |
|---------------------|---------|---|---|
| Address | string | <i>read-write required (null)</i> | A valid IPv6 address. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PrefixLength | integer | <i>read-write required (null)</i> | The prefix length, in bits, of this IPv6 address. |

4.10 Location

4.10.1 Description

The location of a resource.

4.10.2 Properties

| Property | Type | Attributes | Notes |
|--|-----------------|-------------------|---|
| AltitudeMeters (v1.6+) | number (meters) | read-write (null) | The altitude of the resource in meters. |
| Contacts (v1.7+) [{ | array | | An array of contact information. |
| ContactName (v1.7+) | string | read-write (null) | Name of this contact. |
| EmailAddress (v1.7+) | string | read-write (null) | Email address for this contact. |
| PhoneNumber (v1.7+) | string | read-write (null) | Phone number for this contact. |
| }] | | | |
| Info (v1.1+, deprecated v1.5) | string | read-only (null) | The location of the resource. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the PostalAddress, Placement, and PartLocation properties.</i> |
| InfoFormat (v1.1+, deprecated v1.5) | string | read-only (null) | The format of the Info property. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the PostalAddress, Placement, and PartLocation properties.</i> |
| Latitude (v1.6+) | number (deg) | read-write (null) | The latitude of the resource. |
| Longitude (v1.6+) | number (deg) | read-write (null) | The longitude of the resource in degrees. |
| Oem (v1.1+) { | object | | See the Oem object definition in the Common properties section. |
| (pattern) {} | object | | Property names follow regular expression pattern <code>"^[A-Za-z0-9_]+"</code> |
| } | | | |
| PartLocation (v1.5+) { | object | | The part location for a resource within an enclosure. |
| LocationOrdinalValue (v1.5+) | integer | read-only (null) | The number that represents the location of the part. For example, if LocationType is <code>Slot</code> and this unit is in slot 2, the LocationOrdinalValue is <code>2</code> . |
| LocationType (v1.5+) | string (enum) | read-only (null) | The type of location of the part. <i>For the possible property values, see LocationType in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------------------|--|
| Orientation (v1.5+) | string (enum) | <i>read-only</i> (<i>null</i>) | The orientation for the ordering of the slot enumeration used by the LocationOrdinalValue property. <i>For the possible property values, see Orientation in Property details.</i> |
| Reference (v1.5+) | string (enum) | <i>read-only</i> (<i>null</i>) | The reference point for the part location. Provides guidance about the general location of the part. <i>For the possible property values, see Reference in Property details.</i> |
| ServiceLabel (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The label of the part location, such as a silk-screened name or a printed label. |
| } | | | |
| PartLocationContext (v1.16+) | string | <i>read-only</i> (<i>null</i>) | Human readable string to enable differentiation between PartLocation value for parts in the same enclosure, which might include hierarchical information of containing PartLocation values for the part. |
| PhysicalAddress (v1.17+) { | object | | The physical address for a resource. |
| City (v1.17+) | string | <i>read-write</i> (<i>null</i>) | City, township, or shi (JP). |
| Country (v1.17+) | string | <i>read-write</i> (<i>null</i>) | The country. |
| ISOCountryCode (v1.17+) | string | <i>read-write</i> (<i>null</i>) | The ISO 3166-1 country code. |
| ISOSubdivisionCode (v1.17+) | string | <i>read-write</i> (<i>null</i>) | ISO 3166-2 subdivision code . |
| PostalCode (v1.17+) | string | <i>read-write</i> (<i>null</i>) | The postal code. |
| StateOrProvince (v1.17+) | string | <i>read-write</i> (<i>null</i>) | State or province. |
| StreetAddress (v1.17+) | string | <i>read-write</i> (<i>null</i>) | The street-level address, including building, room, or other identifiers. |
| } | | | |
| Placement (v1.3+) { | object | | A place within the addressed location. |
| AdditionalInfo (v1.7+) | string | <i>read-write</i> (<i>null</i>) | Area designation or other additional info. |
| Rack (v1.3+) | string | <i>read-write</i> (<i>null</i>) | The name of a rack location within a row. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|--|
| RackOffset (v1.3+) | integer | <i>read-write</i> (null) | The vertical location of the item, in terms of RackOffsetUnits. |
| RackOffsetUnits (v1.3+) | string (enum) | <i>read-write</i> (null) | The type of rack units in use. <i>For the possible property values, see RackOffsetUnits in Property details.</i> |
| Row (v1.3+) | string | <i>read-write</i> (null) | The name of the row. |
| } | | | |
| PostalAddress (v1.3+, deprecated v1.17 { | object | | The postal address of the addressed resource. <i>Deprecated in v1.17 and later. This object and its properties have been deprecated in favor of PhysicalAddress.</i> |
| AdditionalCode (v1.3+) | string | <i>read-write</i> (null) | The additional code. |
| AdditionalInfo (v1.7+) | string | <i>read-write</i> (null) | The room designation or other additional information. |
| Building (v1.3+) | string | <i>read-write</i> (null) | The name of the building. |
| City (v1.3+) | string | <i>read-write</i> (null) | City, township, or shi (JP). |
| Community (v1.3+) | string | <i>read-write</i> (null) | The postal community name. |
| Country (v1.3+) | string | <i>read-write</i> (null) | The country. |
| District (v1.3+) | string | <i>read-write</i> (null) | A county, parish, gun (JP), or district (IN). |
| Division (v1.3+) | string | <i>read-write</i> (null) | City division, borough, city district, ward, or chou (JP). |
| Floor (v1.3+) | string | <i>read-write</i> (null) | The floor. |
| GPSCoords (v1.3+, deprecated v1.6 | string | <i>read-write</i> (null) | The GPS coordinates of the part. <i>Deprecated in v1.6 and later. This property has been deprecated in favor of the Longitude and Latitude properties.</i> |
| HouseNumber (v1.3+) | integer | <i>read-write</i> (null) | The numeric portion of house number. |
| HouseNumberSuffix (v1.3+) | string | <i>read-write</i> (null) | The house number suffix. |

| Property | Type | Attributes | Notes |
|--|--------|-----------------------------|---|
| Landmark (v1.3+) | string | <i>read-write</i> (null) | The landmark. |
| LeadingStreetDirection (v1.3+) | string | <i>read-write</i> (null) | A leading street direction. |
| Location (v1.3+, deprecated v1.7) | string | <i>read-write</i> (null) | The room designation or other additional information. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of the AdditionalInfo property.</i> |
| Name (v1.3+) | string | <i>read-write</i> (null) | The name. |
| Neighborhood (v1.3+) | string | <i>read-write</i> (null) | Neighborhood or block. |
| PlaceType (v1.3+) | string | <i>read-write</i> (null) | The description of the type of place that is addressed. |
| POBox (v1.3+) | string | <i>read-write</i> (null) | The post office box (PO box). |
| PostalCode (v1.3+) | string | <i>read-write</i> (null) | The postal code or zip code. |
| Road (v1.3+) | string | <i>read-write</i> (null) | The primary road or street. |
| RoadBranch (v1.3+) | string | <i>read-write</i> (null) | The road branch. |
| RoadPostModifier (v1.3+) | string | <i>read-write</i> (null) | The road post-modifier. |
| RoadPreModifier (v1.3+) | string | <i>read-write</i> (null) | The road pre-modifier. |
| RoadSection (v1.3+) | string | <i>read-write</i> (null) | The road section. |
| RoadSubBranch (v1.3+) | string | <i>read-write</i> (null) | The road sub branch. |
| Room (v1.3+) | string | <i>read-write</i> (null) | The name or number of the room. |
| Seat (v1.3+) | string | <i>read-write</i> (null) | The seat, such as the desk, cubicle, or workstation. |
| Street (v1.3+) | string | <i>read-write</i> (null) | Street name. |

| Property | Type | Attributes | Notes |
|-------------------------------------|--------|-----------------------------|--|
| StreetSuffix (v1.3+) | string | <i>read-write</i> (null) | Avenue, Platz, Street, Circle. |
| Territory (v1.3+) | string | <i>read-write</i> (null) | A top-level subdivision within a country. |
| TrailingStreetSuffix (v1.3+) | string | <i>read-write</i> (null) | A trailing street suffix. |
| Unit (v1.3+) | string | <i>read-write</i> (null) | The name or number of the apartment unit or suite. |
| } | | | |

4.10.3 Property details

4.10.3.1 LocationType

The type of location of the part.

| string | Description |
|--------------------|-------------------------|
| Backplane (v1.12+) | A backplane. |
| Bay | A bay. |
| Connector | A connector or port. |
| Embedded (v1.13+) | Embedded within a part. |
| Slot | A slot. |
| Socket | A socket. |

4.10.3.2 Orientation

The orientation for the ordering of the slot enumeration used by the LocationOrdinalValue property.

| string | Description |
|-------------|---|
| BackToFront | The ordering for the LocationOrdinalValue is back to front. |
| BottomToTop | The ordering for LocationOrdinalValue is bottom to top. |

| string | Description |
|-------------|---|
| FrontToBack | The ordering for LocationOrdinalValue is front to back. |
| LeftToRight | The ordering for the LocationOrdinalValue is left to right. |
| RightToLeft | The ordering for the LocationOrdinalValue is right to left. |
| TopToBottom | The ordering for the LocationOrdinalValue is top to bottom. |

4.10.3.3 RackOffsetUnits

The type of rack units in use.

| string | Description |
|---------|--|
| EIA_310 | A rack unit that is equal to 1.75 in (44.45 mm). |
| OpenU | A rack unit that is equal to 48 mm (1.89 in). |

4.10.3.4 Reference

The reference point for the part location. Provides guidance about the general location of the part.

| string | Description |
|--------|--|
| Bottom | The part is in the bottom of the unit. |
| Front | The part is in the front of the unit. |
| Left | The part is on the left side of of the unit. |
| Middle | The part is in the middle of the unit. |
| Rear | The part is in the rear of the unit. |
| Right | The part is on the right side of the unit. |
| Top | The part is in the top of the unit. |

4.11 Message

4.11.1 Description

The message that the Redfish service returns.

4.11.2 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|-------------------|-------------------------------------|---|
| Message | string | <i>read-only</i> | The human-readable message. |
| MessageArgs [] | array (string) | <i>read-only</i> | An array of message arguments that are substituted for the arguments in the message when looked up in the message registry. |
| MessageId | string | <i>read-only</i> <i>required</i> | The identifier for the message. |
| MessageSeverity (v1.1+) | string (enum) | <i>read-only</i> | The severity of the message. <i>For the possible property values, see MessageSeverity in Property details.</i> |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| RelatedProperties [] | array (string) | <i>read-only</i> | A set of properties described by the message. |
| Resolution | string | <i>read-only</i> | Used to provide suggestions on how to resolve the situation that caused the message. |
| Severity (deprecated v1.1) | string | <i>read-only</i> | The severity of the message. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.</i> |

4.11.3 Property details

4.11.3.1 MessageSeverity

The severity of the message.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |

| string | Description |
|---------|---------------------------------|
| Warning | A condition requires attention. |

4.12 Redundancy

4.12.1 Description

The common redundancy definition and structure used in other Redfish schemas.

4.12.2 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|---------------|-----------------------------------|--|
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions (v1.2+) {} | object | | The available actions for this resource. |
| MaxNumSupported | integer | <i>read-only (null)</i> | The maximum number of members allowable for this particular redundancy group. |
| MemberId | string | <i>read-only required</i> | The unique identifier for the member within an array. |
| MinNumNeeded | integer | <i>read-only required (null)</i> | The minimum number of members needed for this group to be redundant. |
| Mode | string (enum) | <i>read-write required (null)</i> | The redundancy mode of the group. <i>For the possible property values, see Mode in Property details.</i> |
| Name | string | <i>read-only required</i> | The name of the resource or array member. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| RedundancyEnabled (v1.1+) | boolean | <i>read-write (null)</i> | An indication of whether redundancy is enabled. |
| RedundancySet [{ | array | <i>required</i> | The links to components of this redundancy set. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

| Property | Type | Attributes | Notes |
|------------------|--------|-----------------|---|
| Status {} | object | <i>required</i> | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

4.12.3 Property details

4.12.3.1 Mode

The redundancy mode of the group.

| string | Description |
|----------------------|---|
| Failover | Failure of one unit automatically causes a standby or offline unit in the redundancy set to take over its functions. |
| N+m | Multiple units are available and active such that normal operation will continue if one or more units fail. |
| NotRedundant (v1.3+) | The subsystem is not configured in a redundancy mode, either due to configuration or the functionality has been disabled by the user. |
| Sharing | Multiple units contribute or share such that operation will continue, but at a reduced capacity, if one or more units fail. |
| Sparing | One or more spare units are available to take over the function of a failed unit, but takeover is not automatic. |

4.13 RedundantGroup

4.13.1 Description

The redundancy information for the devices in a redundancy group.

4.13.2 Properties

| Property | Type | Attributes | Notes |
|------------------------------------|---------|-------------------------------------|---|
| MaxSupportedInGroup (v1.4+) | integer | <i>read-only</i> (<i>null</i>) | The maximum number of devices supported in this redundancy group. |

| Property | Type | Attributes | Notes |
|---------------------------------------|------------------|---|---|
| MinNeededInGroup (v1.4+) | integer | <i>read-only required (null)</i> | The minimum number of devices needed for this group to be redundant. |
| RedundancyGroup (v1.4+) [{ | array | <i>required</i> | The links to the devices included in this redundancy group. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| RedundancyType (v1.4+) | string (enum) | <i>read-write required (null)</i> | The redundancy mode of the group. <i>For the possible property values, see RedundancyType in Property details.</i> |
| Status (v1.4+) { } | object | <i>required</i> | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

4.13.3 Property details

4.13.3.1 RedundancyType

The redundancy mode of the group.

| string | Description |
|--------------|---|
| Failover | Failure of one unit automatically causes a standby or offline unit in the redundancy set to take over its functions. |
| NotRedundant | The subsystem is not configured in a redundancy mode, either due to configuration or the functionality has been disabled by the user. |
| NPlusM | Multiple units are available and active such that normal operation will continue if one or more units fail. |
| Sharing | Multiple units contribute or share such that operation will continue, but at a reduced capacity, if one or more units fail. |
| Sparing | One or more spare units are available to take over the function of a failed unit, but takeover is not automatic. |

4.14 ReplicaInfo

4.14.1 Description

Defines the characteristics of a replica of a source.

4.14.2 Properties

| Property | Type | Attributes | Notes |
|--|---------------|-------------------------|--|
| ConsistencyEnabled | boolean | <i>read-only (null)</i> | True if consistency is enabled. |
| ConsistencyState | string (enum) | <i>read-only (null)</i> | The current state of consistency. <i>For the possible property values, see ConsistencyState in Property details.</i> |
| ConsistencyStatus | string (enum) | <i>read-only (null)</i> | The current status of consistency. <i>For the possible property values, see ConsistencyStatus in Property details.</i> |
| ConsistencyType | string (enum) | <i>read-only (null)</i> | Indicates the consistency type used by the source and its associated target group. <i>For the possible property values, see ConsistencyType in Property details.</i> |
| DataProtectionLineOfService (v1.1+) { | object | | A pointer to the DataProtection line of service element that describes this replica. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| FailedCopyStopsHostIO | boolean | <i>read-only (null)</i> | If true, the storage array tells host to stop sending data to source element if copying to a remote element fails. |
| PercentSynced | integer (%) | <i>read-only (null)</i> | Specifies the percent of the work completed to reach synchronization. |
| RemoteSourceReplica (v1.4+) | string | <i>read-only (null)</i> | ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship. |
| Replica { | object | | Deprecated - Use Source Replica. The resource that is the source of this replica. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |

| Property | Type | Attributes | Notes |
|-----------------------------------|--------------------|-------------------------------------|---|
| ReplicaFaultDomain (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship. <i>For the possible property values, see ReplicaFaultDomain in Property details.</i> |
| ReplicaPriority | string (enum) | <i>read-only</i> (<i>null</i>) | The priority of background copy engine I/O to be managed relative to host I/O operations during a sequential background copy operation. <i>For the possible property values, see ReplicaPriority in Property details.</i> |
| ReplicaProgressStatus | string (enum) | <i>read-only</i> (<i>null</i>) | The status of the session with respect to Replication activity. <i>For the possible property values, see ReplicaProgressStatus in Property details.</i> |
| ReplicaReadOnlyAccess | string (enum) | <i>read-only</i> (<i>null</i>) | This property specifies whether the source, the target, or both elements are read only to the host. <i>For the possible property values, see ReplicaReadOnlyAccess in Property details.</i> |
| ReplicaRecoveryMode | string (enum) | <i>read-only</i> (<i>null</i>) | Describes whether the copy operation continues after a broken link is restored. <i>For the possible property values, see ReplicaRecoveryMode in Property details.</i> |
| ReplicaRole | string (enum) | <i>read-only</i> (<i>null</i>) | The source or target role of this replica. <i>For the possible property values, see ReplicaRole in Property details.</i> |
| ReplicaSkewBytes | integer (bytes) | <i>read-only</i> (<i>null</i>) | Applies to Adaptive mode and it describes maximum number of bytes the SyncedElement (target) can be out of sync. |
| ReplicaState | string (enum) | <i>read-only</i> (<i>null</i>) | ReplicaState describes the state of the relationship with respect to Replication activity. <i>For the possible property values, see ReplicaState in Property details.</i> |
| ReplicaType | string (enum) | <i>read-only</i> (<i>null</i>) | ReplicaType describes the intended outcome of the replication. <i>For the possible property values, see ReplicaType in Property details.</i> |
| ReplicaUpdateMode | string (enum) | <i>read-only</i> (<i>null</i>) | Describes whether the target elements will be updated synchronously or asynchronously. <i>For the possible property values, see ReplicaUpdateMode in Property details.</i> |
| RequestedReplicaState | string (enum) | <i>read-only</i> (<i>null</i>) | The last requested or desired state for the relationship. <i>For the possible property values, see RequestedReplicaState in Property details.</i> |
| SourceReplica (v1.2+) { | object | | The URI to the source replica when located on a different Swordfish service instance. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------|---------------|-------------------------|---|
| SyncMaintained | boolean | <i>read-only (null)</i> | Synchronization is maintained. |
| UndiscoveredElement | string (enum) | <i>read-only (null)</i> | This property specifies whether the source, the target, or both elements involved in a copy operation are undiscovered. <i>For the possible property values, see UndiscoveredElement in Property details.</i> |
| WhenActivated | string (%) | <i>read-only (null)</i> | Specifies when point-in-time copy was taken or when the replication relationship is activated, reactivated, resumed or re-established. |
| WhenDeactivated | string (%) | <i>read-only (null)</i> | Specifies when the replication relationship is deactivated. |
| WhenEstablished | string (%) | <i>read-only (null)</i> | Specifies when the replication relationship is established. |
| WhenSuspended | string (%) | <i>read-only (null)</i> | Specifies when the replication relationship is suspended. |
| WhenSynced | string | <i>read-only (null)</i> | The point in time that the Elements were synchronized. |
| WhenSynchronized | string (%) | <i>read-only (null)</i> | Specifies when the replication relationship is synchronized. |

4.14.3 Property details

4.14.3.1 ConsistencyState

The current state of consistency.

| string | Description |
|--------------|-----------------|
| Consistent | Consistent. |
| Inconsistent | Not consistent. |

4.14.3.2 ConsistencyStatus

The current status of consistency.

| string | Description |
|------------|-----------------------|
| Consistent | Consistent. |
| Disabled | Consistency disabled. |
| InError | Consistency error. |
| InProgress | Becoming consistent. |

4.14.3.3 ConsistencyType

Indicates the consistency type used by the source and its associated target group.

| string | Description |
|------------------------|--------------------------|
| SequentiallyConsistent | Sequentially consistent. |

4.14.3.4 ReplicaFaultDomain

ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship.

| string | Description |
|--------|---|
| Local | Local indicates that the source and target replicas are contained within a single fault domain. |
| Remote | Remote indicates that the source and target replicas are in separate fault domains. |

4.14.3.5 ReplicaPriority

The priority of background copy engine I/O to be managed relative to host I/O operations during a sequential background copy operation.

| string | Description |
|--------|--|
| High | Copy engine I/O has higher priority than host I/O. |
| Low | Copy engine I/O lower priority than host I/O. |
| Same | Copy engine I/O has the same priority as host I/O. |
| Urgent | Copy operation to be performed as soon as possible, regardless of the host I/O requests. |

4.14.3.6 ReplicaProgressStatus

The status of the session with respect to Replication activity.

| string | Description |
|------------------|--|
| Aborting | Abort in progress. |
| Completed | The request is completed. Data flow is idle. |
| Detaching | Detach in progress. |
| Dormant | Indicates that the data flow is inactive, suspended or quiesced. |
| FailingBack | Undoing the result of failover. |
| FailingOver | In the process of switching source and target. |
| Fracturing | Fracture in progress. |
| Initializing | In the process of establishing source/replica relationship and the data flow has not started. |
| Mixed | Applies to groups with element pairs with different statuses. Generally, the individual statuses need to be examined. |
| Pending | The flow of data has stopped momentarily due to limited bandwidth or a busy system. |
| Preparing | Preparation in progress. |
| RequiresActivate | The requested operation has completed, however, the synchronization relationship needs to be activated before further copy operations can be issued. |
| RequiresDetach | The requested operation has completed, however, the synchronization relationship needs to be detached before further copy operations can be issued. |
| RequiresFracture | The requested operation has completed, however, the synchronization relationship needs to be fractured before further copy operations can be issued. |
| RequiresResume | The requested operation has completed, however, the synchronization relationship needs to be resumed before further copy operations can be issued. |
| RequiresResync | The requested operation has completed, however, the synchronization relationship needs to be resynced before further copy operations can be issued. |
| RequiresSplit | The requested operation has completed, however, the synchronization relationship needs to be split before further copy operations can be issued. |
| Restoring | Restore in progress. |
| Resyncing | Resync in progress. |

| string | Description |
|---------------|--|
| Splitting | Split in progress. |
| Suspending | The copy operation is in the process of being suspended. |
| Synchronizing | Sync in progress. |
| Terminating | The relationship is in the process of terminating. |

4.14.3.7 ReplicaReadOnlyAccess

This property specifies whether the source, the target, or both elements are read only to the host.

| string | Description |
|----------------|--|
| Both | Both the source and the target elements are read only to the host. |
| ReplicaElement | The replica element. |
| SourceElement | The source element. |

4.14.3.8 ReplicaRecoveryMode

Describes whether the copy operation continues after a broken link is restored.

| string | Description |
|-----------|--|
| Automatic | Copy operation resumes automatically. |
| Manual | ReplicaState is set to Suspended after the link is restored. It is required to issue the Resume operation to continue. |

4.14.3.9 ReplicaRole

The source or target role of this replica.

| string | Description |
|--------|---------------------|
| Source | The source element. |
| Target | The target element. |

4.14.3.10 ReplicaState

ReplicaState describes the state of the relationship with respect to Replication activity.

| string | Description |
|----------------|--|
| Aborted | The copy operation is aborted with the Abort operation. Use the Resync Replica operation to restart the copy operation. |
| Broken | The relationship is non-functional due to errors in the source, the target, the path between the two or space constraints. |
| Failedover | Reads and writes are sent to the target element. Source element is not reachable. |
| Fractured | Target is split from the source. |
| Inactive | Data flow has stopped, writes to source element will not be sent to target element. |
| Initialized | The link to enable replication is established and source/replica elements are associated, but the data flow has not started. |
| Invalid | The array is unable to determine the state of the replication relationship, for example, after the connection is restored; however, either source or target elements have an unknown status. |
| Mixed | Applies to the ReplicaState of GroupSynchronized. It indicates the StorageSynchronized relationships of the elements in the groups have different ReplicaState values. |
| Partitioned | State of replication relationship can not be determined, for example, due to a connection problem. |
| Prepared | Initialization is completed, however, the data flow has not started. |
| Restored | It indicates the source element was restored from the target element. |
| Skewed | The target has been modified and is no longer synchronized with the source element or the point-in-time view. |
| Split | The target element was gracefully (or systematically) split from its source element -- consistency is guaranteed. |
| Suspended | Data flow between the source and target elements has stopped. Writes to source element are held until the relationship is Resumed. |
| Synchronized | For the Mirror, Snapshot, or Clone replication, the target represents a copy of the source. |
| Unsynchronized | Not all the source element data has been copied to the target element. |

4.14.3.11 ReplicaType

ReplicaType describes the intended outcome of the replication.

| string | Description |
|----------------|---|
| Clone | Create a point in time, full copy the source. |
| Mirror | Create and maintain a copy of the source. |
| Snapshot | Create a point in time, virtual copy of the source. |
| TokenizedClone | Create a token based clone. |

4.14.3.12 ReplicaUpdateMode

Describes whether the target elements will be updated synchronously or asynchronously.

| string | Description |
|--------------|---|
| Active | Active-Active (i.e. bidirectional) synchronous updates. |
| Adaptive | Allows implementation to switch between synchronous and asynchronous modes. |
| Asynchronous | Asynchronous updates. |
| Synchronous | Synchronous updates. |

4.14.3.13 RequestedReplicaState

The last requested or desired state for the relationship.

| string | Description |
|------------|--|
| Aborted | The copy operation is aborted with the Abort operation. Use the Resync Replica operation to restart the copy operation. |
| Broken | The relationship is non-functional due to errors in the source, the target, the path between the two or space constraints. |
| Failedover | Reads and writes are sent to the target element. Source element is not reachable. |
| Fractured | Target is split from the source. |
| Inactive | Data flow has stopped, writes to source element will not be sent to target element. |

| string | Description |
|----------------|--|
| Initialized | The link to enable replication is established and source/replica elements are associated, but the data flow has not started. |
| Invalid | The array is unable to determine the state of the replication relationship, for example, after the connection is restored; however, either source or target elements have an unknown status. |
| Mixed | Applies to the ReplicaState of GroupSynchronized. It indicates the StorageSynchronized relationships of the elements in the groups have different ReplicaState values. |
| Partitioned | State of replication relationship can not be determined, for example, due to a connection problem. |
| Prepared | Initialization is completed, however, the data flow has not started. |
| Restored | It indicates the source element was restored from the target element. |
| Skewed | The target has been modified and is no longer synchronized with the source element or the point-in-time view. |
| Split | The target element was gracefully (or systematically) split from its source element -- consistency is guaranteed. |
| Suspended | Data flow between the source and target elements has stopped. Writes to source element are held until the relationship is Resumed. |
| Synchronized | For the Mirror, Snapshot, or Clone replication, the target represents a copy of the source. |
| Unsynchronized | Not all the source element data has been copied to the target element. |

4.14.3.14 UndiscoveredElement

This property specifies whether the source, the target, or both elements involved in a copy operation are undiscovered.

| string | Description |
|----------------|--------------------------------------|
| ReplicaElement | The replica element is undiscovered. |
| SourceElement | The source element is undiscovered. |

4.15 Schedule

4.15.1 Description

Schedule a series of occurrences.

4.15.2 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------------|-----------------------------|--|
| EnabledDaysOfMonth [] | array (integer, null) | <i>read-write</i> | Days of the month when scheduled occurrences are enabled. 0 indicates that every day of the month is enabled. |
| EnabledDaysOfWeek [] | array (string (enum)) | <i>read-write</i> (null) | Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled. <i>For the possible property values, see EnabledDaysOfWeek in Property details.</i> |
| EnabledIntervals (v1.1+) [] | array (string, null) | <i>read-write</i> | Intervals when scheduled occurrences are enabled. |
| EnabledMonthsOfYear [] | array (string (enum)) | <i>read-write</i> (null) | The months of the year when scheduled occurrences are enabled. If not present, all months of the year are enabled. <i>For the possible property values, see EnabledMonthsOfYear in Property details.</i> |
| InitialStartTime | string (date-time) | <i>read-write</i> (null) | The date and time when the initial occurrence is scheduled to occur. |
| Lifetime | string (duration) | <i>read-write</i> (null) | The time after provisioning when the schedule as a whole expires. |
| MaxOccurrences | integer | <i>read-write</i> (null) | The maximum number of scheduled occurrences. |
| Name | string | <i>read-write</i> (null) | The schedule name. |
| RecurrenceInterval | string (duration) | <i>read-write</i> (null) | The duration between consecutive occurrences. |

4.15.3 Property details

4.15.3.1 EnabledDaysOfWeek

Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled.

| string | Description |
|-----------|------------------------|
| Every | Every day of the week. |
| Friday | Friday. |
| Monday | Monday. |
| Saturday | Saturday. |
| Sunday | Sunday. |
| Thursday | Thursday. |
| Tuesday | Tuesday. |
| Wednesday | Wednesday. |

4.15.3.2 EnabledMonthsOfYear

The months of the year when scheduled occurrences are enabled. If not present, all months of the year are enabled.

| string | Description |
|----------|--------------------------|
| April | April. |
| August | August. |
| December | December. |
| Every | Every month of the year. |
| February | February. |
| January | January. |
| July | July. |
| June | June. |

| string | Description |
|-----------|-------------|
| March | March. |
| May | May. |
| November | November. |
| October | October. |
| September | September. |

4.16 Status

4.16.1 Description

The status and health of a resource and its children.

4.16.2 Properties

| Property | Type | Attributes | Notes |
|---------------------------------|-------------------|-------------------------------------|---|
| Conditions (v1.11+) { | array | | Conditions in this resource that require attention. |
| LogEntry { | object | | The link to the log entry created for this condition. See the <i>LogEntry</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogEntry resource. See the Links section and the <i>LogEntry</i> schema for details. |
| } | | | |
| Message | string | <i>read-only</i> | The human-readable message for this condition. |
| MessageArgs [] | array (string) | <i>read-only</i> | An array of message arguments that are substituted for the arguments in the message when looked up in the message registry. |
| MessageId | string | <i>read-only</i> <i>required</i> | The identifier for the message. |
| OriginOfCondition { | object | | A link to the resource or object that originated the condition. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |

| Property | Type | Attributes | Notes |
|-------------------------------|-----------------------|-------------------------------------|---|
| } | | | |
| Resolution (v1.14+) | string | <i>read-only</i> | Suggestions on how to resolve the condition. |
| Severity | string (enum) | <i>read-only</i> | The severity of the condition. <i>For the possible property values, see Severity in Property details.</i> |
| Timestamp | string (date-time) | <i>read-only</i> | The time the condition occurred. |
| }] | | | |
| Health | string (enum) | <i>read-only</i> (<i>null</i>) | The health state of this resource in the absence of its dependent resources. <i>For the possible property values, see Health in Property details.</i> |
| HealthRollup | string (enum) | <i>read-only</i> (<i>null</i>) | The overall health state from the view of this resource. <i>For the possible property values, see HealthRollup in Property details.</i> |
| Oem { | object | | See the Oem object definition in the Common properties section. |
| (pattern) {} | object | | Property names follow regular expression pattern "[A-Za-z0-9_]+\$" |
| } | | | |
| State | string (enum) | <i>read-only</i> (<i>null</i>) | The known state of the resource, such as, enabled. <i>For the possible property values, see State in Property details.</i> |

4.16.3 Property details

4.16.3.1 Health

The health state of this resource in the absence of its dependent resources.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

4.16.3.2 HealthRollup

The overall health state from the view of this resource.

Methods used to determine the value of this property can vary between different architectures and requirements of the underlying product. This property does not necessarily surface the most degraded health from all subordinate resources. For example, if a `PowerSupply` resource contains `Critical` for its `Health` property, but belongs to a redundancy group that is still able to power the parent `Chassis` resource, the `Chassis` resource could report `warning` for the `HealthRollup` property, depending on the redundancy policy for the `Chassis` resource. Using the same `PowerSupply` example, the `ComputerSystem` resource associated with this `Chassis` resource could degrade its `HealthRollup`, even though the `PowerSupply` resource is not subordinate to the `ComputerSystem` resource. In this case, the `ComputerSystem` resource is dependent on the `PowerSupply`, but are in two different resource hierarchies.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

4.16.3.3 Severity

The severity of the condition.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

4.16.3.4 State

The known state of the resource, such as, enabled.

| string | Description |
|-------------------|---|
| Absent | This function or device is not currently present or detected. This resource represents a capability or an available location where a device can be installed. |
| Deferring (v1.2+) | The element does not process any commands but queues new requests. |
| Disabled | This function or resource is disabled. |

| string | Description |
|----------------------------|--|
| Enabled | This function or resource is enabled. |
| InTest | This function or resource is undergoing testing, or is in the process of capturing information for debugging. |
| Qualified (v1.9+) | The element quality is within the acceptable range of operation. |
| Quiesced (v1.2+) | The element is enabled but only processes a restricted set of commands. |
| StandbyOffline | This function or resource is enabled but awaits an external action to activate it. |
| StandbySpare | This function or resource is part of a redundancy set and awaits a failover or other external action to activate it. |
| Starting | This function or resource is starting. |
| UnavailableOffline (v1.1+) | This function or resource is present but cannot be used. |
| Updating (v1.2+) | The element is updating and might be unavailable or degraded. |

5 Resource collections

A resource collection is a core concept in Redfish. A resource collection is a group of like resources where the number of instances in the group can shrink or grow depending on the scope of the Redfish service or the configuration of the devices being managed. Every resource collection contains the same set of supported properties, and all contain `Collection` in the name of their schema. Every resource linked in the `Members` array within a resource collection will have the same resource type with the same major version, but can vary in minor or errata schema versions.

The properties of a resource collection are:

5.0.1 Properties

| Property | Type | Attributes | Notes |
|-------------------------------|--------------|---------------------------|--|
| @odata.context | string (URI) | <i>read-only</i> | The OData description of a payload. |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| @odata.type | string | <i>read-only required</i> | The type of a resource. |
| Description | string | <i>read-only (null)</i> | The description of this resource. Used for commonality in the schema definitions. |
| Members [{ | array | <i>required</i> | The members of this collection. |
| @odata.id | string (URI) | <i>read-only</i> | The link to a Resource instance, which is a member of this collection. |
| }] | | | |
| Members@odata.count | integer | <i>read-only</i> | The number of items in a collection. |
| Members@odata.nextLink | string (URI) | <i>read-only</i> | The URI to the resource containing the next set of partial members. |
| Name | string | <i>read-only required</i> | The name of the resource or array member. |
| Oem {} | object | | The manufacturer- or provider-specific extension moniker that divides the <code>oem</code> object into sections. |

As shown in the following example, a Redfish service may provide management functionality for

several `ComputerSystem` resources, and therefore a `ComputerSystemCollection` resource is provided. This example shows a service with four `ComputerSystem` instances inside the `Members` array.

```
{
  "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
  "Name": "Computer System Collection",
  "Members@odata.count": 4,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/529QB9450R6"
    },
    {
      "@odata.id": "/redfish/v1/Systems/529QB9451R6"
    },
    {
      "@odata.id": "/redfish/v1/Systems/529QB9452R6"
    },
    {
      "@odata.id": "/redfish/v1/Systems/529QB9453R6"
    }
  ],
  "@odata.id": "/redfish/v1/Systems"
}
```

5.1 Collection capabilities annotation (#CollectionCapabilities)

This annotation is used to inform the client how to form the request body for a create (POST) operation to a given collection based on a specified use case, which will result in a new member being added to the given collection.

5.1.1 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|--------------|------------------|--|
| Capabilities [{ | array | | The list of capabilities supported by this resource. |
| CapabilitiesObject { | object | <i>required</i> | The link to the resource the client can issue a GET request against to understand how to form a POST request for a collection. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |

| Property | Type | Attributes | Notes |
|--------------------------------|---------------|-------------------------------------|--|
| Links { | object | <i>required</i> | The links to other resources that are related to this resource. |
| Oem {} | object | | The OEM extension property. For property details, see Oem. |
| RelatedItem [{ | array | | An array of links to resources associated with this capability. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| RelatedItem@odata.count | integer | <i>read-only</i> | The number of items in a collection. |
| TargetCollection { | object | <i>required</i> | The link to the collection that this capabilities structure is describing. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| } | | | |
| UseCase | string (enum) | <i>read-only</i> <i>required</i> | The use case in which a client can issue a POST request to the collection. <i>For the possible property values, see UseCase in Property details.</i> |
| }] | | | |
| MaxMembers (v1.2+) | integer | <i>read-only</i> | The maximum number of members allowed in this collection. |

5.1.2 Property details

5.1.2.1 UseCase

The use case in which a client can issue a POST request to the collection.

| string | Description |
|--|--|
| ComputerSystemComposition | This capability describes a client creating a new computer system resource from a set of disaggregated hardware. |
| ComputerSystemConstrainedComposition (v1.1+) | This capability describes a client creating a new computer system resource from a set of constraints. |
| ResourceBlockComposition (v1.3+) | This capability describes a client creating a new resource block from a set of other resource blocks. |

| string | Description |
|---|---|
| ResourceBlockConstrainedComposition (v1.3+) | This capability describes a client creating a new resource block from a set of constraints. |
| VolumeCreation | This capability describes a client creating a new volume resource as part of an existing storage subsystem. |

5.1.3 Example collection capabilities annotation

```

{
  "@Redfish.CollectionCapabilities": {
    "@odata.type": "#CollectionCapabilities.v1_1_0.CollectionCapabilities",
    "Capabilities": [
      {
        "CapabilitiesObject": {
          "@odata.id": "/redfish/v1/Systems/Capabilities"
        },
        "UseCase": "ComputerSystemComposition",
        "Links": {
          "TargetCollection": {
            "@odata.id": "/redfish/v1/Systems"
          }
        }
      },
      {
        "CapabilitiesObject": {
          "@odata.id": "/redfish/v1/Systems/ConstrainedCompositionCapabilities"
        },
        "UseCase": "ComputerSystemConstrainedComposition",
        "Links": {
          "TargetCollection": {
            "@odata.id": "/redfish/v1/Systems"
          }
        }
      }
    ]
  },
  ...
}

```

5.2 Resource collection URIs in Redfish v1.6 and later

The following table lists all Redfish-defined resource collections and the URIs where they can appear.

Note: The URIs listed are valid for Redfish services that conform to the *Redfish Specification*

v1.6.0 or higher. Services built on earlier specification versions might use different URIs, which must be discovered by following the hyperlinks from the service root (`/redfish/v1/`).

| Collection Type | URIs |
|--------------------------------|---|
| AccelerationFunctionCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/AccelerationFunctions /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions /redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/AccelerationFunctions /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions |
| AddressPoolCollection | /redfish/v1/Fabrics/{FabricId}/AddressPools |
| AggregateCollection | /redfish/v1/AggregationService/Aggregates |
| AggregationSourceCollection | /redfish/v1/AggregationService/AggregationSources |
| AllowDenyCollection | /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny |
| ApplicationCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Applications /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Applications /redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Applications |
| BatteryCollection | /redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries |
| BootOptionCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/BootOptions /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/BootOptions /redfish/v1/Systems/{ComputerSystemId}/BootOptions |

| Collection Type | URIs |
|-----------------|--------------------|
| CableCollection | /redfish/v1/Cables |

| Collection Type | URIs |
|-----------------------|--|
| CertificateCollection | /redfish/v1/AccountService/Accounts/{ManagerAccountId}/Certificates /redfish/v1/AccountService/ActiveDirectory/Certificates /redfish/v1/AccountService/ExternalAccountProviders/{ExternalAccountProviderId}/Certificates /redfish/v1/AccountService/LDAP/Certificates /redfish/v1/AccountService/MultiFactorAuth/ClientCertificate/Certificates /redfish/v1/AccountService/MultiFactorAuth/SecurID/Certificates /redfish/v1/AccountService/OutboundConnections/{OutboundConnectionId}/Certificates /redfish/v1/AccountService/OutboundConnections/{OutboundConnectionId}/ClientCertificates /redfish/v1/Chassis/{ChassisId}/Certificates /redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}/Certificates /redfish/v1/Chassis/{ChassisId}/Memory/{MemoryId}/Certificates /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Certificates /redfish/v1/Chassis/{ChassisId}/TrustedComponents/{TrustedComponentId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Drives/{DriveId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Memory/{MemoryId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Drives/{DriveId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Boot/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/KeyManagement/KMIPCertificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Memory/{MemoryId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates |

| Collection Type | URIs |
|-----------------|---|
| | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/VirtualMedia/{VirtualMediaId}/Certificates /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/VirtualMedia/{VirtualMediaId}/ClientCertificates /redfish/v1/EventService/Subscriptions/{EventDestinationId}/Certificates /redfish/v1/EventService/Subscriptions/{EventDestinationId}/ClientCertificates /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Certificates /redfish/v1/Managers/{ManagerId}/Certificates /redfish/v1/Managers/{ManagerId}/NetworkProtocol/HTTPS/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts/ {ManagerAccountId}/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/ActiveDirectory/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/ExternalAccountProviders/ {ExternalAccountProviderId}/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/LDAP/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/MultiFactorAuth/ ClientCertificate/Certificates /redfish/v1/Managers/{ManagerId}/RemoteAccountService/MultiFactorAuth/SecurID/ Certificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/SPDM/RevokedCertificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/SPDM/TrustedCertificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Client/RevokedCertificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Client/TrustedCertificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Server/RevokedCertificates /redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Server/TrustedCertificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Drives/{DriveId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Memory/{MemoryId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers/ {StorageControllerId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Drives/{DriveId}/ Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/ StorageControllers/{StorageControllerId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Boot/ Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ KeyManagement/KMIPCertificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Memory/{MemoryId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Processors/{ProcessorId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ SecureBoot/SecureBootDatabases/{DatabaseId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/ {StorageId}/Controllers/{StorageControllerId}/Certificates /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/ |

| Collection Type | URIs |
|------------------------------|--|
| | <p> <i>{StorageId}/Drives/{DriveId}/Certificates</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/Certificates</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/ClientCertificates</i> <i>/redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Certificates</i> <i>/redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Boot/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/KeyManagement/KMIPCertificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/Certificates</i> <i>/redfish/v1/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/ClientCertificates</i> <i>/redfish/v1/UpdateService/ClientCertificates</i> <i>/redfish/v1/UpdateService/RemoteServerCertificates</i> </p> |
| ChassisCollection | <i>/redfish/v1/Chassis</i> |
| CircuitCollection | <p> <i>/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Mains</i> <i>/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Mains</i> <i>/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Subfeeds</i> <i>/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Mains</i> <i>/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Mains</i> <i>/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Feeders</i> <i>/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Mains</i> <i>/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Subfeeds</i> <i>/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Branches</i> <i>/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Feeders</i> <i>/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Mains</i> </p> |
| ComponentIntegrityCollection | <i>/redfish/v1/ComponentIntegrity</i> |

| Collection Type | URIs |
|----------------------------------|--|
| CompositionReservationCollection | /redfish/v1/CompositionService/CompositionReservations |
| ComputerSystemCollection | /redfish/v1/Systems |
| ConnectionCollection | /redfish/v1/Fabrics/{FabricId}/Connections /redfish/v1/Storage/{StorageId}/Connections |
| ConnectionMethodCollection | /redfish/v1/AggregationService/ConnectionMethods |
| ContainerCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Containers /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Containers /redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Containers |
| ContainerImageCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/ContainerImages /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/ContainerImages /redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/ContainerImages |
| ControlCollection | /redfish/v1/Chassis/{ChassisId}/Controls |
| CoolantConnectorCollection | /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/CoolantConnectors /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/PrimaryCoolantConnectors /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/SecondaryCoolantConnectors /redfish/v1/ThermalEquipment/CoolingLoops/{CoolingUnitId}/PrimaryCoolantConnectors /redfish/v1/ThermalEquipment/CoolingLoops/{CoolingUnitId}/SecondaryCoolantConnectors /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/PrimaryCoolantConnectors /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/SecondaryCoolantConnectors /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/PrimaryCoolantConnectors /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/SecondaryCoolantConnectors |
| CoolingLoopCollection | /redfish/v1/ThermalEquipment/CoolingLoops |
| CoolingUnitCollection | /redfish/v1/ThermalEquipment/CDUs /redfish/v1/ThermalEquipment/HeatExchangers /redfish/v1/ThermalEquipment/ImmersionUnits |
| CXLLogicalDeviceCollection | /redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCIeDeviceId}/CXLLogicalDevices |

| Collection Type | URIs |
|-----------------------------|--|
| DriveCollection | <pre> /redfish/v1/Chassis/{ChassisId}/Drives /redfish/v1/Storage/{StorageId}/FileSystems/{FileSystemId}/CapacitySources/ {CapacitySourceId}/ProvidingDrives /redfish/v1/Storage/{StorageId}/StoragePools/{StoragePoolId}/CapacitySources/ {CapacitySourceId}/ProvidingDrives /redfish/v1/Storage/{StorageId}/Volumes/{VolumeId}/CapacitySources/ {CapacitySourceId}/ProvidingDrives /redfish/v1/StorageServices/{StorageServiceId}/Drives /redfish/v1/StorageServices/{StorageServiceId}/FileSystems/{FileSystemId}/ CapacitySources/{CapacitySourceId}/ProvidingDrives /redfish/v1/StorageServices/{StorageServiceId}/StoragePools/{StoragePoolId}/ CapacitySources/{CapacitySourceId}/ProvidingDrives /redfish/v1/StorageServices/{StorageServiceId}/Volumes/{VolumeId}/CapacitySources/ {CapacitySourceId}/ProvidingDrives /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/FileSystems/ {FileSystemId}/CapacitySources/{CapacitySourceId}/ProvidingDrives /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StoragePools/ {StoragePoolId}/CapacitySources/{CapacitySourceId}/ProvidingDrives /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Volumes/{VolumeId}/ CapacitySources/{CapacitySourceId}/ProvidingDrives </pre> |
| EndpointCollection | <pre> /redfish/v1/Fabrics/{FabricId}/Endpoints /redfish/v1/Storage/{StorageId}/Endpoints /redfish/v1/StorageServices/{StorageServiceId}/Endpoints </pre> |
| EndpointGroupCollection | <pre> /redfish/v1/Fabrics/{FabricId}/EndpointGroups /redfish/v1/Storage/{StorageId}/EndpointGroups /redfish/v1/StorageServices/{StorageServiceId}/EndpointGroups /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/EndpointGroups </pre> |
| EthernetInterfaceCollection | <pre> /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/ NetworkDeviceFunctions/{NetworkDeviceFunctionId}/EthernetInterfaces /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/EthernetInterfaces /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/OperatingSystem/Containers/EthernetInterfaces /redfish/v1/Managers/{ManagerId}/EthernetInterfaces /redfish/v1/Managers/{ManagerId}/HostInterfaces/{HostInterfaceId}/ HostEthernetInterfaces /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ EthernetInterfaces /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ OperatingSystem/Containers/EthernetInterfaces /redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces /redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Containers/ EthernetInterfaces </pre> |
| EventDestinationCollection | <pre> /redfish/v1/EventService/Subscriptions </pre> |

| Collection Type | URIs |
|-----------------------------------|--|
| ExternalAccountProviderCollection | /redfish/v1/AccountService/ExternalAccountProviders /redfish/v1/Managers/{ManagerId}/RemoteAccountService/ExternalAccountProviders |
| FabricAdapterCollection | /redfish/v1/Chassis/{ChassisId}/FabricAdapters /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters |
| FabricCollection | /redfish/v1/Fabrics |
| FacilityCollection | /redfish/v1/Facilities |
| FanCollection | /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Fans |
| FilterCollection | /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Pumps/{PumpId}/Filters /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Filters /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps/{PumpId}/Filters /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Filters /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps/{PumpId}/Filters /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Filters /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps/{PumpId}/Filters /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters |
| GraphicsControllerCollection | /redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers |
| HeaterCollection | /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Heaters |
| HostInterfaceCollection | /redfish/v1/Managers/{ManagerId}/HostInterfaces |
| JobCollection | /redfish/v1/JobService/Jobs /redfish/v1/JobService/Jobs/{JobId}/Steps |
| JsonSchemaFileCollection | /redfish/v1/JsonSchemas |
| KeyCollection | /redfish/v1/AccountService/Accounts/{ManagerAccountId}/Keys /redfish/v1/AggregationService/AggregationSources/{AggregationSourceId}/TrustedPublicHostKeys /redfish/v1/KeyService/NVMeoFSecrets /redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts/{ManagerAccountId}/Keys /redfish/v1/UpdateService/RemoteServerSSHKeys |

| Collection Type | URIs |
|---------------------------|---|
| KeyPolicyCollection | /redfish/v1/KeyService/NVMeoFKeyPolicies |
| LeakDetectorCollection | /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/LeakDetection/LeakDetectors /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/LeakDetection/LeakDetectors /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/LeakDetection/LeakDetectors/ /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/LeakDetection/LeakDetectors |
| LicenseCollection | /redfish/v1/LicenseService/Licenses |
| LogEntryCollection | /redfish/v1/Chassis/{ChassisId}/LogServices/{LogServiceId}/Entries /redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/CXLLogicalDevices/{CXLLogicalDeviceId}/DeviceLog/Entries /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries /redfish/v1/JobService/Log/Entries /redfish/v1/Managers/{ManagerId}/LogServices/{LogServiceId}/Entries /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries /redfish/v1/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries /redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/DeviceLog/Entries /redfish/v1/TelemetryService/LogService/Entries |
| LogServiceCollection | /redfish/v1/Chassis/{ChassisId}/LogServices /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/LogServices /redfish/v1/Managers/{ManagerId}/LogServices /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/LogServices /redfish/v1/Systems/{ComputerSystemId}/LogServices |
| ManagerAccountCollection | /redfish/v1/AccountService/Accounts /redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts |
| ManagerCollection | /redfish/v1/Managers |
| MediaControllerCollection | /redfish/v1/Chassis/{ChassisId}/MediaControllers (deprecated) |
| MemoryChunksCollection | /redfish/v1/Chassis/{ChassisId}/MemoryDomains/{MemoryDomainId}/MemoryChunks /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/MemoryDomains/{MemoryDomainId}/MemoryChunks /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/MemoryDomains/{MemoryDomainId}/MemoryChunks /redfish/v1/Systems/{ComputerSystemId}/MemoryDomains/{MemoryDomainId}/MemoryChunks |

| Collection Type | URIs |
|----------------------------------|---|
| MemoryCollection | /redfish/v1/Chassis/{ChassisId}/Memory /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Memory /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Memory /redfish/v1/Systems/{ComputerSystemId}/Memory |
| MemoryDomainCollection | /redfish/v1/Chassis/{ChassisId}/MemoryDomains /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/MemoryDomains /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/MemoryDomains /redfish/v1/Systems/{ComputerSystemId}/MemoryDomains |
| MemoryRegionCollection | /redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/CXLLogicalDevices/{CXLLogicalDeviceId}/MemoryRegions |
| MessageRegistryCollection | |
| MessageRegistryFileCollection | /redfish/v1/Registries |
| MetricDefinitionCollection | /redfish/v1/TelemetryService/MetricDefinitions |
| MetricReportCollection | /redfish/v1/TelemetryService/MetricReports |
| MetricReportDefinitionCollection | /redfish/v1/TelemetryService/MetricReportDefinitions |
| NetworkAdapterCollection | /redfish/v1/Chassis/{ChassisId}/NetworkAdapters |
| NetworkDeviceFunctionCollection | /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions /redfish/v1/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions /redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions |
| NetworkInterfaceCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces /redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces |

| Collection Type | URIs |
|------------------------------|---|
| NetworkPortCollection | /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkPorts (deprecated) /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkPorts (deprecated) /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkPorts (deprecated) /redfish/v1/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkPorts (deprecated) /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkPorts (deprecated) /redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkPorts (deprecated) |
| OperatingConfigCollection | /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/OperatingConfigs |
| OutboundConnectionCollection | /redfish/v1/AccountService/OutboundConnections |
| OutletCollection | /redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Outlets /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Outlets /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Outlets /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Outlets |
| OutletGroupCollection | /redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/OutletGroups /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/OutletGroups /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/OutletGroups /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/OutletGroups |
| PCIeDeviceCollection | /redfish/v1/Chassis/{ChassisId}/PCIeDevices /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices /redfish/v1/Systems/{ComputerSystemId}/PCIeDevices |
| PCIeFunctionCollection | /redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions /redfish/v1/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions |

| Collection Type | URIs |
|-----------------|---|
| PortCollection | <p> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports</i> <i>/redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId}/Ports</i> <i>/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports</i> <i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports</i> <i>/redfish/v1/Managers/{ManagerId}/DedicatedNetworkPorts</i> <i>/redfish/v1/Managers/{ManagerId}/SharedNetworkPorts</i> <i>/redfish/v1/Managers/{ManagerId}/USBPorts</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports</i> </p> |

| Collection Type | URIs |
|-----------------------------|---|
| | /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports /redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports /redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports /redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports /redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/Ports /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports /redfish/v1/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports |
| PowerDistributionCollection | /redfish/v1/PowerEquipment/ElectricalBuses /redfish/v1/PowerEquipment/FloorPDUs /redfish/v1/PowerEquipment/PowerShelves /redfish/v1/PowerEquipment/RackPDUs /redfish/v1/PowerEquipment/Switchgear /redfish/v1/PowerEquipment/TransferSwitches |
| PowerDomainCollection | /redfish/v1/Facilities/{FacilityId}/PowerDomains |
| PowerSupplyCollection | /redfish/v1/Chassis/{ChassisId}/PowerSubsystem/PowerSupplies /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/PowerSupplies (deprecated) |

| Collection Type | URIs |
|----------------------------|--|
| ProcessorCollection | <p> <i>/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors</i> <i>/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/Chassis/{ChassisId}/Processors</i> <i>/redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Processors</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors</i> </p> |
| PumpCollection | <p> <i>/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Pumps</i> <i>/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps</i> <i>/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps</i> <i>/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps</i> </p> |
| RegisteredClientCollection | <p> <i>/redfish/v1/RegisteredClients</i> </p> |
| ReservoirCollection | <p> <i>/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs</i> <i>/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs</i> <i>/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs</i> </p> |

| Collection Type | URIs |
|-------------------------|---|
| ResourceBlockCollection | /redfish/v1/CompositionService/ActivePool /redfish/v1/CompositionService/FreePool /redfish/v1/CompositionService/ResourceBlocks /redfish/v1/ResourceBlocks |
| RoleCollection | /redfish/v1/AccountService/Roles /redfish/v1/Managers/{ManagerId}/RemoteAccountService/Roles |

| Collection Type | URIs |
|----------------------|--|
| RouteEntryCollection | <p> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/MSDT (deprecated)</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/LPRT</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/MPRT</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT (deprecated)</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT (deprecated)</i> <i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/SSDT (deprecated)</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT (deprecated)</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/LPRT</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/MPRT</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT (deprecated)</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT (deprecated)</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/SSDT (deprecated)</i> <i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/LPRT</i> <i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/MPRT</i> <i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/LPRT (deprecated)</i> <i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/MPRT (deprecated)</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT (deprecated)</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/LPRT</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/MPRT</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT (deprecated)</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT (deprecated)</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT (deprecated)</i> </p> |

| Collection Type | URIs |
|------------------------------|--|
| | FabricAdapters/{FabricAdapterId}/SSDT (deprecated) /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT (deprecated) /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/LPRT /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/MPRT /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT (deprecated) /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT (deprecated) /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/SSDT (deprecated) |
| RouteSetEntryCollection | /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId}/RouteSet /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/{LPRTId}/RouteSet /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/{MPRTId}/RouteSet /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId}/RouteSet /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/LPRT/{LPRTId}/RouteSet /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/MPRT/{MPRTId}/RouteSet /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId}/RouteSet /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/{LPRTId}/RouteSet /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/{MPRTId}/RouteSet /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId}/RouteSet |
| SecureBootDatabaseCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases /redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases |

| Collection Type | URIs |
|-----------------------------|---|
| SensorCollection | /redfish/v1/Chassis/{ChassisId}/Sensors /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Sensors (deprecated) /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Sensors (deprecated) /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Sensors (deprecated) /redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Sensors (deprecated) /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Sensors (deprecated) |
| SerialInterfaceCollection | /redfish/v1/Managers/{ManagerId}/SerialInterfaces |
| SessionCollection | /redfish/v1/SessionService/Sessions |
| SignatureCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Signatures /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Signatures /redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Signatures |
| SimpleStorageCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SimpleStorage /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/SimpleStorage /redfish/v1/Systems/{ComputerSystemId}/SimpleStorage |
| SoftwareInventoryCollection | /redfish/v1/UpdateService/FirmwareInventory /redfish/v1/UpdateService/SoftwareInventory |
| StorageCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage /redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage /redfish/v1/Storage /redfish/v1/Systems/{ComputerSystemId}/Storage |
| StorageControllerCollection | /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers /redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Controllers /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers /redfish/v1/Storage/{StorageId}/Controllers /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers |
| SwitchCollection | /redfish/v1/Fabrics/{FabricId}/Switches |
| TaskCollection | /redfish/v1/TaskService/Tasks /redfish/v1/TaskService/Tasks/{TaskId}/SubTasks |

| Collection Type | URIs |
|----------------------------|---|
| TriggersCollection | /redfish/v1/TelemetryService/Triggers |
| TrustedComponentCollection | /redfish/v1/Chassis/{ChassisId}/TrustedComponents |
| USBControllerCollection | /redfish/v1/Systems/{ComputerSystemId}/USBControllers |

| Collection Type | URIs |
|---------------------|---|
| VCATEntryCollection | <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT</i></p> <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT</i></p> <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT</i></p> <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/VCAT (deprecated)</i></p> <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT (deprecated)</i></p> <p><i>/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT (deprecated)</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/VCAT (deprecated)</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT (deprecated)</i></p> <p><i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT (deprecated)</i></p> <p><i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/VCAT</i></p> <p><i>/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/VCAT (deprecated)</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/VCAT (deprecated)</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT (deprecated)</i></p> <p><i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT (deprecated)</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/VCAT (deprecated)</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT (deprecated)</i></p> <p><i>/redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT (deprecated)</i></p> |

| Collection Type | URIs |
|--------------------------------|--|
| VirtualMediaCollection | <pre> /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/VirtualMedia /redfish/v1/Managers/{ManagerId}/VirtualMedia (deprecated) /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ VirtualMedia /redfish/v1/Systems/{ComputerSystemId}/VirtualMedia </pre> |
| VlanNetworkInterfaceCollection | <pre> /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/ NetworkDeviceFunctions/{NetworkDeviceFunctionId}/Ethernet/VLANs (deprecated) /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/EthernetInterfaces/ {EthernetInterfaceId}/VLANs (deprecated) /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs (deprecated) /redfish/v1/Managers/{ManagerId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs (deprecated) /redfish/v1/ResourceBlocks/{ResourceBlockId}/EthernetInterfaces/ {EthernetInterfaceId}/VLANs (deprecated) /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ EthernetInterfaces/{EthernetInterfaceId}/VLANs (deprecated) /redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces/{EthernetInterfaceId}/ VLANs (deprecated) </pre> |

| Collection Type | URIs |
|------------------|--|
| VolumeCollection | <p> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Volumes</i> <i>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Volumes</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Storage/{StorageId}/Volumes</i> <i>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Storage/{StorageId}/Volumes</i> <i>/redfish/v1/Storage/{StorageId}/ConsistencyGroups/{ConsistencyGroupId}/Volumes</i> <i>/redfish/v1/Storage/{StorageId}/FileSystems/{FileSystemId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/Storage/{StorageId}/StoragePools/{StoragePoolId}/AllocatedVolumes</i> <i>/redfish/v1/Storage/{StorageId}/StoragePools/{StoragePoolId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/Storage/{StorageId}/Volumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/ConsistencyGroups/{ConsistencyGroupId}/Volumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/FileSystems/{FileSystemId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/StoragePools/{StoragePoolId}/AllocatedVolumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/StoragePools/{StoragePoolId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/Volumes</i> <i>/redfish/v1/StorageServices/{StorageServiceId}/Volumes/{VolumeId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/ConsistencyGroups/{ConsistencyGroupId}/Volumes</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/FileSystems/{FileSystemId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StoragePools/{StoragePoolId}/AllocatedVolumes</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StoragePools/{StoragePoolId}/CapacitySources/{CapacitySourceId}/ProvidingVolumes</i> <i>/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Volumes</i> </p> |
| ZoneCollection | <p> <i>/redfish/v1/CompositionService/ResourceZones</i> <i>/redfish/v1/Fabrics/{FabricId}/Zones</i> </p> |

6 Reference Guide

To produce this guide, DMTF's [Redfish Documentation Generator](#) merges DMTF's Redfish Schema Bundle (DSP8010) contents with supplemental text.

6.1 AccelerationFunction 1.0.3

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2018.3 |

6.1.1 Description

The AccelerationFunction schema describes an acceleration function that a processor implements. This can include functions such as audio processing, compression, encryption, packet inspection, packet switching, scheduling, or video processing.

6.1.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions/{AccelerationFunctionId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.1.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------|------------------|--|
| AccelerationFunctionType | string (enum) | read-only (null) | The acceleration function type. <i>For the possible property values, see AccelerationFunctionType in Property details.</i> |
| FpgaReconfigurationSlots [] | array (string) | read-only | An array of the reconfiguration slot identifiers of the FPGA that this acceleration function occupies. |
| Links { | object | | The links to other Resources that are related to this Resource. |
| Endpoints [{ | array | | An array of links to the endpoints that connect to this acceleration function. |
| @odata.id | string | read-only | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |

| Property | Type | Attributes | Notes |
|--------------------------|-----------------|-------------------------|---|
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions [{ | array | | An array of links to the PCleFunctions associated with this acceleration function. |
| @odata.id | string | <i>read-only</i> | Link to a PCleFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| } | | | |
| Manufacturer | string | <i>read-only</i> | The acceleration function code manufacturer. |
| PowerWatts | integer (Watts) | <i>read-only</i> | The acceleration function power consumption, in watts. |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| UUID | string (uuid) | <i>read-only (null)</i> | The UUID for this acceleration function. |
| Version | string | <i>read-only</i> | The acceleration function version. |

6.1.4 Property details

6.1.4.1 AccelerationFunctionType

The acceleration function type.

| string | Description |
|------------------|---------------------------------------|
| AudioProcessing | An audio processing function. |
| Compression | A compression function. |
| Encryption | An encryption function. |
| OEM | An OEM-defined acceleration function. |
| PacketInspection | A packet inspection function. |
| PacketSwitch | A packet switch function. |

| string | Description |
|-----------------|------------------------------|
| Scheduler | A scheduler function. |
| VideoProcessing | A video processing function. |

6.1.5 Example response

```
{
  "@odata.type": "#AccelerationFunction.v1_0_3.AccelerationFunction",
  "Id": "Compression",
  "Name": "Compression Accelerator",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "FpgaReconfigurationSlots": [
    "AFU0"
  ],
  "AccelerationFunctionType": "Compression",
  "Manufacturer": "Intel (R) Corporation",
  "Version": "Green Compression Type 1 v.1.00.86",
  "PowerWatts": 15,
  "Links": {
    "Endpoints": [],
    "PCIeFunctions": []
  },
  "@odata.id": "/redfish/v1/Systems/1/Processors/FPGA1/AccelerationFunctions/Compression"
}
```

6.2 AccountService 1.14.0

| Version | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.2 | 2023.1 | 2022.3 | 2022.1 | 2021.2 | 2021.1 | 2020.4 | 2019.4 | 2019.2 | 2019.1 | 2018.3 | ... |

6.2.1 Description

The AccountService schema defines an account service. The properties are common to, and enable management of, all user accounts. The properties include the password requirements and control features, such as account lockout. Properties and actions in this service specify general behavior that should be followed for typical accounts, however implementations might override these behaviors for special accounts or situations to avoid denial of service or other deadlock situations.

6.2.2 URIs

/redfish/v1/AccountService
 /redfish/v1/Managers/{ManagerId}/RemoteAccountService

6.2.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------------|-----------------------------|--|
| AccountLockoutCounterResetAfter | integer (seconds) | <i>read-write</i> | The period of time, in seconds, between the last failed login attempt and the reset of the lockout threshold counter. This value must be less than or equal to the AccountLockoutDuration value. A reset sets the counter to 0. |
| AccountLockoutCounterResetEnabled (v1.5+) | boolean | <i>read-write</i> | An indication of whether the threshold counter is reset after AccountLockoutCounterResetAfter expires. If true, it is reset. If false, only a successful login resets the threshold counter and if the user reaches the AccountLockoutThreshold limit, the account will be locked out indefinitely and only an administrator-issued reset clears the threshold counter. If this property is absent, the default is true. |
| AccountLockoutDuration | integer (seconds) | <i>read-write</i> (null) | The period of time, in seconds, that an account is locked after the number of failed login attempts reaches the account lockout threshold, within the period between the last failed login attempt and the reset of the lockout threshold counter. If this value is 0, no lockout will occur. If the AccountLockoutCounterResetEnabled value is false, this property is ignored. |
| AccountLockoutThreshold | integer | <i>read-write</i> (null) | The number of allowed failed login attempts before a user account is locked for a specified duration. If 0, the account is never locked. |
| Accounts { | object | | The collection of manager accounts. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of ManagerAccount. See the ManagerAccount schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|---------------|-----------------------------|---|
| ActiveDirectory (v1.3+) {} | object | | The first Active Directory external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details. |
| AdditionalExternalAccountProviders (v1.3+) { | object | | The additional external account providers that this account service uses. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ExternalAccountProvider</i> . See the <i>ExternalAccountProvider</i> schema for details. |
| } | | | |
| AuthFailureLoggingThreshold | integer | <i>read-write</i> | The number of authorization failures per account that are allowed before the failed attempt is logged to the manager log. |
| LDAP (v1.3+) {} | object | | The first LDAP external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details. |
| LocalAccountAuth (v1.3+) | string (enum) | <i>read-write</i> | An indication of how the service uses the accounts collection within this account service as part of authentication. The enumerated values describe the details for each mode. <i>For the possible property values, see LocalAccountAuth in Property details.</i> |
| MaxPasswordLength | integer | <i>read-write</i> | The maximum password length for this account service. |
| MinPasswordLength | integer | <i>read-write</i> | The minimum password length for this account service. |
| MultiFactorAuth (v1.12+) { | object | (null) | The multi-factor authentication settings that this account service supports. |
| ClientCertificate (v1.12+) { | object | (null) | The settings related to client certificate authentication schemes such as mTLS or CAC/PIV. |
| CertificateMappingAttribute (v1.12+) | string (enum) | <i>read-write</i> (null) | The client certificate attribute to map to a user. <i>For the possible property values, see CertificateMappingAttribute in Property details.</i> |
| Certificates (v1.12+) { | object | | The link to a collection of CA certificates used to validate client certificates. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the <i>Certificate</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|---|
| } | | | |
| Enabled (v1.12+) | boolean | <i>read-write</i> (null) | An indication of whether client certificate authentication is enabled. |
| RespondToUnauthenticatedClients (v1.12+) | boolean | <i>read-write</i> (null) | An indication of whether the service responds to clients that do not successfully authenticate. |
| } | | | |
| GoogleAuthenticator (v1.12+) { | object | (null) | The settings related to Google Authenticator multi-factor authentication. |
| Enabled (v1.12+) | boolean | <i>read-write</i> (null) | An indication of whether multi-factor authentication with Google Authenticator is enabled. |
| SecretKey (v1.12+) | string | <i>read-write</i> (null) | The secret key to use when communicating with the Google Authenticator server. This property is null in responses. |
| SecretKeySet (v1.12+) | boolean | <i>read-only</i> | Indicates if the SecretKey property is set. |
| } | | | |
| MicrosoftAuthenticator (v1.12+) { | object | (null) | The settings related to Microsoft Authenticator multi-factor authentication. |
| Enabled (v1.12+) | boolean | <i>read-write</i> (null) | An indication of whether multi-factor authentication with Microsoft Authenticator is enabled. |
| SecretKey (v1.12+) | string | <i>read-write</i> (null) | The secret key to use when communicating with the Microsoft Authenticator server. This property is null in responses. |
| SecretKeySet (v1.12+) | boolean | <i>read-only</i> | Indicates if the SecretKey property is set. |
| } | | | |
| OneTimePasscode (v1.14+) { | object | (null) | The settings related to one-time passcode (OTP) multi-factor authentication. |
| Enabled (v1.14+) | boolean | <i>read-write</i> (null) | An indication of whether multi-factor authentication using a one-time passcode is enabled. |
| } | | | |
| SecurID (v1.12+) { | object | (null) | The settings related to RSA SecurID multi-factor authentication. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------------|--------------------------|---|
| Certificates (v1.12+) { | object | | The link to a collection of server certificates for the RSA SecurID server referenced by the ServerURI property. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ClientId (v1.12+) | string | <i>read-write (null)</i> | The client ID to use when communicating with the RSA SecurID server. |
| ClientSecret (v1.12+) | string | <i>read-write (null)</i> | The client secret to use when communicating with the RSA SecurID server. This property is <code>null</code> in responses. |
| ClientSecretSet (v1.12+) | boolean | <i>read-only</i> | Indicates if the ClientSecret property is set. |
| Enabled (v1.12+) | boolean | <i>read-write (null)</i> | An indication of whether multi-factor authentication with RSA SecurID is enabled. |
| ServerURI (v1.12+) | string (URI) | <i>read-write (null)</i> | The URI of the RSA SecurID server. |
| } | | | |
| } | | | |
| OAuth2 (v1.10+) {} | object | (null) | The first OAuth 2.0 external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details. |
| OutboundConnections (v1.14+) { | object | (null) | The collection of outbound connection configurations. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>OutboundConnection</i> . See the OutboundConnection schema for details. |
| } | | | |
| PasswordExpirationDays (v1.9+) | integer | <i>read-write (null)</i> | The number of days before account passwords in this account service will expire. |
| PrivilegeMap (v1.1+) { | object | | The link to the mapping of the privileges required to complete a requested operation on a URI associated with this service. See the <i>PrivilegeRegistry</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|-----------------------|--------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a PrivilegeRegistry resource. See the Links section and the <i>PrivilegeRegistry</i> schema for details. |
| } | | | |
| RequireChangePasswordAction (v1.14+) | boolean | <i>read-write (null)</i> | An indication of whether clients are required to invoke the ChangePassword action to modify account passwords. |
| RestrictedOemPrivileges (v1.8+) [] | array (string) | <i>read-only</i> | The set of restricted OEM privileges. |
| RestrictedPrivileges (v1.8+) [] | array (string (enum)) | <i>read-only</i> | The set of restricted Redfish privileges. <i>For the possible property values, see RestrictedPrivileges in Property details.</i> |
| Roles { | object | | The collection of Redfish roles. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Role</i> . See the Role schema for details. |
| } | | | |
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether the account service is enabled. If <code>true</code> , it is enabled. If <code>false</code> , it is disabled and users cannot be created, deleted, or modified, and new sessions cannot be started. However, established sessions might still continue to run. Any service, such as the session service, that attempts to access the disabled account service fails. However, this does not affect HTTP Basic Authentication connections. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedAccountTypes (v1.8+) [] | array (string (enum)) | <i>read-only</i> | The account types supported by the service. <i>For the possible property values, see SupportedAccountTypes in Property details.</i> |
| SupportedOEMAccountTypes (v1.8+) [] | array (string) | <i>read-only</i> | The OEM account types supported by the service. |
| TACACSplus (v1.8+) {} | object | <i>(null)</i> | The first TACACS+ external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details. |

6.2.4 Property details

6.2.4.1 AccountProviderType

The type of external account provider to which this service connects.

| string | Description |
|------------------------|---|
| ActiveDirectoryService | An external Active Directory service. |
| LDAPService | A generic external LDAP service. |
| OAuth2 (v1.10+) | An external OAuth 2.0 service. |
| OEM | An OEM-specific external authentication or directory service. |
| RedfishService | An external Redfish service. |
| TACACSplus (v1.8+) | An external TACACS+ service. |

6.2.4.2 Authentication

The information required to authenticate to the external service.

| | | | |
|--------------------------------------|------------------|----------------------|---|
| AuthenticationType (v1.3+) | string (enum) | read-write (null) | The type of authentication used to connect to the external account provider. For the possible property values, see <i>AuthenticationType</i> in Property details. |
| EncryptionKey (v1.8+) | string | read-write (null) | Specifies the encryption key. |
| EncryptionKeySet (v1.8+) | boolean | read-only (null) | Indicates if the EncryptionKey property is set. |
| KerberosKeytab (v1.3+) | string | read-write (null) | The Base64-encoded version of the Kerberos keytab for this service. A PATCH or PUT operation writes the keytab. This property is <code>null</code> in responses. |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| Password (v1.3+) | string | read-write (null) | The password for this service. A PATCH or PUT request writes the password. This property is <code>null</code> in responses. |

| | | | |
|-------------------------|--------|--------------------------|---|
| Token (v1.3+) | string | <i>read-write (null)</i> | The token for this service. A PATCH or PUT operation writes the token. This property is <code>null</code> in responses. |
| Username (v1.3+) | string | <i>read-write</i> | The user name for the service. |

6.2.4.3 AuthenticationType

The type of authentication used to connect to the external account provider.

| string | Description |
|---------------------|---|
| KerberosKeytab | A Kerberos keytab. |
| OEM | An OEM-specific authentication mechanism. |
| Token | An opaque authentication token. |
| UsernameAndPassword | A user name and password combination. |

6.2.4.4 BypassTypes

The types of multi-factor authentication this account or role mapping is allowed to bypass.

| string | Description |
|------------------------|---|
| All | Bypass all multi-factor authentication types. |
| ClientCertificate | Bypass client certificate authentication. |
| GoogleAuthenticator | Bypass Google Authenticator. |
| MicrosoftAuthenticator | Bypass Microsoft Authenticator. |
| OEM | Bypass OEM-defined multi-factor authentication. |
| OneTimePasscode | Bypass one-time passcode authentication. |
| SecurID | Bypass RSA SecurID. |

6.2.4.5 CertificateMappingAttribute

The client certificate attribute to map to a user.

| string | Description |
|-------------------|--|
| CommonName | Match the Common Name (CN) field in the provided certificate to the username. |
| UserPrincipalName | Match the User Principal Name (UPN) field in the provided certificate to the username. |
| Whole | Match the whole certificate. |

6.2.4.6 ExternalAccountProvider

The external account provider services that can provide accounts for this manager to use for authentication.

| | | | |
|--|------------------|----------------------|---|
| AccountProviderType (v1.3+, deprecated v1.5) | string (enum) | read-only (null) | The type of external account provider to which this service connects. <i>For the possible property values, see AccountProviderType in Property details. Deprecated in v1.5 and later. This property is deprecated because the account provider type is known when used in the LDAP and ActiveDirectory objects.</i> |
| Authentication (v1.3+) {} | object | | The authentication information for the external account provider. For more information about this property, see Authentication in Property Details. |
| Certificates (v1.4+) {} | object | | The link to a collection of certificates that the external account provider uses. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| LDAPService (v1.3+) {} | object | | The additional mapping information needed to parse a generic LDAP service. For more information about this property, see LDAPService in Property Details. |
| OAuth2Service (v1.10+) {} | object | (null) | The additional information needed to parse an OAuth 2.0 service. For more information about this property, see OAuth2Service in Property Details. |
| PasswordSet (v1.7+) | boolean | read-only | Indicates if the Password property is set. |
| Priority (v1.8+) | integer | read-write (null) | The authentication priority for the external account provider. |
| RemoteRoleMapping (v1.3+) [{} | array | | The mapping rules to convert the external account providers account information to the local Redfish role. |
| LocalRole (v1.3+) | string | read-write (null) | The name of the local Redfish role to which to map the remote user or group. |

| | | | |
|---|-----------------------------|--------------------------|---|
| MFAByPass (v1.12+) { | object | (null) | The multi-factor authentication bypass settings. |
| BypassTypes (v1.12+) [] | array (string (enum)) | read- write (null) | The types of multi-factor authentication this account or role mapping is allowed to bypass. <i>For the possible property values, see BypassTypes in Property details.</i> |
| } | | | |
| Oem (v1.3+) { } | object | | See the Oem object definition in the Common properties section. |
| RemoteGroup (v1.3+) | string | read- write (null) | The name of the remote group, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links. |
| RemoteUser (v1.3+) | string | read- write (null) | The name of the remote user that maps to the local Redfish role to which this entity links. |
| }] | | | |
| Retries (v1.13+) | integer | read- write (null) | The number of times to retry connecting to an address in the ServiceAddresses property before attempting the next address in the array. |
| ServiceAddresses (v1.3+) [] | array (string, null) | read- write | The addresses of the user account providers to which this external account provider links. The format of this field depends on the type of external account provider. |
| ServiceEnabled (v1.3+) | boolean | read- write (null) | An indication of whether this service is enabled. |
| TACACSplusService (v1.8+) { } | object | (null) | The additional information needed to parse a TACACS+ services. For more information about this property, see TACACSplusService in Property Details. |
| TimeoutSeconds (v1.13+) | integer | read- write (null) | The period of time, in seconds, this account service will wait for a response from an address of a user account provider before timing out. |

6.2.4.7 LDAPService

The settings required to parse a generic LDAP service.

| | | | |
|---------------------------------|--------|--|---|
| Oem (v1.3+) { } | object | | See the Oem object definition in the Common properties section. |
| SearchSettings (v1.3+) { | object | | The required settings to search an external LDAP service. |

| | | | |
|--|----------------------------|-----------------------------------|--|
| BaseDistinguishedNames (v1.3+) [] | array (string, null) | <i>read- write</i> | The base distinguished names to use to search an external LDAP service. |
| EmailAttribute (v1.14+) | string | <i>read- write (null)</i> | The attribute name that contains the LDAP user's email address. |
| GroupNameAttribute (v1.3+) | string | <i>read- write (null)</i> | The attribute name that contains the LDAP group name entry. |
| GroupsAttribute (v1.3+) | string | <i>read- write (null)</i> | The attribute name that contains the groups for a user on the LDAP user entry. |
| SSHKeyAttribute (v1.11+) | string | <i>read- write (null)</i> | The attribute name that contains the LDAP user's SSH public key entry. |
| UsernameAttribute (v1.3+) | string | <i>read- write (null)</i> | The attribute name that contains the LDAP user name entry. |
| } | | | |

6.2.4.8 LocalAccountAuth

An indication of how the service uses the accounts collection within this account service as part of authentication. The enumerated values describe the details for each mode.

| string | Description |
|--------------------|---|
| Disabled | The service never authenticates users based on the account service-defined accounts collection. |
| Enabled | The service authenticates users based on the account service-defined accounts collection. |
| Fallback | The service authenticates users based on the account service-defined accounts collection only if any external account providers are currently unreachable. |
| LocalFirst (v1.6+) | The service first authenticates users based on the account service-defined accounts collection. If authentication fails, the service authenticates by using external account providers. |

6.2.4.9 Mode

The mode of operation for token validation.

| string | Description |
|-----------|---|
| Discovery | OAuth 2.0 service information for token validation is downloaded by the service. |
| Offline | OAuth 2.0 service information for token validation is configured by a client. Clients should configure the Issuer and OAuthServiceSigningKeys properties for this mode. |

6.2.4.10 OAuth2Service

Various settings to parse an OAuth 2.0 service.

| | | | |
|---|----------------|-------------------|--|
| Audience (v1.10+) [] | array (string) | read-only | The allowable audience strings of the Redfish service. |
| Issuer (v1.10+) | string | read-write (null) | The issuer string of the OAuth 2.0 service. Clients should configure this property if Mode contains <code>Offline</code> . |
| Mode (v1.10+) | string (enum) | read-write | The mode of operation for token validation. <i>For the possible property values, see Mode in Property details.</i> |
| OAuthServiceSigningKeys (v1.10+) | string | read-write (null) | The Base64-encoded signing keys of the issuer of the OAuth 2.0 service. Clients should configure this property if Mode contains <code>Offline</code> . |
| Oem (v1.13+) {} | object | | See the Oem object definition in the Common properties section. |

6.2.4.11 PasswordExchangeProtocols

Indicates the allowed TACACS+ password exchange protocols.

| string | Description |
|----------|------------------------------|
| ASCII | The ASCII Login method. |
| CHAP | The CHAP Login method. |
| MSCHAPv1 | The MS-CHAP v1 Login method. |
| MSCHAPv2 | The MS-CHAP v2 Login method. |
| PAP | The PAP Login method. |

6.2.4.12 RestrictedPrivileges

The set of restricted Redfish privileges.

| string | Description |
|------------------------------------|---|
| AdministrateStorage | Administrator for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| AdministrateSystems | Administrator for systems found in the systems collection. Able to manage boot configuration, keys, and certificates for systems. |
| ConfigureComponents | Can configure components that this service manages. |
| ConfigureCompositionInfrastructure | Can view and configure composition service resources. |
| ConfigureManager | Can configure managers. |
| ConfigureSelf | Can change the password for the current user account, log out of their own sessions, and perform operations on resources they created. Services will need to be aware of resource ownership to map this privilege to an operation from a particular user. |
| ConfigureUsers | Can configure users and their accounts. |
| Login | Can log in to the service and read resources. |
| NoAuth | Authentication is not required. |
| OperateStorageBackup | Operator for storage backup functionality for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| OperateSystems | Operator for systems found in the systems collection. Able to perform resets and configure interfaces. |

6.2.4.13 SupportedAccountTypes

The account types supported by the service.

| string | Description |
|-------------|--|
| HostConsole | Allow access to the host's console, which could be connected through Telnet, SSH, or other protocol. |
| IPMI | Allow access to the Intelligent Platform Management Interface service. |
| KVMIP | Allow access to a Keyboard-Video-Mouse over IP session. |

| string | Description |
|----------------|---|
| ManagerConsole | Allow access to the manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol. |
| OEM | OEM account type. See the OEMAccountTypes property. |
| Redfish | Allow access to the Redfish service. |
| SNMP | Allow access to SNMP services. |
| VirtualMedia | Allow access to control virtual media. |
| WebUI | Allow access to a web user interface session, such as a graphical interface or another web-based protocol. |

6.2.4.14 TACACSplusService

Various settings to parse a TACACS+ service.

| | | | |
|--|-----------------------------|----------------------|--|
| AuthorizationService (v1.13+) | string | read-write | The TACACS+ service authorization argument. |
| Oem (v1.13+) {} | object | | See the Oem object definition in the Common properties section. |
| PasswordExchangeProtocols (v1.8+) [] | array (string (enum)) | read-write (null) | Indicates the allowed TACACS+ password exchange protocols. <i>For the possible property values, see PasswordExchangeProtocols in Property details.</i> |
| PrivilegeLevelArgument (v1.8+) | string | read-write (null) | Indicates the name of the TACACS+ argument name in an authorization request. |

6.2.5 Example response

```
{
  "@odata.type": "#AccountService.v1_14_0.AccountService",
  "Id": "AccountService",
  "Name": "Account Service",
  "Description": "Local Manager Account Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "AuthFailureLoggingThreshold": 3,
}
```

```
"MinPasswordLength": 8,
"AccountLockoutThreshold": 5,
"AccountLockoutDuration": 30,
"AccountLockoutCounterResetAfter": 30,
"AccountLockoutCounterResetEnabled": true,
"Accounts": {
  "@odata.id": "/redfish/v1/AccountService/Accounts"
},
"Roles": {
  "@odata.id": "/redfish/v1/AccountService/Roles"
},
"LocalAccountAuth": "Enabled",
"LDAP": {
  "AccountProviderType": "LDAPService",
  "ServiceEnabled": false,
  "ServiceAddresses": [
    "ldaps://ldap.example.org:636"
  ],
  "Authentication": {
    "AuthenticationType": "UsernameAndPassword",
    "Username": "cn=Manager,dc=example,dc=org",
    "Password": null
  },
  "LDAPService": {
    "SearchSettings": {
      "BaseDistinguishedNames": [
        "dc=example,dc=org"
      ],
      "UsernameAttribute": "uid",
      "GroupsAttribute": "memberof"
    }
  },
  "RemoteRoleMapping": [
    {
      "RemoteUser": "cn=Manager,dc=example,dc=org",
      "LocalRole": "Administrator"
    },
    {
      "RemoteGroup": "cn=Admins,ou=Groups,dc=example,dc=org",
      "LocalRole": "Administrator"
    },
    {
      "RemoteGroup": "cn=PowerUsers,ou=Groups,dc=example,dc=org",
      "LocalRole": "Operator"
    },
    {
      "RemoteGroup": "(cn=*)",
      "LocalRole": "ReadOnly"
    }
  ]
}
```

```

    },
    "ActiveDirectory": {
      "AccountProviderType": "ActiveDirectoryService",
      "ServiceEnabled": true,
      "ServiceAddresses": [
        "ad1.example.org",
        "ad2.example.org",
        null,
        null
      ],
      "Authentication": {
        "AuthenticationType": "KerberosKeytab",
        "KerberosKeytab": null
      }
    },
    "RemoteRoleMapping": [
      {
        "RemoteGroup": "Administrators",
        "LocalRole": "Administrator"
      },
      {
        "RemoteUser": "DOMAIN\\Bob",
        "LocalRole": "Operator"
      },
      {
        "RemoteGroup": "PowerUsers",
        "LocalRole": "Operator"
      },
      {
        "RemoteGroup": "Everybody",
        "LocalRole": "ReadOnly"
      }
    ]
  },
  "AdditionalExternalAccountProviders": {
    "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders"
  },
  "RequireChangePasswordAction": false,
  "@odata.id": "/redfish/v1/AccountService"
}

```

6.3 ActionInfo 1.4.0

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2022.2 | 2021.2 | 2018.2 | 2016.2 |

6.3.1 Description

The ActionInfo schema defines the supported parameters and other information for a Redfish action. Supported parameters can differ among vendors and even among resource instances. This data can ensure that action requests from applications contain supported parameters.

6.3.2 Properties

| Property | Type | Attributes | Notes |
|---|----------------------|--------------------|---|
| Parameters [{ | array | | The list of parameters included in the specified Redfish action. |
| AllowableNumbers (v1.3+) [] | array (string, null) | read-only | The allowable numeric values or duration values, inclusive ranges of values, and incremental step values for this parameter as applied to this action target. |
| AllowablePattern (v1.3+) | string | read-only (null) | The allowable pattern for this parameter as applied to this action target. |
| AllowableValueDescriptions (v1.4+) [] | array (string, null) | read-only | Descriptions of allowable values for this parameter. |
| AllowableValues [] | array (string, null) | read-only | The allowable values for this parameter as applied to this action target. |
| ArraySizeMaximum (v1.2+) | integer | read-only (null) | The maximum number of array elements allowed for this parameter. |
| ArraySizeMinimum (v1.2+) | integer | read-only (null) | The minimum number of array elements required for this parameter. |
| DataType | string (enum) | read-only (null) | The JSON property type for this parameter. <i>For the possible property values, see DataType in Property details.</i> |
| MaximumValue (v1.1+) | number | read-only (null) | The maximum supported value for this parameter. |
| MinimumValue (v1.1+) | number | read-only (null) | The minimum supported value for this parameter. |
| Name | string | read-only required | The name of the parameter for this action. |
| ObjectDataType | string | read-only (null) | The data type of an object-based parameter. |

| Property | Type | Attributes | Notes |
|-----------------|---------|------------------|---|
| Required | boolean | <i>read-only</i> | An indication of whether the parameter is required to complete this action. |
| }] | | | |

6.3.3 Property details

6.3.3.1 DataType

The JSON property type for this parameter.

| string | Description |
|-------------|---------------------------|
| Boolean | A boolean. |
| Number | A number. |
| NumberArray | An array of numbers. |
| Object | An embedded JSON object. |
| ObjectArray | An array of JSON objects. |
| String | A string. |
| StringArray | An array of strings. |

6.3.4 Example response

```

{
  "@odata.type": "#ActionInfo.v1_4_0.ActionInfo",
  "Id": "ResetActionInfo",
  "Name": "Reset Action Info",
  "Parameters": [
    {
      "Name": "ResetType",
      "Required": true,
      "DataType": "String",
      "AllowableValues": [
        "On",
        "ForceOff",
        "GracefulShutdown",
        "GracefulRestart",
      ]
    }
  ]
}

```

```

        "ForceRestart",
        "Nmi",
        "ForceOn",
        "PushPowerButton"
    ]
}
],
"@odata.id": "/redfish/v1/Systems/1/ResetActionInfo"
}

```

6.4 AddressPool 1.2.3

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|
| Release | 2021.2 | 2020.3 | 2019.4 |

6.4.1 Description

The schema definition of an address pool and its configuration.

6.4.2 URIs

/redfish/v1/Fabrics/{FabricId}/AddressPools/{AddressPoolId}

6.4.3 Properties

| Property | Type | Attributes | Notes |
|---|---------|----------------------|---|
| Ethernet (v1.1+) { | object | | The Ethernet related properties for this address pool. |
| BFDSingleHopOnly (v1.1+) { | object | (null) | Bidirectional Forwarding Detection (BFD) related properties for this Ethernet fabric. |
| DemandModeEnabled (v1.1+) | boolean | read-write (null) | Bidirectional Forwarding Detection (BFD) Demand Mode status. |
| DesiredMinTxIntervalMilliseconds (v1.1+) | integer | read-write (null) | Desired Bidirectional Forwarding Detection (BFD) minimal transmit interval. |
| KeyChain (v1.1+) | string | read-write (null) | Bidirectional Forwarding Detection (BFD) Key Chain name. |

| Property | Type | Attributes | Notes |
|--|---------|-----------------------------|--|
| LocalMultiplier (v1.1+) | integer | <i>read-write</i> (null) | Bidirectional Forwarding Detection (BFD) multiplier value. |
| MeticulousModeEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Meticulous MD5 authentication of the Bidirectional Forwarding Detection (BFD) session. |
| RequiredMinRxIntervalMilliseconds (v1.1+) | integer | <i>read-write</i> (null) | Bidirectional Forwarding Detection (BFD) receive value. |
| SourcePort (v1.1+) | integer | <i>read-write</i> (null) | Bidirectional Forwarding Detection (BFD) source port. |
| } | | | |
| BGPEvpn (v1.1+) { | object | (null) | BGP Ethernet Virtual Private Network (EVPN) related properties for this Ethernet fabric. |
| AnycastGatewayIPAddress (v1.1+) | string | <i>read-write</i> (null) | The anycast gateway IPv4 address. |
| AnycastGatewayMACAddress (v1.1+) | string | <i>read-write</i> (null) | The anycast gateway MAC address. |
| ARPProxyEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Address Resolution Protocol (ARP) proxy status. |
| ARPSuppressionEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Address Resolution Protocol (ARP) suppression status. |
| ESINumberRange (v1.1+) { | object | (null) | The Ethernet Segment Identifier (ESI) number range for the fabric. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Ethernet Segment Identifier (ESI) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Ethernet Segment Identifier (ESI) number. |
| } | | | |
| EVINumberRange (v1.1+) { | object | (null) | The Ethernet Virtual Private Network (EVPN) Instance number (EVI) number range for the fabric. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Ethernet Virtual Private Network (EVPN) Instance (EVI) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Ethernet Virtual Private Network (EVPN) Instance (EVI) number. |

| Property | Type | Attributes | Notes |
|--|---------|-----------------------------|---|
| } | | | |
| GatewayIPAddress (v1.1+) | string | <i>read-write</i> (null) | The gateway IPv4 address. |
| GatewayIPAddressRange (v1.2+) { | object | (null) | The IPv4 address range for gateways. |
| Lower (v1.2+) | string | <i>read-write</i> (null) | The lower IPv4 address. |
| Upper (v1.2+) | string | <i>read-write</i> (null) | The upper IPv4 address. |
| } | | | |
| NDPProxyEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Network Discovery Protocol (NDP) proxy status. |
| NDPSuppressionEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Network Discovery Protocol (NDP) suppression status. |
| RouteDistinguisherAdministratorSubfield (v1.2+) | string | <i>read-write</i> (null) | The Route Distinguisher (RD) Administrator subfield. |
| RouteDistinguisherRange (v1.1+) { | object | (null) | The Route Distinguisher (RD) number range for the fabric. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Route Distinguisher (RD) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Route Distinguisher (RD) number. |
| } | | | |
| RouteTargetAdministratorSubfield (v1.2+) | string | <i>read-write</i> (null) | The Route Target (RT) Administrator Subfield. |
| RouteTargetRange (v1.1+) { | object | (null) | The Route Target (RT) number range for the fabric. |
| Lower (v1.1+) | integer | <i>read-write</i> (null) | Lower Route Target (RT) number. |
| Upper (v1.1+) | integer | <i>read-write</i> (null) | Upper Route Target (RT) number. |
| } | | | |
| UnderlayMulticastEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Underlay multicast status. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|--|
| UnknownUnicastSuppressionEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Suppression of unknown unicast packets. |
| VLANIdentifierAddressRange (v1.1+) { | object | (null) | Virtual LAN (VLAN) tag related address range applicable to this Ethernet fabric or for end host subnets. |
| Lower (v1.1+) | integer | <i>read-write</i> (null) | Virtual LAN (VLAN) tag lower value. |
| Upper (v1.1+) | integer | <i>read-write</i> (null) | Virtual LAN (VLAN) tag upper value. |
| } | | | |
| } | | | |
| EBGP (v1.1+) { | object | (null) | External BGP (eBGP) related properties for this Ethernet fabric. |
| AllowDuplicateASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Allow duplicate Autonomous System (AS) path. |
| AllowOverrideASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Option to override an Autonomous System (AS) number with the AS number of the sending peer . |
| AlwaysCompareMEDEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Compare Multi Exit Discriminator (MED) status. |
| ASNumberRange (v1.1+) { | object | (null) | Autonomous System (AS) number range. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Autonomous System (AS) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Autonomous System (AS) number. |
| } | | | |
| BGPLocalPreference (v1.1+) | integer | <i>read-write</i> (null) | Local preference value. |
| BGPNeighbor (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) neighbor related properties. |
| Address (v1.1+) | string | <i>read-write</i> (null) | Border Gateway Protocol (BGP) neighbor address. |
| AllowOwnASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Allow own Autonomous System (AS) status. |

| Property | Type | Attributes | Notes |
|--|------------|--------------------------|---|
| CIDR (v1.2+) | integer | <i>read-write</i> | The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask. |
| ConnectRetrySeconds (v1.1+) | integer | <i>read-write (null)</i> | Border Gateway Protocol (BGP) retry timer in seconds. |
| Enabled (v1.2+) | boolean | <i>read-write</i> | An indication of whether BGP neighbor communication is enabled. |
| HoldTimeSeconds (v1.1+) | integer | <i>read-write (null)</i> | Border Gateway Protocol (BGP) hold timer in seconds. |
| KeepaliveIntervalSeconds (v1.1+) | integer | <i>read-write (null)</i> | Border Gateway Protocol (BGP) Keepalive timer in seconds. |
| LocalAS (v1.1+) | integer | <i>read-write (null)</i> | Local Autonomous System (AS) number. |
| LogStateChangesEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Border Gateway Protocol (BGP) neighbor log state change status. |
| MaxPrefix (v1.1+) { | object | <i>(null)</i> | Border Gateway Protocol (BGP) max prefix properties. |
| MaxPrefixNumber (v1.1+) | integer | <i>read-write (null)</i> | Maximum prefix number. |
| RestartTimerSeconds (v1.1+) | integer | <i>read-write (null)</i> | Border Gateway Protocol (BGP) restart timer in seconds. |
| ShutdownThresholdPercentage (v1.1+) | number (%) | <i>read-write (null)</i> | Shutdown threshold status. |
| ThresholdWarningOnlyEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Threshold warning only status. |
| } | | | |
| MinimumAdvertisementIntervalSeconds (v1.1+) | integer | <i>read-write (null)</i> | Minimum Border Gateway Protocol (BGP) advertisement interval in seconds. |
| PassiveModeEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Border Gateway Protocol (BGP) passive mode status. |
| PathMTUDiscoveryEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Path MTU discovery status. |
| PeerAS (v1.1+) | integer | <i>read-write (null)</i> | Peer Autonomous System (AS) number. |

| Property | Type | Attributes | Notes |
|---|---------|--------------------------|---|
| ReplacePeerASEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status. |
| TCPMaxSegmentSizeBytes (v1.1+) | integer | <i>read-write (null)</i> | TCP max segment size in Bytes. |
| TreatAsWithdrawEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Border Gateway Protocol (BGP) treat as withdraw status. |
| } | | | |
| BGPRoute (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) route related properties. |
| AdvertiseInactiveRoutesEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Advertise inactive route status. |
| DistanceExternal (v1.1+) | integer | <i>read-write (null)</i> | Route distance for external routes. |
| DistanceInternal (v1.1+) | integer | <i>read-write (null)</i> | Route distance for internal routes. |
| DistanceLocal (v1.1+) | integer | <i>read-write (null)</i> | Route distance for local routes. |
| ExternalCompareRouterIdEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Compare router id status. |
| FlapDampingEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Route flap dampening status. |
| SendDefaultRouteEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Send default route status. |
| } | | | |
| BGPWeight (v1.1+) | integer | <i>read-write (null)</i> | BGP weight attribute. |
| GracefulRestart (v1.1+) { | object | (null) | Graceful restart related properties. |
| GracefulRestartEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Border Gateway Protocol (BGP) graceful restart status. |
| HelperModeEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Graceful restart helper mode status. |
| StaleRoutesTimeSeconds (v1.1+) | integer | <i>read-write (null)</i> | Stale route timer in seconds. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|---|
| TimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Graceful restart timer in seconds. |
| } | | | |
| MED (v1.1+) | integer | <i>read-write</i> (null) | BGP Multi Exit Discriminator (MED) value. |
| MultihopEnabled (v1.1+) | boolean | <i>read-write</i> (null) | External BGP (eBGP) multihop status. |
| MultihopTTL (v1.1+) | integer | <i>read-write</i> (null) | External BGP (eBGP) multihop Time to Live (TTL) value. |
| MultiplePaths (v1.1+) { | object | (null) | Multiple path related properties. |
| MaximumPaths (v1.1+) | integer | <i>read-write</i> (null) | Maximum paths number. |
| UseMultiplePathsEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) multiple paths status. |
| } | | | |
| SendCommunityEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Indicates whether community attributes are sent. |
| } | | | |
| IPv4 (v1.1+) { | object | (null) | IPv4 and Virtual LAN (VLAN) related addressing for this Ethernet fabric. |
| AnycastGatewayIPAddress (v1.1+) | string | <i>read-write</i> (null) | The anycast gateway IPv4 address. |
| AnycastGatewayMACAddress (v1.1+) | string | <i>read-write</i> (null) | The anycast gateway MAC address. |
| DHCP (v1.1+) { | object | (null) | The Dynamic Host Configuration Protocol (DHCP) related addressing for this Ethernet fabric. |
| DHCPInterfaceMTUBytes (v1.1+) | integer | <i>read-write</i> (null) | Dynamic Host Configuration Protocol (DHCP) interface Maximum Transmission Unit (MTU). |
| DHCPRelayEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Dynamic Host Configuration Protocol (DHCP) relay status. |

| Property | Type | Attributes | Notes |
|--|----------------------------|------------------------------|--|
| DHCPServer (v1.1+) [] | array (string, null) | <i>read-write</i> | The Dynamic Host Configuration Protocol (DHCP) IPv4 addresses for this Ethernet fabric. |
| } | | | |
| DistributeIntoUnderlayEnabled (v1.1+) | boolean | <i>read-write (null)</i> | Indicates if host subnets should be distributed into the fabric underlay. |
| DNSDomainName (v1.1+) | string | <i>read-write (null)</i> | The Domain Name Service (DNS) domain name for this Ethernet fabric. |
| DNSServer (v1.1+) [] | array (string, null) | <i>read-write</i> | The Domain Name Service (DNS) servers for this Ethernet fabric. |
| EBGPAddressRange (v1.1+) {} | object | <i>(null)</i> | External BGP (eBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details. |
| FabricLinkAddressRange (v1.1+) {} | object | <i>(null)</i> | Link related IPv4 addressing for this Ethernet fabric typically applied to connections between spine and leaf Ethernet switches. For more information about this property, see IPv4AddressRange in Property Details. |
| GatewayIPAddress (v1.1+) | string | <i>read-write (null)</i> | The gateway IPv4 address. |
| HostAddressRange (v1.1+) {} | object | <i>(null)</i> | IPv4 related host subnet addressing for physical device endpoints that connect to this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details. |
| IBGPAddressRange (v1.1+) {} | object | <i>(null)</i> | Internal BGP (iBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details. |
| LoopbackAddressRange (v1.1+) {} | object | <i>(null)</i> | Loopback related IPv4 addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details. |

| Property | Type | Attributes | Notes |
|---|----------------------------|----------------------|---|
| ManagementAddressRange (v1.1+) {} | object | (null) | Management related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details. |
| NativeVLAN (v1.1+) | integer | read-write (null) | The untagged Virtual LAN (VLAN) ID value. |
| NTPOffsetHoursMinutes (v1.1+) | integer | read-write (null) | The Network Time Protocol (NTP) offset configuration. |
| NTPServer (v1.1+) [] | array (string, null) | read-write | The Network Time Protocol (NTP) servers for this Ethernet fabric. |
| NTPTimezone (v1.1+) | string | read-write (null) | The Network Time Protocol (NTP) timezone for this Ethernet fabric. |
| SystemMACRange (v1.2+) { | object | (null) | The MAC address range for systems in this subnet. |
| Lower (v1.2+) | string | read-write (null) | The lower system MAC address. |
| Upper (v1.2+) | string | read-write (null) | The upper system MAC address. |
| } | | | |
| VLANIdentifierAddressRange (v1.1+) { | object | (null) | Virtual LAN (VLAN) tag related addressing for this Ethernet fabric or for end host networks. |
| Lower (v1.1+) | integer | read-write (null) | Virtual LAN (VLAN) tag lower value. |
| Upper (v1.1+) | integer | read-write (null) | Virtual LAN (VLAN) tag upper value. |
| } | | | |
| } | | | |
| MultiProtocolEBGP (v1.1+) { | object | (null) | Multi Protocol eBGP (MP eBGP) related properties for this Ethernet fabric. |
| AllowDuplicateASEnabled (v1.1+) | boolean | read-write (null) | Allow duplicate Autonomous System (AS) path. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|---|
| AllowOverrideASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Option to override an Autonomous System (AS) number with the AS number of the sending peer . |
| AlwaysCompareMEDEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Compare Multi Exit Discriminator (MED) status. |
| ASNumberRange (v1.1+) { | object | (null) | Autonomous System (AS) number range. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Autonomous System (AS) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Autonomous System (AS) number. |
| } | | | |
| BGPLocalPreference (v1.1+) | integer | <i>read-write</i> (null) | Local preference value. |
| BGPNeighbor (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) neighbor related properties. |
| Address (v1.1+) | string | <i>read-write</i> (null) | Border Gateway Protocol (BGP) neighbor address. |
| AllowOwnASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Allow own Autonomous System (AS) status. |
| CIDR (v1.2+) | integer | <i>read-write</i> | The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask. |
| ConnectRetrySeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) retry timer in seconds. |
| Enabled (v1.2+) | boolean | <i>read-write</i> | An indication of whether BGP neighbor communication is enabled. |
| HoldTimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) hold timer in seconds. |
| KeepaliveIntervalSeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) Keepalive timer in seconds. |
| LocalAS (v1.1+) | integer | <i>read-write</i> (null) | Local Autonomous System (AS) number. |
| LogStateChangesEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) neighbor log state change status. |

| Property | Type | Attributes | Notes |
|--|---------------|----------------------|---|
| MaxPrefix (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) max prefix properties. |
| MaxPrefixNumber (v1.1+) | integer | read-write (null) | Maximum prefix number. |
| RestartTimerSeconds (v1.1+) | integer | read-write (null) | Border Gateway Protocol (BGP) restart timer in seconds. |
| (v1.1+) ShutdownThresholdPercentage | number (%) | read-write (null) | Shutdown threshold status. |
| (v1.1+) ThresholdWarningOnlyEnabled | boolean | read-write (null) | Threshold warning only status. |
| } | | | |
| (v1.1+) MinimumAdvertisementIntervalSeconds | integer | read-write (null) | Minimum Border Gateway Protocol (BGP) advertisement interval in seconds. |
| PassiveModeEnabled (v1.1+) | boolean | read-write (null) | Border Gateway Protocol (BGP) passive mode status. |
| PathMTUDiscoveryEnabled (v1.1+) | boolean | read-write (null) | Path MTU discovery status. |
| PeerAS (v1.1+) | integer | read-write (null) | Peer Autonomous System (AS) number. |
| ReplacePeerASEnabled (v1.1+) | boolean | read-write (null) | Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status. |
| TCPMaxSegmentSizeBytes (v1.1+) | integer | read-write (null) | TCP max segment size in Bytes. |
| TreatAsWithdrawEnabled (v1.1+) | boolean | read-write (null) | Border Gateway Protocol (BGP) treat as withdraw status. |
| } | | | |
| BGPRoute (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) route related properties. |
| AdvertiseInactiveRoutesEnabled (v1.1+) | boolean | read-write (null) | Advertise inactive route status. |
| DistanceExternal (v1.1+) | integer | read-write (null) | Route distance for external routes. |
| DistanceInternal (v1.1+) | integer | read-write (null) | Route distance for internal routes. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|--|
| DistanceLocal (v1.1+) | integer | <i>read-write</i> (null) | Route distance for local routes. |
| ExternalCompareRouterIdEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Compare router id status. |
| FlapDampingEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Route flap dampening status. |
| SendDefaultRouteEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Send default route status. |
| } | | | |
| BGPWeight (v1.1+) | integer | <i>read-write</i> (null) | BGP weight attribute. |
| GracefulRestart (v1.1+) { | object | (null) | Graceful restart related properties. |
| GracefulRestartEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) graceful restart status. |
| HelperModeEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Graceful restart helper mode status. |
| StaleRoutesTimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Stale route timer in seconds. |
| TimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Graceful restart timer in seconds. |
| } | | | |
| MED (v1.1+) | integer | <i>read-write</i> (null) | BGP Multi Exit Discriminator (MED) value. |
| MultihopEnabled (v1.1+) | boolean | <i>read-write</i> (null) | External BGP (eBGP) multihop status. |
| MultihopTTL (v1.1+) | integer | <i>read-write</i> (null) | External BGP (eBGP) multihop Time to Live (TTL) value. |
| MultiplePaths (v1.1+) { | object | (null) | Multiple path related properties. |
| MaximumPaths (v1.1+) | integer | <i>read-write</i> (null) | Maximum paths number. |
| UseMultiplePathsEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) multiple paths status. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|---|
| } | | | |
| SendCommunityEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Indicates whether community attributes are sent. |
| } | | | |
| MultiProtocolIBGP (v1.1+) { | object | (null) | Multi Protocol iBGP (MP iBGP) related properties for this Ethernet fabric. |
| ASNumberRange (v1.1+) { | object | (null) | Autonomous System (AS) number range. |
| Lower (v1.1+) | integer | <i>read-write</i> | Lower Autonomous System (AS) number. |
| Upper (v1.1+) | integer | <i>read-write</i> | Upper Autonomous System (AS) number. |
| } | | | |
| BGPNeighbor (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) neighbor related properties. |
| Address (v1.1+) | string | <i>read-write</i> (null) | Border Gateway Protocol (BGP) neighbor address. |
| AllowOwnASEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Allow own Autonomous System (AS) status. |
| CIDR (v1.2+) | integer | <i>read-write</i> | The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask. |
| ConnectRetrySeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) retry timer in seconds. |
| Enabled (v1.2+) | boolean | <i>read-write</i> | An indication of whether BGP neighbor communication is enabled. |
| HoldTimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) hold timer in seconds. |
| KeepaliveIntervalSeconds (v1.1+) | integer | <i>read-write</i> (null) | Border Gateway Protocol (BGP) Keepalive timer in seconds. |
| LocalAS (v1.1+) | integer | <i>read-write</i> (null) | Local Autonomous System (AS) number. |
| LogStateChangesEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) neighbor log state change status. |

| Property | Type | Attributes | Notes |
|---|---------------|----------------------|---|
| MaxPrefix (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) max prefix properties. |
| MaxPrefixNumber (v1.1+) | integer | read-write (null) | Maximum prefix number. |
| RestartTimerSeconds (v1.1+) | integer | read-write (null) | Border Gateway Protocol (BGP) restart timer in seconds. |
| ShutdownThresholdPercentage (v1.1+) | number (%) | read-write (null) | Shutdown threshold status. |
| ThresholdWarningOnlyEnabled (v1.1+) | boolean | read-write (null) | Threshold warning only status. |
| } | | | |
| MinimumAdvertisementIntervalSeconds (v1.1+) | integer | read-write (null) | Minimum Border Gateway Protocol (BGP) advertisement interval in seconds. |
| PassiveModeEnabled (v1.1+) | boolean | read-write (null) | Border Gateway Protocol (BGP) passive mode status. |
| PathMTUDiscoveryEnabled (v1.1+) | boolean | read-write (null) | Path MTU discovery status. |
| PeerAS (v1.1+) | integer | read-write (null) | Peer Autonomous System (AS) number. |
| ReplacePeerASEnabled (v1.1+) | boolean | read-write (null) | Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status. |
| TCPMaxSegmentSizeBytes (v1.1+) | integer | read-write (null) | TCP max segment size in Bytes. |
| TreatAsWithdrawEnabled (v1.1+) | boolean | read-write (null) | Border Gateway Protocol (BGP) treat as withdraw status. |
| } | | | |
| BGPRoute (v1.1+) { | object | (null) | Border Gateway Protocol (BGP) route related properties. |
| AdvertiseInactiveRoutesEnabled (v1.1+) | boolean | read-write (null) | Advertise inactive route status. |
| DistanceExternal (v1.1+) | integer | read-write (null) | Route distance for external routes. |
| DistanceInternal (v1.1+) | integer | read-write (null) | Route distance for internal routes. |

| Property | Type | Attributes | Notes |
|---|---------|-----------------------------|--|
| DistanceLocal (v1.1+) | integer | <i>read-write</i> (null) | Route distance for local routes. |
| ExternalCompareRouterIdEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Compare router id status. |
| FlapDampingEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Route flap dampening status. |
| SendDefaultRouteEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Send default route status. |
| } | | | |
| GracefulRestart (v1.1+) { | object | (null) | Graceful restart related properties. |
| GracefulRestartEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) graceful restart status. |
| HelperModeEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Graceful restart helper mode status. |
| StaleRoutesTimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Stale route timer in seconds. |
| TimeSeconds (v1.1+) | integer | <i>read-write</i> (null) | Graceful restart timer in seconds. |
| } | | | |
| MultiplePaths (v1.1+) { | object | (null) | Multiple path related properties. |
| MaximumPaths (v1.1+) | integer | <i>read-write</i> (null) | Maximum paths number. |
| UseMultiplePathsEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Border Gateway Protocol (BGP) multiple paths status. |
| } | | | |
| SendCommunityEnabled (v1.1+) | boolean | <i>read-write</i> (null) | Indicates whether community attributes are sent. |
| } | | | |
| } | | | |
| GenZ { | object | | The Gen-Z related properties for this address pool. |

| Property | Type | Attributes | Notes |
|----------------------|---------|--------------------------|---|
| AccessKey | string | <i>read-write (null)</i> | The Access Key required for this address pool. |
| MaxCID | integer | <i>read-write (null)</i> | The maximum value for the Component Identifier (CID). |
| MaxSID | integer | <i>read-write (null)</i> | The maximum value for the Subnet Identifier (SID). |
| MinCID | integer | <i>read-write (null)</i> | The minimum value for the Component Identifier (CID). |
| MinSID | integer | <i>read-write (null)</i> | The minimum value for the Subnet Identifier (SID). |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Endpoints [{ | array | | An array of links to the endpoints that this address pool contains. |
| @odata.id | string | <i>read-write</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Zones [{ | array | | An array of links to the zones that this address pool contains. |
| @odata.id | string | <i>read-write</i> | Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details. |
| }] | | | |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.4.4 Property details

6.4.4.1 IPv4AddressRange

IPv4 related address range for an Ethernet fabric.

| | | | |
|-------------------------|--------|----------------------------------|-----------------------------|
| Lower (v1.1+) | string | <i>read- write</i> (null) | Lower IPv4 network address. |
| Upper (v1.1+) | string | <i>read- write</i> (null) | Upper IPv4 network address. |

6.4.5 Example response

```
{
  "@odata.type": "#AddressPool.v1_2_3.AddressPool",
  "Id": "AP1",
  "Name": "Address Pool 1",
  "Description": "Address Pool 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "GenZ": {
    "MinCID": 1,
    "MaxCID": 4096,
    "MinSID": 100,
    "MaxSID": 8192,
    "AccessKey": "0x1A"
  },
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Fabrics/GenZ/AddressPools/AP1"
}
```

6.5 Aggregate 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2020.2 |

6.5.1 Description

The Aggregate schema describes a grouping method for an aggregation service. Aggregates are formal groups of resources that are more persistent than ad hoc groupings.

6.5.2 URIs

/redfish/v1/AggregationService/Aggregates/{AggregateId}

6.5.3 Properties

| Property | Type | Attributes | Notes |
|----------------------|--------------|-------------------------|--|
| Elements [{ | array | <i>required</i> | The elements of this aggregate. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| ElementsCount | integer | <i>read-only (null)</i> | The number of entries in the Elements array. |

6.5.4 Actions

6.5.4.1 AddElements

Description

This action is used to add one or more resources to the aggregate.

Action URI

{Base URI of target resource}/Actions/Aggregate.AddElements

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------------|------------------|--|
| Elements [{ | array | <i>required</i> | An array of resource links to add to the Elements array. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

Request Example

```

{
  "Elements": [
    {
      "@odata.id": "/redfish/v1/Systems/cluster-node7"
    },
    {
      "@odata.id": "node8.intranet.contoso.com/redfish/v1/Systems/1"
    }
  ]
}

```

6.5.4.2 RemoveElements**Description**

This action is used to remove one or more resources from the aggregate.

Action URI

{Base URI of target resource}/Actions/Aggregate.RemoveElements

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------------|------------------|---|
| Elements [{ | array | <i>required</i> | An array of resource links to remove from the Elements array. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |

| Parameter Name | Type | Attributes | Notes |
|----------------|------|------------|-------|
| }] | | | |

Request Example

```
{
  "Elements": [
    {
      "@odata.id": "node8.intranet.contoso.com/redfish/v1/Systems/1"
    }
  ]
}
```

6.5.4.3 Reset

Description

This action is used to reset a collection of resources. For example, this could be an aggregate or a list of computer systems.

Action URI

{Base URI of target resource}/Actions/Aggregate.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------------------|-------------------|------------|--|
| BatchSize | integer | optional | The number of elements in each batch being reset. |
| DelayBetweenBatchesInSeconds | integer (seconds) | optional | The delay of the batches of elements being reset in seconds. |
| ResetType | string (enum) | optional | The type of reset. For the possible property values, see <i>ResetType</i> in Property details. |

Request Example

```
{
  "ResetType": "ForceRestart",
```

```

    "BatchSize": 5,
    "DeLayBetweenBatchesInSeconds": 30
  }

```

6.5.4.4 SetDefaultBootOrder

Description

This action is used to restore the boot order to the default state for the computer systems that are members of this aggregate.

Action URI

{Base URI of target resource}/Actions/Aggregate.SetDefaultBootOrder

Action parameters

This action takes no parameters.

6.5.5 Property details

6.5.5.1 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |

| string | Description |
|-----------------|---|
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.5.6 Example response

```
{
  "@odata.type": "#Aggregate.v1_0_1.Aggregate",
  "Id": "Aggregate1",
  "Name": "Aggregate One",
  "ElementsCount": 2,
  "Elements": [
    {
      "@odata.id": "/redfish/v1/Systems/cluster-node3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/cluster-node4"
    }
  ],
  "Actions": {
    "#Aggregate.Reset": {
      "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.Reset",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/ResetActionInfo"
    },
    "#Aggregate.SetDefaultBootOrder": {
      "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.SetDefaultBootOrder",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/SetDefaultBootOrderActionInfo"
    },
    "#Aggregate.AddElements": {
      "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.AddElements",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/AddElementsActionInfo"
    },
    "#Aggregate.RemoveElements": {
      "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.RemoveElements",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/RemoveElementsActionInfo"
    }
  },
  "@odata.id": "/redfish/v1/AggregationService/Aggregates/Aggregate1"
}
```

6.6 AggregationService 1.0.2

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2020.2 |

6.6.1 Description

The AggregationService schema contains properties for managing aggregation operations, either on ad hoc combinations of resources or on defined sets of resources called aggregates. Access points define the properties needed to access the entity being aggregated and connection methods describe the protocol or other semantics of the connection.

6.6.2 URIs

/redfish/v1/AggregationService

6.6.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|--------|------------|--|
| Aggregates { | object | | The link to the collection of aggregates associated with this service. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Aggregate</i> . See the Aggregate schema for details. |
| } | | | |
| AggregationSources { | object | | The link to the collection of aggregation sources associated with this service. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>AggregationSource</i> . See the AggregationSource schema for details. |
| } | | | |
| ConnectionMethods { | object | | The link to the collection of connection methods associated with this service. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>ConnectionMethod</i> . See the ConnectionMethod schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|-----------------------|---------|--------------------------|---|
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether the aggregation service is enabled. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.6.4 Actions

6.6.4.1 Reset

Description

This action is used to reset a set of resources. For example this could be a list of computer systems.

Action URI

{Base URI of target resource}/Actions/AggregationService.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------------------|-------------------|------------------|--|
| BatchSize | integer | <i>optional</i> | The number of elements in each batch being reset. |
| DelayBetweenBatchesInSeconds | integer (seconds) | <i>optional</i> | The delay of the batches of elements being reset in seconds. |
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |
| TargetURIs [{ | array | <i>required</i> | An array of links to the resources being reset. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

Request Example

```
{
  "ResetType": "ForceRestart",
  "BatchSize": 1,
}
```

```

    "DelayBetweenBatchesInSeconds": 30,
    "TargetURIs": [
      {
        "@odata.id": "/redfish/v1/Systems/cluster-node3"
      },
      {
        "@odata.id": "/redfish/v1/Systems/cluster-node4"
      },
      {
        "@odata.id": "node7.intranet.contoso.com/redfish/v1/Systems/1"
      }
    ]
  }

```

6.6.4.2 SetDefaultBootOrder

Description

This action is used to restore the boot order to the default state for the specified computer systems.

Action URI

{Base URI of target resource}/Actions/AggregationService.SetDefaultBootOrder

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------|--------|------------------|--|
| Systems [{ | array | <i>required</i> | The computer systems to restore. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |

Request Example

```

{
  "Systems": [
    {
      "@odata.id": "/redfish/v1/Systems/cluster-node3"
    },
    {

```

```

      "@odata.id": "/redfish/v1/Systems/cluster-node4"
    },
    {
      "@odata.id": "node7.intranet.contoso.com/redfish/v1/Systems/1"
    }
  ]
}

```

6.6.5 Property details

6.6.5.1 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.6.6 Example response

```
{
  "@odata.type": "#AggregationService.v1_0_2.AggregationService",
  "Id": "AggregationService",
  "Description": "Aggregation Service",
  "Name": "Aggregation Service",
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "Aggregates": {
    "@odata.id": "/redfish/v1/AggregationService/Aggregates"
  },
  "AggregationSources": {
    "@odata.id": "/redfish/v1/AggregationService/AggregationSources"
  },
  "ConnectionMethods": {
    "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods"
  },
  "Actions": {
    "#AggregationService.Reset": {
      "target": "/redfish/v1/AggregationService/Actions/AggregationService.Reset",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/ResetActionInfo"
    },
    "#AggregationService.SetDefaultBootOrder": {
      "target": "/redfish/v1/AggregationService/Actions/AggregationService.SetDefaultBootOrder",
      "@Redfish.ActionInfo": "/redfish/v1/AggregationService/SetDefaultBootOrderActionInfo"
    }
  },
  "@odata.id": "/redfish/v1/AggregationService/"
}
```

6.7 AggregationSource 1.3.1

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2022.3 | 2021.3 | 2020.4 | 2020.2 |

6.7.1 Description

The AggregationSource schema is used to represent the source of information for a subset of the

resources provided by a Redfish service. It can be thought of as a provider of information. As such, most such interfaces have requirements to support the gathering of information like address and account used to access the information.

6.7.2 URIs

/redfish/v1/AggregationService/AggregationSources/{AggregationSourceId}

6.7.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|-----------------------------|---|
| AggregationType (v1.2+) | string (enum) | <i>read-write</i> | The type of aggregation used towards the aggregation source. For the possible property values, see <i>AggregationType</i> in Property details. |
| HostName | string (URI) | <i>read-write</i> (null) | The URI of the system to be accessed. |
| Links { | object | | The links to other resources that are related to this resource. |
| ConnectionMethod { | object | (null) | An array of links to the connection methods used to contact this aggregation source. See the <i>ConnectionMethod</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>ConnectionMethod</i> resource. See the Links section and the <i>ConnectionMethod</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| ResourcesAccessed [{ | array | | An array links to the resources added to the service through this aggregation source. It is recommended that this be the minimal number of properties needed to find the resources that would be lost when the aggregation source is deleted. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| Password | string | <i>read-write</i> (null) | The password for accessing the aggregation source. The value is <code>null</code> in responses. |

| Property | Type | Attributes | Notes |
|--|-----------------------|----------------------|--|
| SNMP (v1.1+) { | object | (null) | SNMP settings of the aggregation source. |
| AuthenticationKey (v1.1+) | string | read-write (null) | The secret authentication key for SNMPv3. |
| AuthenticationKeySet (v1.1+) | boolean | read-only | Indicates if the AuthenticationKey property is set. |
| AuthenticationProtocol (v1.1+) | string (enum) | read-write (null) | The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i> |
| EncryptionKey (v1.1+) | string | read-write (null) | The secret authentication key for SNMPv3. |
| EncryptionKeySet (v1.1+) | boolean | read-only | Indicates if the EncryptionKey property is set. |
| EncryptionProtocol (v1.1+) | string (enum) | read-write (null) | The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i> |
| TrapCommunity (v1.2+) | string | read-write (null) | The SNMP trap community string. |
| } | | | |
| SSHSettings (v1.3+) { | object | (null) | Settings for an aggregation source using SSH as part of the associated connection method. |
| PresentedPublicHostKey (v1.3+) { | object | | A link to the last public host key presented by the remote service corresponding to the aggregation source. A client that trusts this public host key can add the public host key to the TrustedPublicHostKeys collection to allow SSH communication with the aggregation source. See the Key schema for details on this property. |
| @odata.id | string | read-only | Link to a Key resource. See the Links section and the Key schema for details. |
| } | | | |
| PresentedPublicHostKeyTimestamp (v1.3+) | string (date-time) | read-only (null) | The date and time when the key referenced by the PresentedPublicHostKey property was last updated. |

| Property | Type | Attributes | Notes |
|---|---------------|--------------------------|--|
| PublicIdentityKey (v1.3+) { | object | | A link to the public key that is used with the aggregation source when the authentication method is configured to use a public key. The <code>GenerateSSHIdentityKeyPair</code> and <code>RemoveSSHIdentityKeyPair</code> are used to update the key for this aggregation source. See the <i>Key</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Key</i> resource. See the Links section and the <i>Key</i> schema for details. |
| } | | | |
| TrustedPublicHostKeys (v1.3+) { | object | | A link to the trusted public host keys of the remote service corresponding to the aggregation source. These trusted public host keys are used for authentication of the remote service with SSH. An SSH public host key of the remote service can be added to this collection to allow for public key-based SSH authentication. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Key</i> . See the <i>Key</i> schema for details. |
| } | | | |
| UserAuthenticationMethod (v1.3+) | string (enum) | <i>read-write (null)</i> | The client user authentication method. <i>For the possible property values, see UserAuthenticationMethod in Property details.</i> |
| } | | | |
| Status (v1.3+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| UserName | string | <i>read-write (null)</i> | The user name for accessing the aggregation source. |

6.7.4 Actions

6.7.4.1 GenerateSSHIdentityKeyPair (v1.3+)

Description

This action generates a new SSH identity key-pair to be used with this aggregation source. The generated public key is stored in the *Key* resource referenced by the *PublicIdentityKey* property in *SSHSettings*. Any existing key-pair is deleted and replaced by the new key-pair.

Action URI

{Base URI of target resource}/Actions/AggregationSource.GenerateSSHIdentityKeyPair

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|---|
| Curve | string (enum) | <i>optional</i> | The curve to use with the SSH key if the KeyType parameter contains <code>ECDSA</code> . <i>For the possible property values, see Curve in Property details.</i> |
| KeyLength | integer | <i>optional</i> | The length of the SSH key, in bits, if the KeyType parameter contains <code>RSA</code> . |
| KeyType | string (enum) | <i>required</i> | The type of SSH key. <i>For the possible property values, see KeyType in Property details.</i> |

Request Example

```
{  
  "KeyType": "Ed25519"  
}
```

6.7.4.2 RemoveSSHIdentityKeyPair (v1.3+)

Description

This action removes the SSH identity key-pair used with this aggregation source.

Action URI

{Base URI of target resource}/Actions/AggregationSource.RemoveSSHIdentityKeyPair

Action parameters

This action takes no parameters.

6.7.5 Property details

6.7.5.1 AggregationType

The type of aggregation used towards the aggregation source.

| string | Description |
|-------------------|--|
| Full | Full aggregation according to connection method. |
| NotificationsOnly | Only notifications are aggregated. |

6.7.5.2 AuthenticationProtocol

The authentication protocol for SNMPv3.

| string | Description |
|-----------------|---------------------------------------|
| CommunityString | Trap community string authentication. |
| HMAC128_SHA224 | HMAC-128-SHA-224 authentication. |
| HMAC192_SHA256 | HMAC-192-SHA-256 authentication. |
| HMAC256_SHA384 | HMAC-256-SHA-384 authentication. |
| HMAC384_SHA512 | HMAC-384-SHA-512 authentication. |
| HMAC_MD5 | HMAC-MD5-96 authentication. |
| HMAC_SHA96 | HMAC-SHA-96 authentication. |
| None | No authentication. |

6.7.5.3 Curve

The curve to use with the SSH key if the KeyType parameter contains `ECDSA` .

| string | Description |
|----------|-------------|
| NISTB233 | NIST B-233. |
| NISTB409 | NIST B-409. |
| NISTK163 | NIST K-163. |
| NISTK233 | NIST K-233. |
| NISTK283 | NIST K-283. |
| NISTK409 | NIST K-409. |
| NISTP192 | NIST P-192. |

| string | Description |
|----------|-------------|
| NISTP224 | NIST P-224. |
| NISTP256 | NIST P-256. |
| NISTP384 | NIST P-384. |
| NISTP521 | NIST P-521. |
| NISTT571 | NIST T-571. |

6.7.5.4 EncryptionProtocol

The encryption protocol for SNMPv3.

| string | Description |
|---------------|----------------------------|
| CBC_DES | CBC-DES encryption. |
| CFB128_AES128 | CFB128-AES-128 encryption. |
| None | No encryption. |

6.7.5.5 KeyType

The type of SSH key.

| string | Description |
|---------|-------------|
| DSA | DSA. |
| ECDSA | ECDSA. |
| Ed25519 | Ed25519. |
| RSA | RSA. |

6.7.5.6 UserAuthenticationMethod

The client user authentication method.

| string | Description |
|-----------|--|
| Password | SSH user authentication with a password. |
| PublicKey | SSH user authentication with a public key. |

6.7.6 Example response

```
{
  "@odata.type": "#AggregationSource.v1_3_1.AggregationSource",
  "Id": "AggregationSource1",
  "Name": "AggregationSource One",
  "HostName": "https://Someserver.Contoso.com/redfish/v1",
  "UserName": "root",
  "Password": null,
  "Links": {
    "ConnectionMethod": {
      "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods/ConnectionMethod1"
    },
    "ResourcesAccessed": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/AggregationService/AggregationSources/AggregationSource1"
}
```

6.8 AllowDeny 1.0.1

| | |
|---------|--------|
| Version | v1.0 |
| Release | 2021.2 |

6.8.1 Description

The AllowDeny schema represents a set of allow or deny configurations.

6.8.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny/{AllowDenyId}

/redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/
NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny/{AllowDenyId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.8.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|------------------|----------------------|---|
| AllowType | string (enum) | read-write (null) | Indicates the type of permission. <i>For the possible property values, see AllowType in Property details.</i> |
| DestinationPortLower | integer | read-write (null) | The TCP, UDP, or other destination port to which this rule begins to application, inclusive. |
| DestinationPortUpper | integer | read-write (null) | The TCP, UDP, or other destination port to which this rule ends application, inclusive. |
| Direction | string (enum) | read-write (null) | Indicates the direction of the data to which this permission applies. <i>For the possible property values, see Direction in Property details.</i> |
| IANAProtocolNumber | integer | read-write (null) | The IANA protocol number to which this permission applies. For TCP, this is 6. For UDP, this is 17. |
| IPAddressLower | string | read-write (null) | The lower IP address to which this permission applies. |
| IPAddressType | string (enum) | read-write (null) | The type of IP address populated in the IPAddressLower and IPAddressUpper properties. <i>For the possible property values, see IPAddressType in Property details.</i> |
| IPAddressUpper | string | read-write (null) | The upper IP address to which this permission applies. |
| SourcePortLower | integer | read-write (null) | The TCP, UDP, or other source port to which this rule begins application, inclusive. |
| SourcePortUpper | integer | read-write (null) | The TCP, UDP or other source port to which this rule ends application, inclusive. |
| StatefulSession | boolean | read-write (null) | Indicates if this is a permission that only applies to stateful connection. |

6.8.4 Property details

6.8.4.1 AllowType

Indicates the type of permission.

| string | Description |
|--------|---|
| Allow | Indicates that traffic that matches the criteria in this resource is permitted. |
| Deny | Indicates that traffic that matches the criteria in this resource is not permitted. |

6.8.4.2 Direction

Indicates the direction of the data to which this permission applies.

| string | Description |
|---------|--|
| Egress | Indicates that this limit is enforced on packets and bytes transmitted by the network device function. |
| Ingress | Indicates that this limit is enforced on packets and bytes received by the network device function. |

6.8.4.3 IPAddressType

The type of IP address populated in the IPAddressLower and IPAddressUpper properties.

| string | Description |
|--------|---|
| IPv4 | IPv4 addressing is used for all IP-fields in this object. |
| IPv6 | IPv6 addressing is used for all IP-fields in this object. |

6.8.5 Example response

```
{
  "@odata.type": "#AllowDeny.v1_0_1.AllowDeny",
  "Id": "AllowDeny Rule 1",
  "Name": "Allow Rule 1",
  "Direction": "Ingress",
  "AllowType": "Allow",
  "StatefulSession": true,
  "IPAddressType": "IPv4",
  "IPAddressLower": "192.168.1.1",
  "IPAddressUpper": "192.168.1.100",
  "IANAProtocolNumber": 6,
  "SourcePortLower": 5,
  "SourcePortUpper": 65535,
}
```

```

    "DestinationPortLower": 5,
    "DestinationPortUpper": 65535,
    "@odata.id": "/redfish/v1/Chassis/Card1/NetworkAdapters/Slot1/NetworkDeviceFunctions/SC2KP1F0/AllowDeny/Rule1"
  }

```

6.9 Application 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.2 |

6.9.1 Description

The Application schema represents an application or service running on a computer system.

6.9.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Applications/{ApplicationId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.9.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|----------------------------|------------------|--|
| DestinationURIs [] | array (URI) (string, null) | <i>read-only</i> | The URIs to which this application pushes data. |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SoftwareImage { | object | | The link to the software image for this application. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|------------------------|----------------------------|-------------------------|---|
| MetricsURIs [] | array (URI) (string, null) | <i>read-only</i> | The URIs that provide access to data or other information in this application. |
| StartTime | string (date-time) | <i>read-only (null)</i> | The date and time when the application started running. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Vendor | string | <i>read-only (null)</i> | The vendor of this application. |
| Version | string | <i>read-only (null)</i> | The version of this application. |

6.9.4 Actions

6.9.4.1 Reset

Description

This action resets the application.

Action URI

{Base URI of target resource}/Actions/Application.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|---------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "GracefulRestart"
}
```

6.9.5 Property details

6.9.5.1 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.9.6 Example response

```
{
  "@odata.type": "#Application.v1_0_0.Application",
  "Id": "Logger",
  "Name": "Logging Agent",
  "Version": "1.5.1",
  "Vendor": "Contoso",
  "StartTime": "2021-10-29T10:42:38+06:00",
  "Status": {
```



```

        "State": "Enabled",
        "Health": "OK"
    },
    "DestinationURIs": [
        "https://listeners.contoso.org:8000/handler"
    ],
    "MetricsURIs": [
        "https://192.168.0.12:7000"
    ],
    "Actions": {
        "#Application.Reset": {
            "target": "/redfish/v1/Systems/VM1/OperatingSystem/Applications/Logger/Actions/Application.Reset",
            "ResetType@Redfish.AllowableValues": [
                "On",
                "ForceOff",
                "GracefulShutdown",
                "GracefulRestart",
                "ForceRestart",
                "ForceOn"
            ]
        }
    }
},
"@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Applications/Logger"
}

```

6.10 Assembly 1.4.0

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2020.3 | 2018.2 | 2018.1 | 2017.3 |

6.10.1 Description

The Assembly schema defines an assembly. Assembly information contains details about a device, such as part number, serial number, manufacturer, and production date. It also provides access to the original data for the assembly.

6.10.2 URIs

- /redfish/v1/Chassis/{ChassisId}/Assembly
- /redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}/Assembly
- /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Assembly
- /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}

Assembly

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/Assembly
/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors/{ProcessorId3}/Assembly
/redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/Assembly
/redfish/v1/Chassis/{ChassisId}/Power/PowerSupplies/{PowerSupplyId}/Assembly
/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries/{BatteryId}/Assembly
/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/PowerSupplies/{PowerSupplyId}/Assembly
/redfish/v1/Chassis/{ChassisId}/Thermal/Fans/{FanId}/Assembly
/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Fans/{FanId}/Assembly
/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Heaters/{HeaderId}/Assembly
/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/PowerSupplies/{PowerSupplyId}/Assembly
/redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Assembly
/redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/PCleDevices/{PCleDeviceId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors/{ProcessorId3}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/Assembly
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps/{PumpId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs/{ReservoirId}/Assembly
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps/{PumpId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs/{ReservoirId}/Assembly
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/{FilterId}/Assembly
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Assembly

/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Filters/{FilterId}/Assembly
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps/{PumpId}/Assembly
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}/
 Assembly
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs/{ReservoirId}/Assembly
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/
 {FilterId}/Assembly

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.10.3 Properties

| Property | Type | Attributes | Notes |
|--|---------------|---------------------------|--|
| Assemblies [{ | array | | The assembly records. |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions { } | object | | The available actions for this Resource. |
| BinaryDataURI | string (URI) | <i>read-only (null)</i> | The URI at which to access an image of the assembly information. |
| Description | string | <i>read-only (null)</i> | The description of the assembly. |
| EngineeringChangeLevel | string | <i>read-only (null)</i> | The engineering change level of the assembly. |
| Location (v1.3+) { } | object | | The location of the assembly. For property details, see Location. |
| LocationIndicatorActive (v1.3+) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| MemberId | string | <i>read-only required</i> | The unique identifier for the member within an array. |
| Model | string | <i>read-only (null)</i> | The model number of the assembly. |
| Name | string | <i>read-only (null)</i> | The name of the assembly. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PartNumber | string | <i>read-only (null)</i> | The part number of the assembly. |
| PhysicalContext (v1.2+) | string (enum) | <i>read-only</i> | The area or device to which the assembly data applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |

| Property | Type | Attributes | Notes |
|-----------------------------|-----------------------|-------------------------------------|--|
| Producer | string | <i>read-only</i> (<i>null</i>) | The producer or manufacturer of the assembly. |
| ProductionDate | string (date-time) | <i>read-only</i> (<i>null</i>) | The production date of the assembly. |
| Replaceable (v1.4+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the component associated this assembly can be independently replaced as allowed by the vendor's replacement policy. |
| SerialNumber (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The serial number of the assembly. |
| SKU | string | <i>read-only</i> (<i>null</i>) | The SKU of the assembly. |
| SparePartNumber | string | <i>read-only</i> (<i>null</i>) | The spare part number of the assembly. |
| Status (v1.1+) {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| Vendor | string | <i>read-only</i> (<i>null</i>) | The vendor of the assembly. |
| Version | string | <i>read-only</i> (<i>null</i>) | The hardware version of the assembly. |
| }] | | | |

6.10.4 Property details

6.10.4.1 PhysicalContext

The area or device to which the assembly data applies.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |

| string | Description |
|---------------------|---|
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |

| string | Description |
|------------------|-----------------------------------|
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.10.5 Example response

```
{
  "@odata.type": "#Assembly.v1_4_0.Assembly",
  "Id": "Assembly",
  "Name": "System-related Assembly data",
  "Assemblies": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/Assembly#/Assemblies/0",
      "MemberId": "0",
      "Name": "System Board",
      "Description": "PCA System Board",
      "Model": "345TTT",
      "PartNumber": "923943",
    }
  ]
}
```

```

        "SparePartNumber": "55-434",
        "SKU": "55ZZATR",
        "SerialNumber": "345394834",
        "Vendor": "Contoso",
        "ProductionDate": "2017-04-01T14:55:33+03:00",
        "Producer": "Contoso Supply Co.",
        "Version": "1.44B",
        "EngineeringChangeLevel": "9",
        "BinaryDataURI": "/dumpster/434",
        "Oem": {
            "Contoso": {
                "Region": "C",
                "Packaging": "Retail"
            }
        }
    },
    {
        "@odata.id": "/redfish/v1/Chassis/1/Assembly#/Assemblies/1",
        "MemberId": "1",
        "Name": "Fan Controller",
        "Description": "PCA Fan Controller",
        "Model": "F58AS",
        "PartNumber": "3434-149",
        "Vendor": "Contoso",
        "Version": "2.4.481",
        "BinaryDataURI": "/dumpster/422",
        "Status": {
            "State": "Enabled",
            "Health": "Warning"
        }
    }
],
"@odata.id": "/redfish/v1/Chassis/1/Assembly"
}

```

6.11 AttributeRegistry 1.3.7

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2018.3 | 2018.1 | 2017.1 | 2016.1 |

6.11.1 Description

The AttributeRegistry schema contains a set of key-value pairs that represent the structure of an attribute registry. It includes mechanisms for building user interfaces, or menus, allowing consistent

navigation of the contents. The attribute registry is specific to an implementation or product. The attributes and property names are not standardized.

6.11.2 Properties

| Property | Type | Attributes | Notes |
|--------------------------|-------------------------------|-------------------------------|---|
| Language | string | <i>read-only required</i> | The RFC5646-conformant language code for the attribute registry. |
| OwningEntity | string | <i>read-only required</i> | The organization or company that publishes this attribute registry. |
| RegistryEntries { | object | | The list of all attributes and their metadata for this component. |
| Attributes [{ | array | | An array of attributes and their possible values in the attribute registry. |
| AttributeName | string | <i>read-only required</i> | The unique name for the attribute. |
| CurrentValue | string, boolean, number | <i>read-only (null)</i> | The placeholder of the current value for the attribute. |
| DefaultValue | string, boolean, number | <i>read-only (null)</i> | The default value for the attribute. |
| DisplayName | string | <i>read-only (null)</i> | The user-readable display string for the attribute in the defined language. |
| DisplayOrder | integer | <i>read-only (null)</i> | The ascending order, as a number, in which this attribute appears relative to other attributes. |
| GrayOut | boolean | <i>read-only (null)</i> | An indication of whether this attribute is grayed out. A grayed-out attribute is not active and is grayed out in user interfaces but the attribute value can be modified. |
| HelpText | string | <i>read-only (null)</i> | The help text for the attribute. |
| Hidden | boolean | <i>read-only (null)</i> | An indication of whether this attribute is hidden in user interfaces. |
| Immutable | boolean | <i>read-only (null)</i> | An indication of whether this attribute is immutable. Immutable attributes cannot be modified and typically reflect a hardware state. |

| Property | Type | Attributes | Notes |
|--------------------------------|---------------|---------------------------|---|
| IsSystemUniqueProperty | boolean | <i>read-only (null)</i> | An indication of whether this attribute is unique for this system and should not be replicated. |
| LowerBound | integer | <i>read-only (null)</i> | The lower limit for an integer attribute. |
| MaxLength | integer | <i>read-only (null)</i> | The maximum character length of a string attribute. |
| MenuPath | string | <i>read-only (null)</i> | The path that describes the menu hierarchy of this attribute. |
| MinLength | integer | <i>read-only (null)</i> | The minimum character length of the string attribute. |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| ReadOnly | boolean | <i>read-only (null)</i> | An indication of whether this attribute is read-only. A read-only attribute cannot be modified, and should be grayed out in user interfaces. |
| ResetRequired (v1.2+) | boolean | <i>read-only (null)</i> | An indication of whether a system or device reset is required for this attribute value change to take effect. |
| ScalarIncrement | integer | <i>read-only (null)</i> | The amount to increment or decrement an integer attribute each time a user requests a value change. The 0 value indicates a free-form numeric user-input attribute. |
| Type | string (enum) | <i>read-only</i> | The attribute type. <i>For the possible property values, see Type in Property details.</i> |
| UefiDevicePath (v1.2+) | string | <i>read-only (null)</i> | The UEFI device path that qualifies this attribute. |
| UefiKeywordName (v1.2+) | string | <i>read-only</i> | The UEFI keyword string for this attribute. |
| UefiNamespaceId (v1.2+) | string | <i>read-only</i> | The UEFI namespace ID for the attribute. |
| UpperBound | integer | <i>read-only (null)</i> | The upper limit for an integer attribute. |
| Value [{ | array | | An array of the possible values for enumerated attribute values. |
| ValueDisplayName | string | <i>read-only (null)</i> | A user-readable display string of the value for the attribute in the defined language. |
| ValueName | string | <i>read-only required</i> | The unique value name for the attribute. |

| Property | Type | Attributes | Notes |
|-------------------------|-------------------------------|----------------------------|--|
| }] | | | |
| ValueExpression | string | <i>read-only</i> (null) | A valid regular expression, according to the Perl regular expression dialect, that validates the attribute value. Applies to only string and integer attributes. |
| WarningText | string | <i>read-only</i> (null) | The warning text for the attribute. |
| WriteOnly | boolean | <i>read-only</i> (null) | An indication of whether this attribute is write-only. A write-only attribute reverts to its initial value after settings are applied. |
| }] | | | |
| Dependencies [{ | array | | An array of dependencies of attributes on this component. |
| Dependency { | object | | The dependency expression for one or more attributes in this attribute registry. |
| MapFrom [{ | array | | An array of the map-from conditions for a mapping dependency. |
| MapFromAttribute | string | <i>read-only</i> | The attribute to use to evaluate this dependency expression. |
| MapFromCondition | string (enum) | <i>read-only</i> | The condition to use to evaluate this dependency expression. <i>For the possible property values, see MapFromCondition in Property details.</i> |
| MapFromProperty | string (enum) | <i>read-only</i> | The metadata property for the attribute that the MapFromAttribute property specifies to use to evaluate this dependency expression. <i>For the possible property values, see MapFromProperty in Property details.</i> |
| MapFromValue | string, boolean, number | <i>read-only</i> (null) | The value to use to evaluate this dependency expression. |
| MapTerms | string (enum) | <i>read-only</i> | The logical term that combines two or more map-from conditions in this dependency expression. For example, AND for logical AND, or OR for logical OR. <i>For the possible property values, see MapTerms in Property details.</i> |
| }] | | | |
| MapToAttribute | string | <i>read-only</i> | The AttributeName of the attribute that is affected by this dependency expression. |

| Property | Type | Attributes | Notes |
|-----------------------|-------------------------------|-------------------------------------|---|
| MapToProperty | string (enum) | <i>read-only</i> | The metadata property for the attribute that contains the map-from condition that evaluates this dependency expression. <i>For the possible property values, see MapToProperty in Property details.</i> |
| MapToValue | string, boolean, number | <i>read-only</i> (<i>null</i>) | The value that the map-to property changes to if the dependency expression evaluates to <code>true</code> . |
| } | | | |
| DependencyFor | string | <i>read-only</i> | The AttributeName of the attribute whose change triggers the evaluation of this dependency expression. |
| Type | string (enum) | <i>read-only</i> | The type of the dependency structure. <i>For the possible property values, see Type in Property details.</i> |
| }] | | | |
| Menus [{ | array | | An array for the attributes menus and their hierarchy in the attribute registry. |
| DisplayName | string | <i>read-only</i> (<i>null</i>) | The user-readable display string of this menu in the defined language. |
| DisplayOrder | integer | <i>read-only</i> (<i>null</i>) | The ascending order, as a number, in which this menu appears relative to other menus. |
| GrayOut | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this menu is grayed out. A grayed-only menu is not accessible in user interfaces. |
| Hidden (v1.3+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this menu is hidden in user interfaces. |
| MenuName | string | <i>read-only</i> | The unique name string of this menu. |
| MenuPath | string | <i>read-only</i> (<i>null</i>) | The path to the menu names that describes this menu hierarchy relative to other menus. |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| ReadOnly | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this menu is read-only. A read-only menu, its properties, and sub-menus are not accessible in user interfaces. |
| }] | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|---|--------|-------------------------------|---|
| RegistryVersion | string | <i>read-only required</i> | The attribute registry version. |
| SupportedSystems [{ | array | | An array of systems that this attribute registry supports. |
| FirmwareVersion (<i>v1.1+</i>) | string | <i>read-only (null)</i> | Firmware version. |
| ProductName | string | <i>read-only (null)</i> | The product name of the computer system to which this attribute registry applies. |
| SystemId | string | <i>read-only (null)</i> | The ID of the systems to which this attribute registry applies. |
| }] | | | |

6.11.3 Property details

6.11.3.1 MapFromCondition

The condition to use to evaluate this dependency expression.

| string | Description |
|--------|--|
| EQU | The logical operation for 'Equal'. |
| GEQ | The logical operation for 'Greater than or Equal'. |
| GTR | The logical operation for 'Greater than'. |
| LEQ | The logical operation for 'Less than or Equal'. |
| LSS | The logical operation for 'Less than'. |
| NEQ | The logical operation for 'Not Equal'. |

6.11.3.2 MapFromProperty

The metadata property for the attribute that the MapFromAttribute property specifies to use to evaluate this dependency expression.

| string | Description |
|-----------------|---|
| CurrentValue | The dependency on an attribute's CurrentValue. |
| DefaultValue | The dependency on an attribute's DefaultValue. |
| GrayOut | The dependency on an attribute's GrayOut state. |
| Hidden | The dependency on an attribute's Hidden state. |
| LowerBound | The dependency on an attribute's LowerBound. |
| MaxLength | The dependency on an attribute's MaxLength. |
| MinLength | The dependency on an attribute's MinLength. |
| ReadOnly | The dependency on an attribute's ReadOnly state. |
| ScalarIncrement | The dependency on an attribute's ScalarIncrement. |
| UpperBound | The dependency on an attribute's UpperBound. |
| WriteOnly | The dependency on an attribute's WriteOnly state. |

6.11.3.3 MapTerms

The logical term that combines two or more map-from conditions in this dependency expression. For example, `AND` for logical AND, or `OR` for logical OR.

| string | Description |
|--------|---|
| AND | The operation used for logical 'AND' of dependency terms. |
| OR | The operation used for logical 'OR' of dependency terms. |

6.11.3.4 MapToProperty

The metadata property for the attribute that contains the map-from condition that evaluates this dependency expression.

| string | Description |
|--------------|--|
| CurrentValue | The dependency that affects an attribute's CurrentValue. |
| DefaultValue | The dependency that affects an attribute's DefaultValue. |
| DisplayName | The dependency that affects an attribute's DisplayName. |

| string | Description |
|-----------------|---|
| DisplayOrder | The dependency that affects an attribute's DisplayName. |
| GrayOut | The dependency that affects an attribute's GrayOut state. |
| HelpText | The dependency that affects an attribute's HelpText. |
| Hidden | The dependency that affects an attribute's Hidden state. |
| Immutable | The dependency that affects an attribute's Immutable state. |
| LowerBound | The dependency that affects an attribute's LowerBound. |
| MaxLength | The dependency that affects an attribute's MaxLength. |
| MinLength | The dependency that affects an attribute's MinLength. |
| ReadOnly | The dependency that affects an attribute's ReadOnly state. |
| ScalarIncrement | The dependency that affects an attribute's ScalarIncrement. |
| UpperBound | The dependency that affects an attribute's UpperBound. |
| ValueExpression | The dependency that affects an attribute's ValueExpression. |
| WarningText | The dependency that affects an attribute's WarningText. |
| WriteOnly | The dependency that affects an attribute's WriteOnly state. |

6.11.3.5 Type

6.11.3.5.1 In RegistryEntries: Attributes:

The attribute type.

| string | Description |
|---------------|---|
| Boolean | A flag with a <code>true</code> or <code>false</code> value. |
| Enumeration | A list of the known possible enumerated values. |
| Integer | An integer value. |
| Password | Password values that do not appear as plain text. The value is null in responses. |
| String | Free-form text in their values. |

6.11.3.5.2 In RegistryEntries: Dependencies:

The type of the dependency structure.

| string | Description |
|--------|--|
| Map | A simple mapping dependency. If the condition evaluates to <code>true</code> , the attribute or state changes to the mapped value. |

6.11.4 Example response

```
{
  "@odata.type": "#AttributeRegistry.v1_3_7.AttributeRegistry",
  "Description": "This registry defines a representation of BIOS Attribute instances",
  "Id": "BiosAttributeRegistryG9000.v1_0_0",
  "Language": "en",
  "Name": "G9000 BIOS Attribute Registry",
  "OwningEntity": "Contoso",
  "RegistryVersion": "1.0.0",
  "SupportedSystems": [
    {
      "ProductName": "Contoso Server GLH9000",
      "SystemId": "G9000",
      "FirmwareVersion": "v1.00 (06/02/2014)"
    }
  ],
  "RegistryEntries": {
    "Attributes": [
      {
        "CurrentValue": null,
        "DisplayName": "Embedded NIC 1 Boot",
        "DisplayOrder": 5,
        "HelpText": "Select this option to enable network boot (PXE, iSCSI, or FCoE) for the selected NIC.",
        "MenuPath": "./SystemOptions/NetworkBootOptions",
        "AttributeName": "NicBoot1",
        "ReadOnly": false,
        "Hidden": false,
        "Type": "Enumeration",
        "Value": [
          {
            "ValueDisplayName": "Network Boot",
            "ValueName": "NetworkBoot"
          },
          {
            "ValueDisplayName": "Disabled",
            "ValueName": "Disabled"
          }
        ]
      }
    ]
  }
}
```

```

    },
    ],
    "WarningText": "Important: When enabling network boot support for an embedded NIC, the NIC boot opt
  },
  {
    "CurrentValue": null,
    "DisplayName": "Embedded SATA Configuration",
    "DisplayOrder": 74,
    "HelpText": "Important: Select this option to configure the embedded chipset SATA controller.",
    "MenuPath": "./SystemOptions/SataOptions",
    "AttributeName": "EmbeddedSata",
    "ReadOnly": false,
    "Hidden": false,
    "Type": "Enumeration",
    "Value": [
      {
        "ValueDisplayName": "Enable SATA AHCI Support",
        "ValueName": "Ahci"
      },
      {
        "ValueDisplayName": "Enable Software RAID Support",
        "ValueName": "Raid"
      }
    ],
    "WarningText": "Important: Software RAID is not supported when the Boot Mode is configured in Legac
  }
],
"Dependencies": [
  {
    "Dependency": {
      "MapFrom": [
        {
          "MapFromAttribute": "BootMode",
          "MapFromCondition": "EQU",
          "MapFromProperty": "CurrentValue",
          "MapFromValue": "LegacyBios"
        }
      ],
      "MapToAttribute": "EmbeddedSata",
      "MapToProperty": "ReadOnly",
      "MapToValue": true
    },
    "DependencyFor": "EmbeddedSata",
    "Type": "Map"
  }
],
"Menus": [
  {
    "DisplayName": "BIOS Configuration",
    "DisplayOrder": 1,

```



```

        "MenuPath": "./",
        "MenuName": "BiosMainMenu",
        "Hidden": false,
        "ReadOnly": false
    },
    {
        "DisplayName": "System Options",
        "DisplayOrder": 2,
        "MenuPath": "./SystemOptions",
        "MenuName": "SystemOptions",
        "Hidden": false,
        "ReadOnly": false
    }
]
}
}
}

```

6.12 Battery 1.2.1

| | | |
|---------|--------|--------|
| Version | v1.2 | v1.1 |
| Release | 2022.2 | 2021.2 |

6.12.1 Description

The Battery schema describes a battery unit, such as those used to provide systems with power during a power loss event. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.12.2 URIs

/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries/{BatteryId}

6.12.3 Properties

| Property | Type | Attributes | Notes |
|------------|--------|------------|---|
| Assembly { | object | | The link to the assembly associated with this battery. See the <i>Assembly</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------------|-------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| CapacityActualAmpHours | number (A.h) | <i>read-only (null)</i> | The actual maximum capacity of this battery in amp-hours. |
| CapacityActualWattHours | number (W.h) | <i>read-only (null)</i> | The actual maximum capacity of this battery in watt-hours. |
| CapacityRatedAmpHours | number (A.h) | <i>read-only (null)</i> | The rated maximum capacity of this battery in amp-hours. |
| CapacityRatedWattHours | number (W.h) | <i>read-only (null)</i> | The rated maximum capacity of this battery in watt-hours. |
| ChargeState | string (enum) | <i>read-only (null)</i> | The charge state of this battery. <i>For the possible property values, see ChargeState in Property details.</i> |
| FirmwareVersion | string | <i>read-only (null)</i> | The firmware version for this battery. |
| HotPluggable | boolean | <i>read-only (null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| Links (v1.1+) { | object | | The links to other resources that are related to this resource. |
| Memory (v1.1+) [{ | array | | An array of links to the memory devices to which this battery provides power during a power loss event. |
| @odata.id | string | <i>read-only</i> | Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| StorageControllers (v1.1+) [{ | array | | An array of links to the storage controllers to which this battery provides power during a power loss event. |
| @odata.id | string | <i>read-only</i> | Link to a StorageController resource. See the Links section and the <i>StorageController</i> schema for details. |
| }] | | | |
| } | | | |
| Location { } | object | | The location of the battery. For property details, see Location. |

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------|--------------------------------------|---|
| LocationIndicatorActive | boolean | <i>read-write</i> (<i>null</i>) | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only</i> (<i>null</i>) | The manufacturer of this battery. |
| MaxChargeRateAmps | number (A) | <i>read-only</i> (<i>null</i>) | The maximum charge rate of this battery in amps. |
| MaxChargeVoltage | number (Volts) | <i>read-only</i> (<i>null</i>) | The maximum charge voltage of this battery. |
| MaxDischargeRateAmps | number (A) | <i>read-only</i> (<i>null</i>) | The maximum discharge rate of this battery in amps. |
| Metrics { | object | | The link to the battery metrics resource associated with this battery. See the <i>BatteryMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>BatteryMetrics</i> resource. See the Links section and the <i>BatteryMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only</i> (<i>null</i>) | The model number for this battery. |
| PartNumber | string | <i>read-only</i> (<i>null</i>) | The part number for this battery. |
| ProductionDate | string (date-time) | <i>read-only</i> (<i>null</i>) | The production or manufacturing date of this battery. |
| Replaceable (<i>v1.2+</i>) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number for this battery. |
| SparePartNumber | string | <i>read-only</i> (<i>null</i>) | The spare part number for this battery. |
| StateOfHealthPercent { | object (excerpt) | | The state of health (percent) of this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |

| Property | Type | Attributes | Notes |
|------------------|--------|-----------------------------------|---|
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Version | string | <i>read-only</i> <i>(null)</i> | The hardware version of this battery. |

6.12.4 Actions

6.12.4.1 Calibrate

Description

This action performs a self-calibration, or learn cycle, of the battery.

Action URI

{Base URI of target resource}/Actions/Battery.Calibrate

Action parameters

This action takes no parameters.

6.12.4.2 Reset

Description

This action resets the battery.

Action URI

{Base URI of target resource}/Actions/Battery.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "PowerCycle"
}
```

6.12.4.3 SelfTest**Description**

This action performs a self-test of the battery.

Action URI

{Base URI of target resource}/Actions/Battery.SelfTest

Action parameters

This action takes no parameters.

6.12.5 Property details**6.12.5.1 ChargeState**

The charge state of this battery.

| string | Description |
|-------------|-----------------------------|
| Charging | The battery is charging. |
| Discharging | The battery is discharging. |
| Idle | The battery is idle. |

6.12.5.2 ResetType

The type of reset.

| string | Description |
|----------|--|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |

| string | Description |
|------------------|---|
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.12.6 Example response

```
{
  "@odata.type": "#Battery.v1_2_1.Battery",
  "Id": "Module1",
  "Name": "Battery 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Actions": {
    "#Battery.SelfTest": {
      "target": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Actions/Battery.SelfTest"
    },
    "#Battery.Calibrate": {
      "target": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Actions/Battery.Calibrate"
    }
  },
  "Location": {
    "PartLocation": {
```

```

        "ServiceLabel": "Battery 1",
        "LocationType": "Bay",
        "LocationOrdinalValue": 0
    }
},
"Model": "RKS-440DC",
"Manufacturer": "Contoso Power",
"FirmwareVersion": "1.00",
"Version": "A05",
"ProductionDate": "2019-10-01T06:00:00Z",
"SerialNumber": "3488247",
"PartNumber": "23456-133",
"SparePartNumber": "93284-133",
"LocationIndicatorActive": false,
"HotPluggable": true,
"CapacityRatedWattHours": 20,
"CapacityActualWattHours": 19.41,
"MaxDischargeRateAmps": 10,
"StateOfHealthPercent": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1StateOfHealth",
    "Reading": 91
},
"ChargeState": "Idle",
"Metrics": {
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Metrics"
},
"@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1"
}

```

6.13 BatteryMetrics 1.0.2

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.2 |

6.13.1 Description

The BatteryMetrics schema contains definitions for the metrics of a battery unit.

6.13.2 URIs

/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries/{BatteryId}/Metrics

6.13.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|---------------------|-------------------------------------|--|
| CellVoltages [{ | array (excerpt) | | The cell voltages (V) for this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| }] | | | |
| ChargePercent { } | object | | The amount of charge available (percent) in this battery. For more information about this property, see <i>SensorExcerpt</i> in Property Details. |
| DischargeCycles | number | <i>read-only</i> (<i>null</i>) | The number of discharges this battery sustained. |
| InputCurrentAmps { | object (excerpt) | | The input current (A) for this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| } | | | |
| InputVoltage { | object (excerpt) | | The input voltage (V) for this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |

| Property | Type | Attributes | Notes |
|--------------------------------|-----------------|-------------------------|--|
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only (null)</i> | The total harmonic distortion percent (% THD). |
| } | | | |
| OutputCurrentAmps [{ | array (excerpt) | | The output currents (A) for this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| CrestFactor (v1.1+) | number | <i>read-only (null)</i> | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only (null)</i> | The total harmonic distortion percent (% THD). |
| }] | | | |
| OutputVoltages [{ | array (excerpt) | | The output voltages (V) for this battery. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| CrestFactor (v1.1+) | number | <i>read-only (null)</i> | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only (null)</i> | The total harmonic distortion percent (% THD). |
| }] | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| StoredChargeAmpHours {} | object | | The charge (Ah) stored in this battery. For more information about this property, see SensorExcerpt in Property Details. |

| Property | Type | Attributes | Notes |
|---------------------------------|--------|------------|--|
| StoredEnergyWattHours {} | object | | The energy (Wh) stored in this battery. For more information about this property, see SensorExcerpt in Property Details. |
| TemperatureCelsius {} | object | | The temperature (C) for this battery. For more information about this property, see SensorExcerpt in Property Details. |

6.13.4 Property details

6.13.4.1 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|--------------|----------------------------|--|
| DataSourceUri | string (URI) | <i>read-only</i> (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (null) | The sensor value. |

6.13.5 Example response

```
{
  "@odata.type": "#BatteryMetrics.v1_0_2.BatteryMetrics",
  "Id": "Metrics",
  "Name": "Metrics for Battery 1",
  "DischargeCycles": 8.67,
  "InputVoltage": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1InputVoltage",
    "Reading": 12.22
  },
  "InputCurrentAmps": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1InputCurrent",
    "Reading": 0
  },
  "OutputVoltages": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1OutputVoltage",
      "Reading": 12.22
    }
  ]
},
```

```
"OutputCurrentAmps": [
  {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery10OutputCurrent",
    "Reading": 0
  }
],
"StoredEnergyWattHours": {
  "Reading": 19.41
},
"TemperatureCelsius": {
  "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1Temp",
  "Reading": 33
},
"ChargePercent": {
  "Reading": 100
},
"CellVoltages": [
  {
    "Reading": 3.44
  },
  {
    "Reading": 3.45
  },
  {
    "Reading": 3.43
  },
  {
    "Reading": 3.43
  },
  {
    "Reading": 3.45
  },
  {
    "Reading": 3.44
  },
  {
    "Reading": 3.43
  },
  {
    "Reading": 3.44
  }
],
"@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Metrics"
}
```

6.14 Bios 1.2.1

| | | | |
|----------------|--------|--------|--------|
| Version | v1.2 | v1.1 | v1.0 |
| Release | 2021.1 | 2019.2 | 2016.1 |

6.14.1 Description

The Bios schema contains properties related to the BIOS attribute registry. The attribute registry describes the system-specific BIOS attributes and actions for changing to BIOS settings. Changes to the BIOS typically require a system reset before they take effect. It is likely that a client finds the `@Redfish.Settings` term in this resource, and if it is found, the client makes requests to change BIOS settings by modifying the resource identified by the `@Redfish.Settings` term.

6.14.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/Bios

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.14.3 Properties

| Property | Type | Attributes | Notes |
|---|-------------------------------|-----------------------------|--|
| AttributeRegistry | string | <i>read-only</i> (null) | The resource ID of the attribute registry that has the system-specific information about a BIOS resource. |
| Attributes { | object | | The list of BIOS attributes specific to the manufacturer or provider. |
| (pattern) | string, boolean, number | <i>read-write</i> (null) | Property names follow regular expression pattern " <code>^[A-Za-z][A-Za-z0-9_]+\$</code> " |
| } | | | |
| Links (v1.1+) { | object | | The links to other resources that are related to this resource. |
| ActiveSoftwareImage (v1.1+) { | object | | The link to the software inventory that represents the active BIOS firmware image. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|---------|-------------------------------------|--|
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SoftwareImages (v1.1+) [{ | array | | The images that are associated with this BIOS. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| } | | | |
| ResetBiosToDefaultsPending (v1.2+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether there is a pending request to reset the BIOS attributes to default values. |

6.14.4 Actions

6.14.4.1 ChangePassword

Description

This action changes a BIOS password.

Action URI

{Base URI of target resource}/Actions/Bios.ChangePassword

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|-----------------|--|
| NewPassword | string | <i>required</i> | The new BIOS password. |
| OldPassword | string | <i>required</i> | The existing BIOS password. |
| PasswordName | string | <i>required</i> | The name of the BIOS password to change. |

Request Example

```
{
  "OldPassword": "secret123",
```

```
"NewPassword": "B3tt3rS3cur1tY!",
"PasswordName": "Admin"
}
```

6.14.4.2 ResetBios

Description

This action resets the BIOS attributes to default.

Action URI

{Base URI of target resource}/Actions/Bios.ResetBios

Action parameters

This action takes no parameters.

6.14.5 Example response

```
{
  "@odata.type": "#Bios.v1_2_1.Bios",
  "Id": "BIOS",
  "Name": "BIOS Configuration Current Settings",
  "AttributeRegistry": "BiosAttributeRegistryP89.v1_0_0",
  "Attributes": {
    "AdminPhone": "",
    "BootMode": "Uefi",
    "EmbeddedSata": "Raid",
    "NicBoot1": "NetworkBoot",
    "NicBoot2": "Disabled",
    "PowerProfile": "MaxPerf",
    "ProcCoreDisable": 0,
    "ProcHyperthreading": "Enabled",
    "ProcTurboMode": "Enabled",
    "UsbControl": "UsbEnabled"
  },
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_3_5.Settings",
    "ETag": "9234ac83b9700123cc32",
    "Messages": [
      {
        "MessageId": "Base.1.0.SettingsFailed",
        "RelatedProperties": [
          "/Attributes/ProcTurboMode"
        ]
      }
    ]
  }
}
```

```

        ]
      }
    ],
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/437XR1138R2/Bios/Settings"
    },
    "Time": "2016-03-07T14:44.30-05:00"
  },
  "Actions": {
    "#Bios.ResetBios": {
      "target": "/redfish/v1/Systems/437XR1138R2/Bios/Actions/Bios.ResetBios"
    },
    "#Bios.ChangePassword": {
      "target": "/redfish/v1/Systems/437XR1138R2/Bios/Actions/Bios.ChangePassword"
    }
  }
},
"@odata.id": "/redfish/v1/Systems/437XR1138R2/Bios"
}

```

6.15 BootOption 1.0.5

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2017.3 |

6.15.1 Description

The BootOption schema reports information about a single boot option in a system. It represents the properties of a bootable device available in the system.

6.15.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/BootOptions/{BootOptionId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.15.3 Properties

| Property | Type | Attributes | Notes |
|--------------|------------------|---------------------|--|
| Alias | string (enum) | read-only (null) | The alias of this boot source. <i>For the possible property values, see Alias in Property details.</i> |

| Property | Type | Attributes | Notes |
|----------------------------|-----------------|--|---|
| BootOptionEnabled | boolean | <i>read-write (null)</i> | An indication of whether the boot option is enabled. If <code>true</code> , it is enabled. If <code>false</code> , the boot option that the boot order array on the computer system contains is skipped. In the UEFI context, this property influences the load option active flag for the boot option. |
| BootOptionReference | string | <i>read-only required (null)</i> | The unique boot option. |
| DisplayName | string | <i>read-only (null)</i> | The user-readable display name of the boot option that appears in the boot order list in the user interface. |
| RelatedItem [{ | array | | An array of links to resources or objects associated with this boot option. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| UefiDevicePath | string | <i>read-only (null)</i> | The UEFI device path to access this UEFI boot option. |

6.15.4 Property details

6.15.4.1 Alias

The alias of this boot source.

| string | Description |
|-----------|--|
| BiosSetup | Boot to the BIOS setup utility. |
| Cd | Boot from the CD or DVD. |
| Diags | Boot to the manufacturer's diagnostics program. |
| Floppy | Boot from the floppy disk drive. |
| Hdd | Boot from a hard drive. |
| None | Boot from the normal boot device. |
| Pxe | Boot from the Pre-Boot EXecution (PXE) environment. |
| Recovery | Boot to a system-designated recovery process or image. |

| string | Description |
|--------------|---|
| RemoteDrive | Boot from a remote drive, such as an iSCSI target. |
| SDCard | Boot from an SD card. |
| UefiBootNext | Boot to the UEFI device that the BootNext property specifies. |
| UefiHttp | Boot from a UEFI HTTP network location. |
| UefiShell | Boot to the UEFI Shell. |
| UefiTarget | Boot to the UEFI device specified in the UefiTargetBootSourceOverride property. |
| Usb | Boot from a system BIOS-specified USB device. |
| Utilities | Boot to the manufacturer's utilities program or programs. |

6.15.5 Example response

```
{
  "@odata.type": "#BootOption.v1_0_5.BootOption",
  "Id": "1",
  "Name": "Boot Option",
  "Description": "UEFI Boot Option",
  "BootOptionReference": "Boot0000",
  "DisplayName": "Windows Boot Manager",
  "UefiDevicePath": "PciRoot(0x0)/Pci(0x1,0x0)/Pci(0x0,0x0)/Scsi(0x0,0x0)/HD(2,GPT,B02BF459-8975-4222-A1C4-179150...)",
  "Alias": "Hdd",
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Systems/1/SimpleStorage/1"
    }
  ],
  "@odata.id": "/redfish/v1/Systems/1/BootOptions/1"
}
```

6.16 Cable 1.2.1

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|
| Release | 2021.4 | 2021.3 | 2021.2 |

6.16.1 Description

The Cable schema contains properties that describe a cable connecting endpoints of a chassis, port, or any other cable-compatible endpoint.

6.16.2 URIs

/redfish/v1/Cables/{CableId}

6.16.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------|--------------------------|---|
| Assembly { | object | | The link to the assembly associated with this cable. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag for this cable. |
| CableClass | string (enum) | <i>read-write (null)</i> | The identifier for the downstream resource. <i>For the possible property values, see CableClass in Property details.</i> |
| CableStatus | string (enum) | <i>read-write</i> | The user-reported status of this resource. <i>For the possible property values, see CableStatus in Property details.</i> |
| CableType | string | <i>read-write (null)</i> | The type of this cable. |
| DownstreamConnectorTypes [] | array (string (enum)) | <i>read-write</i> | The connector types this cable supports. <i>For the possible property values, see DownstreamConnectorTypes in Property details.</i> |
| DownstreamName | string | <i>read-write (null)</i> | The identifier for the downstream resource. |
| LengthMeters | number | <i>read-write (null)</i> | The length of the cable in meters. |
| Links { | object | | The links to other resources that are related to this resource. |
| DownstreamChassis [{ | array | | An array of links to the downstream chassis connected to this cable. |

| Property | Type | Attributes | Notes |
|--------------------------------|--------------|--------------------------|--|
| @odata.id | string | <i>read-write</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| DownstreamPorts [{ | array | | An array of links to the downstream ports connected to this cable. |
| @odata.id | string | <i>read-write</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| DownstreamResources [{ | array | | An array of links to the downstream resources connected to this cable. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| UpstreamChassis [{ | array | | An array of links to the upstream chassis connected to this cable. |
| @odata.id | string | <i>read-write</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| UpstreamPorts [{ | array | | An array of links to the upstream ports connected to this cable. |
| @odata.id | string | <i>read-write</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| UpstreamResources [{ | array | | An array of links to the upstream resources connected to this cable. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the assembly. For property details, see Location. |
| Manufacturer | string | <i>read-write (null)</i> | The manufacturer of this cable. |

| Property | Type | Attributes | Notes |
|-----------------------------------|-----------------------|--------------------------|---|
| Model | string | <i>read-write (null)</i> | The model number of the cable. |
| PartNumber | string | <i>read-write (null)</i> | The part number for this cable. |
| SerialNumber | string | <i>read-write (null)</i> | The serial number for this cable. |
| SKU | string | <i>read-write (null)</i> | The SKU for this cable. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UpstreamConnectorTypes [] | array (string (enum)) | <i>read-write</i> | The connector types this cable supports. <i>For the possible property values, see UpstreamConnectorTypes in Property details.</i> |
| UpstreamName | string | <i>read-write (null)</i> | The identifier for the downstream resource. |
| UserDescription | string | <i>read-write (null)</i> | The description of this cable. |
| UserLabel (v1.1+) | string | <i>read-write</i> | A user-assigned label. |
| Vendor | string | <i>read-write (null)</i> | The manufacturer of this cable. |

6.16.4 Property details

6.16.4.1 CableClass

The identifier for the downstream resource.

| string | Description |
|---------|---|
| Fabric | This cable is used for connecting to a fabric. |
| Fan | This cable is used for connecting to a fan system. |
| General | This cable is used for providing general connectivity. |
| Network | This cable is used for connecting to a networking system. |
| PCIe | This cable is used for connecting to a PCIe endpoint. |

| string | Description |
|---------|---|
| Power | This cable is used for connecting to a power system. |
| Serial | This cable is used for connecting to a serial endpoint. |
| Storage | This cable is used for connecting to a storage system. |
| USB | This cable is used for connecting to a USB endpoint. |
| Video | This cable is used for connecting to a video system. |

6.16.4.2 CableStatus

The user-reported status of this resource.

| string | Description |
|--------------|---|
| Degraded | The cable is degraded. |
| Disabled | The cable is disabled. |
| Failed | The cable has failed. |
| Normal | The cable is operating normally. |
| SetByService | The cable status is set by the service. |
| Testing | The cable is under test. |

6.16.4.3 DownstreamConnectorTypes

The connector types this cable supports.

| string | Description |
|-------------|---|
| ACPower | This cable connects to a AC power connector. |
| CDFP | This cable connects to a CDFP connector. |
| DB9 | This cable connects to a DB9 connector. |
| DCPower | This cable connects to a DC power connector. |
| DisplayPort | This cable connects to a DisplayPort power connector. |
| HDMI | This cable connects to an HDMI connector. |

| string | Description |
|-------------|---|
| ICI | This cable connects to an ICI connector. |
| IPASS | This cable connects to an IPASS connector. |
| OSFP | This cable connects to a OSFP connector. |
| PCIe | This cable connects to a PCIe connector. |
| Proprietary | This cable connects to a proprietary connector. |
| QSFP | This cable connects to a QSFP connector. |
| RJ45 | This cable connects to an RJ45 connector. |
| SATA | This cable connects to a SATA connector. |
| SCSI | This cable connects to a SCSI connector. |
| SFP | This cable connects to a SFP connector. |
| SFPPlus | This cable connects to a SFPPlus connector. |
| SlimSAS | This cable connects to a SlimSAS connector. |
| USBA | This cable connects to a USB-A connector. |
| USBC | This cable connects to a USB-C connector. |

6.16.4.4 UpstreamConnectorTypes

The connector types this cable supports.

| string | Description |
|-------------|---|
| ACPower | This cable connects to a AC power connector. |
| CDFP | This cable connects to a CDFP connector. |
| DB9 | This cable connects to a DB9 connector. |
| DCPower | This cable connects to a DC power connector. |
| DisplayPort | This cable connects to a DisplayPort power connector. |
| HDMI | This cable connects to an HDMI connector. |
| ICI | This cable connects to an ICI connector. |
| IPASS | This cable connects to an IPASS connector. |

| string | Description |
|-------------|---|
| OSFP | This cable connects to a OSFP connector. |
| PCIe | This cable connects to a PCIe connector. |
| Proprietary | This cable connects to a proprietary connector. |
| QSFP | This cable connects to a QSFP connector. |
| RJ45 | This cable connects to an RJ45 connector. |
| SATA | This cable connects to a SATA connector. |
| SCSI | This cable connects to a SCSI connector. |
| SFP | This cable connects to a SFP connector. |
| SFPPlus | This cable connects to a SFPPlus connector. |
| SlimSAS | This cable connects to a SlimSAS connector. |
| USBA | This cable connects to a USB-A connector. |
| USBC | This cable connects to a USB-C connector. |

6.16.5 Example response

```
{
  "@odata.type": "#Cable.v1_2_1.Cable",
  "Id": "hdmi_dp",
  "Name": "HDMI to DP Cable",
  "UserDescription": "HDMI to DisplayPort Cable",
  "UpstreamName": "HDMI0",
  "DownstreamName": "Video Out",
  "CableType": "HDMI",
  "LengthMeters": 0.1,
  "CableClass": "Video",
  "UpstreamConnectorTypes": [
    "HDMI"
  ],
  "DownstreamConnectorTypes": [
    "DisplayPort"
  ],
  "Links": {
    "UpstreamChassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/bmc"
      }
    ]
  }
}
```

```

    },
    "PartNumber": "934AMS02X",
    "Manufacturer": "Cable Co.",
    "SerialNumber": "2345791",
    "Vendor": "Cablestore",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    },
    "CableStatus": "Normal",
    "@odata.id": "/redfish/v1/Cables/hdmi_dp"
  }
}

```

6.17 Certificate 1.8.0

| Version | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.1 | 2021.3 | 2021.2 | 2021.1 | 2020.1 | 2019.1 | 2018.3 |

6.17.1 Description

The Certificate schema describes a certificate that proves the identify of a component, account, or service.

6.17.2 URIs

/redfish/v1/AccountService/Accounts/{ManagerAccountId}/Certificates/{CertificateId}
 /redfish/v1/AccountService/ActiveDirectory/Certificates/{CertificateId}
 /redfish/v1/AccountService/ExternalAccountProviders/{ExternalAccountProviderId}/Certificates/{CertificateId}
 /redfish/v1/AccountService/LDAP/Certificates/{CertificateId}
 /redfish/v1/AccountService/MultiFactorAuth/ClientCertificate/Certificates/{CertificateId}
 /redfish/v1/AccountService/MultiFactorAuth/SecurID/Certificates/{CertificateId}
 /redfish/v1/AccountService/OutboundConnections/{OutboundConnectionId}/Certificates/{CertificateId}
 /redfish/v1/AccountService/OutboundConnections/{OutboundConnectionId}/ClientCertificates/{CertificateId}
 /redfish/v1/Chassis/{ChassisId}/Certificates/{CertificateId}
 /redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}/Certificates/{CertificateId}
 /redfish/v1/Chassis/{ChassisId}/Memory/{MemoryId}/Certificates/{CertificateId}
 /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Certificates/{CertificateId}
 /redfish/v1/Chassis/{ChassisId}/TrustedComponents/{TrustedComponentId}/Certificates/


```

{CertificateId}
/redfish/v1/EventService/Subscriptions/{EventDestinationId}/Certificates/{CertificateId}
/redfish/v1/EventService/Subscriptions/{EventDestinationId}/ClientCertificates/{CertificateId}
/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/NetworkProtocol/HTTPS/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts/{ManagerAccountId}/Certificates/
{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/ActiveDirectory/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/ExternalAccountProviders/
{ExternalAccountProviderId}/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/LDAP/Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/MultiFactorAuth/ClientCertificate/
Certificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/MultiFactorAuth/SecurID/Certificates/
{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/SPDM/RevokedCertificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/SPDM/TrustedCertificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Client/RevokedCertificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Client/TrustedCertificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Server/RevokedCertificates/{CertificateId}
/redfish/v1/Managers/{ManagerId}/SecurityPolicy/TLS/Server/TrustedCertificates/{CertificateId}
/redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Certificates/{CertificateId}
/redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Boot/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/KeyManagement/KMIPCertificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/
Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/
Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/Certificates/
{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/
{StorageControllerId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/Certificates/{CertificateId}
/redfish/v1/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}/ClientCertificates/
{CertificateId}
/redfish/v1/UpdateService/ClientCertificates/{CertificateId}
/redfish/v1/UpdateService/RemoteServerCertificates/{CertificateId}

```

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.17.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------------|--|---|
| CertificateString | string | <i>read-only required on create (null)</i> | The string for the certificate. |
| CertificateType | string (enum) | <i>read-only required on create (null)</i> | The format of the certificate. <i>For the possible property values, see CertificateType in Property details.</i> |
| CertificateUsageTypes (v1.4+) [] | array (string (enum)) | <i>read-only (null)</i> | The types or purposes for this certificate. <i>For the possible property values, see CertificateUsageTypes in Property details.</i> |
| Fingerprint (v1.3+) | string | <i>read-only</i> | The fingerprint of the certificate. |
| FingerprintHashAlgorithm (v1.3+) | string | <i>read-only</i> | The hash algorithm for the fingerprint of the certificate. |
| Issuer { | object | | The issuer of the certificate. |
| AdditionalCommonNames (v1.6+) [] | array (string, null) | <i>read-only</i> | Additional common names of the entity. |
| AdditionalOrganizationalUnits (v1.6+) [] | array (string, null) | <i>read-only</i> | Additional organizational units of the entity. |
| AlternativeNames (v1.7+) [] | array (string, null) | <i>read-only</i> | The additional host names of the entity. |
| City | string | <i>read-only</i> | The city or locality of the organization of the entity. |
| CommonName | string | <i>read-only</i> | The common name of the entity. |
| Country | string | <i>read-only</i> | The country of the organization of the entity. |
| DisplayString (v1.6+) | string | <i>read-only (null)</i> | A human-readable string for this identifier. |
| DomainComponents (v1.6+) [] | array (string, null) | <i>read-only</i> | The domain components of the entity. |
| Email | string | <i>read-only (null)</i> | The email address of the contact within the organization of the entity. |

| Property | Type | Attributes | Notes |
|-----------------------------------|-----------------------|-------------------------|---|
| Organization | string | <i>read-only</i> | The name of the organization of the entity. |
| OrganizationalUnit | string | <i>read-only</i> | The name of the unit or division of the organization of the entity. |
| State | string | <i>read-only</i> | The state, province, or region of the organization of the entity. |
| } | | | |
| KeyUsage [] | array (string (enum)) | <i>read-only (null)</i> | The key usage extension, which defines the purpose of the public keys in this certificate. <i>For the possible property values, see KeyUsage in Property details.</i> |
| Links (v1.4+) { | object | | The links to other resources that are related to this resource. |
| Issuer (v1.4+) { | object | (null) | A link to the certificate of the CA that issued this certificate. |
| @odata.id | string | <i>read-write</i> | Link to another Certificate resource. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Subjects (v1.4+) [{ | array | | An array of links to certificates that were issued by the CA that is represented by this certificate. |
| @odata.id | string | <i>read-write</i> | Link to another Certificate resource. |
| }] | | | |
| } | | | |
| SerialNumber (v1.3+) | string | <i>read-only</i> | The serial number of the certificate. |
| SignatureAlgorithm (v1.3+) | string | <i>read-only</i> | The algorithm used for creating the signature of the certificate. |
| SPDM (v1.5+) { | object | (null) | SPDM-related information for the certificate. |
| SlotId (v1.5+) | integer | <i>read-only (null)</i> | Slot identifier of the certificate. |
| } | | | |
| Subject { | object | | The subject of the certificate. |

| Property | Type | Attributes | Notes |
|---|----------------------------|-------------------------------------|---|
| AdditionalCommonNames (v1.6+) [] | array (string, null) | <i>read-only</i> | Additional common names of the entity. |
| AdditionalOrganizationalUnits (v1.6+) [] | array (string, null) | <i>read-only</i> | Additional organizational units of the entity. |
| AlternativeNames (v1.7+) [] | array (string, null) | <i>read-only</i> | The additional host names of the entity. |
| City | string | <i>read-only</i> | The city or locality of the organization of the entity. |
| CommonName | string | <i>read-only</i> | The common name of the entity. |
| Country | string | <i>read-only</i> | The country of the organization of the entity. |
| DisplayString (v1.6+) | string | <i>read-only</i> (<i>null</i>) | A human-readable string for this identifier. |
| DomainComponents (v1.6+) [] | array (string, null) | <i>read-only</i> | The domain components of the entity. |
| Email | string | <i>read-only</i> (<i>null</i>) | The email address of the contact within the organization of the entity. |
| Organization | string | <i>read-only</i> | The name of the organization of the entity. |
| OrganizationalUnit | string | <i>read-only</i> | The name of the unit or division of the organization of the entity. |
| State | string | <i>read-only</i> | The state, province, or region of the organization of the entity. |
| } | | | |
| UefiSignatureOwner (v1.2+) | string (uuid) | <i>read-only</i> (<i>null</i>) | The UEFI signature owner for this certificate. |
| ValidNotAfter | string (date-time) | <i>read-only</i> | The date when the certificate is no longer valid. |
| ValidNotBefore | string (date-time) | <i>read-only</i> | The date when the certificate becomes valid. |

6.17.4 Actions

6.17.4.1 Rekey (v1.1+)

Description

This action generates a new key-pair for a certificate and produces a certificate signing request.

Action URI

{Base URI of target resource}/Actions/Certificate.Rekey

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|---------|-----------------|--|
| ChallengePassword | string | <i>optional</i> | The challenge password to apply to the certificate for revocation requests. |
| KeyBitLength | integer | <i>optional</i> | The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value. |
| KeyCurveId | string | <i>optional</i> | The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value. |
| KeyPairAlgorithm | string | <i>optional</i> | The type of key-pair for use with signing algorithms. |

Response Payload

| | | | |
|---------------------------------|--------|-------------------------------------|---|
| { | | | |
| Certificate (v1.1+) { | object | <i>required</i> | The link to the certificate being rekeyed. |
| @odata.id | string | <i>read-only</i> | Link to another Certificate resource. |
| } | | | |
| CSRString (v1.1+) | string | <i>read-only</i> <i>required</i> | The string for the certificate signing request. |
| } | | | |

Request Example

```
{
  "KeyPairAlgorithm": "TPM_ALG_RSA",
  "KeyBitLength": 4096
}
```

Response Example

```
{
  "CSRString": "-----BEGIN CERTIFICATE REQUEST-----END CERTIFICATE REQUEST-----",
  "Certificate": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
  }
}
```

6.17.4.2 Renew (v1.1+)

Description

This action generates a certificate signing request by using the existing information and key-pair of the certificate.

Action URI

{Base URI of target resource}/Actions/Certificate.Renew

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|--------|-----------------|---|
| ChallengePassword | string | <i>optional</i> | The challenge password to apply to the certificate for revocation requests. |

Response Payload

| | | | |
|---------------------------------|--------|-----------------|--|
| Certificate (v1.1+) { | object | <i>required</i> | The link to the certificate being renewed. |
|---------------------------------|--------|-----------------|--|

| | | | |
|-----------------------------|--------|---------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to another Certificate resource. |
| } | | | |
| CSRString (v1.1+) | string | <i>read-only required</i> | The string for the certificate signing request. |
| } | | | |

Request Example

```
{
  "ChallengePassword": "p4ssw0rd"
}
```

Response Example

```
{
  "CSRString": "-----BEGIN CERTIFICATE REQUEST-----END CERTIFICATE REQUEST-----",
  "Certificate": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
  }
}
```

6.17.5 Property details

6.17.5.1 CertificateType

The format of the certificate.

| string | Description |
|------------------|---|
| PEM | A Privacy Enhanced Mail (PEM)-encoded single certificate. |
| PEMchain (v1.4+) | A Privacy Enhanced Mail (PEM)-encoded certificate chain. |
| PKCS7 | A Privacy Enhanced Mail (PEM)-encoded PKCS7 certificate. |

6.17.5.2 CertificateUsageTypes

The types or purposes for this certificate.

| string | Description |
|----------|--|
| BIOS | This certificate is a BIOS certificate like those associated with UEFI. |
| Device | This certificate is a device type certificate like those associated with SPDM and other standards. |
| IAK | This certificate is an IAK certificate like those associated with TCG TPMs. |
| IDevid | This certificate is an IDevid certificate like those associated with TCG TPMs. |
| LAK | This certificate is an LAK certificate like those associated with TCG TPMs. |
| LDevid | This certificate is an LDevid certificate like those associated with TCG TPMs. |
| Platform | This certificate is a platform type certificate like those associated with SPDM and other standards. |
| SSH | This certificate is used for SSH. |
| User | This certificate is a user certificate like those associated with a manager account. |
| Web | This certificate is a web or HTTPS certificate like those used for event destinations. |

6.17.5.3 KeyUsage

The key usage extension, which defines the purpose of the public keys in this certificate.

| string | Description |
|----------------------|--|
| ClientAuthentication | TLS WWW client authentication. |
| CodeSigning | Signs downloadable executable code. |
| CRLSigning | Verifies signatures on certificate revocation lists (CRLs). |
| DataEncipherment | Directly enciphers raw user data without an intermediate symmetric cipher. |
| DecipherOnly | Deciphers data while performing a key agreement. |
| DigitalSignature | Verifies digital signatures, other than signatures on certificates and CRLs. |
| EmailProtection | Email protection. |

| string | Description |
|----------------------|---|
| EncipherOnly | Enciphers data while performing a key agreement. |
| KeyAgreement | Key agreement. |
| KeyCertSign | Verifies signatures on public key certificates. |
| KeyEncipherment | Enciphers private or secret keys. |
| NonRepudiation | Verifies digital signatures, other than signatures on certificates and CRLs, and provides a non-repudiation service that protects against the signing entity falsely denying some action. |
| OCSPSigning | Signs OCSP responses. |
| ServerAuthentication | TLS WWW server authentication. |
| Timestamping | Binds the hash of an object to a time. |

6.17.6 Example response

```
{
  "@odata.type": "#Certificate.v1_8_0.Certificate",
  "Id": "1",
  "Name": "HTTPS Certificate",
  "CertificateString": "-----BEGIN CERTIFICATE-----\nMIIIFsTCC [*truncated*] GXG5zljlu\n-----END CERTIFICATE-----",
  "CertificateType": "PEM",
  "Issuer": {
    "Country": "US",
    "State": "Oregon",
    "City": "Portland",
    "Organization": "Contoso",
    "OrganizationalUnit": "ABC",
    "CommonName": "manager.contoso.org"
  },
  "Subject": {
    "Country": "US",
    "State": "Oregon",
    "City": "Portland",
    "Organization": "Contoso",
    "OrganizationalUnit": "ABC",
    "CommonName": "manager.contoso.org"
  },
  "ValidNotBefore": "2018-09-07T13:22:05Z",
  "ValidNotAfter": "2019-09-07T13:22:05Z",
  "KeyUsage": [
    "KeyEncipherment",
    "ServerAuthentication"
  ],
}
```

```

"SerialNumber": "5d:7a:d8:df:f6:fc:c1:b3:ca:fe:fb:cc:38:f3:01:64:51:ea:05:cb",
"Fingerprint": "A6:E9:D2:5C:DC:52:DA:4B:3B:14:97:F3:A4:53:D9:99:A1:0B:56:41",
"FingerprintHashAlgorithm": "TPM_ALG_SHA1",
"SignatureAlgorithm": "sha256WithRSAEncryption",
"@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
}

```

6.18 CertificateLocations 1.0.2

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2018.3 |

6.18.1 Description

The CertificateLocations schema describes a Resource that an administrator can use in order to locate all certificates installed on a given service.

6.18.2 URIs

/redfish/v1/CertificateService/CertificateLocations

6.18.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|--------|------------------|--|
| Links { | object | | The links to other Resources that are related to this Resource. |
| Certificates [| array | | An array of links to the certificates installed on this service. |
| { | | | |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |

6.18.4 Example response

```
{
  "@odata.type": "#CertificateLocations.v1_0_2.CertificateLocations",
  "Id": "CertificateLocations",
  "Name": "Certificate Locations",
  "Links": {
    "Certificates": [
      {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
}
```

6.19 CertificateService 1.0.4

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2018.3 |

6.19.1 Description

The CertificateService schema describes a certificate service that represents the actions available to manage certificates and links to the certificates.

6.19.2 URIs

/redfish/v1/CertificateService

6.19.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|--------|------------------|--|
| CertificateLocations { | object | | The information about the location of certificates. See the <i>CertificateLocations</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a CertificateLocations resource. See the Links section and the <i>CertificateLocations</i> schema for details. |

| Property | Type | Attributes | Notes |
|----------|------|------------|-------|
| } | | | |

6.19.4 Actions

6.19.4.1 GenerateCSR

Description

This action makes a certificate signing request.

Action URI

{Base URI of target resource}/Actions/CertificateService.GenerateCSR

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------------|----------------|------------------|--|
| AlternativeNames [] | array (string) | <i>optional</i> | The additional host names of the component to secure. |
| CertificateCollection { | object | <i>required</i> | The link to the certificate collection where the certificate is installed after the certificate authority (CA) signs the certificate. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ChallengePassword | string | <i>optional</i> | The challenge password to apply to the certificate for revocation requests. |
| City | string | <i>required</i> | The city or locality of the organization making the request. |
| CommonName | string | <i>required</i> | The fully qualified domain name of the component to secure. |
| ContactPerson | string | <i>optional</i> | The name of the user making the request. |
| Country | string | <i>required</i> | The two-letter country code of the organization making the request. |
| Email | string | <i>optional</i> | The email address of the contact within the organization making the request. |
| GivenName | string | <i>optional</i> | The given name of the user making the request. |
| Initials | string | <i>optional</i> | The initials of the user making the request. |

| Parameter Name | Type | Attributes | Notes |
|---------------------------|-----------------------|-------------------|---|
| KeyBitLength | integer | <i>optional</i> | The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value. |
| KeyCurveId | string | <i>optional</i> | The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value. |
| KeyPairAlgorithm | string | <i>optional</i> | The type of key-pair for use with signing algorithms. |
| KeyUsage [] | array (string (enum)) | <i>read-write</i> | The usage of the key contained in the certificate. <i>For the possible property values, see KeyUsage in Property details.</i> |
| Organization | string | <i>required</i> | The name of the organization making the request. |
| OrganizationalUnit | string | <i>required</i> | The name of the unit or division of the organization making the request. |
| State | string | <i>required</i> | The state, province, or region of the organization making the request. |
| Surname | string | <i>optional</i> | The surname of the user making the request. |
| UnstructuredName | string | <i>optional</i> | The unstructured name of the subject. |

Response Payload

| | | | |
|------------------------------|--------|---------------------------|---|
| { | | | |
| CertificateCollection | object | <i>required</i> | The link to the certificate collection where the certificate is installed. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| CSRString | string | <i>read-only required</i> | The string for the certificate signing request. |
| } | | | |

Request Example

```
{
  "Country": "US",
  "State": "Oregon",
}
```

```

    "City": "Portland",
    "Organization": "Contoso",
    "OrganizationalUnit": "ABC",
    "CommonName": "manager.contoso.org",
    "AlternativeNames": [
      "manager.contoso.org",
      "manager.contoso.com",
      "manager.contoso.us"
    ],
    "Email": "admin@contoso.org",
    "KeyPairAlgorithm": "TPM_ALG_RSA",
    "KeyBitLength": 4096,
    "KeyUsage": [
      "KeyEncipherment",
      "ServerAuthentication"
    ],
    "CertificateCollection": {
      "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates"
    }
  }
}

```

Response Example

```

{
  "CSRString": "-----BEGIN CERTIFICATE REQUEST-----.....-END CERTIFICATE REQUEST-----",
  "CertificateCollection": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates"
  }
}

```

6.19.4.2 ReplaceCertificate

Description

This action replaces a certificate.

Action URI

{Base URI of target resource}/Actions/CertificateService.ReplaceCertificate

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|---------------|------------------|---|
| CertificateString | string | <i>required</i> | The string for the certificate. |
| CertificateType | string (enum) | <i>required</i> | The format of the certificate. <i>For the possible property values, see CertificateType in Property details.</i> |
| CertificateUri { | object | <i>required</i> | The link to the certificate that is being replaced. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |
| } | | | |

Request Example

```

{
  "CertificateUri": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
  },
  "CertificateString": "-----BEGIN CERTIFICATE-----\n...\n-----END CERTIFICATE-----",
  "CertificateType": "PEM"
}

```

6.19.5 Property details

6.19.5.1 CertificateType

The format of the certificate.

| string | Description |
|----------|---|
| PEM | A Privacy Enhanced Mail (PEM)-encoded single certificate. |
| PEMchain | A Privacy Enhanced Mail (PEM)-encoded certificate chain. |
| PKCS7 | A Privacy Enhanced Mail (PEM)-encoded PKCS7 certificate. |

6.19.5.2 KeyUsage

The usage of the key contained in the certificate.

| string | Description |
|----------------------|---|
| ClientAuthentication | TLS WWW client authentication. |
| CodeSigning | Signs downloadable executable code. |
| CRLSigning | Verifies signatures on certificate revocation lists (CRLs). |
| DataEncipherment | Directly enciphers raw user data without an intermediate symmetric cipher. |
| DecipherOnly | Deciphers data while performing a key agreement. |
| DigitalSignature | Verifies digital signatures, other than signatures on certificates and CRLs. |
| EmailProtection | Email protection. |
| EncipherOnly | Enciphers data while performing a key agreement. |
| KeyAgreement | Key agreement. |
| KeyCertSign | Verifies signatures on public key certificates. |
| KeyEncipherment | Enciphers private or secret keys. |
| NonRepudiation | Verifies digital signatures, other than signatures on certificates and CRLs, and provides a non-repudiation service that protects against the signing entity falsely denying some action. |
| OCSPSigning | Signs OCSP responses. |
| ServerAuthentication | TLS WWW server authentication. |
| Timestamping | Binds the hash of an object to a time. |

6.19.6 Example response

```
{
  "@odata.type": "#CertificateService.v1_0_4.CertificateService",
  "Id": "CertificateService",
  "Name": "Certificate Service",
  "Actions": {
    "#CertificateService.GenerateCSR": {
      "target": "/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR",
      "@Redfish.ActionInfo": "/redfish/v1/CertificateService/GenerateCSRActionInfo"
    },
    "#CertificateService.ReplaceCertificate": {
      "target": "/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate",
      "@Redfish.ActionInfo": "/redfish/v1/CertificateService/ReplaceCertificateActionInfo"
    }
  },
  "CertificateLocations": {
```



```

      "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
    },
    "@odata.id": "/redfish/v1/CertificateService"
  }

```

6.20 Chassis 1.24.0

| Version | v1.24 | v1.23 | v1.22 | v1.21 | v1.20 | v1.19 | v1.18 | v1.17 | v1.16 | v1.15 | v1.14 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.2 | 2023.1 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.3 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | ... |

6.20.1 Description

The Chassis schema represents the physical components of a system. This resource represents the sheet-metal confined spaces and logical zones such as racks, enclosures, chassis and all other containers. Subsystems, such as sensors, that operate outside of a system's data plane are linked either directly or indirectly through this resource. A subsystem that operates outside of a system's data plane are not accessible to software that runs on the system. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.20.2 URIs

`/redfish/v1/Chassis/{ChassisId}`

6.20.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------|--------|--------------------------|---|
| Assembly (v1.6+) { | object | | The link to the assembly associated with this chassis. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag of this chassis. |

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|-------------------------------|--|
| Certificates (v1.15+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ChassisType | string (enum) | <i>read-only required</i> | The type of physical form factor of the chassis. <i>For the possible property values, see ChassisType in Property details.</i> |
| Controls (v1.17+) { | object | | The link to the collection of controls located in this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Control</i> . See the Control schema for details. |
| } | | | |
| DepthMm (v1.4+) | number (mm) | <i>read-only (null)</i> | The depth of the chassis. |
| Doors (v1.24+) { | object | | The doors or access panels of the chassis. |
| Front (v1.24+) { | object | <i>(null)</i> | The front door of the chassis. |
| DoorState (v1.24+) | string (enum) | <i>read-only (null)</i> | The state of the door. <i>For the possible property values, see DoorState in Property details.</i> |
| Locked (v1.24+) | boolean | <i>read-write (null)</i> | Indicates if the door is locked. |
| UserLabel (v1.24+) | string | <i>read-write</i> | A user-assigned label. |
| } | | | |
| Rear (v1.24+) { | object | <i>(null)</i> | The rear door of the chassis. |
| DoorState (v1.24+) | string (enum) | <i>read-only (null)</i> | The state of the door. <i>For the possible property values, see DoorState in Property details.</i> |
| Locked (v1.24+) | boolean | <i>read-write (null)</i> | Indicates if the door is locked. |
| UserLabel (v1.24+) | string | <i>read-write</i> | A user-assigned label. |
| } | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|---|----------------------------|--------------------------|---|
| Drives (v1.14+) { | object | | The link to the collection of drives within this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Drive</i> . See the Drive schema for details. |
| } | | | |
| ElectricalSourceManagerURIs (v1.18+) [] | array (URI) (string, null) | <i>read-write</i> | The URIs of the management interfaces for the upstream electrical source connections for this chassis. |
| ElectricalSourceNames (v1.18+) [] | array (string, null) | <i>read-write</i> | The names of the upstream electrical sources, such as circuits or outlets, connected to this chassis. |
| EnvironmentalClass (v1.9+) | string (enum) | <i>read-write (null)</i> | The ASHRAE Environmental Class for this chassis. <i>For the possible property values, see EnvironmentalClass in Property details.</i> |
| EnvironmentMetrics (v1.15+) { | object | | The link to the environment metrics for this chassis. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FabricAdapters (v1.20+) { | object | | The link to the collection of fabric adapters located in this chassis that provide access to fabric-related resource pools. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>FabricAdapter</i> . See the FabricAdapter schema for details. |
| } | | | |
| HeightMm (v1.4+) | number (mm) | <i>read-only (null)</i> | The height of the chassis. |
| HotPluggable (v1.21+) | boolean | <i>read-only (null)</i> | An indication of whether this component can be inserted or removed while the equipment is in operation. |
| IndicatorLED (deprecated v1.14) | string (enum) | <i>read-write (null)</i> | The state of the indicator LED, which identifies the chassis. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.14 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| Cables (v1.17+) [{ | array | | An array of links to the cables connected to this chassis. |

| Property | Type | Attributes | Notes |
|---|-----------------|-------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Cable resource. See the Links section and the <i>Cable</i> schema for details. |
| }] | | | |
| ComputerSystems [{ | array | | An array of links to the computer systems that this chassis directly and wholly contains. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |
| ConnectedCoolingLoops (v1.23+) [{ | array | | An array of links to cooling loops connected to this chassis. |
| @odata.id | string | <i>read-write</i> | Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| }] | | | |
| ContainedBy { | object | | The link to the chassis that contains this chassis. |
| @odata.id | string | <i>read-write</i> | Link to another Chassis resource. |
| } | | | |
| Contains [{ | array | | An array of links to any other chassis that this chassis has in it. |
| @odata.id | string | <i>read-write</i> | Link to another Chassis resource. |
| }] | | | |
| CooledBy (<i>deprecated</i> v1.20) [{ | array | | An array of links to resources or objects that cool this chassis. Normally, the link is for either a chassis or a specific set of fans. <i>Deprecated in v1.20 and later. This property has been deprecated in favor of the Fans link property, and details provided in the ThermalSubsystem resource.</i> |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| CoolingUnits (v1.23+) [{ | array | | An arrays of links to cooling unit functionality contained in this chassis. |
| @odata.id | string | <i>read-write</i> | Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|--------|------------|---|
| Drives (v1.2+) [{ | array | | An array of links to the drives located in this chassis. |
| @odata.id | string | read-only | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| Facility (v1.11+) { | object | | The link to the facility that contains this chassis. See the <i>Facility</i> schema for details on this property. |
| @odata.id | string | read-write | Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details. |
| } | | | |
| Fans (v1.20+) [{ | array | | An array of links to the fans that cool this chassis. |
| @odata.id | string | read-only | Link to a Fan resource. See the Links section and the <i>Fan</i> schema for details. |
| }] | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this chassis. |
| @odata.id | string | read-only | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| ManagersInChassis (v1.2+) [{ | array | | An array of links to the managers located in this chassis. |
| @odata.id | string | read-only | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCIeDevices (v1.4+, deprecated v1.10) [{ | array | | An array of links to the PCIe devices located in this chassis. <i>Deprecated in v1.10 and later. This property has been deprecated in favor of the PCIeDevices resource collection in the root of this resource.</i> |
| @odata.id | string | read-only | Link to a PCIeDevice resource. See the Links section and the <i>PCIeDevice</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|-----------------|------------|---|
| PowerDistribution (v1.20+) { | object | (null) | A link to power distribution functionality contained in this chassis. See the <i>PowerDistribution</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| } | | | |
| PoweredBy (deprecated v1.20) [{ | array | | An array of links to resources or objects that power this chassis. Normally, the link is for either a chassis or a specific set of power supplies. <i>Deprecated in v1.20 and later. This property has been deprecated in favor of the PowerOutlets and PowerSupplies link properties, and details provided in the PowerSubsystem resource.</i> |
| @odata.id | string (URI) | read-only | The unique identifier for a resource. |
| }] | | | |
| PowerOutlets (v1.18+) [{ | array | | An array of links to the outlets that provide power to this chassis. |
| @odata.id | string | read-write | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| }] | | | |
| PowerSupplies (v1.20+) [{ | array | | An array of links to the power supplies that provide power to this chassis. |
| @odata.id | string | read-only | Link to a PowerSupply resource. See the Links section and the <i>PowerSupply</i> schema for details. |
| }] | | | |
| Processors (v1.9+) [{ | array | | An array of links to the processors located in this chassis. |
| @odata.id | string | read-only | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| ResourceBlocks (v1.5+) [{ | array | | An array of links to the resource blocks located in this chassis. |
| @odata.id | string | read-only | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|----------------|--------------------------|---|
| Storage (v1.2+) [{ | array | | An array of links to the storage subsystems connected to or inside this chassis. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| }] | | | |
| Switches (v1.7+) [{ | array | | An array of links to the switches located in this chassis. |
| @odata.id | string | <i>read-only</i> | Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details. |
| }] | | | |
| } | | | |
| Location (v1.2+) { } | object | | The location of the chassis. For property details, see Location. |
| LocationIndicatorActive (v1.14+) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| LogServices { | object | | The link to the logs for this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LogService</i> . See the LogService schema for details. |
| } | | | |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this chassis. |
| MaxPowerWatts (v1.12+) | number (Watts) | <i>read-only (null)</i> | The upper bound of the total power consumed by the chassis. |
| Measurements (v1.15+, deprecated v1.19) [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.19 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| MediaControllers (v1.11+, deprecated v1.20) { | object | | The link to the collection of media controllers located in this chassis. Contains a link to a resource. <i>Deprecated in v1.20 and later. This property has been deprecated in favor of FabricAdapters.</i> |

| Property | Type | Attributes | Notes |
|----------------------------------|----------------|-------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MediaController</i> . See the <i>MediaController</i> schema for details. |
| } | | | |
| Memory (v1.11+) { | object | | The link to the collection of memory located in this chassis that belong to fabric-related resource pools. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Memory</i> . See the <i>Memory</i> schema for details. |
| } | | | |
| MemoryDomains (v1.11+) { | object | | The link to the collection of memory domains located in this chassis that belong to fabric-related resource pools. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MemoryDomain</i> . See the <i>MemoryDomain</i> schema for details. |
| } | | | |
| MinPowerWatts (v1.12+) | number (Watts) | <i>read-only</i> (<i>null</i>) | The lower bound of the total power consumed by the chassis. |
| Model | string | <i>read-only</i> (<i>null</i>) | The model number of the chassis. |
| NetworkAdapters (v1.4+) { | object | | The link to the collection of network adapters associated with this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkAdapter</i> . See the <i>NetworkAdapter</i> schema for details. |
| } | | | |
| PartNumber | string | <i>read-only</i> (<i>null</i>) | The part number of the chassis. |
| PCIeDevices (v1.10+) { | object | | The link to the collection of PCIe devices located in this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PCIeDevice</i> . See the <i>PCIeDevice</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|---------------|--------------------------|---|
| PCleSlots (v1.8+, deprecated v1.24) { | object | | The link to the PCIe slot properties for this chassis. See the <i>PCleSlots</i> schema for details on this property. <i>Deprecated in v1.24 and later. This property has been deprecated in favor of the PCleDevices property. The PCleSlots schema has been deprecated in favor of the PCleDevice schema. Empty PCIe slots are represented by PCleDevice resources using the Absent value of the State property within Status.</i> |
| @odata.id | string | <i>read-only</i> | Link to a PCIeSlots resource. See the Links section and the <i>PCleSlots</i> schema for details. |
| } | | | |
| PhysicalSecurity (v1.1+) { | object | | The physical security state of the chassis. |
| IntrusionSensor (v1.1+) | string (enum) | <i>read-write (null)</i> | The physical security state of the chassis, such as if hardware intrusion is detected. <i>For the possible property values, see IntrusionSensor in Property details.</i> |
| IntrusionSensorNumber (v1.1+, deprecated v1.22) | integer | <i>read-only (null)</i> | A numerical identifier to represent the physical security sensor. <i>Deprecated in v1.22 and later. This property has been deprecated in order to allow for multiple physical sensors to construct this object.</i> |
| IntrusionSensorReArm (v1.1+) | string (enum) | <i>read-only (null)</i> | The policy that describes how the physical security state of the chassis returns to a normal state. <i>For the possible property values, see IntrusionSensorReArm in Property details.</i> |
| } | | | |
| Power (deprecated v1.15) { | object | | The link to the power properties, or power supplies, power policies, and sensors, for this chassis. See the <i>Power</i> schema for details on this property. <i>Deprecated in v1.15 and later. This link has been deprecated in favor of the PowerSubsystem link property.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Power resource. See the Links section and the <i>Power</i> schema for details. |
| } | | | |
| PoweredByParent (v1.20+) | boolean | <i>read-only (null)</i> | Indicates that the chassis receives power from the containing chassis. |
| PowerState (v1.0.1+) | string (enum) | <i>read-only (null)</i> | The current power state of the chassis. <i>For the possible property values, see PowerState in Property details.</i> |
| PowerSubsystem (v1.15+) { | object | | The link to the power subsystem properties for this chassis. See the <i>PowerSubsystem</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|-------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a PowerSubsystem resource. See the Links section and the <i>PowerSubsystem</i> schema for details. |
| } | | | |
| Processors (v1.22+) { | object | | The link to the collection of processors located in this chassis that belong to fabric-related resource pools. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Processor</i> . See the Processor schema for details. |
| } | | | |
| Replaceable (v1.21+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| Sensors (v1.9+) { | object | | The link to the collection of sensors located in the equipment and sub-components. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Sensor</i> . See the Sensor schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number of the chassis. |
| SKU | string | <i>read-only</i> (<i>null</i>) | The SKU of the chassis. |
| SparePartNumber (v1.16+) | string | <i>read-only</i> (<i>null</i>) | The spare part number of the chassis. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Thermal (deprecated v1.15) { | object | | The link to the thermal properties, such as fans, cooling, and sensors, for this chassis. See the <i>Thermal</i> schema for details on this property. <i>Deprecated in v1.15 and later. This link has been deprecated in favor of the ThermalSubsystem link property.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Thermal resource. See the Links section and the <i>Thermal</i> schema for details. |
| } | | | |
| ThermalDirection (v1.20+) | string (enum) | <i>read-only</i> (<i>null</i>) | Indicates the thermal management path through the chassis. <i>For the possible property values, see ThermalDirection in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|------------------|----------------------------|---|
| ThermalManagedByParent (v1.20+) | boolean | <i>read-only</i> (null) | Indicates that the chassis is thermally managed by the parent chassis. |
| ThermalSubsystem (v1.15+) { | object | | The link to the thermal subsystem properties for this chassis. See the <i>ThermalSubsystem</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ThermalSubsystem resource. See the Links section and the <i>ThermalSubsystem</i> schema for details. |
| } | | | |
| TrustedComponents (v1.21+) { | object | | The link to the trusted components in this chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>TrustedComponent</i> . See the TrustedComponent schema for details. |
| } | | | |
| UUID (v1.7+) | string (uuid) | <i>read-only</i> (null) | The UUID for this chassis. |
| Version (v1.21+) | string | <i>read-only</i> (null) | The hardware version of this chassis. |
| WeightKg (v1.4+) | number (kg) | <i>read-only</i> (null) | The weight of the chassis. |
| WidthMm (v1.4+) | number (mm) | <i>read-only</i> (null) | The width of the chassis. |

6.20.4 Actions

6.20.4.1 Reset

Description

This action resets the chassis. Additionally, it could reset systems or other contained resources depending on the ResetType used to invoke this action.

Action URI

{Base URI of target resource}/Actions/Chassis.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ForceRestart"
}
```

6.20.5 Property details

6.20.5.1 ChassisType

The type of physical form factor of the chassis.

| string | Description |
|------------------------|--|
| Blade | An enclosed or semi-enclosed, typically vertically-oriented, system chassis that must be plugged into a multi-system chassis to function normally. |
| Card | A loose device or circuit board intended to be installed in a system or other enclosure. |
| Cartridge | A small self-contained system intended to be plugged into a multi-system chassis. |
| Component | A small chassis, card, or device that contains devices for a particular subsystem or function. |
| Drawer | An enclosed or semi-enclosed, typically horizontally-oriented, system chassis that can be slid into a multi-system chassis. |
| Enclosure | A generic term for a chassis that does not fit any other description. |
| Expansion | A chassis that expands the capabilities or capacity of another chassis. |
| HeatExchanger (v1.23+) | A heat exchanger. |
| ImmersionTank (v1.23+) | An immersion cooling tank. |
| IPBasedDrive (v1.3+) | A chassis in a drive form factor with IP-based network connections. |
| Module | A small, typically removable, chassis or card that contains devices for a particular subsystem or function. |
| Other | A chassis that does not fit any of these definitions. |

| string | Description |
|--------------------------|--|
| Pod | A collection of equipment racks in a large, likely transportable, container. |
| Rack | An equipment rack, typically a 19-inch wide freestanding unit. |
| RackGroup (v1.4+) | A group of racks that form a single entity or share infrastructure. |
| RackMount | A single-system chassis designed specifically for mounting in an equipment rack. |
| Row | A collection of equipment racks. |
| Shelf | An enclosed or semi-enclosed, typically horizontally-oriented, system chassis that must be plugged into a multi-system chassis to function normally. |
| Sidecar | A chassis that mates mechanically with another chassis to expand its capabilities or capacity. |
| Sled | An enclosed or semi-enclosed, system chassis that must be plugged into a multi-system chassis to function normally similar to a blade type chassis. |
| StandAlone | A single, free-standing system, commonly called a tower or desktop chassis. |
| StorageEnclosure (v1.6+) | A chassis that encloses storage. |
| Zone | A logical division or portion of a physical chassis that contains multiple devices or systems that cannot be physically separated. |

6.20.5.2 DoorState

The state of the door.

| string | Description |
|---------------|----------------------------|
| Closed | Door is closed. |
| Locked | Door is closed and locked. |
| LockedAndOpen | Door is open and locked. |
| Open | Door is open. |

6.20.5.3 EnvironmentalClass

The ASHRAE Environmental Class for this chassis.

| string | Description |
|--------|----------------------------------|
| A1 | ASHRAE Environmental Class 'A1'. |
| A2 | ASHRAE Environmental Class 'A2'. |
| A3 | ASHRAE Environmental Class 'A3'. |
| A4 | ASHRAE Environmental Class 'A4'. |

6.20.5.4 IndicatorLED

The state of the indicator LED, which identifies the chassis.

| string | Description |
|------------------------------------|--|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |
| Unknown (<i>deprecated v1.2</i>) | The state of the indicator LED cannot be determined. <i>Deprecated in v1.2 and later. This value has been deprecated in favor of returning null if the state is unknown.</i> |

6.20.5.5 IntrusionSensor

The physical security state of the chassis, such as if hardware intrusion is detected.

| string | Description |
|-------------------|--|
| HardwareIntrusion | A door, lock, or other mechanism protecting the internal system hardware from being accessed is detected to be in an insecure state. |
| Normal | No physical security condition is detected at this time. |
| TamperingDetected | Physical tampering of the monitored entity is detected. |

6.20.5.6 IntrusionSensorReArm

The policy that describes how the physical security state of the chassis returns to a normal state.

| string | Description |
|-----------|--|
| Automatic | The sensor is automatically restored to the normal state when no security condition is detected. |
| Manual | A user is required to clear the sensor to restore it to the normal state. |

6.20.5.7 PowerState

The current power state of the chassis.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.20.5.8 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |

| string | Description |
|-----------------|---|
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.20.5.9 ThermalDirection

Indicates the thermal management path through the chassis.

| string | Description |
|-------------|--|
| BackToFront | A chassis with the air intake in the back and exhaust out the front. |
| FrontToBack | A chassis with the air intake in the front and exhaust out the back. |
| Sealed | A sealed chassis with no air pathway. |
| TopExhaust | A chassis with air exhaust on the top. |

6.20.6 Example response

```
{
  "@odata.type": "#Chassis.v1_24_0.Chassis",
  "Id": "1U",
  "Name": "Computer System Chassis",
  "ChassisType": "RackMount",
  "AssetTag": "Chicago-45Z-2381",
  "Manufacturer": "Contoso",
  "Model": "3500RX",
  "SKU": "8675309",
  "SerialNumber": "437XR1138R2",
  "PartNumber": "224071-J23",
  "PowerState": "On",
  "LocationIndicatorActive": true,
  "Location": {
```



```
    "Placement": {
      "Row": "North",
      "Rack": "WEB43",
      "RackOffsetUnits": "EIA_310",
      "RackOffset": 12
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "HeightMm": 44.45,
  "WidthMm": 431.8,
  "DepthMm": 711,
  "WeightKg": 15.31,
  "EnvironmentalClass": "A3",
  "Sensors": {
    "@odata.id": "/redfish/v1/Chassis/1U/Sensors"
  },
  "PowerSubsystem": {
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem"
  },
  "ThermalSubsystem": {
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem"
  },
  "EnvironmentMetrics": {
    "@odata.id": "/redfish/v1/Chassis/1U/EnvironmentMetrics"
  },
  "Links": {
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/BMC"
      }
    ],
    "ManagersInChassis": [
      {
        "@odata.id": "/redfish/v1/Managers/BMC"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Chassis/1U"
}
```

6.21 Circuit 1.7.0

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2022.1 | 2021.4 | 2021.3 | 2021.2 | 2020.4 | 2020.3 | 2019.4 |

6.21.1 Description

This is the schema definition for an electrical circuit.

6.21.2 URIs

```

/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Mains/{CircuitId}
/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Mains/{CircuitId}
/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Subfeeds/{CircuitId}
/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Mains/{CircuitId}
/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Mains/{CircuitId}
/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Feeders/{CircuitId}
/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Mains/{CircuitId}
/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Subfeeds/{CircuitId}
/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Branches/{CircuitId}
/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Feeders/{CircuitId}
/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Mains/{CircuitId}

```

6.21.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------------|------------------|-------------------------------------|---|
| BreakerState | string (enum) | <i>read-only</i> (<i>null</i>) | The state of the over current protection device. <i>For the possible property values, see BreakerState in Property details.</i> |
| CircuitType | string (enum) | <i>read-only</i> (<i>null</i>) | The type of circuit. <i>For the possible property values, see CircuitType in Property details.</i> |
| ConfigurationLocked (v1.5+) | boolean | <i>read-write</i> | Indicates whether the configuration is locked. |

| Property | Type | Attributes | Notes |
|--|----------------------|--------------------------|--|
| CriticalCircuit | boolean | <i>read-write (null)</i> | Designates if this is a critical circuit. |
| CurrentAmps {} | object | | The current (A) for this single phase circuit. For more information about this property, see <i>SensorCurrentExcerpt</i> in Property Details. |
| ElectricalConsumerNames (v1.4+) [] | array (string, null) | <i>read-write</i> | An array of names of downstream devices that are powered by this circuit. |
| ElectricalContext | string (enum) | <i>read-only (null)</i> | The combination of current-carrying conductors. <i>For the possible property values, see ElectricalContext in Property details.</i> |
| ElectricalSourceManagerURI (v1.4+) | string (URI) | <i>read-write</i> | The URI of the management interface for the upstream electrical source connection for this circuit. |
| ElectricalSourceName (v1.4+) | string | <i>read-write</i> | The name of the upstream electrical source, such as a circuit or outlet, connected to this circuit. |
| EnergykWh {} | object | | The energy (kWh) for this circuit. For more information about this property, see <i>SensorEnergykWhExcerpt</i> in Property Details. |
| FrequencyHz {} | object | | The frequency (Hz) for this circuit. For more information about this property, see <i>SensorExcerpt</i> in Property Details. |
| IndicatorLED (deprecated v1.1) | string (enum) | <i>read-write (null)</i> | The state of the indicator LED, which identifies the circuit. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.1 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| BranchCircuit { | object | (null) | A reference to the branch circuit related to this circuit. |
| @odata.id | string | <i>read-only</i> | Link to another Circuit resource. |
| } | | | |
| DistributionCircuits (v1.4+) [{ | array | | An array of links to the circuits powered by this circuit. |
| @odata.id | string | <i>read-write</i> | Link to another Circuit resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Outlets [{ | array | | An array of references to the outlets contained by this circuit. |

| Property | Type | Attributes | Notes |
|--|------------------|------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| }] | | | |
| PowerOutlet (v1.4+) { | object | <i>(null)</i> | A link to the power outlet that provides power to this circuit. See the <i>Outlet</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| } | | | |
| SourceCircuit (v1.4+) { | object | <i>(null)</i> | A link to the circuit that provides power to this circuit. |
| @odata.id | string | <i>read-write</i> | Link to another Circuit resource. |
| } | | | |
| } | | | |
| LocationIndicatorActive (v1.1+) | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |
| NominalVoltage | string (enum) | <i>read-only</i> <i>(null)</i> | The nominal voltage for this circuit. <i>For the possible property values, see NominalVoltage in Property details.</i> |
| PhaseWiringType | string (enum) | <i>read-only</i> <i>(null)</i> | The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). <i>For the possible property values, see PhaseWiringType in Property details.</i> |
| PlugType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of plug according to NEMA, IEC, or regional standards. <i>For the possible property values, see PlugType in Property details.</i> |
| PolyPhaseCurrentAmps { | object | <i>(null)</i> | The current readings for this circuit. |
| Line1 {} | object | | Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Line2 {} | object | | Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Line3 {} | object | | Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Neutral {} | object | | Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| } | | | |

| Property | Type | Attributes | Notes |
|------------------------------|--------|------------|--|
| PolyPhaseEnergykWh { | object | (null) | The energy readings for this circuit. |
| Line1ToLine2 {} | object | | The Line 1 to Line 2 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| Line1ToNeutral {} | object | | The Line 1 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| Line2ToLine3 {} | object | | The Line 2 to Line 3 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| Line2ToNeutral {} | object | | The Line 2 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| Line3ToLine1 {} | object | | The Line 3 to Line 1 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| Line3ToNeutral {} | object | | The Line 3 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details. |
| } | | | |
| PolyPhasePowerWatts { | object | (null) | The power readings for this circuit. |
| Line1ToLine2 {} | object | | The Line 1 to Line 2 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| Line1ToNeutral {} | object | | The Line 1 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| Line2ToLine3 {} | object | | The Line 2 to Line 3 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| Line2ToNeutral {} | object | | The Line 2 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| Line3ToLine1 {} | object | | The Line 3 to Line 1 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------|----------------------|---|
| Line3ToNeutral {} | object | | The Line 3 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| } | | | |
| PolyPhaseVoltage { | object | (null) | The voltage readings for this circuit. |
| Line1ToLine2 {} | object | | The Line 1 to Line 2 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line1ToNeutral {} | object | | The Line 1 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line2ToLine3 {} | object | | The Line 2 to Line 3 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line2ToNeutral {} | object | | The Line 2 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line3ToLine1 {} | object | | The Line 3 to Line 1 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line3ToNeutral {} | object | | The Line 3 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| } | | | |
| PowerControlLocked (v1.5+) | boolean | read-write | Indicates whether power control requests are locked. |
| PowerCycleDelaySeconds | number | read-write (null) | The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay. |
| PowerEnabled | boolean | read-only (null) | Indicates if the circuit can be powered. |
| PowerLoadPercent (v1.3+) {} | object | | The power load (percent) for this circuit. For more information about this property, see SensorExcerpt in Property Details. |
| PowerOffDelaySeconds | number | read-write (null) | The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off. |

| Property | Type | Attributes | Notes |
|--|---------------|--------------------------|--|
| PowerOnDelaySeconds | number | <i>read-write (null)</i> | The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up. |
| PowerRestoreDelaySeconds | number | <i>read-write (null)</i> | The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay. |
| PowerRestorePolicy | string (enum) | <i>read-write</i> | The desired power state of the circuit when power is restored after a power loss. <i>For the possible property values, see PowerRestorePolicy in Property details.</i> |
| PowerState | string (enum) | <i>read-only (null)</i> | The power state of the circuit. <i>For the possible property values, see PowerState in Property details.</i> |
| PowerStateInTransition (v1.5+) | boolean | <i>read-only</i> | Indicates whether the power state is undergoing a delayed transition. |
| PowerWatts {} | object | | The power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details. |
| RatedCurrentAmps | number (A) | <i>read-only (null)</i> | The rated maximum current allowed for this circuit. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UnbalancedCurrentPercent (v1.5+) {} | object | | The current imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details. |
| UnbalancedVoltagePercent (v1.5+) {} | object | | The voltage imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details. |
| UserLabel (v1.4+) | string | <i>read-write</i> | A user-assigned label. |
| Voltage {} | object | | The voltage (V) for this single phase circuit. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| VoltageType | string (enum) | <i>read-only (null)</i> | The type of voltage applied to the circuit. <i>For the possible property values, see VoltageType in Property details.</i> |

6.21.4 Actions

6.21.4.1 BreakerControl

Description

This action attempts to reset the circuit breaker.

Action URI

{Base URI of target resource}/Actions/Circuit.BreakerControl

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|------------------|-----------------|---|
| PowerState | string (enum) | <i>optional</i> | The desired power state of the circuit if the breaker is reset successfully. <i>For the possible property values, see PowerState in Property details.</i> |

Request Example

```
{
  "PowerState": "On"
}
```

6.21.4.2 PowerControl

Description

This action turns the circuit on or off.

Action URI

{Base URI of target resource}/Actions/Circuit.PowerControl

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|------------------|-----------------|--|
| PowerState | string (enum) | <i>optional</i> | The desired power state of the circuit. <i>For the possible property values, see PowerState in Property details.</i> |

Request Example

```
{
```



```

    "PowerState": "Off"
  }

```

6.21.4.3 ResetMetrics

Description

This action resets metrics related to this circuit.

Action URI

{Base URI of target resource}/Actions/Circuit.ResetMetrics

Action parameters

This action takes no parameters.

6.21.5 Property details

6.21.5.1 BreakerState

The state of the over current protection device.

| string | Description |
|---------|-------------------------------|
| Normal | The breaker is powered on. |
| Off | The breaker is off. |
| Tripped | The breaker has been tripped. |

6.21.5.2 CircuitType

The type of circuit.

| string | Description |
|-------------|----------------------------|
| Branch | A branch (output) circuit. |
| Bus (v1.3+) | An electrical bus circuit. |
| Feeder | A feeder (output) circuit. |

| string | Description |
|---------|-----------------------------------|
| Mains | A mains input or utility circuit. |
| Subfeed | A subfeed (output) circuit. |

6.21.5.3 ElectricalContext

The combination of current-carrying conductors.

| string | Description |
|-----------------------|--|
| Line1 | The circuits that share the L1 current-carrying conductor. |
| Line1ToLine2 | The circuit formed by L1 and L2 current-carrying conductors. |
| Line1ToNeutral | The circuit formed by L1 and neutral current-carrying conductors. |
| Line1ToNeutralAndL1L2 | The circuit formed by L1, L2, and neutral current-carrying conductors. |
| Line2 | The circuits that share the L2 current-carrying conductor. |
| Line2ToLine3 | The circuit formed by L2 and L3 current-carrying conductors. |
| Line2ToNeutral | The circuit formed by L2 and neutral current-carrying conductors. |
| Line2ToNeutralAndL1L2 | The circuit formed by L1, L2, and Neutral current-carrying conductors. |
| Line2ToNeutralAndL2L3 | The circuits formed by L2, L3, and neutral current-carrying conductors. |
| Line3 | The circuits that share the L3 current-carrying conductor. |
| Line3ToLine1 | The circuit formed by L3 and L1 current-carrying conductors. |
| Line3ToNeutral | The circuit formed by L3 and neutral current-carrying conductors. |
| Line3ToNeutralAndL3L1 | The circuit formed by L3, L1, and neutral current-carrying conductors. |
| LineToLine | The circuit formed by two current-carrying conductors. |
| LineToNeutral | The circuit formed by a line and neutral current-carrying conductor. |
| Neutral | The grounded current-carrying return circuit of current-carrying conductors. |
| Total | The circuit formed by all current-carrying conductors. |

6.21.5.4 IndicatorLED

The state of the indicator LED, which identifies the circuit.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |

6.21.5.5 NominalVoltage

The nominal voltage for this circuit.

| string | Description |
|---------------------|--------------------------|
| AC100To127V (v1.6+) | AC 100-127V nominal. |
| AC100To240V | AC 100-240V nominal. |
| AC100To277V | AC 100-277V nominal. |
| AC120V | AC 120V nominal. |
| AC200To240V | AC 200-240V nominal. |
| AC200To277V | AC 200-277V nominal. |
| AC208V | AC 208V nominal. |
| AC230V | AC 230V nominal. |
| AC240AndDC380V | AC 200-240V and DC 380V. |
| AC240V | AC 240V nominal. |
| AC277AndDC380V | AC 200-277V and DC 380V. |
| AC277V | AC 277V nominal. |
| AC400V | AC 400V or 415V nominal. |
| AC480V | AC 480V nominal. |
| DC12V (v1.7+) | DC 12V nominal. |
| DC16V (v1.7+) | DC 16V nominal. |
| DC1_8V (v1.7+) | DC 1.8V nominal. |
| DC240V | DC 240V nominal. |
| DC380V | High Voltage DC (380V). |

| string | Description |
|----------------|------------------|
| DC3_3V (v1.7+) | DC 3.3V nominal. |
| DC48V (v1.2+) | DC 48V nominal. |
| DC5V (v1.7+) | DC 5V nominal. |
| DC9V (v1.7+) | DC 9V nominal. |
| DCNeg48V | -48V DC. |

6.21.5.6 PhaseWiringType

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

| string | Description |
|--------------------|---|
| OneOrTwoPhase3Wire | Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth). |
| OnePhase3Wire | Single-phase / 3-Wire (Line1, Neutral, Protective Earth). |
| ThreePhase4Wire | Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth). |
| ThreePhase5Wire | Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth). |
| TwoPhase3Wire | Two-phase / 3-Wire (Line1, Line2, Protective Earth). |
| TwoPhase4Wire | Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth). |

6.21.5.7 PlugType

The type of plug according to NEMA, IEC, or regional standards.

| string | Description |
|---------------------|---|
| California_CS8265 | California Standard CS8265 (Single-phase 250V; 50A; 2P3W). |
| California_CS8365 | California Standard CS8365 (Three-phase 250V; 50A; 3P4W). |
| Field_208V_3P4W_60A | Field-wired; Three-phase 200-250V; 60A; 3P4W. |
| Field_400V_3P5W_32A | Field-wired; Three-phase 200-240/346-415V; 32A; 3P5W. |
| IEC_60309_316P6 | IEC 60309 316P6 (Single-phase 200-250V; 16A; 1P3W; Blue, 6-hour). |

| string | Description |
|-----------------|--|
| IEC_60309_332P6 | IEC 60309 332P6 (Single-phase 200-250V; 32A; 1P3W; Blue, 6-hour). |
| IEC_60309_363P6 | IEC 60309 363P6 (Single-phase 200-250V; 63A; 1P3W; Blue, 6-hour). |
| IEC_60309_460P9 | IEC 60309 460P9 (Three-phase 200-250V; 60A; 3P4W; Blue; 9-hour). |
| IEC_60309_516P6 | IEC 60309 516P6 (Three-phase 200-240/346-415V; 16A; 3P5W; Red; 6-hour). |
| IEC_60309_532P6 | IEC 60309 532P6 (Three-phase 200-240/346-415V; 32A; 3P5W; Red; 6-hour). |
| IEC_60309_560P9 | IEC 60309 560P9 (Three-phase 120-144/208-250V; 60A; 3P5W; Blue; 9-hour). |
| IEC_60309_563P6 | IEC 60309 563P6 (Three-phase 200-240/346-415V; 63A; 3P5W; Red; 6-hour). |
| IEC_60320_C14 | IEC C14 (Single-phase 250V; 10A; 1P3W). |
| IEC_60320_C20 | IEC C20 (Single-phase 250V; 16A; 1P3W). |
| NEMA_5_15P | NEMA 5-15P (Single-phase 125V; 15A; 1P3W). |
| NEMA_5_20P | NEMA 5-20P (Single-phase 125V; 20A; 1P3W). |
| NEMA_6_15P | NEMA 6-15P (Single-phase 250V; 15A; 2P3W). |
| NEMA_6_20P | NEMA 6-20P (Single-phase 250V; 20A; 2P3W). |
| NEMA_L14_20P | NEMA L14-20P (Split-phase 125/250V; 20A; 2P4W). |
| NEMA_L14_30P | NEMA L14-30P (Split-phase 125/250V; 30A; 2P4W). |
| NEMA_L15_20P | NEMA L15-20P (Three-phase 250V; 20A; 3P4W). |
| NEMA_L15_30P | NEMA L15-30P (Three-phase 250V; 30A; 3P4W). |
| NEMA_L21_20P | NEMA L21-20P (Three-phase 120/208V; 20A; 3P5W). |
| NEMA_L21_30P | NEMA L21-30P (Three-phase 120/208V; 30A; 3P5W). |
| NEMA_L22_20P | NEMA L22-20P (Three-phase 277/480V; 20A; 3P5W). |
| NEMA_L22_30P | NEMA L22-30P (Three-phase 277/480V; 30A; 3P5W). |
| NEMA_L5_15P | NEMA L5-15P (Single-phase 125V; 15A; 1P3W). |
| NEMA_L5_20P | NEMA L5-20P (Single-phase 125V; 20A; 1P3W). |
| NEMA_L5_30P | NEMA L5-30P (Single-phase 125V; 30A; 1P3W). |
| NEMA_L6_15P | NEMA L6-15P (Single-phase 250V; 15A; 2P3W). |
| NEMA_L6_20P | NEMA L6-20P (Single-phase 250V; 20A; 2P3W). |

| string | Description |
|-------------|---|
| NEMA_L6_30P | NEMA L6-30P (Single-phase 250V; 30A; 2P3W). |

6.21.5.8 PowerRestorePolicy

The desired power state of the circuit when power is restored after a power loss.

| string | Description |
|-----------|--|
| AlwaysOff | Always remain powered off when external power is applied. |
| AlwaysOn | Always power on when external power is applied. |
| LastState | Return to the last power state (on or off) when external power is applied. |

6.21.5.9 PowerState

6.21.5.9.1 In top level:

The power state of the circuit.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.21.5.9.2 In Actions: BreakerControl, Actions: PowerControl:

The desired power state of the circuit if the breaker is reset successfully.

| string | Description |
|--------------------|--------------|
| Off | Power off. |
| On | Power on. |
| PowerCycle (v1.5+) | Power cycle. |

6.21.5.10 SensorCurrentExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|-------------------------------|-----------------|---------------------|--|
| CrestFactor (v1.1+) | number | read-only (null) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | read-only (null) | The sensor value. |
| THDPercent (v1.1+) | number (%) | read-only (null) | The total harmonic distortion percent (% THD). |

6.21.5.11 SensorEnergykWhExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|-----------------------------------|--------------------|---------------------|--|
| ApparentkVAh (v1.5+) | number (kV.A.h) | read-only (null) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | read-only (null) | The total accumulation value for this sensor. |

| | | | |
|--------------------------------|-----------------------|-------------------------------------|---|
| ReactiveVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |

6.21.5.12 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|-----------------|-------------------------------------|--|
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |

6.21.5.13 SensorPowerExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|-------------------------------------|-----------------|-------------------------------------|---|
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |

| | | | |
|--------------------|--------------|------------------|--|
| ReactiveVAR | number (V.A) | read-only (null) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | read-only (null) | The sensor value. |

6.21.5.14 SensorVoltageExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------------|--------------|------------------|--|
| CrestFactor (v1.1+) | number | read-only (null) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | read-only (null) | The sensor value. |
| THDPercent (v1.1+) | number (%) | read-only (null) | The total harmonic distortion percent (% THD). |

6.21.5.15 VoltageType

The type of voltage applied to the circuit.

| string | Description |
|--------|-----------------------------------|
| AC | Alternating Current (AC) circuit. |
| DC | Direct Current (DC) circuit. |

6.21.6 Example response

```
{
```

```
"@odata.type": "#Circuit.v1_7_0.Circuit",
"Id": "A",
"Name": "Branch Circuit A",
"Status": {
  "State": "Enabled",
  "Health": "OK"
},
"CircuitType": "Branch",
"PhaseWiringType": "TwoPhase3Wire",
"NominalVoltage": "AC200To240V",
"RatedCurrentAmps": 16,
"BreakerState": "Normal",
"PolyPhaseVoltage": {
  "Line1ToNeutral": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1N",
    "Reading": 118.2
  },
  "Line1ToLine2": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1L2",
    "Reading": 203.5
  }
},
"CurrentAmps": {
  "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
  "Reading": 5.19
},
"PolyPhaseCurrentAmps": {
  "Line1": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
    "Reading": 5.19
  }
},
"PowerWatts": {
  "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA",
  "Reading": 937.4,
  "ApparentVA": 937.4,
  "ReactiveVAR": 0,
  "PowerFactor": 1
},
"PolyPhasePowerWatts": {
  "Line1ToNeutral": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
    "Reading": 937.4,
    "PeakReading": 1000.5,
    "ApparentVA": 937.4,
    "ReactiveVAR": 0,
    "PowerFactor": 1
  }
},
"FrequencyHz": {
```

```

        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA",
        "Reading": 60
    },
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA",
        "Reading": 325675
    },
    "Links": {
        "Outlets": [
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
            },
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
            },
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
            }
        ]
    },
    "Actions": {
        "#Circuit.BreakerControl": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.BreakerControl"
        },
        "#Outlet.ResetMetrics": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.ResetMetrics"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
}

```

6.22 ComponentIntegrity 1.2.1

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|
| Release | 2022.2 | 2022.1 | 2021.4 |

6.22.1 Description

The ComponentIntegrity resource provides critical and pertinent security information about a specific device, system, software element, or other managed entity.

6.22.2 URIs

/redfish/v1/ComponentIntegrity/{ComponentIntegrityId}

6.22.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------------|-------------------------------|---|
| ComponentIntegrityEnabled | boolean | <i>read-write</i> | An indication of whether security protocols are enabled for the component. |
| ComponentIntegrityType | string (enum) | <i>read-only required</i> | The type of security technology for the component. <i>For the possible property values, see ComponentIntegrityType in Property details.</i> |
| ComponentIntegrityTypeVersion | string | <i>read-only required</i> | The version of the security technology. |
| LastUpdated | string (date-time) | <i>read-only (null)</i> | The date and time when information for the component was last updated. |
| Links { | object | | The links to other resources that are related to this resource. |
| ComponentsProtected [{ | array | | An array of links to resources that the target component protects. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| SPDM { | object | | Integrity information about the SPDM Responder as reported by an SPDM Requester. |
| ComponentCommunication { | object | <i>(null)</i> | Information about communication between the SPDM Requester and SPDM Responder. |
| Sessions [{ | array | | The active sessions or communication channels between two components. |

| Property | Type | Attributes | Notes |
|----------------------------------|------------------|-----------------------------------|---|
| SessionId | integer | <i>read-only</i> <i>(null)</i> | The identifier for an active session or communication channel between two components. |
| SessionType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of session or communication channel between two components. <i>For the possible property values, see SessionType in Property details.</i> |
| }] | | | |
| } | | | |
| IdentityAuthentication { | object | <i>(null)</i> | Identity authentication information about the SPDM Requester and SPDM Responder. |
| RequesterAuthentication { | object | <i>(null)</i> | Authentication information of the identity of the SPDM Requester. |
| ProvidedCertificate { | object | | A link to the certificate that represents the identify of the SPDM Requester provided in mutual authentication. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |
| } | | | |
| } | | | |
| ResponderAuthentication { | object | <i>(null)</i> | Authentication information of the identity of the SPDM Responder. |
| ComponentCertificate { | object | | A link to the certificate that represents the identify of the component. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |
| } | | | |
| VerificationStatus | string (enum) | <i>read-only</i> <i>(null)</i> | The status of the verification of the identity of the component. <i>For the possible property values, see VerificationStatus in Property details.</i> |
| } | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|--|-----------------------|---------------------|--|
| MeasurementSet { | object | (null) | Measurement information about the SPDM Responder. |
| Measurements [{ | array | | Measurements from an SPDM Responder. |
| LastUpdated | string (date-time) | read-only (null) | The date and time when information for the measurement was last updated. |
| Measurement | string | read-only (null) | The measurement data. |
| MeasurementHashAlgorithm | string | read-only (null) | The hash algorithm used to compute the measurement. |
| MeasurementIndex | integer | read-only (null) | The index of the measurement. |
| MeasurementType | string (enum) | read-only (null) | The type or characteristics of the data that this measurement represents. <i>For the possible property values, see MeasurementType in Property details.</i> |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PartofSummaryHash | boolean | read-only (null) | Indicates whether this measurement is part of the measurement summary. |
| SecurityVersionNumber (v1.1+) | string | read-only (null) | The security version number the measurement represents. |
| }] | | | |
| MeasurementSpecification | string (enum) | read-only (null) | The measurement specification negotiated between the SPDM Requester and SPDM Responder. <i>For the possible property values, see MeasurementSpecification in Property details.</i> |
| MeasurementSummary | string | read-only (null) | The measurement summary data. |
| MeasurementSummaryHashAlgorithm | string | read-only (null) | The hash algorithm used to compute the measurement summary. |
| MeasurementSummaryType | string (enum) | read-only (null) | The type of measurement summary. <i>For the possible property values, see MeasurementSummaryType in Property details.</i> |
| Oem {} | object | | See the Oem object definition in the Common properties section. |

| Property | Type | Attributes | Notes |
|---------------------------------|---------------|-------------------------------------|--|
| } | | | |
| Requester { | object | <i>required</i> | The link to the the component that is reporting the integrity information of the target component. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TargetComponentURI | string | <i>read-only</i> <i>required</i> | The link to the the component whose integrity that this resource reports. |
| TPM { | object | | Integrity information about the Trusted Platform Module (TPM). |
| ComponentCommunication { | object | <i>(null)</i> | Information about communication with the TPM. |
| Sessions [{ | array | | The active sessions or communication channels between two components. |
| SessionId | integer | <i>read-only</i> <i>(null)</i> | The identifier for an active session or communication channel between two components. |
| SessionType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of session or communication channel between two components. <i>For the possible property values, see SessionType in Property details.</i> |
| }] | | | |
| } | | | |
| IdentityAuthentication { | object | <i>(null)</i> | Identity authentication information about the TPM. |
| ComponentCertificate { | object | | A link to the certificate that represents the identify of the component. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------------|-------------------------------------|---|
| } | | | |
| VerificationStatus | string (enum) | <i>read-only</i> (<i>null</i>) | The status of the verification of the identity of the component. <i>For the possible property values, see VerificationStatus in Property details.</i> |
| } | | | |
| MeasurementSet { | object | (<i>null</i>) | Measurement information from the TPM. |
| Measurements [{ | array | | Measurements from a TPM. |
| LastUpdated | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when information for the measurement was last updated. |
| Measurement | string | <i>read-only</i> (<i>null</i>) | The measurement data. |
| MeasurementHashAlgorithm | string | <i>read-only</i> (<i>null</i>) | The hash algorithm used to compute the measurement. |
| PCR | integer | <i>read-only</i> (<i>null</i>) | The Platform Configuration Register (PCR) bank of the measurement. |
| }] | | | |
| } | | | |
| NonceSizeBytesMaximum (v1.2+) | integer | <i>read-only</i> (<i>null</i>) | The maximum number of bytes that can be specified in the Nonce parameter of the TPMGetSignedMeasurements action. |
| } | | | |

6.22.4 Actions

6.22.4.1 SPDMGetSignedMeasurements

Description

This action generates an SPDM cryptographic signed statement over the given nonce and measurements of the SPDM Responder.

Action URI

{Base URI of target resource}/Actions/ComponentIntegrity.SPDMGetSignedMeasurements

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------------------------|--------------------|-----------------|---|
| MeasurementIndices [] | array (integer) | <i>optional</i> | An array of indices that identify the measurement blocks to sign. |
| Nonce | string | <i>optional</i> | A 32-byte hex-encoded string that is signed with the measurements. The value should be unique. |
| SlotId | integer | <i>optional</i> | The slot identifier for the certificate containing the private key to generate the signature over the measurements. |

Response Payload

| | | | |
|---------------------------|--------|---------------------------|---|
| { | | | |
| Certificate { | object | | A link to the certificate corresponding to the SPDM slot identifier that can be used to validate the signature. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |
| } | | | |
| HashingAlgorithm | string | <i>read-only required</i> | The hashing algorithm used for generating the cryptographic signed statement. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PublicKey | string | <i>read-only</i> | A Privacy Enhanced Mail (PEM)-encoded public key that can be used to validate the signature. |
| SignedMeasurements | string | <i>read-only required</i> | Base64 encoded cryptographic signed statement generated by the signer. |
| SigningAlgorithm | string | <i>read-only required</i> | The asymmetric signing algorithm used for generating the cryptographic signed statement. |
| Version | string | <i>read-only required</i> | The SPDM version used by the SPDM Responder to generate the cryptographic signed statement. |
| } | | | |

Request Example

```

{
  "Nonce": "4f2359ee609824d33d35c2968b6c56b702a692ab0d8a441f25c7d81fbe833a78",
  "SlotId": 0,
  "MeasurementIndices": [
    0,
    1,
    2
  ]
}

```

Response Example

```

{
  "@odata.type": "#ComponentIntegrity.v1_0_0.SPDMGetSignedMeasurementsResponse",
  "Version": "1.1",
  "HashingAlgorithm": "SHA256",
  "SigningAlgorithm": "TPM_ALG_RSAPSS_3072",
  "SignedMeasurements": "EeAQx8PJwv9CbeGdm1PaARrrMw... TRUNCATED (TYPICALLY KB or MB)",
  "Certificate": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Certificates/SScert"
  }
}

```

6.22.4.2 TPMGetSignedMeasurements (v1.2+)

Description

This action generates a TPM cryptographic signed statement over the given nonce and PCRs of the TPM for TPM 2.0 devices.

Action URI

{Base URI of target resource}/Actions/ComponentIntegrity.TPMGetSignedMeasurements

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------------|--------|------------------|--|
| Certificate { | object | <i>required</i> | The URI for the certificate that represents the TPM attestation key. See the <i>Certificate</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details. |

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|-----------------|--|
| } | | | |
| Nonce | string | <i>optional</i> | A set of bytes as a hex-encoded string that is signed with the measurements. The value should be unique. |
| PCRSelection | string | <i>required</i> | An object that identify the PCRs to sign. |
| Scheme | string | <i>required</i> | The signing scheme to use for the TPM attestation key. |

Response Payload

| | | | |
|-----------------------------------|--------|---------------------------|---|
| { | | | |
| Oem (v1.2+) {} | object | | See the Oem object definition in the Common properties section. |
| SignedMeasurements (v1.2+) | string | <i>read-only required</i> | The Base64-encoded cryptographic signed statement generated by the signer. |
| } | | | |

Request Example

```
{
  "Nonce": "4f2359ee609824d33d35c2968b6c56b702a692ab0d8a441f25c7d81fbe833a78",
  "Certificate": {
    "@odata.id": "/redfish/v1/Chassis/1/TrustedComponents/TPM1/Certificates/1"
  },
  "Scheme": "MzI5NDg=",
  "PCRSelection": "MjM3NDA4MjM5ODQ="
}
```

Response Example

```
{
  "SignedMeasurements": "EeAQx8PJWv9CbeGdm1PaARrrMw... TRUNCATED (TYPICALLY KB or MB)"
}
```

6.22.5 Property details

6.22.5.1 ComponentIntegrityType

The type of security technology for the component.

| string | Description |
|--------|---|
| OEM | OEM-specific. |
| SPDM | Security Protocol and Data Model (SPDM) protocol. |
| TPM | Trusted Platform Module (TPM). |

6.22.5.2 MeasurementSpecification

The measurement specification negotiated between the SPDM Requester and SPDM Responder.

| string | Description |
|--------|-------------|
| DMTF | DMTF. |

6.22.5.3 MeasurementSummaryType

The type of measurement summary.

| string | Description |
|--------|--|
| All | The measurement summary covers all measurements in SPDM. |
| TCB | The measurement summary covers the TCB. |

6.22.5.4 MeasurementType

The type or characteristics of the data that this measurement represents.

| string | Description |
|-----------------------|---|
| FirmwareConfiguration | Firmware configuration, such as configurable firmware policy. |

| string | Description |
|--------------------------------------|---|
| HardwareConfiguration | Hardware configuration, such as straps. |
| ImmutableROM | Immutable ROM. |
| MeasurementManifest | Measurement Manifest. |
| MutableFirmware | Mutable firmware or any mutable code. |
| MutableFirmwareSecurityVersionNumber | Mutable firmware security version number. |
| MutableFirmwareVersion | Mutable firmware version. |

6.22.5.5 SessionType

The type of session or communication channel between two components.

| string | Description |
|------------------------|---|
| AuthenticatedOnly | An established session where only authentication is protecting the communication. |
| EncryptedAuthenticated | An established session where both encryption and authentication are protecting the communication. |
| Plain | A plain text session without any protection. |

6.22.5.6 VerificationStatus

The status of the verification of the identity of the component.

| string | Description |
|---------|----------------------------|
| Failed | Unsuccessful verification. |
| Success | Successful verification. |

6.22.6 Example response

```
{
  "@odata.type": "#ComponentIntegrity.v1_2_1.ComponentIntegrity",
  "Id": "TPM-0",
  "Description": "TPM physically attached to a GPU.",
}
```

```

"Status": {
  "Health": "OK",
  "State": "Enabled"
},
"ComponentIntegrityType": "TPM",
"ComponentIntegrityTypeVersion": "1.2.0",
"ComponentIntegrityEnabled": true,
"LastUpdated": "2021-11-02T14:09:54-07:00",
"TargetComponentURI": "/redfish/v1/Systems/437XR1138R2#/TrustedModules/0",
"Links": {
  "ComponentsProtected": [
    {
      "@odata.id": "/redfish/v1/Systems/437XR1138R2/GraphicsControllers/GPU1"
    }
  ]
},
"TPM": {
  "MeasurementSet": {
    "Measurements": [
      {
        "PCR": 1,
        "Measurement": "h6spEuxby0tGhP35UoGhTcVX3iRaZQGdW4Yk5oQcabw=",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
      },
      {
        "PCR": 3,
        "Measurement": "GnbzS4ToNqb+Y7SxXw4AvRDTf4Sz05eeAlAlDca28AA=",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
      },
      {
        "PCR": 1,
        "Measurement": "pLJa5Dyh8CDYFZ1WN0rsiSG1eyCPBlre42CD7CTywg7VkcC4afw4ZG3gQxi2XEFCt5jxz6tN1/cbx/D",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA512"
      },
      {
        "PCR": 3,
        "Measurement": "GBgEucATV8omirTmYqY+vvbbisHR1jBkFVAEK1XSifBHnnIYXopsc0NEXURDSSyPj021NrPqnwiq5Lh",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA512"
      }
    ]
  },
  "IdentityAuthentication": {
    "VerificationStatus": "Success",
    "ComponentCertificate": {
      "@odata.id": "/redfish/v1/Systems/437XR1138R2/Certificates/TPMcert"
    }
  }
}

```

```

    },
    "ComponentCommunication": {
      "Sessions": [
        {
          "SessionId": 4556,
          "SessionType": "Plain"
        }
      ]
    }
  },
  "@odata.id": "/redfish/v1/ComponentIntegrity/TPM-0"
}

```

6.23 CompositionReservation 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.1 |

6.23.1 Description

The CompositionReservation schema contains reservation information related to the Compose action defined in the CompositionService resource when the of RequestType parameter contains the value `PreviewReserve`.

6.23.2 URIs

`/redfish/v1/CompositionService/CompositionReservations/{CompositionReservationId}`

6.23.3 Properties

| Property | Type | Attributes | Notes |
|--------------------|--------|--------------------------|---|
| Client | string | <i>read-only</i> | The client that owns the reservation. |
| Manifest { | object | | The manifest document processed by the service that resulted in this reservation. |
| Description | string | <i>read-write (null)</i> | The description of this manifest. |

| Property | Type | Attributes | Notes |
|-----------------------------------|-----------------------|--------------------------------------|--|
| Expand | string (enum) | <i>read-write</i> (<i>null</i>) | The expansion control for references in manifest responses, similar to the <code>\$expand=.</code> query parameter. <i>For the possible property values, see Expand in Property details.</i> |
| Stanzas [{ | array | | An array of stanzas that describe the requests specified by this manifest. |
| OEMStanzaType | string | <i>read-write</i> (<i>null</i>) | The OEM-defined type of stanza. |
| Request {} | object | (<i>null</i>) | The request details for the stanza. |
| Response {} | object | (<i>null</i>) | The response details for the stanza. |
| Stanzald | string | <i>read-write</i> (<i>null</i>) | The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service. |
| StanzaType | string (enum) | <i>read-write</i> (<i>null</i>) | The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i> |
| }] | | | |
| Timestamp | string (date-time) | <i>read-write</i> (<i>null</i>) | The date and time when the manifest was created. |
| } | | | |
| ReservationTime | string (date-time) | <i>read-only</i> | The date time the service created the reservation. |
| ReservedResourceBlocks [{ | array | | The array of links to the reserved resource blocks. |
| @odata.id | string | <i>read-only</i> | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| }] | | | |

6.23.4 Property details

6.23.4.1 Expand

The expansion control for references in manifest responses, similar to the `$expand=.` query parameter.

| string | Description |
|----------|---|
| All | Expand all subordinate references. |
| None | Do not expand any references. |
| Relevant | Expand relevant subordinate references. Relevant references are those that are tied to a constrained composition request, such as a request for a quantity of processors. |

6.23.4.2 StanzaType

The type of stanza.

| string | Description |
|-------------------------------|---|
| ComposeResource | A stanza that describes the desired end state for a composed resource block. The resources consumed by the composed resource block are moved to the active pool. |
| ComposeSystem | A stanza that describes the desired end state for computer system composition operation. The resources consumed by the composed computer system are moved to the active pool. |
| DecomposeResource | A stanza that references a composed resource block to decompose and return resources to the free pool. |
| DecomposeSystem | A stanza that references a computer system to decompose and return resources to the free pool. |
| OEM | A stanza that describes an OEM-specific request. |
| RegisterResourceBlock (v1.1+) | A stanza that references a resource, such as a computer system, in order to create a resource block that references the resource and add it to the free pool. |

6.23.5 Example response

```
{
  "@odata.type": "#CompositionReservation.v1_0_0.CompositionReservation",
  "Id": "1",
  "Name": "Composition Reservation 1",
  "ReservationTime": "2019-08-22T10:35:16+06:00",
  "Client": "VCF1001",
  "ReservedResourceBlocks": [
    {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-2"
    }
  ],
  "Manifest": {
```

```

    "Description": "Description for this Manifest document.",
    "Timestamp": "2019-08-22T10:35:16+06:00",
    "Expand": "None",
    "Stanzas": [
      {
        "StanzaType": "ComposeSystem",
        "StanzaId": "Compute1",
        "Request": {
          "Links": {
            "ResourceBlocks": [
              {
                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-2"
              }
            ]
          }
        }
      }
    ],
    "@odata.id": "/redfish/v1/CompositionService/CompositionReservations/1"
  }

```

6.24 CompositionService 1.2.1

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|
| Release | 2021.1 | 2018.2 | 2017.1 |

6.24.1 Description

The CompositionService schema describes a composition service and its properties and links to the resources available for composition.

6.24.2 URIs

/redfish/v1/CompositionService

6.24.3 Properties

| Property | Type | Attributes | Notes |
|--|-------------------|--------------------------|--|
| ActivePool (v1.2+) { | object | | The link to the collection of resource blocks within the active pool. Resource blocks in the active pool are contributing to at least one composed resource as a result of a composition request. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ResourceBlock</i> . See the ResourceBlock schema for details. |
| } | | | |
| AllowOverprovisioning (v1.1+) | boolean | <i>read-write (null)</i> | An indication of whether this service is allowed to overprovision a composition relative to the composition request. |
| AllowZoneAffinity (v1.1+) | boolean | <i>read-only (null)</i> | An indication of whether a client can request that a specific resource zone fulfill a composition request. |
| CompositionReservations (v1.2+) { | object | | The link to the collection of reservations with the composition reservation collection. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CompositionReservation</i> . See the CompositionReservation schema for details. |
| } | | | |
| FreePool (v1.2+) { | object | | The link to the collection of resource blocks within the free pool. Resource blocks in the free pool are not contributing to any composed resources. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ResourceBlock</i> . See the ResourceBlock schema for details. |
| } | | | |
| ReservationDuration (v1.2+) | string (duration) | <i>read-write (null)</i> | The length of time a composition reservation is held before the service deletes the reservation marks any related resource blocks as no longer reserved. |
| ResourceBlocks { | object | | The resource blocks available on the service. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ResourceBlock</i> . See the ResourceBlock schema for details. |
| } | | | |
| ResourceZones { | object | | The resource zones available on the service. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|-----------------------|---------|--------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Zone</i> . See the <i>Zone</i> schema for details. |
| } | | | |
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this service is enabled. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |

6.24.4 Actions

6.24.4.1 Compose (v1.2+)

Description

This action performs a set of operations specified by a manifest.

Action URI

{Base URI of target resource}/Actions/CompositionService.Compose

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------------|---------------|--------------------------|--|
| Manifest { | object | <i>optional</i> | The manifest containing the compose operation request. |
| Description | string | <i>read-write (null)</i> | The description of this manifest. |
| Expand | string (enum) | <i>read-write (null)</i> | The expansion control for references in manifest responses, similar to the <code>\$expand=.</code> query parameter. <i>For the possible property values, see Expand in Property details.</i> |
| Stanzas [{ | array | | An array of stanzas that describe the requests specified by this manifest. |
| OEMStanzaType | string | <i>read-write (null)</i> | The OEM-defined type of stanza. |
| Request {} | object | <i>(null)</i> | The request details for the stanza. |

| Parameter Name | Type | Attributes | Notes |
|----------------------|-----------------------|----------------------|--|
| Response {} | object | (null) | The response details for the stanza. |
| Stanzald | string | read-write (null) | The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service. |
| StanzaType | string (enum) | read-write (null) | The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i> |
| }] | | | |
| Timestamp | string (date-time) | read-write (null) | The date and time when the manifest was created. |
| } | | | |
| RequestFormat | string (enum) | required | The format of the request. <i>For the possible property values, see RequestFormat in Property details.</i> |
| RequestType | string (enum) | required | The type of request. <i>For the possible property values, see RequestType in Property details.</i> |
| ReservationId | string | optional | The identifier of the composition reservation if applying a reservation. The value for this parameter is obtained from the response of a Compose action where the RequestType parameter contains the value <code>PreviewReserve</code> . |

Response Payload

| | | | |
|---------------------------|------------------|----------------------|--|
| { | | | |
| Manifest (v1.2+) { | object | | The manifest containing the compose operation response. |
| Description | string | read-write (null) | The description of this manifest. |
| Expand | string (enum) | read-write (null) | The expansion control for references in manifest responses, similar to the <code>\$expand=.</code> query parameter. <i>For the possible property values, see Expand in Property details.</i> |
| Stanzas [{ | array | | An array of stanzas that describe the requests specified by this manifest. |
| OEMStanzaType | string | read-write (null) | The OEM-defined type of stanza. |

| | | | |
|------------------------------|-----------------------|-----------------------|---|
| Request {} | object | (null) | The request details for the stanza. |
| Response {} | object | (null) | The response details for the stanza. |
| StanzaId | string | read-write (null) | The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service. |
| StanzaType | string (enum) | read-write (null) | The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i> |
| }] | | | |
| Timestamp | string (date-time) | read-write (null) | The date and time when the manifest was created. |
| } | | | |
| RequestFormat (v1.2+) | string (enum) | read-only required | The format of the request. <i>For the possible property values, see RequestFormat in Property details.</i> |
| RequestType (v1.2+) | string (enum) | read-only required | The type of request. <i>For the possible property values, see RequestType in Property details.</i> |
| ReservationId (v1.2+) | string | read-only | The identifier of the composition reservation that was created. |
| } | | | |

Request Example

```
{
  "RequestFormat": "Manifest",
  "RequestType": "Apply",
  "Manifest": {
    "Description": "Specific composition example",
    "Timestamp": "2019-08-22T10:35:16+06:00",
    "Expand": "None",
    "Stanzas": [
      {
        "StanzaType": "ComposeSystem",
        "StanzaId": "Compute1",
        "Request": {
          "Links": {
```

```

        "ResourceBlocks": [
          {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1"
          },
          {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1"
          },
          {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1"
          }
        ]
      }
    ]
  }
}

```

Response Example

```

{
  "RequestFormat": "Manifest",
  "RequestType": "Apply",
  "Manifest": {
    "Description": "Specific composition example",
    "Timestamp": "2019-08-22T10:35:16+06:00",
    "Expand": "None",
    "Stanzas": [
      {
        "StanzaType": "ComposeSystem",
        "StanzaId": "Compute1",
        "Request": {
          "Links": {
            "ResourceBlocks": [
              {
                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1"
              },
              {
                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1"
              },
              {
                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1"
              }
            ]
          }
        },
        "Response": {
          "@odata.id": "/redfish/v1/Systems/ComposedCompute1",

```


| string | Description |
|----------|---|
| Relevant | Expand relevant subordinate references. Relevant references are those that are tied to a constrained composition request, such as a request for a quantity of processors. |

6.24.5.2 RequestFormat

The format of the request.

| string | Description |
|----------|---------------------------------------|
| Manifest | The request body contains a manifest. |

6.24.5.3 RequestType

The type of request.

| string | Description |
|----------------|--|
| Apply | Perform the requested operations specified by the manifest and modify resources as needed. |
| Preview | Preview the outcome of the operations specified by the manifest. |
| PreviewReserve | Preview the outcome of the operations specified by the manifest and reserve resources. |

6.24.5.4 StanzaType

The type of stanza.

| string | Description |
|-------------------|---|
| ComposeResource | A stanza that describes the desired end state for a composed resource block. The resources consumed by the composed resource block are moved to the active pool. |
| ComposeSystem | A stanza that describes the desired end state for computer system composition operation. The resources consumed by the composed computer system are moved to the active pool. |
| DecomposeResource | A stanza that references a composed resource block to decompose and return resources to the free pool. |
| DecomposeSystem | A stanza that references a computer system to decompose and return resources to the free pool. |

| string | Description |
|-------------------------------|---|
| OEM | A stanza that describes an OEM-specific request. |
| RegisterResourceBlock (v1.1+) | A stanza that references a resource, such as a computer system, in order to create a resource block that references the resource and add it to the free pool. |

6.24.6 Example response

```
{
  "@odata.type": "#CompositionService.v1_2_1.CompositionService",
  "Id": "CompositionService",
  "Name": "Composition Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "AllowOverprovisioning": true,
  "AllowZoneAffinity": true,
  "ResourceBlocks": {
    "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks"
  },
  "ResourceZones": {
    "@odata.id": "/redfish/v1/CompositionService/ResourceZones"
  },
  "@odata.id": "/redfish/v1/CompositionService"
}
```

6.25 ComputerSystem 1.21.0

| Version | v1.21 | v1.20 | v1.19 | v1.18 | v1.17 | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.2 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | 2020.2 | 2020.1 | ... |

6.25.1 Description

The ComputerSystem schema represents a computer or system instance and the software-visible resources, or items within the data plane, such as memory, CPU, and other devices that it can access. Details of those resources or subsystems are also linked through this resource.

6.25.2 URIs

/redfish/v1/Systems/{ComputerSystemId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.25.3 Properties

| Property | Type | Attributes | Notes |
|--|-----------------------------|------------------------------------|--|
| AssetTag | string | <i>read-write</i> <i>(null)</i> | The user-definable tag that can track this computer system for inventory or other client purposes. |
| Bios (v1.1+) { | object | | The link to the BIOS settings associated with this system. See the <i>Bios</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Bios resource. See the Links section and the <i>Bios</i> schema for details. |
| } | | | |
| BiosVersion | string | <i>read-only</i> <i>(null)</i> | The version of the system BIOS or primary system firmware. |
| Boot { | object | | The boot settings for this system. |
| AliasBootOrder (v1.6+) [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | Ordered array of boot source aliases representing the persistent boot order associated with this computer system. <i>For the possible property values, see AliasBootOrder in Property details.</i> |
| AutomaticRetryAttempts (v1.11+) | integer | <i>read-write</i> <i>(null)</i> | The number of attempts the system will automatically retry booting. |
| AutomaticRetryConfig (v1.11+) | string (enum) | <i>read-write</i> <i>(null)</i> | The configuration of how the system retries booting automatically. <i>For the possible property values, see AutomaticRetryConfig in Property details.</i> |
| BootNext (v1.5+) | string | <i>read-write</i> <i>(null)</i> | The BootOptionReference of the Boot Option to perform a one-time boot from when BootSourceOverrideTarget is UefiBootNext . |
| BootOptions (v1.5+) { | object | | The link to the collection of the UEFI boot options associated with this computer system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>BootOption</i> . See the BootOption schema for details. |

| Property | Type | Attributes | Notes |
|---|----------------------------|------------------------------|--|
| } | | | |
| BootOrder (v1.5+) [] | array (string, null) | <i>read-write</i> | An array of <code>BootOptionReference</code> strings that represent the persistent boot order for with this computer system. Changes to the boot order typically require a system reset before they take effect. It is likely that a client finds the <code>@Redfish.Settings</code> term in this resource, and if it is found, the client makes requests to change boot order settings by modifying the resource identified by the <code>@Redfish.Settings</code> term. |
| BootOrderPropertySelection (v1.6+) | string (enum) | <i>read-write (null)</i> | The name of the boot order property that the system uses for the persistent boot order. <i>For the possible property values, see <code>BootOrderPropertySelection</code> in Property details.</i> |
| BootSourceOverrideEnabled | string (enum) | <i>read-write (null)</i> | The state of the boot source override feature. <i>For the possible property values, see <code>BootSourceOverrideEnabled</code> in Property details.</i> |
| BootSourceOverrideMode (v1.1+) | string (enum) | <i>read-write (null)</i> | The BIOS boot mode to use when the system boots from the <code>BootSourceOverrideTarget</code> boot source. <i>For the possible property values, see <code>BootSourceOverrideMode</code> in Property details.</i> |
| BootSourceOverrideTarget | string (enum) | <i>read-write (null)</i> | The current boot source to use at the next boot instead of the normal boot device, if <code>BootSourceOverrideEnabled</code> does not contain <code>Disabled</code> . <i>For the possible property values, see <code>BootSourceOverrideTarget</code> in Property details.</i> |
| Certificates (v1.7+) { | object | | The link to a collection of certificates used for booting through HTTPS by this computer system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <code>Certificate</code> . See the <code>Certificate</code> schema for details. |
| } | | | |
| HttpBootUri (v1.9+) | string (URI) | <i>read-write (null)</i> | The URI to boot from when <code>BootSourceOverrideTarget</code> is set to <code>UefiHttp</code> . |
| RemainingAutomaticRetryAttempts (v1.11+) | integer | <i>read-only (null)</i> | The number of remaining automatic retry boots. |
| StopBootOnFault (v1.15+) | string (enum) | <i>read-write (null)</i> | If the boot should stop on a fault. <i>For the possible property values, see <code>StopBootOnFault</code> in Property details.</i> |

| Property | Type | Attributes | Notes |
|---|-----------------------|-------------------|---|
| TrustedModuleRequiredToBoot (v1.14+) | string (enum) | read-write (null) | The Trusted Module boot requirement. <i>For the possible property values, see TrustedModuleRequiredToBoot in Property details.</i> |
| UefiTargetBootSourceOverride | string | read-write (null) | The UEFI device path of the device from which to boot when BootSourceOverrideTarget is <code>UefiTarget</code> . |
| } | | | |
| BootProgress (v1.13+) { | object | (null) | This object describes the last boot progress state. |
| LastBootTimeSeconds (v1.18+) | number | read-only (null) | The number of seconds the system spent booting to the operating system during the last boot. |
| LastState (v1.13+) | string (enum) | read-only (null) | The last boot progress state. <i>For the possible property values, see LastState in Property details.</i> |
| LastStateTime (v1.13+) | string (date-time) | read-only (null) | The date and time when the last boot state was updated. |
| Oem (v1.13+) {} | object | | See the Oem object definition in the Common properties section. |
| OemLastState (v1.13+) | string | read-only (null) | The OEM-specific last state, if the LastState type is <code>OEM</code> . |
| } | | | |
| Certificates (v1.14+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| Composition (v1.18+) { | object | (null) | Information about the composition capabilities and state of the computer system. |
| UseCases (v1.18+) [] | array (string (enum)) | read-only (null) | The composition use cases in which this computer system can participate. <i>For the possible property values, see UseCases in Property details.</i> |
| } | | | |
| EthernetInterfaces { | object | | The link to the collection of Ethernet interfaces associated with this system. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|---|-----------------------|--------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EthernetInterface</i> . See the <i>EthernetInterface</i> schema for details. |
| } | | | |
| FabricAdapters (v1.10+) { | object | | The link to the collection of fabric adapters associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>FabricAdapter</i> . See the <i>FabricAdapter</i> schema for details. |
| } | | | |
| GraphicalConsole (v1.13+) { | object | | The information about the graphical console (KVM-IP) service of this system. |
| ConnectTypesSupported (v1.13+) [] | array (string (enum)) | <i>read-only</i> | This property enumerates the graphical console connection types that the implementation allows. <i>For the possible property values, see ConnectTypesSupported in Property details.</i> |
| MaxConcurrentSessions (v1.13+) | integer | <i>read-only</i> | The maximum number of service sessions, regardless of protocol, that this system can support. |
| Port (v1.13+) | integer | <i>read-write (null)</i> | The protocol port. |
| ServiceEnabled (v1.13+) | boolean | <i>read-write</i> | An indication of whether the service is enabled for this system. |
| } | | | |
| GraphicsControllers (v1.15+) { | object | | The link to a collection of graphics controllers that can output video for this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>GraphicsController</i> . See the <i>GraphicsController</i> schema for details. |
| } | | | |
| HostedServices (v1.2+) { | object | | The services that this computer system supports. |
| Oem (v1.2+) { | object | | See the <i>Oem</i> object definition in the Common properties section. |
| StorageServices (v1.2+) { | object | | The link to a collection of storage services that this computer system supports. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------------|---|--|
| } | | | |
| } | | | |
| HostingRoles (v1.2+) [] | array (string (enum)) | <i>read-only</i> | The hosting roles that this computer system supports. <i>For the possible property values, see HostingRoles in Property details.</i> |
| HostName | string | <i>read-write (null)</i> | The DNS host name, without any domain information. |
| HostWatchdogTimer (v1.5+) { | object | | The host watchdog timer functionality for this system. |
| FunctionEnabled (v1.5+) | boolean | <i>read-write required (null)</i> | An indication of whether a user has enabled the host watchdog timer functionality. This property indicates only that a user has enabled the timer. To activate the timer, installation of additional host-based software is necessary; an update to this property does not initiate the timer. |
| Oem (v1.5+) {} | object | | See the Oem object definition in the Common properties section. |
| Status (v1.5+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TimeoutAction (v1.5+) | string (enum) | <i>read-write required (null)</i> | The action to perform when the watchdog timer reaches its timeout value. <i>For the possible property values, see TimeoutAction in Property details.</i> |
| WarningAction (v1.5+) | string (enum) | <i>read-write (null)</i> | The action to perform when the watchdog timer is close to reaching its timeout value. This action typically occurs from three to ten seconds before to the timeout value, but the exact timing is dependent on the implementation. <i>For the possible property values, see WarningAction in Property details.</i> |
| } | | | |
| IdlePowerSaver (v1.16+) { | object | <i>(null)</i> | The idle power saver settings of the computer system. |
| Enabled (v1.16+) | boolean | <i>read-write</i> | An indication of whether idle power saver is enabled. |
| EnterDwellTimeSeconds (v1.16+) | integer (seconds) | <i>read-write (null)</i> | The duration in seconds the computer system is below the EnterUtilizationPercent value before the idle power save is activated. |

| Property | Type | Attributes | Notes |
|---|-------------------|-------------------|--|
| EnterUtilizationPercent (v1.16+) | number (%) | read-write (null) | The percentage of utilization when the computer system enters idle power save. If the computer system's utilization goes below this value, it enters idle power save. |
| ExitDwellTimeSeconds (v1.16+) | integer (seconds) | read-write (null) | The duration in seconds the computer system is above the ExitUtilizationPercent value before the idle power save is stopped. |
| ExitUtilizationPercent (v1.16+) | number (%) | read-write (null) | The percentage of utilization when the computer system exits idle power save. If the computer system's utilization goes above this value, it exits idle power save. |
| } | | | |
| IndicatorLED (deprecated v1.13) | string (enum) | read-write (null) | The state of the indicator LED, which identifies the system. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.13 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| KeyManagement (v1.16+) { | object | (null) | The key management settings of the computer system. |
| KMIPCertificates (v1.16+) { | object | | The link to a collection of server certificates for the servers referenced by the KMIPServers property. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| KMIPServers (v1.16+) [{ | array | | The KMIP servers to which this computer system is subscribed. |
| Address (v1.16+) | string | read-write (null) | The KMIP server address. |
| CacheDuration (v1.20+) | string (duration) | read-write (null) | The duration the system caches KMIP data. |
| CachePolicy (v1.20+) | string (enum) | read-write (null) | The cache policy to control how KMIP data is cached. <i>For the possible property values, see CachePolicy in Property details.</i> |
| Password (v1.16+) | string | read-write (null) | The password to access the KMIP server. The value is <code>null</code> in responses. |

| Property | Type | Attributes | Notes |
|--|-----------------------|--------------------------------------|--|
| Port (v1.16+) | integer | <i>read-write</i> (<i>null</i>) | The KMIP server port. |
| Username (v1.16+) | string | <i>read-write</i> (<i>null</i>) | The username to access the KMIP server. |
| }] | | | |
| } | | | |
| LastResetTime (v1.12+) | string (date-time) | <i>read-only</i> | The date and time when the system was last reset or rebooted. |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis [{ | array | | An array of links to the chassis that contains this system. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| ConsumingComputerSystems (v1.5+) [{ | array | | An array of links to ComputerSystems that are realized, in whole or in part, from this ComputerSystem. |
| @odata.id | string | <i>read-only</i> | Link to another ComputerSystem resource. |
| }] | | | |
| CooledBy [{ | array | | An array of links to resources or objects that that cool this computer system. Normally, the link is for either a chassis or a specific set of fans. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Endpoints (v1.2+) [{ | array | | An array of links to the endpoints that connect to this system. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|--------------|------------|--|
| HostingComputerSystem (v1.21+) { | object | (null) | The link to the system that is hosting this virtual machine. |
| @odata.id | string | read-only | Link to another ComputerSystem resource. |
| } | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for this system. |
| @odata.id | string | read-only | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| OffloadedNetworkDeviceFunctions (v1.17+) [{ | array | | The network device functions to which this system performs offload computation, such as with a SmartNIC. |
| @odata.id | string | read-only | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| PoweredBy [{ | array | | An array of links to resources or objects that power this computer system. Normally, the link is for either a chassis or a specific set of power supplies. |
| @odata.id | string (URI) | read-only | The unique identifier for a resource. |
| }] | | | |
| ResourceBlocks (v1.4+) [{ | array | | An array of links to the resource blocks that are used in this computer system. |
| @odata.id | string | read-write | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| }] | | | |
| SupplyingComputerSystems (v1.5+) [{ | array | | An array of links to ComputerSystems that contribute, in whole or in part, to the implementation of this ComputerSystem. |
| @odata.id | string | read-only | Link to another ComputerSystem resource. |

| Property | Type | Attributes | Notes |
|--|---------|--------------------------|--|
| }] | | | |
| TrustedComponents (v1.19+) [{ | array | | An array of links to the trusted components for this system. |
| @odata.id | string | <i>read-only</i> | Link to a TrustedComponent resource. See the Links section and the <i>TrustedComponent</i> schema for details. |
| }] | | | |
| VirtualMachines (v1.21+) [{ | array | | An array of links to the virtual machines this system is hosting. |
| @odata.id | string | <i>read-only</i> | Link to another ComputerSystem resource. |
| }] | | | |
| } | | | |
| LocationIndicatorActive (v1.13+) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| LogServices { | object | | The link to the collection of log services associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LogService</i> . See the LogService schema for details. |
| } | | | |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer or OEM of this system. |
| ManufacturingMode (v1.18+) | boolean | <i>read-only (null)</i> | An indication of whether the system is in manufacturing mode. Manufacturing mode is a special boot mode, not normally available to end users, that modifies features and settings for use while the system is being manufactured and tested. |
| Measurements (v1.14+, deprecated v1.17) [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.17 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|---------------|-----------------------------------|---|
| Memory (v1.1+) { | object | | The link to the collection of memory associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Memory</i> . See the <i>Memory</i> schema for details. |
| } | | | |
| MemoryDomains (v1.2+) { | object | | The link to the collection of memory domains associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MemoryDomain</i> . See the <i>MemoryDomain</i> schema for details. |
| } | | | |
| MemorySummary { | object | | The central memory of the system in general detail. |
| MemoryMirroring (v1.1+) | string (enum) | <i>read-only</i> <i>(null)</i> | The ability and type of memory mirroring that this computer system supports. <i>For the possible property values, see MemoryMirroring in Property details.</i> |
| Metrics (v1.8+) { | object | | The link to the metrics associated with all memory in this system. See the <i>MemoryMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>MemoryMetrics</i> resource. See the <i>Links</i> section and the <i>MemoryMetrics</i> schema for details. |
| } | | | |
| Status (deprecated v1.16) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . <i>Deprecated in v1.16 and later. This property has been deprecated in favor of the Conditions property within Status in the root of this resource.</i> |
| TotalSystemMemoryGiB | number (GiBy) | <i>read-only</i> <i>(null)</i> | The total configured operating system-accessible memory (RAM), measured in GiB. |
| TotalSystemPersistentMemoryGiB (v1.4+) | number (GiBy) | <i>read-only</i> <i>(null)</i> | The total configured, system-accessible persistent memory, measured in GiB. |
| } | | | |
| Model | string | <i>read-only</i> <i>(null)</i> | The product name for this system, without the manufacturer name. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|---|
| NetworkInterfaces (v1.3+) { | object | | The link to the collection of Network Interfaces associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkInterface</i> . See the <i>NetworkInterface</i> schema for details. |
| } | | | |
| OperatingSystem (v1.21+) { | object | | The link to the operating system information associated with this system. See the <i>OperatingSystem</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>OperatingSystem</i> resource. See the Links section and the <i>OperatingSystem</i> schema for details. |
| } | | | |
| PartNumber | string | <i>read-only</i> (null) | The part number for this system. |
| PCleDevices (v1.2+) [{ | array | | The link to a collection of PCIe devices that this computer system uses. |
| @odata.id | string | <i>read-only</i> | Link to a <i>PCleDevice</i> resource. See the Links section and the <i>PCleDevice</i> schema for details. |
|]] | | | |
| PCleFunctions (v1.2+) [{ | array | | The link to a collection of PCIe functions that this computer system uses. |
| @odata.id | string | <i>read-only</i> | Link to a <i>PCleFunction</i> resource. See the Links section and the <i>PCleFunction</i> schema for details. |
|]] | | | |
| PowerCycleDelaySeconds (v1.13+) | number | <i>read-write</i> (null) | The number of seconds to delay power on after a <i>Reset</i> action requesting <i>PowerCycle</i> . Zero seconds indicates no delay. |
| PowerMode (v1.15+) | string (enum) | <i>read-write</i> (null) | The power mode setting of the computer system. For the possible property values, see <i>PowerMode in Property details</i> . |
| PowerOffDelaySeconds (v1.13+) | number | <i>read-write</i> (null) | The number of seconds to delay power off during a reset. Zero seconds indicates no delay to power off. |
| PowerOnDelaySeconds (v1.13+) | number | <i>read-write</i> (null) | The number of seconds to delay power on after a power cycle or during a reset. Zero seconds indicates no delay to power up. |

| Property | Type | Attributes | Notes |
|--------------------------------------|------------------|-----------------------------|---|
| PowerRestorePolicy (v1.6+) | string (enum) | <i>read-write</i> | The desired power state of the system when power is restored after a power loss. <i>For the possible property values, see PowerRestorePolicy in Property details.</i> |
| PowerState | string (enum) | <i>read-only (null)</i> | The current power state of the system. <i>For the possible property values, see PowerState in Property details.</i> |
| Processors { | object | | The link to the collection of processors associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Processor</i> . See the Processor schema for details. |
| } | | | |
| ProcessorSummary { | object | | The central processors of the system in general detail. |
| CoreCount (v1.14+) | integer | <i>read-only (null)</i> | The number of processor cores in the system. |
| Count | integer | <i>read-only (null)</i> | The number of physical processors in the system. |
| LogicalProcessorCount (v1.5+) | integer | <i>read-only (null)</i> | The number of logical processors in the system. |
| Metrics (v1.7+) { | object | | The link to the metrics associated with all processors in this system. See the <i>ProcessorMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ProcessorMetrics resource. See the Links section and the <i>ProcessorMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only (null)</i> | The processor model for the primary or majority of processors in this system. |
| Status (deprecated v1.16) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. <i>Deprecated in v1.16 and later. This property has been deprecated in favor of the Conditions property within Status in the root of this resource.</i> |
| ThreadingEnabled (v1.15+) | boolean | <i>read-write</i> | An indication of whether threading is enabled on all processors in this system. |
| } | | | |

| Property | Type | Attributes | Notes |
|---------------------------------------|-------------------|-------------------------------------|---|
| Redundancy (v1.5+)[{ }] | array (object) | | The link to a collection of redundancy entities. Each entity specifies a kind and level of redundancy and a collection, or redundancy set, of other computer systems that provide the specified redundancy to this computer system. For property details, see Redundancy. |
| SecureBoot (v1.1+) { | object | | The link to the UEFI Secure Boot associated with this system. See the <i>SecureBoot</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SecureBoot resource. See the Links section and the <i>SecureBoot</i> schema for details. |
| } | | | |
| SerialConsole (v1.13+) { | object | | The serial console services that this system provides. |
| IPMI (v1.13+) { } | object | | The connection details for an IPMI Serial-over-LAN service. For more information about this property, see SerialConsoleProtocol in Property Details. |
| MaxConcurrentSessions (v1.13+) | integer | <i>read-only</i> | The maximum number of service sessions, regardless of protocol, that this system can support. |
| SSH (v1.13+) { } | object | | The connection details for an SSH serial console service. For more information about this property, see SerialConsoleProtocol in Property Details. |
| Telnet (v1.13+) { } | object | | The connection details for a Telnet serial console service. For more information about this property, see SerialConsoleProtocol in Property Details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number for this system. |
| SimpleStorage { | object | | The link to the collection of storage devices associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>SimpleStorage</i> . See the SimpleStorage schema for details. |
| } | | | |
| SKU | string | <i>read-only</i> (<i>null</i>) | The manufacturer SKU for this system. |

| Property | Type | Attributes | Notes |
|--|------------------|-------------------------------------|---|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Storage (v1.1+) { | object | | The link to the collection of storage devices associated with this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Storage</i> . See the Storage schema for details. |
| } | | | |
| SubModel (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The sub-model for this system. |
| SystemType | string (enum) | <i>read-only</i> | The type of computer system that this resource represents. <i>For the possible property values, see SystemType in Property details.</i> |
| TrustedModules (v1.1+, deprecated v1.19 [{ | array | | An array of trusted modules in the system. <i>Deprecated in v1.19 and later. This property has been deprecated in favor of the TrustedComponents property in Links.</i> |
| FirmwareVersion (v1.1+) | string | <i>read-only</i> (<i>null</i>) | The firmware version of this Trusted Module. |
| FirmwareVersion2 (v1.3+) | string | <i>read-only</i> (<i>null</i>) | The second firmware version of this Trusted Module, if applicable. |
| InterfaceType (v1.1+) | string (enum) | <i>read-only</i> (<i>null</i>) | The interface type of the Trusted Module. <i>For the possible property values, see InterfaceType in Property details.</i> |
| InterfaceTypeSelection (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The interface type selection supported by this Trusted Module. <i>For the possible property values, see InterfaceTypeSelection in Property details.</i> |
| Oem (v1.1+) {} | object | | See the Oem object definition in the Common properties section. |
| Status (v1.1+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| }] | | | |
| USBControllers (v1.15+) { | object | | The link to a collection of USB controllers for this system. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------------|--------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>USBController</i> . See the <i>USBController</i> schema for details. |
| } | | | |
| UUID | string (uuid) | <i>read-only (null)</i> | The UUID for this system. <i>For more information about this property, see Property details.</i> |
| VirtualMedia (v1.13+) { | object | | The link to the virtual media services for this system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VirtualMedia</i> . See the <i>VirtualMedia</i> schema for details. |
| } | | | |
| VirtualMediaConfig (v1.13+) { | object | | The information about the virtual media service of this system. |
| Port (v1.13+) | integer | <i>read-write (null)</i> | The protocol port. |
| ServiceEnabled (v1.13+) | boolean | <i>read-write</i> | An indication of whether the service is enabled for this system. |
| } | | | |

6.25.4 Actions

6.25.4.1 AddResourceBlock (v1.6+)

Description

This action adds a resource block to a system.

Action URI

{Base URI of target resource}/Actions/ComputerSystem.AddResourceBlock

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------------|--------|-----------------|---------------------------------|
| ComputerSystemETag | string | <i>optional</i> | The current ETag of the system. |

| Parameter Name | Type | Attributes | Notes |
|--------------------------|--------|------------------|--|
| ResourceBlock { | object | <i>required</i> | The resource block to add to the system. See the <i>ResourceBlock</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| } | | | |
| ResourceBlockETag | string | <i>optional</i> | The current ETag of the resource block to add to the system. |

Request Example

```
{
  "ResourceBlock": {
    "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/Offload-GPU1"
  },
  "ResourceBlockETag": "W/\"19472363938\"",
  "ComputerSystemETag": "W/\"99374369273\""
}
```

6.25.4.2 Decommission (v1.21+)

Description

This action decommissions a system.

Action URI

{Base URI of target resource}/Actions/ComputerSystem.Decommission

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------------------|-----------------------------|-------------------|--|
| ComputerSystemETag | string | <i>optional</i> | The current ETag of the system. |
| DecommissionTypes [] | array (string (enum)) | <i>read-write</i> | The types of data to remove from the system. <i>For the possible property values, see DecommissionTypes in Property details.</i> |
| OEMDecommissionTypes [] | array (string) | <i>optional</i> | The OEM-specific types of data to remove from the system. |

| Parameter Name | Type | Attributes | Notes |
|---------------------------|---------|-----------------|--|
| RequireSecureErase | boolean | <i>optional</i> | Ensure secure erasure of all devices and fail the request if not possible. |

Request Example

```
{
  "DecommissionTypes": [
    "All"
  ],
  "RequireSecureErase": false
}
```

6.25.4.3 RemoveResourceBlock (v1.6+)

Description

This action removes a resource block from a system.

Action URI

{Base URI of target resource}/Actions/ComputerSystem.RemoveResourceBlock

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------------|--------|------------------|---|
| ComputerSystemETag | string | <i>optional</i> | The current ETag of the system. |
| ResourceBlock { | object | <i>required</i> | The resource block to remove from the system. See the <i>ResourceBlock</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| } | | | |
| ResourceBlockETag | string | <i>optional</i> | The current ETag of the resource block to remove from the system. |

Request Example

```
{
```

```

    "ResourceBlock": {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/Offload-GPU1"
    },
    "ResourceBlockETag": "W/\"19472363938\"",
    "ComputerSystemETag": "W/\"99374369273\""
  }

```

6.25.4.4 Reset

Description

This action resets the system.

Action URI

{Base URI of target resource}/Actions/ComputerSystem.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```

{
  "ResetType": "ForceRestart"
}

```

6.25.4.5 SetDefaultBootOrder (v1.5+)

Description

This action sets the BootOrder to the default settings.

Action URI

{Base URI of target resource}/Actions/ComputerSystem.SetDefaultBootOrder

Action parameters

This action takes no parameters.

6.25.5 Property details

6.25.5.1 AliasBootOrder

Ordered array of boot source aliases representing the persistent boot order associated with this computer system.

| string | Description |
|--------------|---|
| BiosSetup | Boot to the BIOS setup utility. |
| Cd | Boot from the CD or DVD. |
| Diags | Boot to the manufacturer's diagnostics program. |
| Floppy | Boot from the floppy disk drive. |
| Hdd | Boot from a hard drive. |
| None | Boot from the normal boot device. |
| Pxe | Boot from the Pre-Boot EXecution (PXE) environment. |
| Recovery | Boot to a system-designated recovery process or image. |
| RemoteDrive | Boot from a remote drive, such as an iSCSI target. |
| SDCard | Boot from an SD card. |
| UefiBootNext | Boot to the UEFI device that the BootNext property specifies. |
| UefiHttp | Boot from a UEFI HTTP network location. |
| UefiShell | Boot to the UEFI Shell. |
| UefiTarget | Boot to the UEFI device specified in the UefiTargetBootSourceOverride property. |
| Usb | Boot from a system BIOS-specified USB device. |
| Utilities | Boot to the manufacturer's utilities program or programs. |

6.25.5.2 AutomaticRetryConfig

The configuration of how the system retries booting automatically.

| string | Description |
|---------------|--|
| Disabled | Disable automatic retrying of booting. |
| RetryAlways | Always automatically retry booting. |
| RetryAttempts | Automatic retrying of booting is based on a specified retry count. |

6.25.5.3 BootOrderPropertySelection

The name of the boot order property that the system uses for the persistent boot order.

| string | Description |
|----------------|---|
| AliasBootOrder | The system uses the AliasBootOrder property to specify the persistent boot order. |
| BootOrder | The system uses the BootOrder property to specify the persistent boot order. |

6.25.5.4 BootSourceOverrideEnabled

The state of the boot source override feature.

| string | Description |
|------------|---|
| Continuous | The system boots to the target specified in the BootSourceOverrideTarget property until this property is <code>Disabled</code> . |
| Disabled | The system boots normally. |
| Once | On its next boot cycle, the system boots one time to the boot source override target. Then, the BootSourceOverrideEnabled value is reset to <code>Disabled</code> . |

6.25.5.5 BootSourceOverrideMode

The BIOS boot mode to use when the system boots from the BootSourceOverrideTarget boot source.

| string | Description |
|--------|--|
| Legacy | The system boots in non-UEFI boot mode to the boot source override target. |
| UEFI | The system boots in UEFI boot mode to the boot source override target. |

6.25.5.6 BootSourceOverrideTarget

The current boot source to use at the next boot instead of the normal boot device, if `BootSourceOverrideEnabled` does not contain `Disabled`.

| string | Description |
|----------------------|--|
| BiosSetup | Boot to the BIOS setup utility. |
| Cd | Boot from the CD or DVD. |
| Diags | Boot to the manufacturer's diagnostics program. |
| Floppy | Boot from the floppy disk drive. |
| Hdd | Boot from a hard drive. |
| None | Boot from the normal boot device. |
| Pxe | Boot from the Pre-Boot EXecution (PXE) environment. |
| Recovery (v1.19+) | Boot to a system-designated recovery process or image. |
| RemoteDrive (v1.2+) | Boot from a remote drive, such as an iSCSI target. |
| SDCard (v1.1+) | Boot from an SD card. |
| UefiBootNext (v1.5+) | Boot to the UEFI device that the <code>BootNext</code> property specifies. |
| UefiHttp (v1.1+) | Boot from a UEFI HTTP network location. |
| UefiShell | Boot to the UEFI Shell. |
| UefiTarget | Boot to the UEFI device specified in the <code>UefiTargetBootSourceOverride</code> property. |
| Usb | Boot from a system BIOS-specified USB device. |
| Utilities | Boot to the manufacturer's utilities program or programs. |

6.25.5.7 CachePolicy

The cache policy to control how KMIP data is cached.

| string | Description |
|---------------|--|
| AfterFirstUse | The system caches KMIP data after first use for the duration specified by the <code>CacheDuration</code> property. |

| string | Description |
|--------|--------------------------------------|
| None | The system does not cache KMIP data. |

6.25.5.8 ConnectTypesSupported

This property enumerates the graphical console connection types that the implementation allows.

| string | Description |
|--------|---|
| KVMIP | The controller supports a graphical console connection through a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol. |
| OEM | The controller supports a graphical console connection through an OEM-specific protocol. |

6.25.5.9 DecommissionTypes

The types of data to remove from the system.

| string | Description |
|---------------|--|
| All | Remove all possible data from the server. |
| BIOSConfig | Reset all BIOS settings to factory defaults. |
| Logs | Clear all logs. |
| ManagerConfig | Reset all manager settings to factory defaults. |
| NetworkConfig | Reset all network settings to factory defaults. |
| StorageConfig | Reset all storage controller settings to factory defaults. This will leave the user data intact unless that is also specified. |
| UserData | Remove all possible data from block devices and other user or operating system accessible storage attached to the system. |

6.25.5.10 HostingRoles

The hosting roles that this computer system supports.

| string | Description |
|----------------------|---|
| Appliance | The system hosts functionality that supports the system acting as an appliance. |
| ApplicationServer | The system hosts functionality that supports general purpose applications. |
| BareMetalServer | The system hosts functionality that supports the system acting as a bare metal server. |
| ContainerServer | The system hosts functionality that supports the system acting as a container server. |
| StorageServer | The system hosts functionality that supports the system acting as a storage server. |
| Switch | The system hosts functionality that supports the system acting as a switch. |
| VirtualMachineServer | The system hosts functionality that supports the system acting as a virtual machine server. |

6.25.5.11 IndicatorLED

The state of the indicator LED, which identifies the system.

| string | Description |
|------------------------------------|--|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |
| Unknown (<i>deprecated v1.1</i>) | The state of the indicator LED cannot be determined. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of returning null if the state is unknown.</i> |

6.25.5.12 InterfaceType

The interface type of the Trusted Module.

| string | Description |
|--------|--|
| TCM1_0 | Trusted Cryptography Module (TCM) 1.0. |
| TPM1_2 | Trusted Platform Module (TPM) 1.2. |
| TPM2_0 | Trusted Platform Module (TPM) 2.0. |

6.25.5.13 InterfaceTypeSelection

The interface type selection supported by this Trusted Module.

| string | Description |
|----------------|---|
| BiosSetting | The TrustedModule supports switching InterfaceType through platform software, such as a BIOS configuration attribute. |
| FirmwareUpdate | The TrustedModule supports switching InterfaceType through a firmware update. |
| None | The TrustedModule does not support switching the InterfaceType. |
| OemMethod | The TrustedModule supports switching InterfaceType through an OEM proprietary mechanism. |

6.25.5.14 LastState

The last boot progress state.

| string | Description |
|---|---|
| BusInitializationStarted | The system has started initializing the buses. |
| MemoryInitializationStarted | The system has started initializing the memory. |
| None | The system is not booting. |
| OEM | A boot progress state in an OEM-defined format. |
| OSBootStarted | The operating system has started booting. |
| OSRunning | The operating system is running. |
| PCIResourceConfigStarted | The system has started initializing the PCI resources. |
| PrimaryProcessorInitializationStarted | The system has started initializing the primary processor. |
| SecondaryProcessorInitializationStarted | The system has started initializing the remaining processors. |
| SetupEntered (v1.15+) | The system has entered the setup utility. |
| SystemHardwareInitializationComplete | The system has completed initializing all hardware. |

6.25.5.15 MemoryMirroring

The ability and type of memory mirroring that this computer system supports.

| string | Description |
|--------|---|
| DIMM | The system supports DIMM mirroring at the DIMM level. Individual DIMMs can be mirrored. |

| string | Description |
|--------|---|
| Hybrid | The system supports a hybrid mirroring at the system and DIMM levels. Individual DIMMs can be mirrored. |
| None | The system does not support DIMM mirroring. |
| System | The system supports DIMM mirroring at the system level. Individual DIMMs are not paired for mirroring in this mode. |

6.25.5.16 PowerMode

The power mode setting of the computer system.

| string | Description |
|---------------------|---|
| BalancedPerformance | The system performs at the highest speeds while utilization is high and performs at reduced speeds when the utilization is low. |
| MaximumPerformance | The system performs at the highest speeds possible. |
| OEM | The system power mode is OEM-defined. |
| OSControlled | The system power mode is controlled by the operating system. |
| PowerSaving | The system performs at reduced speeds to save power. |
| Static | The system power mode is static. |

6.25.5.17 PowerRestorePolicy

The desired power state of the system when power is restored after a power loss.

| string | Description |
|-----------|---|
| AlwaysOff | The system always remains powered off when power is applied. |
| AlwaysOn | The system always powers on when power is applied. |
| LastState | The system returns to its last on or off power state when power is applied. |

6.25.5.18 PowerState

The current power state of the system.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.25.5.19 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.25.5.20 SerialConsoleProtocol

The information about a serial console service that this system provides.

| | | | |
|--|---------|----------------------|---|
| ConsoleEntryCommand (v1.13+) | string | read-only (null) | The command string passed to the service to select or enter the system's serial console. |
| HotKeySequenceDisplay (v1.13+) | string | read-only (null) | The hotkey sequence available for the user to exit the serial console session. |
| Port (v1.13+) | integer | read-write (null) | The protocol port. |
| ServiceEnabled (v1.13+) | boolean | read-write | An indication of whether the service is enabled for this system. |
| SharedWithManagerCLI (v1.13+) | boolean | read-only | Indicates whether the serial console service is shared with access to the manager's command-line interface (CLI). |

6.25.5.21 StopBootOnFault

If the boot should stop on a fault.

| string | Description |
|----------|--|
| AnyFault | The system should stop the boot on any fault. |
| Never | The system performs any normal recovery actions during boot if a fault occurs. |

6.25.5.22 SystemType

The type of computer system that this resource represents.

| string | Description |
|------------------|--|
| Composed (v1.4+) | A computer system constructed by binding resource blocks together. |
| DPU (v1.16+) | A computer system that performs the functions of a data processing unit, such as a SmartNIC. |

| string | Description |
|-----------------------|---|
| OS (deprecated v1.21) | An operating system instance. <i>Deprecated in v1.21 and later. This property has been deprecated in favor of representing operating systems with the OperatingSystem resource.</i> |
| Physical | A computer system. |
| PhysicallyPartitioned | A hardware-based partition of a computer system. |
| Virtual | A virtual machine instance running on this system. |
| VirtuallyPartitioned | A virtual or software-based partition of a computer system. |

6.25.5.23 TimeoutAction

The action to perform when the watchdog timer reaches its timeout value.

| string | Description |
|-------------|--------------------------------|
| None | No action taken. |
| OEM | Perform an OEM-defined action. |
| PowerCycle | Power cycle the system. |
| PowerDown | Power down the system. |
| ResetSystem | Reset the system. |

6.25.5.24 TrustedModuleRequiredToBoot

The Trusted Module boot requirement.

| string | Description |
|----------|--|
| Disabled | No Trusted Module requirement to boot. |
| Required | A functional Trusted Module is required to boot. |

6.25.5.25 UseCases

The composition use cases in which this computer system can participate.

| string | Description |
|----------------------|--|
| ExpandableSystem | This computer system supports expandable system composition and is associated with a resource block. |
| ResourceBlockCapable | This computer system supports being registered as a resource block in order for it to participate in composition requests. |

6.25.5.26 UUID

The UUID for this system.

The UUID property contains a value that represents the universal unique identifier number (UUID) of a system.

The UUID property is a string data type. The format of the string is the 36-character string format specified in RFC4122: "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx". Each x represents a hexadecimal digit (0-f).

Regarding the case of the hex values, RFC4122 specifies that the hex values should be lowercase characters. Most modern scripting languages typically also represent hex values in lowercase characters following the RFC. However, dmidecode, WMI and some Redfish implementations currently use uppercase characters for UUID on output.

6.25.5.27 WarningAction

The action to perform when the watchdog timer is close to reaching its timeout value. This action typically occurs from three to ten seconds before to the timeout value, but the exact timing is dependent on the implementation.

| string | Description |
|---------------------|---|
| DiagnosticInterrupt | Raise a (typically non-maskable) Diagnostic Interrupt. |
| MessagingInterrupt | Raise a legacy IPMI messaging interrupt. |
| None | No action taken. |
| OEM | Perform an OEM-defined action. |
| SCI | Raise an interrupt using the ACPI System Control Interrupt (SCI). |
| SMI | Raise a Systems Management Interrupt (SMI). |

6.25.6 Example response

```
{
  "@odata.type": "#ComputerSystem.v1_21_0.ComputerSystem",
  "Id": "437XR1138R2",
  "Name": "WebFrontEnd483",
  "SystemType": "Physical",
  "AssetTag": "Chicago-45Z-2381",
  "Manufacturer": "Contoso",
  "Model": "3500RX",
  "SKU": "8675309",
  "SerialNumber": "437XR1138R2",
  "PartNumber": "224071-J23",
  "Description": "Web Front End node",
  "UUID": "38947555-7742-3448-3784-823347823834",
  "HostName": "web483",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "HostingRoles": [
    "ApplicationServer"
  ],
  "LocationIndicatorActive": false,
  "PowerState": "On",
  "Boot": {
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Pxe",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None",
      "Pxe",
      "Cd",
      "Usb",
      "Hdd",
      "BiosSetup",
      "Utilities",
      "Diags",
      "SDCard",
      "UefiTarget"
    ],
    "BootSourceOverrideMode": "UEFI",
    "UefiTargetBootSourceOverride": "/0x31/0x33/0x01/0x01"
  },
  "TrustedModules": [
    {
      "FirmwareVersion": "1.13b",
      "InterfaceType": "TPM1_2",
      "Status": {
```



```
        "State": "Enabled",
        "Health": "OK"
    }
}
],
"Oem": {
    "Contoso": {
        "@odata.type": "#Contoso.ComputerSystem",
        "ProductionLocation": {
            "FacilityName": "PacWest Production Facility",
            "Country": "USA"
        }
    },
    "Chipwise": {
        "@odata.type": "#Chipwise.ComputerSystem",
        "Style": "Executive"
    }
},
"BiosVersion": "P79 v1.33 (02/28/2015)",
"ProcessorSummary": {
    "Count": 2,
    "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series"
},
"MemorySummary": {
    "TotalSystemMemoryGiB": 96,
    "TotalSystemPersistentMemoryGiB": 0,
    "MemoryMirroring": "None"
},
"Bios": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/BIOS"
},
"Processors": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors"
},
"Memory": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory"
},
"EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces"
},
"SimpleStorage": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/SimpleStorage"
},
"LogServices": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/LogServices"
},
"Links": {
    "Chassis": [
        {
            "@odata.id": "/redfish/v1/Chassis/1U"
        }
    ]
}
```

```

    }
  ],
  "ManagedBy": [
    {
      "@odata.id": "/redfish/v1/Managers/BMC"
    }
  ]
},
"Actions": {
  "#ComputerSystem.Reset": {
    "target": "/redfish/v1/Systems/437XR1138R2/Actions/ComputerSystem.Reset",
    "ResetType@Redfish.AllowableValues": [
      "On",
      "ForceOff",
      "GracefulShutdown",
      "GracefulRestart",
      "ForceRestart",
      "Nmi",
      "ForceOn",
      "PushPowerButton"
    ]
  },
  "Oem": {
    "#Contoso.Reset": {
      "target": "/redfish/v1/Systems/437XR1138R2/Oem/Contoso/Actions/Contoso.Reset"
    }
  }
},
"@odata.id": "/redfish/v1/Systems/437XR1138R2"
}

```

6.26 Connection 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2021.1 | 2020.3 |

6.26.1 Description

The Connection schema describes the access permissions endpoints, or groups of endpoints, have with other resources in the service.

6.26.2 URIs

/redfish/v1/Fabrics/{FabricId}/Connections/{ConnectionId}

6.26.3 Properties

| Property | Type | Attributes | Notes |
|--|---------|----------------------|--|
| ConnectionKeys (v1.1+) { | object | | The permission keys required to access the specified resources for this connection. |
| CHAP (v1.2+) { | object | (null) | The CHAP-specific permission key information for this connection. |
| CHAPPassword (v1.2+) | string | read-write (null) | The password for CHAP authentication. The value is <code>null</code> in responses. |
| CHAPUsername (v1.2+) | string | read-write (null) | The username for CHAP authentication. |
| InitiatorCHAPPassword (v1.2+) | string | read-write (null) | The initiator shared secret for mutual (2-way) CHAP authentication. The value is <code>null</code> in responses. |
| InitiatorCHAPUsername (v1.2+) | string | read-write (null) | The initiator username for mutual (2-way) CHAP authentication. |
| TargetCHAPPassword (v1.2+) | string | read-write (null) | The target shared secret for mutual (2-way) CHAP authentication. The value is <code>null</code> in responses. |
| } | | | |
| DHCHAP (v1.2+) { | object | (null) | The DHCHAP-specific permission key information for this connection. |
| LocalDHCHAPAuthSecret (v1.2+) | string | read-write (null) | The local DHCHAP authentication secret. The value is <code>null</code> in responses. |
| PeerDHCHAPAuthSecret (v1.2+) | string | read-write (null) | The peer DHCHAP authentication secret. The value is <code>null</code> in responses. |
| } | | | |
| GenZ (v1.1+) { | object | (null) | The Gen-Z-specific permission key information for this connection. |
| AccessKey (v1.1+) | string | read-write | The Access Key for this connection. |
| RKeyDomainCheckingEnabled (v1.1+) | boolean | read-write | Indicates whether Region Key domain checking is enabled for this connection. |

| Property | Type | Attributes | Notes |
|------------------------------------|------------------|---------------------|---|
| RKeyReadOnlyKey (v1.1+) | string | read-write | The read-only Region Key for this connection. |
| RKeyReadWriteKey (v1.1+) | string | read-write | The read-write Region Key for this connection. |
| } | | | |
| } | | | |
| ConnectionType | string (enum) | read-only (null) | The type of resources this connection specifies. <i>For the possible property values, see ConnectionType in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| InitiatorEndpointGroups [{ | array | | An array of links to the initiator endpoint groups that are associated with this connection. |
| @odata.id | string | read-write | Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details. |
| }] | | | |
| InitiatorEndpoints [{ | array | | An array of links to the initiator endpoints that are associated with this connection. |
| @odata.id | string | read-write | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| TargetEndpointGroups [{ | array | | An array of links to the target endpoint groups that are associated with this connection. |
| @odata.id | string | read-write | Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details. |
| }] | | | |
| TargetEndpoints [{ | array | | An array of links to the target endpoints that are associated with this connection. |
| @odata.id | string | read-write | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|-------------------|--|
| MemoryChunkInfo (v1.1+) [{ | array | | The set of memory chunks and access capabilities specified for this connection. |
| AccessCapabilities (v1.1+) [] | array (string (enum)) | read-write (null) | Supported IO access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i> |
| AccessState (v1.1+) | string (enum) | read-write (null) | The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i> |
| MemoryChunk (v1.1+) { | object | (null) | The specified memory chunk. See the <i>MemoryChunks</i> schema for details on this property. |
| @odata.id | string | read-write | Link to a MemoryChunks resource. See the Links section and the <i>MemoryChunks</i> schema for details. |
| } | | | |
| }] | | | |
| MemoryRegionInfo (v1.3+) [{ | array | | The set of memory regions and access capabilities specified for this connection. |
| AccessCapabilities (v1.3+) [] | array (string (enum)) | read-write (null) | Supported IO access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i> |
| AccessState (v1.3+) | string (enum) | read-write (null) | The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i> |
| MemoryRegion (v1.3+) { | object | (null) | The specified memory region. See the <i>MemoryRegion</i> schema for details on this property. |
| @odata.id | string | read-write | Link to a MemoryRegion resource. See the Links section and the <i>MemoryRegion</i> schema for details. |
| } | | | |
| }] | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| VolumeInfo [{ | array | | The set of volumes and access capabilities specified for this connection. |
| AccessCapabilities [] | array (string (enum)) | read-write (null) | Supported IO access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i> |

| Property | Type | Attributes | Notes |
|--------------------|------------------|--------------------------------------|---|
| AccessState | string (enum) | <i>read-write</i> (<i>null</i>) | The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i> |
| LUN (v1.2+) | integer | <i>read-write</i> (<i>null</i>) | The initiator-visible logical unit number (LUN) assigned to this volume. |
| Volume { | object | | The specified volume. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| }] | | | |

6.26.4 Property details

6.26.4.1 AccessCapabilities

Supported IO access capabilities.

| string | Description |
|--------|---|
| Read | Endpoints are allowed to perform reads from the specified resource. |
| Write | Endpoints are allowed to perform writes to the specified resource. |

6.26.4.2 AccessState

The access state for this connection.

| string | Description |
|---------------|---|
| NonOptimized | The resource is in an active and non-optimized state. |
| Optimized | The resource is in an active and optimized state. |
| Standby | The resource is in a standby state. |
| Transitioning | The resource is transitioning to a new state. |
| Unavailable | The resource is in an unavailable state. |

6.26.4.3 ConnectionType

The type of resources this connection specifies.

| string | Description |
|---------|---|
| Memory | A connection to memory related resources. |
| Storage | A connection to storage related resources, such as volumes. |

6.26.5 Example response

```
{
  "@odata.type": "#Connection.v1_3_0.Connection",
  "Id": "1",
  "Name": "Connection info for host 1",
  "ConnectionType": "Storage",
  "VolumeInfo": [
    {
      "AccessCapabilities": [
        "Read",
        "Write"
      ],
      "Volume": {
        "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/1"
      }
    },
    {
      "AccessCapabilities": [
        "Read",
        "Write"
      ],
      "Volume": {
        "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/3"
      }
    }
  ],
  "Links": {
    "InitiatorEndpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Connections/1"
}
```

6.27 ConnectionMethod 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2022.3 | 2020.2 |

6.27.1 Description

The ConnectionMethod schema describes the protocol, provider, or other method used to communicate to a given access point for a Redfish aggregation service.

6.27.2 URIs

/redfish/v1/AggregationService/ConnectionMethods/{ConnectionMethodId}

6.27.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|------------------|-------------------------------------|---|
| ConnectionMethodType | string (enum) | <i>read-only</i> (<i>null</i>) | The type of connection method. <i>For the possible property values, see ConnectionMethodType in Property details.</i> |
| ConnectionMethodVariant | string | <i>read-only</i> (<i>null</i>) | The variant of connection method. |
| Links { | object | | The links to other resources that are related to this resource. |
| AggregationSources [| array | | An array of links to the access points using this connection method. |
| { | | | |
| @odata.id | string | <i>read-only</i> | Link to a AggregationSource resource. See the Links section and the <i>AggregationSource</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| TunnelingProtocol (v1.1+) | string (enum) | <i>read-only</i> (<i>null</i>) | The tunneling protocol used for this connection method. <i>For the possible property values, see TunnelingProtocol in Property details.</i> |

6.27.4 Property details

6.27.4.1 ConnectionMethodType

The type of connection method.

| string | Description |
|---------|-----------------------------|
| IPMI15 | IPMI 1.5 connection method. |
| IPMI20 | IPMI 2.0 connection method. |
| NETCONF | NETCONF connection method. |
| OEM | OEM connection method. |
| Redfish | Redfish connection method. |
| SNMP | SNMP connection method. |

6.27.4.2 TunnelingProtocol

The tunneling protocol used for this connection method.

| string | Description |
|--------|----------------|
| OEM | OEM tunneling. |
| SSH | SSH tunneling. |

6.27.5 Example response

```
{
  "@odata.type": "#ConnectionMethod.v1_1_0.ConnectionMethod",
  "Id": "ConnectionMethod1",
  "Name": "ConnectionMethod One",
  "ConnectionMethodType": "Redfish",
  "ConnectionMethodVariant": "Contoso",
  "Links": {
    "AggregationSources": [
      {
        "@odata.id": "/redfish/v1/AggregationService/AggregationSources/AggregationSource1"
      }
    ]
  }
}
```

```

    ],
    },
    "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods/ConnectionMethod1"
  }
}

```

6.28 Container 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.2 |

6.28.1 Description

The Container schema represents an instance of a container that is running on a computer system.

6.28.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Containers/{ContainerId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.28.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|--------------------|-----------------------------------|--|
| EthernetInterfaces { | object | | The link to the collection of Ethernet interfaces associated with this container. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details. |
| } | | | |
| Limits { | object | <i>(null)</i> | The resource limits allocated to this container. |
| CPUCount | number | <i>read-only</i> <i>(null)</i> | The number of processors available to this container. |
| MemoryBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of memory available to this container in bytes. |
| } | | | |

| Property | Type | Attributes | Notes |
|------------------------|--------------------|-------------------------|---|
| Links { | object | | The links to other resources that are related to this resource. |
| ContainerImage | object | | The link to the container image for this container. See the <i>ContainerImage</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ContainerImage resource. See the Links section and the <i>ContainerImage</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| MountPoints [{ | array | | The file system mount points configured for this container. |
| Destination | string | <i>read-only (null)</i> | The file system path in the container that is provided as the mount point to access the files and folders contained in the source path. |
| Source | string | <i>read-only (null)</i> | The file system path from the hosting system that is provided to this container. |
| }] | | | |
| ProgrammaticId | string | <i>read-only (null)</i> | The programmatic identifier for this container. |
| StartTime | string (date-time) | <i>read-only (null)</i> | The date and time when the container started running. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.28.4 Actions

6.28.4.1 Reset

Description

This action resets the container.

Action URI

{Base URI of target resource}/Actions/Container.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "GracefulRestart"
}
```

6.28.5 Property details

6.28.5.1 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |

| string | Description |
|---------|---|
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.28.6 Example response

```
{
  "@odata.type": "#Container.v1_0_0.Container",
  "Id": "WebBusinessLogic",
  "Name": "Internal Web Business Logic",
  "StartTime": "2021-02-06T22:49:02Z",
  "Limits": {
    "MemoryBytes": 4294967296,
    "CPUCount": 1.5
  },
  "Status": {
    "State": "Enabled"
  },
  "MountPoints": [
    {
      "Source": "/opt/MyContainerStorage/WebConfig",
      "Destination": "/config"
    }
  ],
  "ProgrammaticId": "5584c257aba833892e1841cb77d898edc1f942f3bf901e7e0c390a504b9897a0",
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Containers/WebBusinessLogic/EthernetInterfaces"
  },
  "Links": {
    "ContainerImage": {
      "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/ContainerImages/WebLogic"
    }
  },
  "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Containers/WebBusinessLogic"
}
```

6.29 ContainerImage 1.0.0

| | |
|---------|--------|
| Version | v1.0 |
| Release | 2023.2 |

6.29.1 Description

The ContainerImage schema represents a container image available to a computer system.

6.29.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/ContainerImages/{ContainerImageId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.29.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|-----------------------|-------------------------------------|--|
| CreateTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the container image was created. |
| Links { | object | | The links to other resources that are related to this resource. |
| Containers [{ | array | | The array of links to the containers running from this container image. |
| @odata.id | string | <i>read-only</i> | Link to a Container resource. See the Links section and the <i>Container</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SoftwareImage | object | | The link to the software image for this container image. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| } | | | |
| ProgrammaticId | string | <i>read-only</i> (<i>null</i>) | The programmatic identifier for this container image. |
| SizeBytes | integer (bytes) | <i>read-only</i> (<i>null</i>) | The size of this container image in bytes. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Type | string (enum) | <i>read-only</i> (<i>null</i>) | The image type of this container image. <i>For the possible property values, see Type in Property details.</i> |

| Property | Type | Attributes | Notes |
|----------------|--------|-------------------------------------|----------------------------------|
| Version | string | <i>read-only</i> (<i>null</i>) | The version of this application. |

6.29.4 Property details

6.29.4.1 Type

The image type of this container image.

| string | Description |
|----------|----------------------------------|
| DockerV1 | Docker V1. |
| DockerV2 | Docker V2. |
| OCI | OCI (Open Container Initiative). |

6.29.5 Example response

```
{
  "@odata.type": "#ContainerImage.v1_0_0.ContainerImage",
  "Id": "WebLogic",
  "Name": "Contoso Internal Web Business Logic 1.0",
  "CreateTime": "2021-02-06T22:49:02Z",
  "Type": "OCI",
  "Version": "1.0.0",
  "Status": {
    "State": "Enabled"
  },
  "ProgrammaticId": "2fbd319a987e5265aae45b7e786dead51d1aae48b7bea42bcfc91a62934ca37f",
  "SizeBytes": 373293056,
  "Links": {
    "Containers": [
      {
        "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Containers/WebBusinessLogic"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/ContainerImages/WebLogic"
}
```

6.30 Control 1.4.0

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.2 | 2021.4 | 2021.2 |

6.30.1 Description

The Control schema describes a control point and its properties.

6.30.2 URIs

/redfish/v1/Chassis/{ChassisId}/Controls/{ControlId}

6.30.3 Properties

| Property | Type | Attributes | Notes |
|--|----------------------|--------------------------|---|
| Accuracy (<i>deprecated v1.4</i>) | number (%) | <i>read-only (null)</i> | The estimated percent error of measured versus actual values. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of SetPointAccuracy to provide a range instead of a percentage.</i> |
| AllowableMax | number | <i>read-only (null)</i> | The maximum possible setting for this control. |
| AllowableMin | number | <i>read-only (null)</i> | The minimum possible setting for this control. |
| AllowableNumericValues [] | array (number, null) | <i>read-only</i> | The supported values for the set point. |
| AssociatedSensors [{ | array | | An array of links to the sensors associated with this control. |
| @odata.id | string | <i>read-only</i> | Link to a Sensor resource. See the Links section and the <i>Sensor</i> schema for details. |
| }] | | | |
| ControlDelaySeconds | number | <i>read-write (null)</i> | The time delay in seconds before the control will activate once the value has deviated from the set point. |

| Property | Type | Attributes | Notes |
|--------------------------------|-----------------------|----------------------|---|
| ControlLoop { | object | (null) | The control loop details. |
| CoefficientUpdateTime | string (date-time) | read-only (null) | The date and time that the control loop coefficients were changed. |
| Differential | number | read-write (null) | The differential coefficient. |
| Integral | number | read-write (null) | The integral coefficient. |
| Proportional | number | read-write (null) | The proportional coefficient. |
| } | | | |
| ControlMode | string (enum) | read-write (null) | The current operating mode of the control. <i>For the possible property values, see ControlMode in Property details.</i> |
| ControlType | string (enum) | read-only (null) | The type of control. <i>For the possible property values, see ControlType in Property details.</i> |
| DeadBand | number | read-write (null) | The maximum deviation from the set point allowed before the control will activate. |
| DefaultSetPoint (v1.3+) | number | read-only (null) | The default set point of the control. |
| Implementation | string (enum) | read-only (null) | The implementation of the control. <i>For the possible property values, see Implementation in Property details.</i> |
| Increment | number | read-only (null) | The smallest increment supported for the set point. |
| Location { } | object | | The location information for this control. For property details, see Location. |
| PhysicalContext | string (enum) | read-only (null) | The area or device to which this control applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | read-only (null) | The usage or location within a device to which this control applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| RelatedItem [{ | array | | An array of links to resources that this control services. |
| @odata.id | string (URI) | read-only | The unique identifier for a resource. |

| Property | Type | Attributes | Notes |
|---------------------------------|-----------------------|------------------------------------|---|
| }] | | | |
| Sensor { | object (excerpt) | | The sensor reading associated with this control. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| } | | | |
| SetPoint | number | <i>read-write</i> <i>(null)</i> | The desired set point of the control. |
| SetPointAccuracy (v1.4+) | number | <i>read-only</i> <i>(null)</i> | Accuracy (+/-) of the set point. |
| SetPointType | string (enum) | <i>read-only</i> <i>(null)</i> | The set point type used to operate the control. <i>For the possible property values, see SetPointType in Property details.</i> |
| SetPointUnits | string | <i>read-only</i> <i>(null)</i> | The units of the set point. |
| SetPointUpdateTime | string (date-time) | <i>read-only</i> <i>(null)</i> | The date and time that the set point was changed. |
| SettingMax | number | <i>read-write</i> <i>(null)</i> | The maximum set point in the allowed range. |
| SettingMin | number | <i>read-write</i> <i>(null)</i> | The minimum set point in the allowed range. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |

6.30.4 Actions

6.30.4.1 ResetToDefaults (v1.2+)

Description

The action resets the values of writable properties to factory defaults.

Action URI

{Base URI of target resource}/Actions/Control.ResetToDefaults

Action parameters

This action takes no parameters.

6.30.5 Property details

6.30.5.1 ControlMode

The current operating mode of the control.

| string | Description |
|-----------|---|
| Automatic | Automatically adjust control to meet the set point. |
| Disabled | The control has been disabled. |
| Manual | No automatic adjustments are made to the control. |
| Override | User override of the automatic set point value. |

6.30.5.2 ControlType

The type of control.

| string | Description |
|-----------------------------------|--|
| Frequency | Frequency (Hz) control. |
| FrequencyMHz (v1.1+) | Frequency (MHz) control. |
| Power | Power (W) control or power limit. |
| Pressure (v1.1+, deprecated v1.3) | Pressure (kPa) control. <i>Deprecated in v1.3 and later. This value has been deprecated in favor of PressurekPa for units consistency with the equivalent Sensor resource ReadingType value.</i> |
| PressurekPa (v1.3+) | Pressure (kPa) control. |
| Temperature | Temperature (C) control or thermostat. |
| Valve (v1.3+) | Valve (% open) control. |

6.30.5.3 Implementation

The implementation of the control.

| string | Description |
|--------------|--|
| Direct | The set point directly affects the control value. |
| Monitored | A physical control that cannot be adjusted through this interface. |
| Programmable | The set point can be adjusted through this interface. |

6.30.5.4 PhysicalContext

The area or device to which this control applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |

| string | Description |
|------------------|--|
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |

| string | Description |
|------------------|-----------------------------------|
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.30.5.5 PhysicalSubContext

The usage or location within a device to which this control applies.

| string | Description |
|--------|-------------|
| Input | The input. |
| Output | The output. |

6.30.5.6 SetPointType

The set point type used to operate the control.

| string | Description |
|--------|----------------------------------|
| Range | Control uses a range of values. |
| Single | Control uses a single set point. |

6.30.6 Example response

```
{
  "@odata.type": "#Control.v1_4_0.Control",
  "Id": "PowerLimit",
  "Name": "System Power Limit",
  "PhysicalContext": "Chassis",
  "ControlType": "Power",
  "ControlMode": "Automatic",
  "SetPoint": 500,
  "SetPointUnits": "W",
  "AllowableMax": 1000,
  "AllowableMin": 150,
  "Sensor": {
    "Reading": 374,
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/TotalPower"
  },
}
```

```

    "Status": {
      "Health": "OK",
      "State": "Enabled"
    },
    "@odata.id": "/redfish/v1/Chassis/1U/Controls/PowerLimit"
  }

```

6.31 CoolantConnector 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.31.1 Description

This schema describes a liquid coolant connector, including any associated instrumentation.

6.31.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/CoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/PrimaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/SecondaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/CoolingLoops/{CoolingUnitId}/PrimaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/CoolingLoops/{CoolingUnitId}/SecondaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/PrimaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/SecondaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/PrimaryCoolantConnectors/{CoolantConnectorId}

/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/SecondaryCoolantConnectors/{CoolantConnectorId}

6.31.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|------------------|--------------------------------------|--|
| Coolant { | object | | Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Coolant resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| } | | | |
| CoolantConnectorType | string (enum) | <i>read-only</i> (<i>null</i>) | The type of coolant connector. <i>For the possible property values, see CoolantConnectorType in Property details.</i> |
| CoolingLoopName | string | <i>read-write</i> (<i>null</i>) | The name of the cooling loop attached to this interface. |
| CoolingManagerURI | string (URI) | <i>read-write</i> (<i>null</i>) | The link to the application that manages the cooling loop. |
| DeltaPressurekPa {} | object | | The differential pressure (kPa). For more information about this property, see SensorExcerpt in Property Details. |
| DeltaTemperatureCelsius {} | object | | The differential temperature (C). For more information about this property, see SensorExcerpt in Property Details. |
| FlowLitersPerMinute {} | object | | The liquid flow (L/min). For more information about this property, see SensorExcerpt in Property Details. |
| HeatRemovedkW {} | object | | The heat removed (kW) through this connector. For more information about this property, see SensorExcerpt in Property Details. |
| Links { | object | | The links to other resources that are related to this resource. |
| ConnectedChassis [{ | array | | Any array of links to chassis at the other end of the connection. |
| @odata.id | string | <i>read-write</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| ConnectedCoolingLoop { | object | (<i>null</i>) | A link to the cooling loop at the other end of the connection. See the <i>CoolingLoop</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|---------------------------------------|-------------------|----------------------|--|
| ConnectedCoolingUnit { | object | (null) | A link to the cooling unit at the other end of the connection. See the <i>CoolingUnit</i> schema for details on this property. |
| @odata.id | string | read-write | Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| LocationIndicatorActive | boolean | read-write (null) | An indicator allowing an operator to physically locate this resource. |
| RatedFlowLitersPerMinute | number (L/min) | read-only (null) | The rated liquid flow (L/min) for this loop interface. |
| RatedFlowPressurekPa | number (kPa) | read-only (null) | The pressure (kPa) at which the rated liquid flow is valid. |
| RatedPressurekPa | number (kPa) | read-only (null) | The rated pressure (kPa) for this connector. |
| ReturnPressurekPa {} | object | | The return pressure (kPa). For more information about this property, see SensorExcerpt in Property Details. |
| ReturnTemperatureCelsius {} | object | | The return temperature (C). For more information about this property, see SensorExcerpt in Property Details. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupplyPressurekPa {} | object | | The supply pressure (kPa). For more information about this property, see SensorExcerpt in Property Details. |
| SupplyTemperatureCelsius {} | object | | The supply temperature (C). For more information about this property, see SensorExcerpt in Property Details. |

6.31.4 Property details

6.31.4.1 CoolantConnectorType

The type of coolant connector.

| string | Description |
|--------|--|
| Closed | A closed or self-contained loop. |
| Inline | An inline connection or measurement point. |
| Pair | A connection pair. |
| Return | A return or outflow connection. |
| Supply | A supply or intake connection. |

6.31.4.2 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|-----------------|----------------------------|--|
| DataSourceUri | string (URI) | <i>read-only</i> (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (null) | The sensor value. |

6.31.5 Example response

```
{
  "@odata.type": "#CoolantConnector.v1_0_0.CoolantConnector",
  "Id": "A",
  "Name": "Rack Cooling Loop A",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "CoolantConnectorType": "Pair",
  "RatedFlowLitersPerMinute": 30,
  "FlowLitersPerMinute": {
    "Reading": 24.3
  },
  "SupplyTemperatureCelsius": {
    "Reading": 14.8
  },
  "ReturnTemperatureCelsius": {
    "Reading": 38.2
  },
}
```

```

    "DeltaTemperatureCelsius": {
      "Reading": 23.4
    },
    "SupplyPressurekPa": {
      "Reading": 426.6
    },
    "ReturnPressurekPa": {
      "Reading": 409.9
    },
    "DeltaPressurekPa": {
      "Reading": 31.7
    },
    "Links": {
      "ConnectedCoolingLoop": {
        "@odata.id": "/redfish/v1/ThermalEquipment/CoolingLoops/Rack4"
      }
    },
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/SecondaryCoolantConnectors/A"
  }

```

6.32 CoolingLoop 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.32.1 Description

This schema describes a cooling loop. A cooling loop might be any coolant-carrying vessel, such as facility-level pipe work, an immersion cooling tank, or a manifold. A loop might describe its connectors and instrumentation, but does not generally include active cooling components or subsystems.

6.32.2 URIs

/redfish/v1/ThermalEquipment/CoolingLoops/{CoolingLoopId}

6.32.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------------|-----------------------------|--------------------------|---|
| ConsumingEquipmentNames [] | array (string, null) | <i>read-write</i> | An array of names of downstream devices that receive coolant from this cooling loop. |
| Coolant { | object | | The coolant details for this cooling loop. |
| AdditiveName | string | <i>read-write (null)</i> | The name of the additive. |
| AdditivePercent | number (%) | <i>read-write (null)</i> | The percent additives contained in the coolant. |
| CoolantType | string (enum) | <i>read-write (null)</i> | The type of coolant. <i>For the possible property values, see CoolantType in Property details.</i> |
| DensityKgPerCubicMeter | number (kg/m ³) | <i>read-write (null)</i> | The density (kg/m ³) of the coolant. |
| RatedServiceHours | number | <i>read-write (null)</i> | The rated hours of service life for this coolant. |
| ServicedDate | string (date-time) | <i>read-write (null)</i> | The date the coolant was last serviced. |
| ServiceHours | number | <i>read-write (null)</i> | The hours of service this coolant has provided. |
| SpecificHeatkJoulesPerKgK | number (kJ/kg/K) | <i>read-write (null)</i> | The specific heat capacity (kJ/(kg*K)) of the coolant. |
| } | | | |
| CoolantLevelPercent { | object (excerpt) | | The coolant capacity filled (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| } | | | |

| Property | Type | Attributes | Notes |
|-----------------------------------|------------------|--------------------------------------|--|
| CoolantLevelStatus | string (enum) | <i>read-only</i> (<i>null</i>) | The status of the coolant level in this cooling loop. <i>For the possible property values, see CoolantLevelStatus in Property details.</i> |
| CoolantQuality | string (enum) | <i>read-only</i> (<i>null</i>) | The quality of the coolant. <i>For the possible property values, see CoolantQuality in Property details.</i> |
| CoolingManagerURI | string (URI) | <i>read-write</i> (<i>null</i>) | The link to the application that manages the cooling loop. |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis { | object | (<i>null</i>) | A link to the chassis that contains this equipment. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Facility { | object | | A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details. |
| } | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this equipment. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| LocationIndicatorActive | boolean | <i>read-write</i> (<i>null</i>) | An indicator allowing an operator to physically locate this resource. |
| PrimaryCoolantConnectors { | object | | A link to the primary coolant connectors for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------------|-------------------------|---|
| RatedFlowLitersPerMinute | number (L/min) | <i>read-only (null)</i> | The rated liquid flow (L/min) for this cooling loop. |
| RatedPressurekPa | number (kPa) | <i>read-only (null)</i> | The rated pressure (kPa) for this cooling loop. |
| SecondaryCoolantConnectors { | object | | A link to the secondary coolant connectors for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| SupplyEquipmentNames [] | array (string, null) | <i>read-write</i> | An array of names of upstream devices that supply coolant to this cooling loop. |
| UserLabel | string | <i>read-write</i> | A user-assigned label. |

6.32.4 Property details

6.32.4.1 CoolantLevelStatus

The status of the coolant level in this cooling loop.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.32.4.2 CoolantQuality

The quality of the coolant.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |

| string | Description |
|---------|---------------------------------|
| OK | Normal. |
| Warning | A condition requires attention. |

6.32.4.3 CoolantType

The type of coolant.

| string | Description |
|--------------|---|
| Dielectric | Dielectric fluid. |
| Fluorocarbon | Fluorocarbon-based. |
| Hydrocarbon | Hydrocarbon-based. |
| Water | Water or glycol mixture, including additives. |

6.32.5 Example response

```
{
  "@odata.type": "#CoolingLoop.v1_0_1.CoolingLoop",
  "Id": "BuildingChiller",
  "Name": "Feed from building chiller",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "UserLabel": "Building Chiller",
  "Coolant": {
    "CoolantType": "Water",
    "AdditiveName": "Generic cooling water biocide",
    "AdditivePercent": 0
  },
  "CoolantLevelStatus": "OK",
  "CoolantQuality": "OK",
  "CoolantLevelPercent": {
    "Reading": 95
  },
  "SupplyEquipmentNames": [
    "Chiller"
  ],
  "ConsumingEquipmentNames": [
    "Rack #1 CDU",

```

```

    "Rack #2 CDU",
    "Rack #3 CDU",
    "Rack #4 CDU"
  ],
  "@odata.id": "/redfish/v1/ThermalEquipment/CoolingLoops/BuildingChiller"
}

```

6.33 CoolingUnit 1.1.0

| Version | v1.1 | v1.0 |
|---------|--------|--------|
| Release | 2023.2 | 2023.1 |

6.33.1 Description

This is the schema definition for a cooling distribution component or unit, such as a cooling distribution unit (CDU) or a heat exchanger.

6.33.2 URIs

```

/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}

```

6.33.3 Properties

| Property | Type | Attributes | Notes |
|-------------------|--------|--------------------------|--|
| Assembly { | object | | The link to the assembly associated with this cooling unit. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag for this equipment. |
| Coolant { | object | | Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|-------------------|-------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Coolant resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| } | | | |
| CoolantConnectorRedundancy (v1.1+)[{ }] | array (object) | | The redundancy information for the coolant connectors in this cooling unit. For property details, see RedundantGroup. |
| CoolingCapacityWatts | integer | <i>read-only</i> (null) | The cooling capacity (W) of this equipment. |
| EnvironmentMetrics { | object | | The link to the environment metrics for this equipment. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| EquipmentType | string (enum) | <i>read-only</i> <i>required</i> | The type of equipment this resource represents. <i>For the possible property values, see EquipmentType in Property details.</i> |
| FilterRedundancy [{ }] | array (object) | | The redundancy information for the groups of filters in this unit. For property details, see RedundantGroup. |
| Filters { | object | | A link to the filters for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Filter</i> . See the Filter schema for details. |
| } | | | |
| FirmwareVersion | string | <i>read-only</i> | The firmware version of this equipment. |
| LeakDetection { | object | | A link to the leak detection components associated with this equipment. See the <i>LeakDetection</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LeakDetection resource. See the Links section and the <i>LeakDetection</i> schema for details. |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis [{ | array | | An array of links to the chassis that contain this equipment. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |

| Property | Type | Attributes | Notes |
|-----------------------------------|--------------------|-------------------------|---|
| }] | | | |
| Facility { | object | | A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details. |
| } | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this equipment. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Location { } | object | | The location of the equipment. For property details, see Location. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this equipment. |
| Model | string | <i>read-only (null)</i> | The product model number of this equipment. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this equipment. |
| PrimaryCoolantConnectors { | object | | A link to the primary coolant connectors for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details. |
| } | | | |
| ProductionDate | string (date-time) | <i>read-only (null)</i> | The production or manufacturing date of this equipment. |
| PumpRedundancy [{ }] | array (object) | | The redundancy information for the groups of pumps in this unit. For property details, see RedundantGroup. |

| Property | Type | Attributes | Notes |
|-------------------------------------|--------|---------------------|---|
| Pumps { | object | | A link to the pumps for this equipment. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Pump</i> . See the Pump schema for details. |
| } | | | |
| Reservoirs { | object | | A link to the reservoirs for this equipment. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Reservoir</i> . See the Reservoir schema for details. |
| } | | | |
| SecondaryCoolantConnectors { | object | | A link to the secondary coolant connectors for this equipment. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>CoolantConnector</i> . See the CoolantConnector schema for details. |
| } | | | |
| SerialNumber | string | read-only (null) | The serial number for this equipment. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UserLabel | string | read-write | A user-assigned label. |
| Version | string | read-only (null) | The hardware version of this equipment. |

6.33.4 Property details

6.33.4.1 EquipmentType

The type of equipment this resource represents.

| string | Description |
|---------------|------------------------------|
| CDU | A cooling distribution unit. |
| HeatExchanger | A heat exchanger. |
| ImmersionUnit | An immersion cooling unit. |

6.33.5 Example response

```
{
  "@odata.type": "#CoolingUnit.v1_1_0.CoolingUnit",
  "Id": "1",
  "EquipmentType": "CDU",
  "Name": "Rack #4 Cooling Distribution Unit",
  "FirmwareVersion": "3.2.0",
  "Version": "1.03b",
  "ProductionDate": "2020-12-24T08:00:00Z",
  "Manufacturer": "Contoso",
  "Model": "BRRR4000",
  "SerialNumber": "29347ZT536",
  "PartNumber": "ICE-9",
  "AssetTag": "PDX5-92381",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "Placement": {
      "Row": "North 1"
    }
  },
  "PrimaryCoolantConnectors": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/PrimaryCoolantConnectors"
  },
  "SecondaryCoolantConnectors": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/SecondaryCoolantConnectors"
  },
  "Pumps": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/Pumps"
  },
  "Filters": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/Filters"
  },
  "EnvironmentMetrics": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/EnvironmentMetrics"
  },
  "LeakDetection": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection"
  },
  "Links": {
    "Facility": {
      "@odata.id": "/redfish/v1/Facilities/Room237"
    }
  },
  "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1"
}
```

6.34 CXLLogicalDevice 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2023.2 | 2022.3 |

6.34.1 Description

The schema definition for the CXLLogicalDevice resource. It represents the properties of a CXL logical device within PCIe device.

6.34.2 URIs

/redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/CXLLogicalDevices/{CXLLogicalDeviceId}

6.34.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|-------------------|------------------|--|
| Identifiers [{ }] | array (object) | | The durable names for the CXL logical device. For property details, see Identifier. |
| Links { | object | | The links to other resources that are related to this resource. |
| Endpoints [{ | array | | An array of links to the endpoints associated with this CXL logical device. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| MemoryChunks [{ | array | | An array of links to the memory chunks owned by this CXL logical device. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryChunks resource. See the Links section and the <i>MemoryChunks</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--------------------------------|---------------------|--------------------------|---|
| MemoryDomains [{ | array | | An array of links to the memory domains associated with this CXL logical device. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions [{ | array | | An array of links to the PCIe functions assigned to this CXL logical device. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| } | | | |
| Log { | object | | The link to the log service associated with this CXL logical device. See the <i>LogService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details. |
| } | | | |
| MemoryRegions (v1.1+) { | object | | The link to the collection of memory regions associated with this CXL logical device. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MemoryRegion</i> . See the MemoryRegion schema for details. |
| } | | | |
| MemorySizeMiB | integer (mebibytes) | <i>read-only</i> | The memory region size defined in this CXL logical device. |
| QoS { | object | | The quality of service configuration for this CXL logical device. |
| AllocatedBandwidth | integer | <i>read-write (null)</i> | The bandwidth allocated for this CXL logical device in multiples of 256. |

| Property | Type | Attributes | Notes |
|--|-----------------------|--------------------------|--|
| LimitPercent | integer (%) | <i>read-write (null)</i> | The bandwidth limit to this CXL logical device as a percentage. |
| } | | | |
| QoSTelemetryCapabilities { | object | | The quality of service telemetry capabilities for this CXL logical device. |
| EgressPortBackpressureSupported | boolean | <i>read-only (null)</i> | Indicates whether the device supports the CXL Specification-defined 'Egress Port Backpressure' mechanism. |
| TemporaryThroughputReductionSupported | boolean | <i>read-only (null)</i> | Indicates whether the device supports the CXL Specification-defined 'Temporary Throughput Reduction' mechanism. |
| } | | | |
| SemanticsSupported [] | array (string (enum)) | <i>read-only</i> | The semantics supported by this CXL logical device. <i>For the possible property values, see SemanticsSupported in Property details.</i> |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.34.4 Property details

6.34.4.1 SemanticsSupported

The semantics supported by this CXL logical device.

| string | Description |
|----------|--------------------------------|
| CXLcache | CXL caching protocol semantic. |
| CXLio | CXL I/O semantic. |
| CXLmem | CXL memory access semantic. |

6.34.5 Example response

```
{
  "@odata.type": "#CXLLogicalDevice.v1_1_0.CXLLogicalDevice",
  "Id": "1",
  "Name": "CXL Logical Device Type 1",
  "Description": "Locally attached CXL Logical Device Type 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "Identifiers": [
    {
      "DurableName": "4C-1D-96-FF-FE-DD-D8-35:0001",
      "DurableNameFormat": "GCXLID"
    }
  ],
  "SemanticsSupported": [
    "CXLio",
    "CXLcache"
  ],
  "Links": {
    "PCIeFunctions": [
      {
        "@odata.id": "/redfish/v1/Chassis/CXL1/PCIeDevices/1/PCIeFunctions/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Chassis/CXL1/PCIeDevices/1/CXLLogicalDevices/1"
}
```

6.35 Drive 1.17.1

| Version | v1.17 | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.1 | 2022.3 | 2022.1 | 2021.4 | 2021.2 | 2020.4 | 2020.3 | 2020.2 | 2019.4 | 2019.3 | 2019.2 | ... |

6.35.1 Description

The Drive schema represents a single physical drive for a system, including links to associated volumes. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.35.2 URIs

/redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}

/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.35.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------|--------------------|----------------------|---|
| Assembly (v1.3+) { | object | | The link to the assembly associated with this drive. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | read-write (null) | The user-assigned asset tag for this drive. |
| BlockSizeBytes | integer (bytes) | read-only (null) | The size, in bytes, of the smallest addressable unit, or block. |
| CapableSpeedGbs | number (Gbit/s) | read-only (null) | The speed, in gigabit per second (Gbit/s), at which this drive can communicate to a storage controller in ideal conditions. |
| CapacityBytes | integer (bytes) | read-only (null) | The size, in bytes, of this drive. |
| Certificates (v1.12+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the <i>Certificate</i> schema for details. |
| } | | | |
| DriveFormFactor (v1.16+) | string (enum) | read-only (null) | The form factor of the drive inserted in this slot. <i>For the possible property values, see DriveFormFactor in Property details.</i> |
| EncryptionAbility | string (enum) | read-only (null) | The encryption ability of this drive. <i>For the possible property values, see EncryptionAbility in Property details.</i> |
| EncryptionStatus | string (enum) | read-only (null) | The status of the encryption of this drive. <i>For the possible property values, see EncryptionStatus in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|----------------|--------------------------|--|
| EnvironmentMetrics (v1.12+) { | object | | The link to the environment metrics for this drive. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FailurePredicted | boolean | <i>read-only (null)</i> | An indication of whether this drive currently predicts a failure in the near future. |
| FirmwareVersion (v1.17+) | string | <i>read-only (null)</i> | The firmware version for this drive. |
| HotspareReplacementMode (v1.5+) | string (enum) | <i>read-write (null)</i> | The replacement mode for the hot spare drive. <i>For the possible property values, see HotspareReplacementMode in Property details.</i> |
| HotspareType | string (enum) | <i>read-write (null)</i> | The type of hot spare that this drive serves as. <i>For the possible property values, see HotspareType in Property details.</i> |
| Identifiers [{ }] | array (object) | | The durable names for the drive. For property details, see Identifier. |
| IndicatorLED (deprecated v1.11) | string (enum) | <i>read-write (null)</i> | The state of the indicator LED, that identifies the drive. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.11 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| ActiveSoftwareImage (v1.16+) { | object | | The link to the software inventory that represents the active drive firmware image. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| Chassis (v1.2+) { | object | | The link to the chassis that contains this drive. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Chassis</i> resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Endpoints (v1.1+) [{ | array | | An array of links to the endpoints that connect to this drive. |

| Property | Type | Attributes | Notes |
|--|--------------|------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| NetworkDeviceFunctions (v1.14+) [{ | array | | An array of links to the network device functions that provide network connectivity for this drive. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions (v1.6+) [{ | array | | An array of links to the PCIe functions that the drive produces. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| SoftwareImages (v1.16+) [{ | array | | The images that are associated with this drive. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| Storage (v1.13+) { | object | | A link to the storage subsystem to which this drive belongs. See the <i>Storage</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| } | | | |
| StoragePools (v1.8+) [{ | array | | An array of links to the storage pools to which this drive belongs. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Volumes [{ | array | | An array of links to the volumes that this drive either wholly or only partially contains. |

| Property | Type | Attributes | Notes |
|---|-----------------|--------------------------|---|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| Location (<i>deprecated v1.4</i>) [{ }] | array (object) | | The location of the drive. For property details, see Location. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of the singular property PhysicalLocation found in Drive.v1_4_0.</i> |
| LocationIndicatorActive (<i>v1.11+</i>) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this drive. |
| Measurements (<i>v1.12+, deprecated v1.14</i>) [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| MediaType | string (enum) | <i>read-only (null)</i> | The type of media contained in this drive. <i>For the possible property values, see MediaType in Property details.</i> |
| Metrics (<i>v1.17+</i>) { | object | <i>(null)</i> | The link to the metrics associated with this drive. See the <i>DriveMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a DriveMetrics resource. See the Links section and the <i>DriveMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only (null)</i> | The model number for the drive. |
| Multipath (<i>v1.9+</i>) | boolean | <i>read-only (null)</i> | An indication of whether the drive is accessible from multiple paths. |
| NegotiatedSpeedGbs | number (Gbit/s) | <i>read-only (null)</i> | The speed, in gigabit per second (Gbit/s), at which this drive currently communicates to the storage controller. |
| Operations (<i>v1.1+</i>) [{ | array | | The operations currently running on the Drive. |
| AssociatedTask (<i>v1.1+</i>) { | object | | The link to the task associated with the operation, if any. See the <i>Task</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|--|-----------------------|--------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Task resource. See the Links section and the <i>Task</i> schema for details. |
| } | | | |
| Operation (v1.17+) | string (enum) | <i>read-only (null)</i> | The type of the operation. <i>For the possible property values, see Operation in Property details.</i> |
| OperationName (v1.1+, deprecated v1.17) | string | <i>read-only (null)</i> | The name of the operation. <i>Deprecated in v1.17 and later. This property is deprecated in favor of the Operation property using the OperationType enumeration defined in the Volume schema.</i> |
| PercentageComplete (v1.1+) | integer (%) | <i>read-only (null)</i> | The percentage of the operation that has been completed. |
| }] | | | |
| PartNumber | string | <i>read-only (null)</i> | The part number for this drive. |
| PhysicalLocation (v1.4+) {} | object | | The location of the drive. For property details, see Location. |
| PredictedMediaLifeLeftPercent | number (%) | <i>read-only (null)</i> | The percentage of reads and writes that are predicted to be available for the media. |
| Protocol | string (enum) | <i>read-only (null)</i> | The protocol that this drive currently uses to communicate to the storage controller. <i>For the possible property values, see Protocol in Property details.</i> |
| ReadyToRemove (v1.10+) | boolean | <i>read-write (null)</i> | An indication of whether the drive is prepared by the system for removal. |
| Revision | string | <i>read-only (null)</i> | The revision of this drive. For SCSI-based drives, this is the version of the drive from the 'Inquiry' command, which can be the firmware or hardware version. For other types of drives, this is the hardware version. |
| RotationSpeedRPM | number ({rev}/min) | <i>read-only (null)</i> | The rotation speed of this drive, in revolutions per minute (RPM). |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this drive. |
| SKU | string | <i>read-only (null)</i> | The SKU for this drive. |
| SlotCapableProtocols (v1.16+) [] | array (string (enum)) | <i>read-only (null)</i> | The drive protocols capable in this slot. <i>For the possible property values, see SlotCapableProtocols in Property details.</i> |

| Property | Type | Attributes | Notes |
|----------------------------------|------------------|--------------------------------------|--|
| SlotFormFactor (v1.16+) | string (enum) | <i>read-only</i> (<i>null</i>) | The form factor of the slot. <i>For the possible property values, see SlotFormFactor in Property details.</i> |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| StatusIndicator | string (enum) | <i>read-write</i> (<i>null</i>) | The state of the status indicator, which communicates status information about this drive. <i>For the possible property values, see StatusIndicator in Property details.</i> |
| WriteCacheEnabled (v1.7+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the drive write cache is enabled. |

6.35.4 Actions

6.35.4.1 Reset (v1.7+)

Description

This action resets this drive.

Action URI

{Base URI of target resource}/Actions/Drive.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "On"
}
```

6.35.4.2 SecureErase

Description

This action securely erases the contents of the drive.

Action URI

{Base URI of target resource}/Actions/Drive.SecureErase

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------------------|------------------|-----------------|--|
| OverwritePasses (v1.15+) | integer | <i>optional</i> | The number of times to overwrite the drive if performing an overwrite type of sanitization. |
| SanitizationType (v1.15+) | string (enum) | <i>optional</i> | The type of data sanitization to perform. <i>For the possible property values, see SanitizationType in Property details.</i> |

Request Example

```
{
  "SanitizationType": "CryptographicErase"
}
```

6.35.5 Property details

6.35.5.1 DriveFormFactor

The form factor of the drive inserted in this slot.

| string | Description |
|----------------|---------------------------------|
| Drive2_5 | A 2.5 inch drive. |
| Drive3_5 | A 3.5 inch drive. |
| EDSFF_1U_Long | An EDSFF 1U Long (E1.L) drive. |
| EDSFF_1U_Short | An EDSFF 1U Short (E1.S) drive. |

| string | Description |
|--------------------|---------------------------------|
| EDSFF_E3_Long | An EDSFF E3 Long (E3.L) drive. |
| EDSFF_E3_Short | An EDSFF E3 Short (E3.S) drive. |
| M2_22110 | An M.2 22110 drive. |
| M2_2230 | An M.2 2230 drive. |
| M2_2242 | An M.2 2242 drive. |
| M2_2260 | An M.2 2260 drive. |
| M2_2280 | An M.2 2280 drive. |
| OEM | An OEM-defined form factor. |
| PCleHalfLength | A half length PCIe add in card. |
| PCleSlotFullLength | A full length PCIe add in card. |
| PCleSlotLowProfile | A low profile PCIe add in card. |
| U2 | A U.2 drive. |

6.35.5.2 EncryptionAbility

The encryption ability of this drive.

| string | Description |
|---------------------|---|
| None | The drive is not capable of self-encryption. |
| Other | The drive is capable of self-encryption through some other means. |
| SelfEncryptingDrive | The drive is capable of self-encryption per the Trusted Computing Group's Self Encrypting Drive Standard. |

6.35.5.3 EncryptionStatus

The status of the encryption of this drive.

| string | Description |
|---------|---|
| Foreign | The drive is currently encrypted, the data is not accessible to the user, and the system requires user intervention to expose the data. |

| string | Description |
|--|--|
| Locked | The drive is currently encrypted and the data is not accessible to the user. However, the system can unlock the drive automatically. |
| Unencrypted (<i>deprecated v1.1</i>) | The drive is not currently encrypted. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of Unencrypted.</i> |
| Unencrypted (<i>v1.1+</i>) | The drive is not currently encrypted. |
| Unlocked | The drive is currently encrypted but the data is accessible to the user in unencrypted form. |

6.35.5.4 HotspareReplacementMode

The replacement mode for the hot spare drive.

| string | Description |
|---------------|---|
| NonRevertible | The hot spare drive that is commissioned due to a drive failure remains as a data drive and does not revert to a hot spare if the failed drive is replaced. |
| Revertible | The hot spare drive that is commissioned due to a drive failure reverts to a hot spare after the failed drive is replaced and rebuilt. |

6.35.5.5 HotspareType

The type of hot spare that this drive serves as.

| string | Description |
|-----------|--|
| Chassis | The drive is serving as a hot spare for all other drives in this storage domain that are contained in the same chassis. |
| Dedicated | The drive is serving as a hot spare for a user-defined set of drives or volumes. Clients cannot specify this value when modifying the HotspareType property. This value is reported as a result of configuring the spare drives within a volume. |
| Global | The drive is serving as a hot spare for all other drives in this storage domain. |
| None | The drive is not a hot spare. |

6.35.5.6 IndicatorLED

The state of the indicator LED, that identifies the drive.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |

6.35.5.7 MediaType

The type of media contained in this drive.

| string | Description |
|--------|--|
| HDD | The drive media type is traditional magnetic platters. |
| SMR | The drive media type is shingled magnetic recording. |
| SSD | The drive media type is solid state or flash memory. |

6.35.5.8 Operation

The type of the operation.

| string | Description |
|------------------|--|
| ChangeRAIDType | A ChangeRAIDType operation is being performed. |
| ChangeStripSize | A ChangeStripSize operation is being performed. |
| CheckConsistency | A CheckConsistency operation is being performed. |
| Compress | A Compress operation is being performed. |
| Decrypt | A Decrypt operation is being performed. |
| Deduplicate | A Deduplicate operation is being performed. |
| Delete | A Delete operation is being performed. |
| Encrypt | An Encrypt operation is being performed. |
| Format | A Format operation is being performed. |
| Initialize | An Initialize operation is being performed. |
| Rebuild | A Rebuild operation is being performed. |

| string | Description |
|-----------|---|
| Replicate | A Replicate operation is being performed. |
| Resize | A Resize operation is being performed. |
| Sanitize | A Sanitize operation is being performed. |

6.35.5.9 Protocol

The protocol that this drive currently uses to communicate to the storage controller.

| string | Description |
|---------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |

| string | Description |
|-----------------|---|
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.35.5.10 ResetType

The type of reset.

| string | Description |
|----------|--|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |

| string | Description |
|------------------|---|
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.35.5.11 SanitizationType

The type of data sanitization to perform.

| string | Description |
|--------------------|--|
| BlockErase | Delete all logical block addresses, including those that are not currently mapping to active addresses, but leaving the data on the drive. |
| CryptographicErase | Erase the target data's encryption key leaving only the ciphertext on the drive. For more information, see NIST800-88 and ISO/IEC 27040. |
| Overwrite | Overwrite data by writing an implementation specific pattern onto all sectors of the drive. |

6.35.5.12 SlotCapableProtocols

The drive protocols capable in this slot.

| string | Description |
|-----------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |

| string | Description |
|--------|---|
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.35.5.13 SlotFormFactor

The form factor of the slot.

| string | Description |
|----------------|---------------------------------|
| Drive2_5 | A 2.5 inch drive. |
| Drive3_5 | A 3.5 inch drive. |
| EDSFF_1U_Long | An EDSFF 1U Long (E1.L) drive. |
| EDSFF_1U_Short | An EDSFF 1U Short (E1.S) drive. |
| EDSFF_E3_Long | An EDSFF E3 Long (E3.L) drive. |
| EDSFF_E3_Short | An EDSFF E3 Short (E3.S) drive. |
| M2_22110 | An M.2 22110 drive. |
| M2_2230 | An M.2 2230 drive. |

| string | Description |
|--------------------|---------------------------------|
| M2_2242 | An M.2 2242 drive. |
| M2_2260 | An M.2 2260 drive. |
| M2_2280 | An M.2 2280 drive. |
| OEM | An OEM-defined form factor. |
| PCleHalfLength | A half length PCIe add in card. |
| PCleSlotFullLength | A full length PCIe add in card. |
| PCleSlotLowProfile | A low profile PCIe add in card. |
| U2 | A U.2 drive. |

6.35.5.14 StatusIndicator

The state of the status indicator, which communicates status information about this drive.

| string | Description |
|---------------------------|--|
| Fail | The drive has failed. |
| Hotspare | The drive has been marked to automatically rebuild and replace a failed drive. |
| InACriticalArray | The array to which this drive belongs has been degraded. |
| InAFailedArray | The array to which this drive belongs has failed. |
| OK | The drive is OK. |
| PredictiveFailureAnalysis | The drive still works but is predicted to fail soon. |
| Rebuild | The drive is being rebuilt. |

6.35.6 Example response

```
{
  "@odata.type": "#Drive.v1_17_1.Drive",
  "Id": "3D58ECBC375FD9F2",
  "Name": "Drive Sample",
  "LocationIndicatorActive": true,
  "Model": "C123",
  "Revision": "100A",
```



```

    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "CapacityBytes": 899527000064,
    "FailurePredicted": false,
    "Protocol": "SAS",
    "MediaType": "HDD",
    "Manufacturer": "Contoso",
    "SerialNumber": "1234568",
    "PartNumber": "C123-1111",
    "Identifiers": [
      {
        "DurableNameFormat": "NAA",
        "DurableName": "32ADF365C6C1B7BD"
      }
    ],
    "HotspareType": "None",
    "EncryptionAbility": "SelfEncryptingDrive",
    "EncryptionStatus": "Unlocked",
    "RotationSpeedRPM": 15000,
    "BlockSizeBytes": 512,
    "CapableSpeedGbs": 12,
    "NegotiatedSpeedGbs": 12,
    "Links": {
      "Volumes": [
        {
          "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/2"
        },
        {
          "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/3"
        }
      ]
    },
    "Actions": {
      "#Drive.SecureErase": {
        "target": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2/Actions/Drive.SecureErase"
      }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
  }

```

6.36 DriveMetrics 1.1.0

| Version | v1.1 | v1.0 |
|---------|--------|--------|
| Release | 2023.2 | 2023.1 |

6.36.1 Description

The usage and health statistics for a drive.

6.36.2 URIs

/redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}/Metrics

/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/Metrics

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.36.3 Properties

| Property | Type | Attributes | Notes |
|--|---------|-------------------------------------|--|
| BadBlockCount | integer | <i>read-only</i> (<i>null</i>) | The total number of bad blocks reported by the drive. |
| CorrectableIOReadErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the correctable read errors for the lifetime of the drive. |
| CorrectableIOWriteErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the correctable write errors for the lifetime of the drive. |
| NativeCommandQueueDepth (<i>v1.1+</i>) | integer | <i>read-only</i> (<i>null</i>) | The current depth of the Native Command Queue. |
| NVMeSMART { | object | | The NVMe SMART metrics for the drive. See the <i>StorageControllerMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NVMeSMARTMetrics resource. See the Links section and the <i>StorageControllerMetrics</i> schema for details. |
| } | | | |
| PowerOnHours | number | <i>read-only</i> (<i>null</i>) | The number of power-on hours for the lifetime of the drive. |
| UncorrectableIOReadErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable read errors for the lifetime of the drive. |
| UncorrectableIOWriteErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable write errors for the lifetime of the drive. |

6.36.4 Example response

```
{
  "@odata.type": "#DriveMetrics.v1_1_0.DriveMetrics",
  "Id": "Metrics",
  "Name": "Drive Metrics",
  "CorrectableIOReadErrorCount": 184,
  "UncorrectableIOReadErrorCount": 0,
  "CorrectableIOWriteErrorCount": 18,
  "UncorrectableIOWriteErrorCount": 0,
  "BadBlockCount": 123098,
  "PowerOnHours": 3,
  "NVMeSMART": {
    "CriticalWarnings": {
      "PMRUnreliable": false,
      "PowerBackupFailed": false,
      "MediaInReadOnly": false,
      "OverallSubsystemDegraded": false,
      "SpareCapacityWornOut": false
    },
    "CompositeTemperatureCelsius": 34,
    "AvailableSparePercent": 50,
    "AvailableSpareThresholdPercent": 30,
    "PercentageUsed": 50,
    "EGCriticalWarningSummary": {
      "NamespacesInReadOnlyMode": false,
      "ReliabilityDegraded": false,
      "SpareCapacityUnderThreshold": false
    },
    "DataUnitsRead": 0,
    "DataUnitsWritten": 0,
    "HostReadCommands": 0,
    "HostWriteCommands": 0,
    "ControllerBusyTimeMinutes": 20,
    "PowerCycles": 49,
    "PowerOnHours": 3,
    "UnsafeShutdowns": 4,
    "MediaAndDataIntegrityErrors": 0,
    "NumberOfErrorInformationLogEntries": 100,
    "WarningCompositeTempTimeMinutes": 0,
    "CriticalCompositeTempTimeMinutes": 0,
    "TemperatureSensorsCelsius": [
      34,
      34,
      34,
      34,
      34,
      35,
      33,

```

```

    32
  ],
  "ThermalMgmtTemp1TransitionCount": 10,
  "ThermalMgmtTemp2TransitionCount": 2,
  "ThermalMgmtTemp1TotalTimeSeconds": 20,
  "ThermalMgmtTemp2TotalTimeSeconds": 42
},
"@odata.id": "/redfish/v1/Chassis/StorageEnclosure1/Drives/0THGR0KP/Metrics"
}

```

6.37 Endpoint 1.8.0

| Version | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2022.3 | 2022.1 | 2021.1 | 2020.3 | 2019.4 | 2018.3 | 2018.2 | 2017.3 | 2016.2 |

6.37.1 Description

The Endpoint schema contains the properties of an endpoint resource that represents the properties of an entity that sends or receives protocol-defined messages over a transport.

6.37.2 URIs

/redfish/v1/Fabrics/{FabricId}/Endpoints/{EndpointId}
 /redfish/v1/Storage/{StorageId}/Endpoints/{EndpointId}
 /redfish/v1/StorageServices/{StorageServiceId}/Endpoints/{EndpointId}

6.37.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------|--------------|------------------|--|
| ConnectedEntities [{ | array | | All the entities connected to this endpoint. |
| EntityLink { | object | | The link to the associated entity. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| EntityPciId { | object | | The PCI ID of the connected entity. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|---|
| ClassCode (v1.2+) | string | <i>read-only</i> (null) | The Class Code, Subclass, and Programming Interface code of this PCIe function. |
| DeviceId | string | <i>read-only</i> (null) | The Device ID of this PCIe function. |
| FunctionNumber (v1.2+) | integer | <i>read-only</i> (null) | The PCI ID of the connected entity. |
| SubsystemId | string | <i>read-only</i> (null) | The Subsystem ID of this PCIe function. |
| SubsystemVendorId | string | <i>read-only</i> (null) | The Subsystem Vendor ID of this PCIe function. |
| VendorId | string | <i>read-only</i> (null) | The Vendor ID of this PCIe function. |
| } | | | |
| EntityRole | string (enum) | <i>read-only</i> (null) | The role of the connected entity. <i>For the possible property values, see EntityRole in Property details.</i> |
| EntityType | string (enum) | <i>read-only</i> (null) | The type of the connected entity. <i>For the possible property values, see EntityType in Property details.</i> |
| GenZ (v1.4+) { | object | (null) | The Gen-Z related properties for the entity. |
| AccessKey (v1.4+, deprecated v1.6) | string | <i>read-write</i> (null) | The Access Key for the entity. <i>Deprecated in v1.6 and later. This property has been deprecated in favor of the ConnectionKeys property in the Connection resource.</i> |
| GCID (v1.4+) { | object | (null) | The Global Component ID (GCID) for the entity. |
| CID (v1.4+) | string | <i>read-write</i> (null) | The component identifier portion of the GCID for the entity. |
| SID (v1.4+) | string | <i>read-write</i> (null) | The subnet identifier portion of the GCID for the entity. |
| } | | | |
| RegionKey (v1.4+, deprecated v1.6) | string | <i>read-write</i> (null) | The Region Key for the entity. <i>Deprecated in v1.6 and later. This property has been deprecated in favor of the ConnectionKeys property in the Connection resource.</i> |
| } | | | |

| Property | Type | Attributes | Notes |
|---|--------------------|-------------------------|--|
| Identifiers [{ }] | array (object) | | Identifiers for the remote entity. For property details, see Identifier. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PciClassCode (<i>deprecated v1.2</i>) | string | <i>read-only (null)</i> | The Class Code, Subclass, and Programming Interface code of this PCIe function. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the ClassCode property inside the EntityPcild object.</i> |
| PciFunctionNumber (<i>deprecated v1.2</i>) | integer | <i>read-only (null)</i> | The PCI ID of the connected entity. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the FunctionNumber property inside the EntityPcild object.</i> |
| }] | | | |
| EndpointProtocol | string (enum) | <i>read-only (null)</i> | The protocol supported by this endpoint. <i>For the possible property values, see EndpointProtocol in Property details.</i> |
| HostReservationMemoryBytes | integer (bytes) | <i>read-only (null)</i> | The amount of memory in bytes that the host should allocate to connect to this endpoint. |
| Identifiers [{ }] | array (object) | | Identifiers for this endpoint. For property details, see Identifier. |
| IPTransportDetails (<i>v1.1+</i>) [{ | array | | An array of details for each IP transport supported by this endpoint. The array structure can model multiple IP addresses for this endpoint. |
| IPv4Address (<i>v1.1+</i>) { } | object | | The IPv4 addresses assigned to the endpoint. For property details, see IPv4Address. |
| IPv6Address (<i>v1.1+</i>) { } | object | | The IPv6 addresses assigned to the endpoint. For property details, see IPv6Address. |
| Port (<i>v1.1+</i>) | number | <i>read-only</i> | The UDP or TCP port number used by the endpoint. |
| TransportProtocol (<i>v1.1+</i>) | string (enum) | <i>read-only</i> | The protocol used by the connection entity. <i>For the possible property values, see TransportProtocol in Property details.</i> |
| }] | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| AddressPools (<i>v1.4+</i>) [{ | array | | An array of links to the address pools associated with this endpoint. |
| @odata.id | string | <i>read-write</i> | Link to a AddressPool resource. See the Links section and the AddressPool schema for details. |

| Property | Type | Attributes | Notes |
|--|--------|------------------|--|
| }] | | | |
| ConnectedPorts (v1.4+) [{ | array | | An array of links to the switch ports or remote device ports at the other end of the link. |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| Connections (v1.5+) [{ | array | | The connections to which this endpoint belongs. |
| @odata.id | string | <i>read-only</i> | Link to a Connection resource. See the Links section and the <i>Connection</i> schema for details. |
| }] | | | |
| LocalPorts (v1.7+) [{ | array | | An array of links to the device ports that this endpoint represents. |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| MutuallyExclusiveEndpoints [{ | array | | An array of links to the endpoints that cannot be used in zones if this endpoint is in a zone. |
| @odata.id | string | <i>read-only</i> | Link to another Endpoint resource. |
| }] | | | |
| NetworkDeviceFunction (v1.1+) [{ | array | | When NetworkDeviceFunction resources are present, this array contains links to the network device functions that connect to this endpoint. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| Ports (deprecated v1.7) [{ | array | | An array of links to the physical ports associated with this endpoint. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of the ConnectedPorts and LocalPorts properties to clarify the semantics of each port referenced.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |

| Property | Type | Attributes | Notes |
|-------------------------------|-------------------|-----------------------------------|--|
| }] | | | |
| Zones (v1.6+) [{ | array | | The zones to which this endpoint belongs. |
| @odata.id | string | <i>read-only</i> | Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details. |
| }] | | | |
| } | | | |
| PcId { | object | | The PCI ID of the endpoint. |
| ClassCode (v1.2+) | string | <i>read-only</i> <i>(null)</i> | The Class Code, Subclass, and Programming Interface code of this PCIe function. |
| DeviceId | string | <i>read-only</i> <i>(null)</i> | The Device ID of this PCIe function. |
| FunctionNumber (v1.2+) | integer | <i>read-only</i> <i>(null)</i> | The PCI ID of the connected entity. |
| SubsystemId | string | <i>read-only</i> <i>(null)</i> | The Subsystem ID of this PCIe function. |
| SubsystemVendorId | string | <i>read-only</i> <i>(null)</i> | The Subsystem Vendor ID of this PCIe function. |
| VendorId | string | <i>read-only</i> <i>(null)</i> | The Vendor ID of this PCIe function. |
| } | | | |
| Redundancy [{ }] | array (object) | | Redundancy information for the lower-level endpoints supporting this endpoint. For property details, see Redundancy. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.37.4 Property details

6.37.4.1 EndpointProtocol

The protocol supported by this endpoint.

| string | Description |
|-----------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |

| string | Description |
|--------|---|
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.37.4.2 EntityRole

The role of the connected entity.

| string | Description |
|-----------|---|
| Both | The entity can both send and receive commands, messages, and other requests to or from other entities on the fabric. |
| Initiator | The entity sends commands, messages, or other types of requests to other entities on the fabric, but cannot receive commands from other entities. |
| Target | The entity receives commands, messages, or other types of requests from other entities on the fabric, but cannot send commands to other entities. |

6.37.4.3 EntityType

The type of the connected entity.

| string | Description |
|------------------------------|--|
| AccelerationFunction (v1.3+) | The entity is an acceleration function realized through a device, such as an FPGA. |
| Bridge | The entity is a PCI(e) bridge. |
| CXLDevice (v1.8+) | The entity is a CXL logical device. |
| DisplayController | The entity is a display controller. |
| Drive | The entity is a drive. |
| FabricBridge (v1.4+) | The entity is a fabric bridge. |
| Manager (v1.5+) | The entity is a manager. |
| MediaController (v1.4+) | The entity is a media controller. |
| Memory (v1.8+) | The entity is a memory device. |
| MemoryChunk (v1.4+) | The entity is a memory chunk. |
| NetworkController | The entity is a network controller. |
| Processor | The entity is a processor. |
| RootComplex | The entity is a PCI(e) root complex. |
| StorageExpander | The entity is a storage expander. |
| StorageInitiator | The entity is a storage initiator. |
| StorageSubsystem (v1.6+) | The entity is a storage subsystem. |
| Switch (v1.4+) | The entity is a switch, not an expander. Use <code>Expander</code> for expanders. |
| Volume (v1.1+) | The entity is a volume. |

6.37.4.4 TransportProtocol

The protocol used by the connection entity.

| string | Description |
|-------------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |

| string | Description |
|-----------------|--|
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |

| string | Description |
|--------|---|
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.37.5 Example response

```
{
  "@odata.type": "#Endpoint.v1_8_0.Endpoint",
  "Id": "Drive1",
  "Name": "SAS Drive",
  "Description": "The SAS Drive in Enclosure 2 Bay 0",
  "EndpointProtocol": "SAS",
  "ConnectedEntities": [
    {
      "EntityType": "Drive",
      "EntityRole": "Target",
      "Identifiers": [
        {
          "DurableNameFormat": "NAA",
          "DurableName": "32ADF365C6C1B7C3"
        }
      ]
    }
  ],
  "Links": {
    "MutuallyExclusiveEndpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Enclosure2"
      }
    ]
  }
}
```

```

    ],
    "ConnectedPorts": [
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports/8"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch2/Ports/8"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive1"
}

```

6.38 EndpointGroup 1.3.2

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|------------|------------|-----------|
| Release | 2020.3 | WIP v1.1.0 | WIP v1.0.5 | TP v1.0.3 |

6.38.1 Description

The EndpointGroup schema describes group of endpoints that are managed as a unit.

6.38.2 URIs

/redfish/v1/Fabrics/{FabricId}/EndpointGroups/{EndpointGroupId}
 /redfish/v1/Storage/{StorageId}/EndpointGroups/{EndpointGroupId}
 /redfish/v1/StorageServices/{StorageServiceId}/EndpointGroups/{EndpointGroupId}
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/EndpointGroups/{EndpointGroupId}

6.38.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|------------------|----------------------|--|
| AccessState (deprecated v1.3) | string (enum) | read-write (null) | The access state for this group. For the possible property values, see AccessState in Property details. Deprecated in v1.3 and later. This property has been deprecated in favor of the AccessState property in the connection resource. |

| Property | Type | Attributes | Notes |
|---|---------------|--------------------------|---|
| Endpoints (<i>deprecated v1.3</i>) [{ | array | | The endpoints in this endpoint group. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of the Endpoints property within Links.</i> |
| @odata.id | string | <i>read-write</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| GroupType | string (enum) | <i>read-write (null)</i> | The endpoint group type. <i>For the possible property values, see GroupType in Property details.</i> |
| Identifier { } | object | | The durable name for the endpoint group. For property details, see Identifier. |
| Links { | object | | The links to other resources that are related to this resource. |
| Connections (<i>v1.3+</i>) [{ | array | | The connections to which this endpoint group belongs. |
| @odata.id | string | <i>read-only</i> | Link to a Connection resource. See the Links section and the <i>Connection</i> schema for details. |
| }] | | | |
| Endpoints (<i>v1.3+</i>) [{ | array | | The endpoints in this endpoint group. |
| @odata.id | string | <i>read-write</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Preferred (<i>deprecated v1.2</i>) | boolean | <i>read-write (null)</i> | An indication if access to the resources through the endpoint group is preferred. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the AccessState property in the connection resource.</i> |
| TargetEndpointGroupIdentifier | integer | <i>read-write (null)</i> | The SCSI-defined identifier for this group. |

6.38.4 Property details

6.38.4.1 AccessState

The access state for this group.

| string | Description |
|---------------|---|
| NonOptimized | The endpoints are in an active and non-optimized state. |
| Optimized | The endpoints are in an active and optimized state. |
| Standby | The endpoints are in a standby state. |
| Transitioning | The endpoints are transitioning to a new state. |
| Unavailable | The endpoints are in an unavailable state. |

6.38.4.2 GroupType

The endpoint group type.

| string | Description |
|---------------------------------|--|
| Client <i>(deprecated v1.3)</i> | The group contains the client (initiator) endpoints. <i>Deprecated in v1.3 and later. This value has been deprecated in favor of <code>Initiator</code>.</i> |
| Initiator (v1.3+) | The group contains the initiator endpoints. |
| Server <i>(deprecated v1.3)</i> | The group contains the server (target) endpoints. <i>Deprecated in v1.3 and later. This value has been deprecated in favor of <code>Target</code>.</i> |
| Target (v1.3+) | The group contains the target endpoints. |

6.38.5 Example response

```
{
  "@odata.type": "#EndpointGroup.v1_3_2.EndpointGroup",
  "Id": "1",
  "Name": "Endpoint group for all initiators",
  "GroupType": "Initiator",
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator2"
      }
    ],
    "Connections": [
      {
```



```

      "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Connections/3"
    }
  ],
  "@odata.id": "/redfish/v1/Fabrics/NVMeoF/EndpointGroups/1"
}

```

6.39 EnvironmentMetrics 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2022.2 | 2021.4 | 2021.2 | 2020.4 |

6.39.1 Description

The EnvironmentMetrics schema represents the environmental metrics of a device.

6.39.2 URIs

/redfish/v1/Chassis/{ChassisId}/Drives/{DriveId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/Memory/{MemoryId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/EnvironmentMetrics
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/EnvironmentMetrics
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/EnvironmentMetrics
 /redfish/v1/Facilities/{FacilityId}/AmbientMetrics
 /redfish/v1/Facilities/{FacilityId}/EnvironmentMetrics
 /redfish/v1/Managers/{ManagerId}/DedicatedNetworkPorts/{PortId}/EnvironmentMetrics
 /redfish/v1/Managers/{ManagerId}/USBPorts/{PortId}/EnvironmentMetrics
 /redfish/v1/Storage/{StorageId}/Controllers/{ControllerId}/EnvironmentMetrics
 /redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports/{PortId}/EnvironmentMetrics
 /redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports/{PortId}/
 EnvironmentMetrics

/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/PCleDevices/{PCleDeviceId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{ControllerId}/
 EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/
 Ports/{PortId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Drives/{DriveId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/
 {StorageControllerId}/Ports/{PortId}/EnvironmentMetrics
 /redfish/v1/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports/{PortId}/
 EnvironmentMetrics
 /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/EnvironmentMetrics
 /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/EnvironmentMetrics
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/EnvironmentMetrics
 * Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.39.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|---------------------|-------------------------------------|--|
| AbsoluteHumidity (v1.2+) {} | object | | Absolute humidity (g/cu m). For more information about this property, see SensorExcerpt in Property Details. |
| DewPointCelsius (v1.1+) {} | object | | The dew point temperature (C). For more information about this property, see SensorExcerpt in Property Details. |
| EnergyJoules (v1.2+) {} | object | | Energy consumption (J). For more information about this property, see SensorExcerpt in Property Details. |
| EnergykWh { | object (excerpt) | | Energy consumption (kWh). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentkVAh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |

| Property | Type | Attributes | Notes |
|-----------------------------------|-----------------------|----------------------------|--|
| LifetimeReading (v1.1+) | number | <i>read-only</i> (null) | The total accumulation value for this sensor. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (null) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (null) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (null) | The date and time when the time-based properties were last reset. |
| } | | | |
| FanSpeedsPercent [{ | array (excerpt) | | Fan speeds (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only</i> (null) | The link to the resource that provides the data for this sensor. |
| DeviceName (v1.2+) | string | <i>read-only</i> (null) | The name of the device. |
| PhysicalContext | string (enum) | <i>read-only</i> (null) | The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (null) | The usage or location within a device to which this sensor measurement applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| Reading | number | <i>read-only</i> (null) | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only</i> (null) | The rotational speed. |
| }] | | | |
| HumidityPercent { } | object | | Humidity (percent). For more information about this property, see SensorExcerpt in Property Details. |
| PowerLimitWatts (v1.1+) | object (excerpt) | | Power limit (W). This object is an excerpt of the <i>Control</i> resource located at the URI shown in DataSourceUri. |
| AllowableMax | number | <i>read-only</i> (null) | The maximum possible setting for this control. |
| AllowableMin | number | <i>read-only</i> (null) | The minimum possible setting for this control. |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------------------|------------------------------|--|
| ControlMode | string (enum) | <i>read-write (null)</i> | The current operating mode of the control. <i>For the possible property values, see ControlMode in Property details.</i> |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this control. |
| DefaultSetPoint (v1.3+) | number | <i>read-only (null)</i> | The default set point of the control. |
| Reading | number | <i>read-only (null)</i> | The reading of the sensor associated with this control. |
| ReadingUnits | string | <i>read-only (null)</i> | The units of the sensor reading associated with this control. |
| SetPoint | number | <i>read-write (null)</i> | The desired set point of the control. |
| } | | | |
| PowerLoadPercent (v1.1+) {} | object | | The power load (percent) for this device. For more information about this property, see SensorExcerpt in Property Details. |
| PowerWatts { | object (excerpt) | | Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | <i>read-only (null)</i> | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only (null)</i> | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only (null)</i> | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only (null)</i> | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| } | | | |
| TemperatureCelsius {} | object | | Temperature (Celsius). For more information about this property, see SensorExcerpt in Property Details. |

6.39.4 Actions

6.39.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI

{Base URI of target resource}/Actions/EnvironmentMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.39.4.2 ResetToDefaults (v1.3+)

Description

The action resets the values of writable properties to factory defaults.

Action URI

{Base URI of target resource}/Actions/EnvironmentMetrics.ResetToDefaults

Action parameters

This action takes no parameters.

6.39.5 Property details

6.39.5.1 ControlMode

The current operating mode of the control.

| string | Description |
|-----------|---|
| Automatic | Automatically adjust control to meet the set point. |
| Disabled | The control has been disabled. |
| Manual | No automatic adjustments are made to the control. |

| string | Description |
|----------|---|
| Override | User override of the automatic set point value. |

6.39.5.2 PhysicalContext

The area or device to which this sensor measurement applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |

| string | Description |
|------------------|--|
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.39.5.3 PhysicalSubContext

The usage or location within a device to which this sensor measurement applies.

| string | Description |
|--------|-------------|
| Input | The input. |
| Output | The output. |

6.39.5.4 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|--------------|-------------------------|--|
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |

6.39.6 Example response

```
{
  "@odata.type": "#EnvironmentMetrics.v1_3_0.EnvironmentMetrics",
  "Name": "Processor Environment Metrics",
  "TemperatureCelsius": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Temp",
    "Reading": 44
  },
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Power",
    "Reading": 12.87
  },
  "FanSpeedsPercent": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPUFan1",
      "DeviceName": "CPU #1 Fan Speed",
      "Reading": 80
    }
  ]
},
```



```
"@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/1/EnvironmentMetrics"
}
```

6.40 EthernetInterface 1.11.0

| Version | v1.11 | v1.10 | v1.9 | v1.8 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Release | 2023.2 | 2023.1 | 2022.2 | 2021.2 | 2020.1 | 2019.1 | 2017.3 | 2017.1 | 2016.3 | 2016.2 | 1.0 |

6.40.1 Description

The EthernetInterface schema represents a single, logical Ethernet interface or network interface controller (NIC).

6.40.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/EthernetInterfaces/{EthernetInterfaceId}
 /redfish/v1/Managers/{ManagerId}/EthernetInterfaces/{EthernetInterfaceId}
 /redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces/{EthernetInterfaceId}
 /redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Containers/EthernetInterfaces/{EthernetInterfaceId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.40.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|---------------|--------------------------|--|
| AutoNeg | boolean | <i>read-write (null)</i> | An indication of whether the speed and duplex are automatically negotiated and configured on this interface. |
| DHCPv4 (v1.4+) { | object | | DHCPv4 configuration for this interface. |
| DHCPEnabled (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether DHCP v4 is enabled on this Ethernet interface. |
| FallbackAddress (v1.5+) | string (enum) | <i>read-write (null)</i> | DHCPv4 fallback address method for this interface. <i>For the possible property values, see FallbackAddress in Property details.</i> |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------------|--------------------------|---|
| UseDNSServers (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether this interface uses DHCP v4-supplied DNS servers. |
| UseDomainName (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether this interface uses a DHCP v4-supplied domain name. |
| UseGateway (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether this interface uses a DHCP v4-supplied gateway. |
| UseNTPServers (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether the interface uses DHCP v4-supplied NTP servers. |
| UseStaticRoutes (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether the interface uses DHCP v4-supplied static routes. |
| } | | | |
| DHCPv6 (v1.4+) { | object | | DHCPv6 configuration for this interface. |
| OperatingMode (v1.4+) | string (enum) | <i>read-write (null)</i> | Determines the DHCPv6 operating mode for this interface. <i>For the possible property values, see OperatingMode in Property details.</i> |
| UseDNSServers (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether the interface uses DHCP v6-supplied DNS servers. |
| UseDomainName (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether this interface uses a DHCP v6-supplied domain name. |
| UseNTPServers (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether the interface uses DHCP v6-supplied NTP servers. |
| UseRapidCommit (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether the interface uses DHCP v6 rapid commit mode for stateful mode address assignments. Do not enable this option in networks where more than one DHCP v6 server is configured to provide address assignments. |
| } | | | |
| EthernetInterfaceType (v1.6+) | string (enum) | <i>read-only (null)</i> | The type of interface. <i>For the possible property values, see EthernetInterfaceType in Property details.</i> |
| FQDN | string | <i>read-write (null)</i> | The complete, fully qualified domain name that DNS obtains for this interface. |
| FullDuplex | boolean | <i>read-write (null)</i> | An indication of whether full-duplex mode is enabled on the Ethernet connection for this interface. |
| HostName | string | <i>read-write (null)</i> | The DNS host name, without any domain information. |

| Property | Type | Attributes | Notes |
|--|----------------|---------------------------|--|
| InterfaceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this interface is enabled. |
| IPv4Addresses [{ }] | array (object) | | The IPv4 addresses currently in use by this interface. For property details, see IPv4Address. |
| IPv4StaticAddresses (v1.4+) [{ }] | array (object) | (null) | The IPv4 static addresses assigned to this interface. See IPv4Addresses for the addresses in use by this interface. For property details, see IPv4Address. |
| IPv6Addresses [{ }] | array (object) | | The IPv6 addresses currently in use by this interface. For property details, see IPv6Address. |
| IPv6AddressPolicyTable [{ | array | | An array that represents the RFC6724-defined address selection policy table. |
| Label | integer | <i>read-write (null)</i> | The IPv6 label, as defined in RFC6724, section 2.1. |
| Precedence | integer | <i>read-write (null)</i> | The IPv6 precedence, as defined in RFC6724, section 2.1. |
| Prefix | string | <i>read-write (null)</i> | The IPv6 address prefix, as defined in RFC6724, section 2.1. |
| }] | | | |
| IPv6DefaultGateway | string | <i>read-only (null)</i> | The IPv6 default gateway address in use on this interface. |
| IPv6StaticAddresses [{ }] | array (object) | (null) | The IPv6 static addresses assigned to this interface. See IPv6Addresses for the addresses in use by this interface. For property details, see IPv6StaticAddress. |
| IPv6StaticDefaultGateways (v1.4+) [{ }] | array (object) | (null) | The IPv6 static default gateways for this interface. For property details, see IPv6GatewayStaticAddress v1.1.3). |
| Links (v1.1+) { | object | <i>required on create</i> | The links to other resources that are related to this resource. |
| AffiliatedInterfaces (v1.10+) [{ | array | | The links to the Ethernet interfaces that are affiliated with this interface, such as a VLAN or a team that uses this interface. |
| @odata.id | string | <i>read-only</i> | Link to another EthernetInterface resource. |
| }] | | | |
| Chassis (v1.3+) { | object | | The link to the chassis that contains this Ethernet interface. See the <i>Chassis</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|--------|------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Endpoints (v1.1+) [{ | array | | An array of links to the endpoints that connect to this Ethernet interface. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| HostInterface (v1.2+) { | object | | The link to a Host Interface that is associated with this Ethernet interface. See the <i>HostInterface</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a HostInterface resource. See the Links section and the <i>HostInterface</i> schema for details. |
| } | | | |
| NetworkDeviceFunction (v1.6+, deprecated v1.7 { | object | (null) | The link to the parent network device function and is only used when representing one of the VLANs on that network device function, such as is done in Unix. See the <i>NetworkDeviceFunction</i> schema for details on this property. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of NetworkDeviceFunctions as each EthernetInterface could represent more than one NetworkDeviceFunction.</i> |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| NetworkDeviceFunctions (v1.7+) [{ | array | | The link to the network device functions that comprise this Ethernet interface. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| Ports (v1.9+) [{ | array | | The links to the ports providing this Ethernet interface. |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|-------------------------|---------------------------|--|
| RelatedInterfaces (v1.9+) [{ | array | <i>required on create</i> | The links to the Ethernet interfaces that comprise this Ethernet interface. |
| @odata.id | string | <i>read-write</i> | Link to another EthernetInterface resource. |
| }] | | | |
| } | | | |
| LinkStatus (v1.1+) | string (enum) | <i>read-only (null)</i> | The link status of this interface, or port. <i>For the possible property values, see LinkStatus in Property details.</i> |
| MACAddress | string | <i>read-write (null)</i> | The currently configured MAC address of the interface, or logical port. |
| MaxIPv6StaticAddresses | integer | <i>read-only (null)</i> | The maximum number of static IPv6 addresses that can be configured on this interface. |
| MTUSize | integer | <i>read-write (null)</i> | The currently configured maximum transmission unit (MTU), in bytes, on this interface. |
| NameServers [] | array (string) | <i>read-only</i> | The DNS servers in use on this interface. |
| PermanentMACAddress | string | <i>read-only (null)</i> | The permanent MAC address assigned to this interface, or port. |
| RoutingScope (v1.11+) | string (enum) | <i>read-only (null)</i> | The routing scope for this interface. <i>For the possible property values, see RoutingScope in Property details.</i> |
| SpeedMbps | integer (Mbit/s) | <i>read-write (null)</i> | The current speed, in Mbit/s, of this interface. |
| StatelessAddressAutoConfig (v1.4+) { | object | | Stateless address autoconfiguration (SLAAC) parameters for this interface. |
| IPv4AutoConfigEnabled (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether IPv4 stateless address autoconfiguration (SLAAC) is enabled for this interface. |
| IPv6AutoConfigEnabled (v1.4+) | boolean | <i>read-write (null)</i> | An indication of whether IPv6 stateless address autoconfiguration (SLAAC) is enabled for this interface. |
| } | | | |
| StaticNameServers (v1.4+) [] | array (string, null) | <i>read-write</i> | The statically-defined set of DNS server IPv4 and IPv6 addresses. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

| Property | Type | Attributes | Notes |
|----------------------------------|------------------|---|--|
| TeamMode (v1.9+) | string (enum) | <i>read-write (null)</i> | The team mode for this interface. <i>For the possible property values, see TeamMode in Property details.</i> |
| UefiDevicePath | string | <i>read-only (null)</i> | The UEFI device path for this interface. |
| VLAN { | object | | If this network interface supports more than one VLAN, this property is absent. VLAN collections appear in the Links property of this resource. |
| Tagged (v1.3+) | boolean | <i>read-write (null)</i> | An indication of whether this VLAN is tagged or untagged for this interface. |
| VLANEnable | boolean | <i>read-write required on create (null)</i> | An indication of whether this VLAN is enabled for this VLAN network interface. |
| VLANId | integer | <i>read-write required on create (null)</i> | The ID for this VLAN. |
| VLANPriority (v1.2+) | integer | <i>read-write (null)</i> | The priority for this VLAN. |
| } | | | |
| VLANs (deprecated v1.7) { | object | | The link to a collection of VLANs, which applies only if the interface supports more than one VLAN. If this property applies, the VLANEnabled and VLANId properties do not apply. Contains a link to a resource. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of newer methods indicating multiple VLANs.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VlanNetworkInterface</i> . See the <i>VlanNetworkInterface</i> schema for details. |
| } | | | |

6.40.4 Property details

6.40.4.1 EthernetInterfaceType

The type of interface.

| string | Description |
|----------|--------------------------------|
| Physical | A physical Ethernet interface. |
| Virtual | A virtual Ethernet interface. |

6.40.4.2 FallbackAddress

DHCPv4 fallback address method for this interface.

| string | Description |
|------------|---|
| AutoConfig | Fall back to an autoconfigured address. |
| None | Continue attempting DHCP without a fallback address. |
| Static | Fall back to a static address specified by IPv4StaticAddresses. |

6.40.4.3 LinkStatus

The link status of this interface, or port.

| string | Description |
|----------|--|
| LinkDown | No link is detected on this interface, but the interface is connected. |
| LinkUp | The link is available for communication on this interface. |
| NoLink | No link or connection is detected on this interface. |

6.40.4.4 OperatingMode

Determines the DHCPv6 operating mode for this interface.

| string | Description |
|----------------------------|---|
| Disabled | DHCPv6 is disabled. |
| Enabled (v1.8+) | DHCPv6 is enabled. |
| Stateful (deprecated v1.8) | DHCPv6 stateful mode. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of <code>Enabled</code>. The control between 'stateful' and 'stateless' is managed by the DHCP server and not the client.</i> |

| string | Description |
|-----------------------------|--|
| Stateless (deprecated v1.8) | DHCPv6 stateless mode. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of <code>Enabled</code>. The control between 'stateful' and 'stateless' is managed by the DHCP server and not the client.</i> |

6.40.4.5 RoutingScope

The routing scope for this interface.

| string | Description |
|----------|--|
| External | Externally accessible. |
| HostOnly | Only accessible to a dedicated interface on the host. |
| Internal | Only accessible to internal networking on the host, such as when virtual machines or containers are allowed to communicate with each other on the same host system as well as a dedicated interface on the hosting system. |
| Limited | Accessible through IP translation provided by the hosting system. |

6.40.4.6 TeamMode

The team mode for this interface.

| string | Description |
|-------------------------------|---|
| ActiveBackup | One interface in the team is active and the others are kept in standby until a failure occurs. |
| AdaptiveLoadBalancing | Packets are transmitted and received based upon the current load of each interface in the team. |
| AdaptiveTransmitLoadBalancing | Packets are transmitted based upon the current load of each interface in the team. |
| Broadcast | Packets are transmitted on all interfaces in the team. |
| IEEE802_3ad | The interfaces in the team create an IEEE802.3ad link aggregation group. |
| None | No teaming. |
| RoundRobin | Packets are transmitted in sequential order from the teamed interfaces. |
| XOR | Transmitting is determined based upon a hash policy. |

6.40.5 Example response

```
{
  "@odata.type": "#EthernetInterface.v1_11_0.EthernetInterface",
  "Id": "1",
  "Name": "Ethernet Interface",
  "Description": "Manager NIC 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "LinkStatus": "LinkUp",
  "PermanentMACAddress": "12:44:6A:3B:04:11",
  "MACAddress": "12:44:6A:3B:04:11",
  "SpeedMbps": 1000,
  "AutoNeg": true,
  "FullDuplex": true,
  "MTUSize": 1500,
  "HostName": "web483",
  "FQDN": "web483.contoso.com",
  "NameServers": [
    "names.contoso.com"
  ],
  "IPv4Addresses": [
    {
      "Address": "192.168.0.10",
      "SubnetMask": "255.255.252.0",
      "AddressOrigin": "DHCP",
      "Gateway": "192.168.0.1"
    }
  ],
  "DHCPv4": {
    "DHCPEnabled": true,
    "UseDNSServers": true,
    "UseGateway": true,
    "UseNTPServers": false,
    "UseStaticRoutes": true,
    "UseDomainName": true
  },
  "DHCPv6": {
    "OperatingMode": "Enabled",
    "UseDNSServers": true,
    "UseDomainName": false,
    "UseNTPServers": false,
    "UseRapidCommit": false
  },
  "StatelessAddressAutoConfig": {
    "IPv4AutoConfigEnabled": false,
    "IPv6AutoConfigEnabled": true
  }
}
```

```
},
"IPv4StaticAddresses": [
  {
    "Address": "192.168.88.130",
    "SubnetMask": "255.255.0.0",
    "Gateway": "192.168.0.1"
  }
],
"IPv6AddressPolicyTable": [
  {
    "Prefix": "::1/128",
    "Precedence": 50,
    "Label": 0
  }
],
"MaxIPv6StaticAddresses": 1,
"IPv6StaticAddresses": [
  {
    "Address": "fc00:1234::a:b:c:d",
    "PrefixLength": 64
  }
],
"IPv6StaticDefaultGateways": [
  {
    "Address": "fe80::fe15:b4ff:fe97:90cd",
    "PrefixLength": 64
  }
],
"IPv6DefaultGateway": "fe80::214:c1ff:fe4c:5c4d",
"IPv6Addresses": [
  {
    "Address": "fe80::1ec1:deff:fe6f:1e24",
    "PrefixLength": 64,
    "AddressOrigin": "SLAAC",
    "AddressState": "Preferred"
  },
  {
    "Address": "fc00:1234::a:b:c:d",
    "PrefixLength": 64,
    "AddressOrigin": "Static",
    "AddressState": "Preferred"
  },
  {
    "Address": "2001:1:3:5::100",
    "PrefixLength": 64,
    "AddressOrigin": "DHCPv6",
    "AddressState": "Preferred"
  },
  {
    "Address": "2002:2:5::1ec1:deff:fe6f:1e24",
```

```

        "PrefixLength": 64,
        "AddressOrigin": "SLAAC",
        "AddressState": "Preferred"
    }
],
"StaticNameServers": [
    "192.168.150.1",
    "fc00:1234:200:2500"
],
"VLAN": {
    "VLANEnable": true,
    "VLANId": 101
},
"@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces/12446A3B0411"
}

```

6.41 Event 1.9.0

| | | | | | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Version | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
| Release | 2023.2 | 2023.1 | 2021.2 | 2020.3 | 2020.2 | 2019.1 | 2018.2 | 2017.1 | 2016.1 | 1.0 |

6.41.1 Description

The Event schema describes the JSON payload received by an event destination, which has subscribed to event notification, when events occur. This resource contains data about events, including descriptions, severity, and a message identifier to a message registry that can be accessed for further information.

6.41.2 Properties

| Property | Type | Attributes | Notes |
|----------------------------|--------|------------------|---|
| Context (v1.1+) | string | <i>read-only</i> | A context can be supplied at subscription time. This property is the context value supplied by the subscriber. |
| Events [{ | array | <i>required</i> | Each event in this array has a set of properties that describe the event. Because this is an array, more than one event can be sent simultaneously. |
| Actions (v1.2+) { } | object | | The available actions for this resource. |

| Property | Type | Attributes | Notes |
|--|--------------------|--------------------|--|
| AdditionalDataSizeBytes (v1.8+) | integer (bytes) | read-only (null) | The size of the additional data for this event. |
| AdditionalDataURI (v1.8+) | string (URI) | read-only (null) | The URI at which to access the additional data for the event, such as diagnostic data, image captures, or other files. |
| Context (deprecated v1.1) | string | read-only | A context can be supplied at subscription time. This property is the context value supplied by the subscriber. <i>Deprecated in v1.1 and later. Events are triggered independently from subscriptions to those events. This property has been deprecated in favor of the Context property found at the root level of the object.</i> |
| CPER (v1.8+) { | object | | Details for a CPER section or record associated with this event. |
| NotificationType (v1.8+) | string (uuid) | read-only (null) | The CPER Notification Type for a CPER record. |
| Oem (v1.8+) { } | object | | See the Oem object definition in the Common properties section. |
| SectionType (v1.8+) | string (uuid) | read-only (null) | The CPER Section Type. |
| } | | | |
| DiagnosticData (v1.8+) | string | read-only (null) | A Base64-encoded set of diagnostic data associated with this event. |
| DiagnosticDataType (v1.8+) | string (enum) | read-only (null) | The type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property. <i>For the possible property values, see DiagnosticDataType in Property details.</i> |
| EventGroupId (v1.3+) | integer | read-only | The identifier that correlates events with the same root cause. If 0, no other event is related to this event. |
| EventId | string | read-only | The unique instance identifier of an event. |
| EventTimestamp | string (date-time) | read-only | The time the event occurred. |
| EventType (deprecated v1.3) | string (enum) | read-only required | The type of event. <i>For the possible property values, see EventType in Property details. Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.</i> |

| Property | Type | Attributes | Notes |
|--|-------------------|-------------------------------------|---|
| LogEntry (v1.7+) { | object | | The link to a log entry if an entry was created for this event. See the <i>LogEntry</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogEntry resource. See the Links section and the <i>LogEntry</i> schema for details. |
| } | | | |
| MemberId | string | <i>read-only</i> <i>required</i> | The unique identifier for the member within an array. |
| Message | string | <i>read-only</i> | The human-readable event message. |
| MessageArgs [] | array (string) | <i>read-only</i> | An array of message arguments that are substituted for the arguments in the message when looked up in the message registry. |
| MessageId | string | <i>read-only</i> <i>required</i> | The identifier for the message. |
| MessageSeverity (v1.5+) | string (enum) | <i>read-only</i> | The severity of the message in this event. <i>For the possible property values, see MessageSeverity in Property details.</i> |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| OEMDiagnosticDataType (v1.9+) | string | <i>read-only</i> (null) | The OEM-defined type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property. |
| OriginOfCondition { | object | | A link to the resource or object that originated the condition that caused the event to be generated. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| Resolution (v1.9+) | string | <i>read-only</i> | Used to provide suggestions on how to resolve the situation that caused the event. |
| Severity (deprecated v1.5) | string | <i>read-only</i> | The severity of the event. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.</i> |
| SpecificEventExistsInGroup (v1.6+) | boolean | <i>read-only</i> | Indicates this event is equivalent to a more specific event in this Event Group. |
| }] | | | |

6.41.3 Property details

6.41.3.1 DiagnosticDataType

The type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property.

| string | Description |
|-------------|---|
| CPER | UEFI Common Platform Error Record. |
| CPERSection | A Section of a UEFI Common Platform Error Record. |
| Manager | Manager diagnostic data. |
| OEM | OEM diagnostic data. |
| OS | Operating system (OS) diagnostic data. |
| PreOS | Pre-OS diagnostic data. |

6.41.3.2 EventType

The type of event.

| string | Description |
|----------------------|--|
| Alert | A condition requires attention. |
| MetricReport (v1.3+) | The telemetry service is sending a metric report. |
| Other (v1.4+) | Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType. |
| ResourceAdded | A resource has been added. |
| ResourceRemoved | A resource has been removed. |
| ResourceUpdated | A resource has been updated. |
| StatusChange | The status of a resource has changed. |

6.41.3.3 MessageSeverity

The severity of the message in this event.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.41.4 Example response

```
{
  "@odata.type": "#Event.v1_7_0.Event",
  "Id": "1",
  "Name": "Event Array",
  "Context": "ContosoWebClient",
  "Events": [
    {
      "EventType": "Other",
      "EventId": "4593",
      "Severity": "Warning",
      "Message": "A cable has been removed from network adapter '1' port '1'.",
      "MessageId": "NetworkDevice.1.0.CableRemoved",
      "MessageArgs": [
        "1",
        "1"
      ],
      "OriginOfCondition": {
        "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces/1"
      },
      "LogEntry": {
        "@odata.id": "/redfish/v1/Managers/BMC/LogServices/EventLog/Entries/532"
      }
    }
  ]
}
```

6.42 EventDestination 1.13.2

| Version | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2022.3 | 2022.1 | 2021.2 | 2020.4 | 2020.3 | 2020.1 | 2019.3 | 2019.2 | 2019.1 | 2018.2 | 2018.1 | ... |

6.42.1 Description

The EventDestination schema defines the target of an event subscription, including the event types and context to provide to the target in the event payload.

6.42.2 URIs

/redfish/v1/EventService/Subscriptions/{EventDestinationId}

6.42.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|------------------|------------------------------------|---|
| Certificates (v1.9+) { | object | | The link to a collection of server certificates for the server referenced by the Destination property. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ClientCertificates (v1.11+) { | object | | The link to a collection of client identity certificates provided to the server referenced by the Destination property. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| Context | string | read-write required (null) | A client-supplied string that is stored with the event destination subscription. |
| DeliveryRetryPolicy (v1.6+) | string (enum) | read-write (null) | The subscription delivery retry policy for events, where the subscription type is RedfishEvent. <i>For the possible property values, see DeliveryRetryPolicy in Property details.</i> |
| Destination | string (URI) | read-only required on create | The URI of the destination event receiver. |
| EventFormatType (v1.4+) | string (enum) | read-only (null) | The content types of the message that are sent to the EventDestination. <i>For the possible property values, see EventFormatType in Property details.</i> |

| Property | Type | Attributes | Notes |
|---|-----------------------|------------------|--|
| EventTypes (deprecated v1.5) [] | array (string (enum)) | read-only | The types of events that are sent to the destination. <i>For the possible property values, see EventTypes in Property details. Deprecated in v1.5 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property. Use EventFormatType to create subscriptions for metric reports. If the subscription does not include this property, the service shall use a single element with a default of other .</i> |
| ExcludeMessageIds (v1.12+) [] | array (string, null) | read-only | The list of MessageIds that are not sent to this event destination. |
| ExcludeRegistryPrefixes (v1.12+) [] | array (string, null) | read-only | The list of prefixes for the message registries that contain the MessageIds that are not sent to this event destination. |
| HeartbeatIntervalMinutes (v1.11+) | integer | read-only (null) | Interval for sending heartbeat events to the destination in minutes. |
| HttpHeaders [{ | array | | An array of settings for HTTP headers, such as authorization information. This array is null or an empty array in responses. An empty array is the preferred return value on read operations. |
| (pattern) | string | read-write | Property names follow regular expression pattern " <code>^[^\s]+</code> " |
| }] | | | |
| IncludeOriginOfCondition (v1.8+) | boolean | read-only (null) | An indication of whether the events subscribed to will also include the entire resource or object referenced the OriginOfCondition property in the event payload. |
| MessageIds (v1.1+) [] | array (string, null) | read-only | The list of MessageIds that are sent to this event destination. |
| MetricReportDefinitions (v1.6+) [{ | array | | A list of metric report definitions for which the service only sends related metric reports. If this property is absent or the array is empty, metric reports that originate from any metric report definition are sent to the subscriber. |
| @odata.id | string | read-only | Link to a MetricReportDefinition resource. See the Links section and the <i>MetricReportDefinition</i> schema for details. |
| }] | | | |
| OEMProtocol (v1.9+) | string | read-only | The OEM-defined protocol type of the event connection. |
| OEMSubscriptionType (v1.9+) | string | read-only | The OEM-defined subscription type for events. |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|-------------------------------------|---|
| OriginResources (v1.1+) [{ | array | | The array of resources for which the service sends only related events. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Protocol | string (enum) | <i>read-only required on create</i> | The protocol type of the event connection. <i>For the possible property values, see Protocol in Property details.</i> |
| RegistryPrefixes (v1.4+) [] | array (string, null) | <i>read-only</i> | The list of prefixes for the message registries that contain the MessageIds that are sent to this event destination. |
| ResourceTypes (v1.4+) [] | array (string, null) | <i>read-only</i> | The list of resource type values (schema names) that correspond to the OriginOfCondition. The version and full namespace should not be specified. |
| SendHeartbeat (v1.11+) | boolean | <i>read-only (null)</i> | Send a heartbeat event periodically to the destination. |
| Severities (v1.13+) [] | array (string (enum)) | <i>read-only (null)</i> | The list of severities that are sent to this event destination. <i>For the possible property values, see Severities in Property details.</i> |
| SNMP (v1.7+) { | object | | Settings for an SNMP event destination. |
| AuthenticationKey (v1.7+) | string | <i>read-write (null)</i> | The secret authentication key for SNMPv3. |
| AuthenticationKeySet (v1.10+) | boolean | <i>read-only</i> | Indicates if the AuthenticationKey property is set. |
| AuthenticationProtocol (v1.7+) | string (enum) | <i>read-write (null)</i> | The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i> |
| EncryptionKey (v1.7+) | string | <i>read-write (null)</i> | The secret authentication key for SNMPv3. |
| EncryptionKeySet (v1.10+) | boolean | <i>read-only</i> | Indicates if the EncryptionKey property is set. |
| EncryptionProtocol (v1.7+) | string (enum) | <i>read-write (null)</i> | The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i> |
| TrapCommunity (v1.7+) | string | <i>read-write (null)</i> | The SNMP trap community string. |
| } | | | |

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------------|--|---|
| Status (v1.6+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SubordinateResources (v1.4+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the subscription is for events in the OriginResources array and its subordinate resources. If <code>true</code> and the OriginResources array is specified, the subscription is for events in the OriginResources array and its subordinate resources. Note that resources associated through the Links section are not considered subordinate. If <code>false</code> and the OriginResources array is specified, the subscription is for events in the OriginResources array only. If the OriginResources array is not present, this property has no relevance. |
| SubscriptionType (v1.3+) | string (enum) | <i>read-only</i> <i>required</i> (<i>null</i>) | The subscription type for events. <i>For the possible property values, see SubscriptionType in Property details.</i> |
| SyslogFilters (v1.9+) [{ | array | | A list of filters applied to syslog messages before sending to a remote syslog server. An empty list indicates all syslog messages are sent. |
| LogFacilities (v1.9+) [] | array (string (enum)) | <i>read-write</i> (<i>null</i>) | The types of programs that can log messages. <i>For the possible property values, see LogFacilities in Property details.</i> |
| LowestSeverity (v1.9+) | string (enum) | <i>read-write</i> (<i>null</i>) | The lowest severity level message that will be forwarded. <i>For the possible property values, see LowestSeverity in Property details.</i> |
| }] | | | |
| VerifyCertificate (v1.9+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the service will verify the certificate of the server referenced by the Destination property prior to sending the event. |

6.42.4 Actions

6.42.4.1 ResumeSubscription

Description

This action resumes a suspended event subscription.

Action URI

{Base URI of target resource}/Actions/EventDestination.ResumeSubscription

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---|----------------------|-----------------|---|
| DeliverBufferedEventDuration (v1.12+) | string (duration) | <i>optional</i> | The maximum age of buffered events that should be delivered when resuming the subscription. |

Request Example

```
{
  "DeliverBufferedEventDuration": "PT8H"
}
```

6.42.4.2 SuspendSubscription (v1.12+)

Description

This action suspends an event subscription.

Action URI

{Base URI of target resource}/Actions/EventDestination.SuspendSubscription

Action parameters

This action takes no parameters.

6.42.5 Property details

6.42.5.1 AuthenticationProtocol

The authentication protocol for SNMPv3.

| string | Description |
|-------------------------|---------------------------------------|
| CommunityString | Trap community string authentication. |
| HMAC128_SHA224 (v1.10+) | HMAC-128-SHA-224 authentication. |
| HMAC192_SHA256 (v1.10+) | HMAC-192-SHA-256 authentication. |
| HMAC256_SHA384 (v1.10+) | HMAC-256-SHA-384 authentication. |
| HMAC384_SHA512 (v1.10+) | HMAC-384-SHA-512 authentication. |

| string | Description |
|------------|-----------------------------|
| HMAC_MD5 | HMAC-MD5-96 authentication. |
| HMAC_SHA96 | HMAC-SHA-96 authentication. |
| None | No authentication. |

6.42.5.2 DeliveryRetryPolicy

The subscription delivery retry policy for events, where the subscription type is RedfishEvent.

| string | Description |
|-------------------------------------|--|
| RetryForever | The subscription is not suspended or terminated, and attempts at delivery of future events continues regardless of the number of retries. |
| RetryForeverWithBackoff (v1.10+) | The subscription is not suspended or terminated, and attempts at delivery of future events continues regardless of the number of retries, but issued over time according to a service-defined backoff algorithm. |
| SuspendRetries | The subscription is suspended after the maximum number of retries is reached. |
| TerminateAfterRetries | The subscription is terminated after the maximum number of retries is reached. |

6.42.5.3 EncryptionProtocol

The encryption protocol for SNMPv3.

| string | Description |
|---------------|----------------------------|
| CBC_DES | CBC-DES encryption. |
| CFB128_AES128 | CFB128-AES-128 encryption. |
| None | No encryption. |

6.42.5.4 EventFormatType

The content types of the message that are sent to the EventDestination.

| string | Description |
|--------------|---|
| Event | The subscription destination receives an event payload. |
| MetricReport | The subscription destination receives a metric report. |

6.42.5.5 EventTypes

The types of events that are sent to the destination.

| string | Description |
|-----------------|--|
| Alert | A condition requires attention. |
| MetricReport | The telemetry service is sending a metric report. |
| Other | Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType. |
| ResourceAdded | A resource has been added. |
| ResourceRemoved | A resource has been removed. |
| ResourceUpdated | A resource has been updated. |
| StatusChange | The status of a resource has changed. |

6.42.5.6 LogFacilities

The types of programs that can log messages.

| string | Description |
|----------|-----------------------------------|
| Auth | Security/authentication messages. |
| Authpriv | Security/authentication messages. |
| Console | Log alert. |
| Cron | Clock daemon. |
| Daemon | System daemons. |
| FTP | FTP daemon. |
| Kern | Kernel messages. |

| string | Description |
|-------------|---|
| Local0 | Locally used facility 0. |
| Local1 | Locally used facility 1. |
| Local2 | Locally used facility 2. |
| Local3 | Locally used facility 3. |
| Local4 | Locally used facility 4. |
| Local5 | Locally used facility 5. |
| Local6 | Locally used facility 6. |
| Local7 | Locally used facility 7. |
| LPR | Line printer subsystem. |
| Mail | Mail system. |
| News | Network news subsystem. |
| NTP | NTP subsystem. |
| Security | Log audit. |
| SolarisCron | Scheduling daemon. |
| Syslog | Messages generated internally by syslogd. |
| User | User-level messages. |
| UUCP | UUCP subsystem. |

6.42.5.7 LowestSeverity

The lowest severity level message that will be forwarded.

| string | Description |
|-----------|--|
| Alert | A condition that should be corrected immediately, such as a corrupted system database. |
| All | A message of any severity. |
| Critical | Hard device errors. |
| Debug | Messages that contain information normally of use only when debugging a program. |
| Emergency | A panic condition. |

| string | Description |
|---------------|--|
| Error | An Error. |
| Informational | Informational only. |
| Notice | Conditions that are not error conditions, but that might require special handling. |
| Warning | A Warning. |

6.42.5.8 Protocol

The protocol type of the event connection.

| string | Description |
|-----------------------------|--|
| Kafka (<i>v1.13+</i>) | The destination follows the Kafka protocol for event notifications. |
| OEM (<i>v1.9+</i>) | The destination follows an OEM protocol for event notifications. |
| Redfish | The destination follows the Redfish Specification for event notifications. |
| SMTP (<i>v1.7+</i>) | The destination follows the SMTP specification for event notifications. |
| SNMPv1 (<i>v1.7+</i>) | The destination follows the SNMPv1 protocol for event notifications. |
| SNMPv2c (<i>v1.7+</i>) | The destination follows the SNMPv2c protocol for event notifications. |
| SNMPv3 (<i>v1.7+</i>) | The destination follows the SNMPv3 protocol for event notifications. |
| SyslogRELP (<i>v1.9+</i>) | The destination follows syslog RELP for event notifications. |
| SyslogTCP (<i>v1.9+</i>) | The destination follows syslog TCP-based for event notifications. |
| SyslogTLS (<i>v1.9+</i>) | The destination follows syslog TLS-based for event notifications. |
| SyslogUDP (<i>v1.9+</i>) | The destination follows syslog UDP-based for event notifications. |

6.42.5.9 Severities

The list of severities that are sent to this event destination.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |

| string | Description |
|---------|---------------------------------|
| Warning | A condition requires attention. |

6.42.5.10 SubscriptionType

The subscription type for events.

| string | Description |
|--------------------|--|
| OEM (v1.9+) | The subscription is an OEM subscription. |
| RedfishEvent | The subscription follows the Redfish Specification for event notifications. To send an event notification, a service sends an HTTP POST to the subscriber's destination URI. |
| SNMPInform (v1.7+) | The subscription follows versions 2 and 3 of SNMP Inform for event notifications. |
| SNMPTrap (v1.7+) | The subscription follows the various versions of SNMP Traps for event notifications. |
| SSE | The subscription follows the HTML5 server-sent event definition for event notifications. |
| Syslog (v1.9+) | The subscription sends Syslog messages for event notifications. |

6.42.6 Example response

```
{
  "@odata.type": "#EventDestination.v1_13_2.EventDestination",
  "Id": "1",
  "Name": "WebUser3 subscribes to all Redfish events",
  "Destination": "http://www.dnsname.com/Destination1",
  "SubscriptionType": "RedfishEvent",
  "DeliveryRetryPolicy": "TerminateAfterRetries",
  "RegistryPrefixes": [],
  "MessageIds": [],
  "OriginResources": [],
  "ResourceTypes": [],
  "Status": {
    "State": "Enabled"
  },
  "Actions": {
    "#EventDestination.ResumeSubscription": {
      "target": "/redfish/v1/EventService/Subscriptions/1/Actions/EventDestination.ResumeSubscription"
    }
  },
  "Context": "WebUser3",
  "Protocol": "Redfish",
}
```

```
"@odata.id": "/redfish/v1/EventService/Subscriptions/1"
}
```

6.43 EventService 1.10.0

| Version | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Release | 2023.1 | 2022.3 | 2022.1 | 2020.2 | 2020.1 | 2019.3 | 2019.2 | 2019.1 | 2018.2 | 2018.1 | 1.0 |

6.43.1 Description

The EventService schema contains properties for managing event subscriptions and generates the events sent to subscribers. The resource has links to the actual collection of subscriptions, which are called event destinations.

6.43.2 URIs

/redfish/v1/EventService

6.43.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------|-------------------------|--|
| DeliveryRetryAttempts | integer | <i>read-write</i> | The number of times that the POST of an event is retried before the subscription terminates. This retry occurs at the service level, which means that the HTTP POST to the event destination fails with an HTTP 4XX or 5XX status code or an HTTP timeout occurs this many times before the event destination subscription terminates. |
| DeliveryRetryIntervalSeconds | integer (seconds) | <i>read-write</i> | The interval, in seconds, between retry attempts for sending any event. |
| EventFormatTypes (v1.2+)[] | array (string (enum)) | <i>read-only (null)</i> | The content types of the message that this service can send to the event destination. <i>For the possible property values, see EventFormatTypes in Property details.</i> |

| Property | Type | Attributes | Notes |
|---|-----------------------------|----------------------|--|
| EventTypesForSubscription (deprecated v1.3) [] | array (string (enum)) | read-only | The types of events to which a client can subscribe. <i>For the possible property values, see EventTypesForSubscription in Property details.</i> <i>Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.</i> |
| ExcludeMessageId (v1.8+) | boolean | read-only | An indication of whether the service supports filtering by the ExcludeMessageIds property. |
| ExcludeRegistryPrefix (v1.8+) | boolean | read-only | An indication of whether the service supports filtering by the ExcludeRegistryPrefixes property. |
| IncludeOriginOfConditionSupported (v1.6+) | boolean | read-only (null) | An indication of whether the service supports including the resource payload of the origin of condition in the event payload. |
| RegistryPrefixes (v1.2+) [] | array (string, null) | read-only | The list of the prefixes of the message registries that can be used for the RegistryPrefixes or ExcludeRegistryPrefixes properties on a subscription. If this property is absent or contains an empty array, the service does not support RegistryPrefix-based subscriptions. |
| ResourceTypes (v1.2+) [] | array (string, null) | read-only | The list of @odata.type values, or schema names, that can be specified in the ResourceTypes array in a subscription. If this property is absent or contains an empty array, the service does not support resource type-based subscriptions. |
| ServerSentEventUri (v1.1+) | string (URI) | read-only | The link to a URI for receiving Server-Sent Event representations for the events that this service generates. |
| ServiceEnabled | boolean | read-write (null) | An indication of whether this service is enabled. If <code>false</code> , events are no longer published, new SSE connections cannot be established, and existing SSE connections are terminated. |
| Severities (v1.9+) [] | array (string (enum)) | read-only (null) | The list of severities that can be specified in the Severities array in a subscription. <i>For the possible property values, see Severities in Property details.</i> |
| SMTP (v1.5+) { | object | | Settings for SMTP event delivery. |
| Authentication (v1.5+) | string (enum) | read-write (null) | The authentication method for the SMTP server. <i>For the possible property values, see Authentication in Property details.</i> |

| Property | Type | Attributes | Notes |
|---|------------------|--------------------------------------|--|
| ConnectionProtocol (v1.5+) | string (enum) | <i>read-write</i> (<i>null</i>) | The connection type to the outgoing SMTP server. <i>For the possible property values, see ConnectionProtocol in Property details.</i> |
| FromAddress (v1.5+) | string | <i>read-write</i> (<i>null</i>) | The 'from' email address of the outgoing email. |
| Password (v1.5+) | string | <i>read-write</i> (<i>null</i>) | The password for authentication with the SMTP server. The value is <code>null</code> in responses. |
| PasswordSet (v1.9+) | boolean | <i>read-only</i> | Indicates if the Password property is set. |
| Port (v1.5+) | integer | <i>read-write</i> (<i>null</i>) | The destination SMTP port. |
| ServerAddress (v1.5+) | string | <i>read-write</i> (<i>null</i>) | The address of the SMTP server. |
| ServiceEnabled (v1.5+) | boolean | <i>read-write</i> (<i>null</i>) | An indication if SMTP for event delivery is enabled. |
| Username (v1.5+) | string | <i>read-write</i> (<i>null</i>) | The username for authentication with the SMTP server. |
| } | | | |
| SSEFilterPropertiesSupported (v1.2+) { | object | | The set of properties that are supported in the <code>\$filter</code> query parameter for the ServerSentEventUri. |
| EventFormatType (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the EventFormatType property. |
| EventType (v1.2+, deprecated v1.3) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the EventType property. <i>Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.</i> |
| MessageId (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the MessageIds property. |
| MetricReportDefinition (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the MetricReportDefinitions property. |
| OriginResource (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the OriginResources property. |
| RegistryPrefix (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the RegistryPrefixes property. |

| Property | Type | Attributes | Notes |
|--|---------|-------------------------|---|
| ResourceType (v1.2+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the ResourceTypes property. |
| SubordinateResources (v1.4+) | boolean | <i>read-only</i> | An indication of whether the service supports filtering by the SubordinateResources property. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SubordinateResourcesSupported (v1.2+) | boolean | <i>read-only (null)</i> | An indication of whether the service supports the SubordinateResources property on both event subscriptions and generated events. |
| Subscriptions { | object | | The link to a collection of event destinations. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EventDestination</i> . See the EventDestination schema for details. |
| } | | | |

6.43.4 Actions

6.43.4.1 SubmitTestEvent

Description

This action generates a test event.

Action URI

{Base URI of target resource}/Actions/EventService.SubmitTestEvent

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-----------------------------|---------|-----------------|-------------------------------------|
| EventGroupId (v1.3+) | integer | <i>optional</i> | The group identifier for the event. |
| EventId | string | <i>optional</i> | The ID for the event to add. |

| Parameter Name | Type | Attributes | Notes |
|---------------------------------------|-----------------------|-----------------|--|
| EventTimestamp | string (date-time) | <i>optional</i> | The date and time for the event to add. |
| EventType (deprecated v1.3) | string (enum) | <i>optional</i> | The type for the event to add. <i>For the possible property values, see EventType in Property details. Deprecated in v1.3 and later. This parameter has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.</i> |
| Message | string | <i>optional</i> | The human-readable message for the event to add. |
| MessageArgs [] | array (string) | <i>optional</i> | An array of message arguments for the event to add. |
| MessageId | string | <i>required</i> | The MessageId for the event to add. |
| MessageSeverity (v1.10+) | string (enum) | <i>optional</i> | The severity for the event to add. <i>For the possible property values, see MessageSeverity in Property details.</i> |
| OriginOfCondition | string (URI) | <i>optional</i> | The URL in the OriginOfCondition property of the event to add. It is not a reference object. |
| Severity | string | <i>optional</i> | The severity for the event to add. |

Request Example

```
{
  "EventId": "5",
  "EventTimestamp": "2016-01-10T18:02:00Z",
  "Severity": "Critical",
  "Message": "Fan 2 crossed Lower Fatal Threshold; fans are no longer redundant",
  "MessageId": "Event.1.0.FanWayTooSlow",
  "MessageArgs": [
    "2"
  ],
  "OriginOfCondition": "/redfish/v1/Chassis/MultiBladeEncl/Thermal"
}
```

6.43.4.2 TestEventSubscription (v1.10+)

Description

This action generates a test event using the pre-defined test message.

Action URI

{Base URI of target resource}/Actions/EventService.TestEventSubscription

Action parameters

This action takes no parameters.

6.43.5 Property details

6.43.5.1 Authentication

The authentication method for the SMTP server.

| string | Description |
|----------------------------------|--|
| AutoDetect | Auto-detect. |
| CRAM_MD5 | CRAM-MD5 authentication. |
| Login (<i>deprecated v1.7</i>) | LOGIN authentication. <i>Deprecated in v1.7 and later. This value has been deprecated in favor of <code>Plain</code>, which supersedes the LOGIN authentication method for SASL.</i> |
| None | No authentication. |
| Plain | PLAIN authentication. |

6.43.5.2 ConnectionProtocol

The connection type to the outgoing SMTP server.

| string | Description |
|------------|--------------|
| AutoDetect | Auto-detect. |
| None | Clear text. |
| StartTLS | StartTLS. |
| TLS_SSL | TLS/SSL. |

6.43.5.3 EventFormatTypes

The content types of the message that this service can send to the event destination.

| string | Description |
|--------------|---|
| Event | The subscription destination receives an event payload. |
| MetricReport | The subscription destination receives a metric report. |

6.43.5.4 EventType

The type for the event to add.

| string | Description |
|-----------------|--|
| Alert | A condition requires attention. |
| MetricReport | The telemetry service is sending a metric report. |
| Other | Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType. |
| ResourceAdded | A resource has been added. |
| ResourceRemoved | A resource has been removed. |
| ResourceUpdated | A resource has been updated. |
| StatusChange | The status of a resource has changed. |

6.43.5.5 EventTypesForSubscription

The types of events to which a client can subscribe.

| string | Description |
|-----------------|--|
| Alert | A condition requires attention. |
| MetricReport | The telemetry service is sending a metric report. |
| Other | Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType. |
| ResourceAdded | A resource has been added. |
| ResourceRemoved | A resource has been removed. |
| ResourceUpdated | A resource has been updated. |
| StatusChange | The status of a resource has changed. |

6.43.5.6 MessageSeverity

The severity for the event to add.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.43.5.7 Severities

The list of severities that can be specified in the Severities array in a subscription.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.43.6 Example response

```
{
  "@odata.type": "#EventService.v1_10_0.EventService",
  "Id": "EventService",
  "Name": "Event Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "DeliveryRetryAttempts": 3,
  "DeliveryRetryIntervalSeconds": 60,
  "EventTypesForSubscription": [
    "StatusChange",
    "ResourceUpdated",
    "ResourceAdded",
    "ResourceRemoved",
    "Alert",
    "Other"
  ]
}
```

```

    ],
    "ServerSentEventUri": "/redfish/v1/EventService/SSE",
    "SSEFilterPropertiesSupported": {
      "EventType": true,
      "MetricReportDefinition": false,
      "RegistryPrefix": true,
      "ResourceType": true,
      "EventFormatType": false,
      "MessageId": true,
      "OriginResource": true,
      "SubordinateResources": true
    },
    "Subscriptions": {
      "@odata.id": "/redfish/v1/EventService/Subscriptions"
    },
    "Actions": {
      "#EventService.SubmitTestEvent": {
        "target": "/redfish/v1/EventService/Actions/EventService.SubmitTestEvent",
        "@Redfish.ActionInfo": "/redfish/v1/EventService/SubmitTestEventActionInfo"
      }
    },
    "@odata.id": "/redfish/v1/EventService"
  }
}

```

6.44 ExternalAccountProvider 1.7.0

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.3 | 2022.1 | 2021.2 | 2020.4 | 2018.3 | 2018.1 |

6.44.1 Description

The ExternalAccountProvider schema represents a remote service that provides accounts for this manager to use for authentication.

6.44.2 URIs

```

/redfish/v1/AccountService/ExternalAccountProviders/{ExternalAccountProviderId}
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/ExternalAccountProviders/
{ExternalAccountProviderId}

```

6.44.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------|------------------|--|---|
| AccountProviderType | string (enum) | <i>read-only required on create (null)</i> | The type of external account provider to which this service connects. <i>For the possible property values, see AccountProviderType in Property details.</i> |
| Authentication { | object | | The authentication information for the external account provider. |
| AuthenticationType | string (enum) | <i>read-write (null)</i> | The type of authentication used to connect to the external account provider. <i>For the possible property values, see AuthenticationType in Property details.</i> |
| EncryptionKey (v1.2+) | string | <i>read-write (null)</i> | Specifies the encryption key. |
| EncryptionKeySet (v1.2+) | boolean | <i>read-only (null)</i> | Indicates if the EncryptionKey property is set. |
| KerberosKeytab | string | <i>read-write (null)</i> | The Base64-encoded version of the Kerberos keytab for this service. A PATCH or PUT operation writes the keytab. This property is <code>null</code> in responses. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Password | string | <i>read-write (null)</i> | The password for this service. A PATCH or PUT request writes the password. This property is <code>null</code> in responses. |
| Token | string | <i>read-write (null)</i> | The token for this service. A PATCH or PUT operation writes the token. This property is <code>null</code> in responses. |
| Username | string | <i>read-write</i> | The user name for the service. |
| } | | | |
| Certificates (v1.1+) { | object | | The link to a collection of certificates that the external account provider uses. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| LDAPService { | object | | The additional mapping information needed to parse a generic LDAP service. |

| Property | Type | Attributes | Notes |
|--|----------------------|--------------------------|--|
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SearchSettings { | object | | The required settings to search an external LDAP service. |
| BaseDistinguishedNames [] | array (string, null) | <i>read-write</i> | The base distinguished names to use to search an external LDAP service. |
| EmailAttribute (v1.7+) | string | <i>read-write (null)</i> | The attribute name that contains the LDAP user's email address. |
| GroupNameAttribute | string | <i>read-write (null)</i> | The attribute name that contains the LDAP group name entry. |
| GroupsAttribute | string | <i>read-write (null)</i> | The attribute name that contains the groups for a user on the LDAP user entry. |
| SSHKeyAttribute (v1.4+) | string | <i>read-write (null)</i> | The attribute name that contains the LDAP user's SSH public key entry. |
| UsernameAttribute | string | <i>read-write (null)</i> | The attribute name that contains the LDAP user name entry. |
| } | | | |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| OAuth2Service (v1.3+) { | object | <i>(null)</i> | The additional information needed to parse an OAuth 2.0 service. |
| Audience (v1.3+) [] | array (string) | <i>read-only</i> | The allowable audience strings of the Redfish service. |
| Issuer (v1.3+) | string | <i>read-write (null)</i> | The issuer string of the OAuth 2.0 service. Clients should configure this property if Mode contains <code>Offline</code> . |
| Mode (v1.3+) | string (enum) | <i>read-write</i> | The mode of operation for token validation. <i>For the possible property values, see Mode in Property details.</i> |
| OAuthServiceSigningKeys (v1.3+) | string | <i>read-write (null)</i> | The Base64-encoded signing keys of the issuer of the OAuth 2.0 service. Clients should configure this property if Mode contains <code>Offline</code> . |

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------------------|-----------------------------|---|
| Oem (v1.6+) {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Priority (v1.2+) | integer | <i>read-write</i> (null) | The authentication priority for the external account provider. |
| RemoteRoleMapping [{ | array | | The mapping rules to convert the external account providers account information to the local Redfish role. |
| LocalRole | string | <i>read-write</i> (null) | The name of the local Redfish role to which to map the remote user or group. |
| MFABypass (v1.5+) { | object | (null) | The multi-factor authentication bypass settings. See the <i>AccountService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MFABypass resource. See the Links section and the <i>AccountService</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| RemoteGroup | string | <i>read-write</i> (null) | The name of the remote group, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links. |
| RemoteUser | string | <i>read-write</i> (null) | The name of the remote user that maps to the local Redfish role to which this entity links. |
| }] | | | |
| Retries (v1.6+) | integer | <i>read-write</i> (null) | The number of times to retry connecting to an address in the <i>ServiceAddresses</i> property before attempting the next address in the array. |
| ServiceAddresses [] | array (string, null) | <i>read-write</i> | The addresses of the user account providers to which this external account provider links. The format of this field depends on the type of external account provider. |
| ServiceEnabled | boolean | <i>read-write</i> (null) | An indication of whether this service is enabled. |
| TACACSplusService (v1.2+) { | object | (null) | The additional information needed to parse a TACACS+ services. |
| AuthorizationService (v1.6+) | string | <i>read-write</i> | The TACACS+ service authorization argument. |

| Property | Type | Attributes | Notes |
|---|-----------------------|-------------------|--|
| Oem (v1.6+) {} | object | | See the Oem object definition in the Common properties section. |
| PasswordExchangeProtocols (v1.2+) [] | array (string (enum)) | read-write (null) | Indicates the allowed TACACS+ password exchange protocols. For the possible property values, see <i>PasswordExchangeProtocols</i> in Property details. |
| PrivilegeLevelArgument (v1.2+) | string | read-write (null) | Indicates the name of the TACACS+ argument name in an authorization request. |
| } | | | |
| TimeoutSeconds (v1.6+) | integer | read-write (null) | The period of time, in seconds, this account service will wait for a response from an address of a user account provider before timing out. |

6.44.4 Property details

6.44.4.1 AccountProviderType

The type of external account provider to which this service connects.

| string | Description |
|------------------------|---|
| ActiveDirectoryService | An external Active Directory service. |
| LDAPService | A generic external LDAP service. |
| OAuth2 (v1.3+) | An external OAuth 2.0 service. |
| OEM | An OEM-specific external authentication or directory service. |
| RedfishService | An external Redfish service. |
| TACACSPplus (v1.3+) | An external TACACS+ service. |

6.44.4.2 AuthenticationType

The type of authentication used to connect to the external account provider.

| string | Description |
|----------------|--------------------|
| KerberosKeytab | A Kerberos keytab. |

| string | Description |
|---------------------|---|
| OEM | An OEM-specific authentication mechanism. |
| Token | An opaque authentication token. |
| UsernameAndPassword | A user name and password combination. |

6.44.4.3 Mode

The mode of operation for token validation.

| string | Description |
|-----------|---|
| Discovery | OAuth 2.0 service information for token validation is downloaded by the service. |
| Offline | OAuth 2.0 service information for token validation is configured by a client. Clients should configure the Issuer and OAuthServiceSigningKeys properties for this mode. |

6.44.4.4 PasswordExchangeProtocols

Indicates the allowed TACACS+ password exchange protocols.

| string | Description |
|----------|------------------------------|
| ASCII | The ASCII Login method. |
| CHAP | The CHAP Login method. |
| MSCHAPv1 | The MS-CHAP v1 Login method. |
| MSCHAPv2 | The MS-CHAP v2 Login method. |
| PAP | The PAP Login method. |

6.44.5 Example response

```
{
  "@odata.type": "#ExternalAccountProvider.v1_7_0.ExternalAccountProvider",
  "Id": "ExternalRedfishService",
  "Name": "Remote Redfish Service",
  "Description": "Remote Redfish Service providing additional Accounts to this Redfish Service",
  "AccountProviderType": "RedfishService",
}
```

```

"ServiceAddresses": [
  "http://redfish.dmtf.org/redfish/v1/AccountService"
],
"Authentication": {
  "AuthenticationType": "Token",
  "Token": null
},
"RemoteRoleMapping": [
  {
    "RemoteGroup": "Admin",
    "LocalRole": "Administrator"
  },
  {
    "RemoteGroup": "Operator",
    "LocalRole": "Operator"
  },
  {
    "RemoteGroup": "ReadOnly",
    "LocalRole": "ReadOnly"
  }
],
"@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders/ExternalRedfishService"
}

```

6.45 Fabric 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2021.4 | 2020.3 | 2019.4 | 2016.2 |

6.45.1 Description

The Fabric schema represents a simple fabric consisting of one or more switches, zero or more endpoints, and zero or more zones.

6.45.2 URIs

`/redfish/v1/Fabrics/{FabricId}`

6.45.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------------|------------------|---------------------|---|
| AddressPools (v1.1+) { | object | | The collection of links to the address pools that this fabric contains. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>AddressPool</i> . See the <i>AddressPool</i> schema for details. |
| } | | | |
| Connections (v1.2+) { | object | | The collection of links to the connections that this fabric contains. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Connection</i> . See the <i>Connection</i> schema for details. |
| } | | | |
| EndpointGroups (v1.2+) { | object | | The collection of links to the endpoint groups that this fabric contains. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>EndpointGroup</i> . See the <i>EndpointGroup</i> schema for details. |
| } | | | |
| Endpoints { | object | | The collection of links to the endpoints that this fabric contains. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Endpoint</i> . See the <i>Endpoint</i> schema for details. |
| } | | | |
| FabricType | string (enum) | read-only (null) | The protocol being sent over this fabric. <i>For the possible property values, see FabricType in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the <i>Oem</i> object definition in the Common properties section. |
| } | | | |
| MaxZones | integer | read-only (null) | The maximum number of zones the switch can currently configure. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| Switches { | object | | The collection of links to the switches that this fabric contains. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|--------------|------------------|----------------------|--|
| @odata.id | string | read-only | Link to Collection of <i>Switch</i> . See the Switch schema for details. |
| } | | | |
| UUID (v1.3+) | string (uuid) | read-write (null) | The UUID for this fabric. |
| Zones { | object | | The collection of links to the zones that this fabric contains. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Zone</i> . See the Zone schema for details. |
| } | | | |

6.45.4 Property details

6.45.4.1 FabricType

The protocol being sent over this fabric.

| string | Description |
|-------------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |

| string | Description |
|-----------------|---|
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |

| string | Description |
|--------|-------------|
| VGA | VGA. |

6.45.5 Example response

```
{
  "@odata.type": "#Fabric.v1_3_0.Fabric",
  "Id": "SAS",
  "Name": "SAS Fabric",
  "FabricType": "SAS",
  "Description": "A SAS Fabric with redundant switches connected to two initiators",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Zones": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Zones"
  },
  "Endpoints": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints"
  },
  "Switches": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Switches"
  },
  "@odata.id": "/redfish/v1/Fabrics/SAS"
}
```

6.46 FabricAdapter 1.5.1

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2022.3 | 2022.2 | 2022.1 | 2021.3 | 2021.2 | 2019.4 |

6.46.1 Description

A fabric adapter represents the physical fabric adapter capable of connecting to an interconnect fabric. Examples include, but are not limited to, Ethernet, NVMe over Fabrics, Gen-Z, and SAS fabric adapters.

6.46.2 URIs

/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}

/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.46.3 Properties

| Property | Type | Attributes | Notes |
|--|-----------------------------|-------------------------------------|---|
| ASICManufacturer | string | <i>read-only</i> (<i>null</i>) | The manufacturer name for the ASIC of this fabric adapter. |
| ASICPartNumber | string | <i>read-only</i> (<i>null</i>) | The part number for the ASIC on this fabric adapter. |
| ASICRevisionIdentifier | string | <i>read-only</i> (<i>null</i>) | The revision identifier for the ASIC on this fabric adapter. |
| FabricType (v1.3+) | string (enum) | <i>read-write</i> | The configured fabric type of this fabric adapter. <i>For the possible property values, see FabricType in Property details.</i> |
| FabricTypeCapabilities (v1.3+) [] | array (string (enum)) | <i>read-only</i> | An array of fabric types supported by this fabric adapter. <i>For the possible property values, see FabricTypeCapabilities in Property details.</i> |
| FirmwareVersion | string | <i>read-only</i> (<i>null</i>) | The firmware version of this fabric adapter. |
| GenZ { | object | | The Gen-Z specific properties for this fabric adapter. |
| MSDT { | object | | The Multi Subnet Destination Table for the component. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details. |
| } | | | |
| PIDT [] | array (string, null) | <i>read-write</i> | An array of table entry values for the Packet Injection Delay Table. |
| RequestorVCAT { | object | | The Requestor Virtual Channel Action Table for the component. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details. |

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------------------|-------------------|---|
| } | | | |
| ResponderVCAT { | object | | The Responder Virtual Channel Action Table for the component. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details. |
| } | | | |
| RITable [] | array (string, null) | <i>read-write</i> | An array of table entry values for the Responder Interface Table. |
| SSDT { | object | | The Single Subnet Destination Table for the component. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details. |
| } | | | |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Endpoints [{ | array | | An array of links to the endpoints that represent the logical fabric connection to this fabric adapter. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| MemoryDomains (v1.3+) [{ | array | | An array of links to the memory domains associated with this fabric adapter. |
| @odata.id | string | <i>read-write</i> | Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleDevices (v1.2+) [{ | array | | An array of links to the PCIe devices associated with this fabric adapter. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------------------|---|
| Processors (v1.5+) [{ | array | | An array of links to the processors that this fabric adapter provides to a fabric. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| } | | | |
| Location (v1.1+) {} | object | | The location of the fabric adapter. For property details, see Location. |
| LocationIndicatorActive (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only</i> (<i>null</i>) | The manufacturer or OEM of this fabric adapter. |
| Model | string | <i>read-only</i> (<i>null</i>) | The model string for this fabric adapter. |
| PartNumber | string | <i>read-only</i> (<i>null</i>) | The part number for this fabric adapter. |
| PCIeInterface { | object | | The PCIe interface details for this fabric adapter. |
| LanesInUse (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes supported by this device. |
| MaxPCIeType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCIeType in Property details.</i> |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCIeType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCIeType in Property details.</i> |
| } | | | |
| Ports { | object | | The link to the collection of ports that exist on the fabric adapter. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number for this fabric adapter. |

| Property | Type | Attributes | Notes |
|------------------------|------------------|-----------------------------------|---|
| SKU | string | <i>read-only</i> <i>(null)</i> | The manufacturer SKU for this fabric adapter. |
| SparePartNumber | string | <i>read-only</i> <i>(null)</i> | The spare part number for this fabric adapter. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UUID | string (uuid) | <i>read-only</i> <i>(null)</i> | The UUID for this fabric adapter. |

6.46.4 Property details

6.46.4.1 FabricType

The configured fabric type of this fabric adapter.

| string | Description |
|-------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |

| string | Description |
|-----------------|---|
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.46.4.2 FabricTypeCapabilities

An array of fabric types supported by this fabric adapter.

| string | Description |
|---------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |

| string | Description |
|-----------------|---|
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.46.4.3 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.46.4.4 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.46.5 Example response

```
{
  "@odata.type": "#FabricAdapter.v1_5_1.FabricAdapter",
  "Id": "Bridge",
  "Name": "Gen-Z Bridge",
  "Manufacturer": "Contoso",
  "Model": "Gen-Z Bridge Model X",
  "PartNumber": "975999-001",
  "SparePartNumber": "152111-A01",
  "SKU": "Contoso 2-port Gen-Z Bridge",
  "SerialNumber": "2M220100SL",
  "ASICRevisionIdentifier": "A0",
  "ASICPartNumber": "53312",
  "ASICManufacturer": "Contoso",
  "FirmwareVersion": "7.4.10",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Ports": {
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/Ports"
  },
  "PCIeInterface": {
    "MaxPCIeType": "Gen4",
    "MaxLanes": 64,
    "PCIeType": "Gen4",
    "LanesInUse": 64
  },
  "UUID": "45724775-ed3b-2214-1313-9865200c1cc1",
  "Links": {
```

```
"Endpoints": [  
  {  
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/3"  
  }  
]  
,  
"GenZ": {  
  "SSDT": {  
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/SSDT"  
  },  
  "MSDT": {  
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/MSDT"  
  },  
  "RequestorVCAT": {  
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/REQ-VCAT"  
  },  
  "ResponderVCAT": {  
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/RSP-VCAT"  
  },  
  "RITable": [  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E",  
    "0x12",  
    "0x3E"  
  ],  
  "PIDT": [  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568",  
    "0x12234568"  
  ]  
}
```


6.47.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|---------------|--------------------|---|
| AmbientMetrics (v1.1+) { | object | | The link to the ambient environment metrics for this facility. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| EnvironmentMetrics (v1.1+) { | object | | The link to the environment metrics for this facility. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FacilityType | string (enum) | read-only required | The type of location this resource represents. <i>For the possible property values, see FacilityType in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| CDUs (v1.4+) [{ | array | | An array of links to the cooling distribution units in this facility. |
| @odata.id | string | read-write | Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details. |
| }] | | | |
| ContainedByFacility | object | | The link to the facility that contains this facility. |
| @odata.id | string | read-write | Link to another Facility resource. |
| } | | | |
| ContainsChassis [{ | array | | An array of links to outermost chassis contained within this facility. |
| @odata.id | string | read-write | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| ContainsFacilities [{ | array | | An array of links to other facilities contained within this facility. |
| @odata.id | string | read-write | Link to another Facility resource. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------|-------------------|--|
| }] | | | |
| CoolingLoops (v1.4+) [{ | array | | An array of links to the cooling loops in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| }] | | | |
| ElectricalBuses (v1.3+) [{ | array | | An array of links to the electrical buses in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| FloorPDUs [{ | array | | An array of links to the floor power distribution units in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| ImmersionUnits (v1.4+) [{ | array | | An array of links to the immersion cooling units in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details. |
| }] | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this facility. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PowerShelves (v1.2+) [{ | array | | An array of links to the power shelves in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|-----------------------------|--------|-------------------|---|
| RackPDUs [{ | array | | An array of links to the rack-level power distribution units in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| Switchgear [{ | array | | An array of links to the switchgear in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| TransferSwitches [{ | array | | An array of links to the transfer switches in this facility. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| } | | | |
| Location { } | object | | The location of the facility. For property details, see Location. |
| PowerDomains { | object | | Link to the power domains in this facility. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDomain</i> . See the PowerDomain schema for details. |
| } | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.47.4 Property details

6.47.4.1 FacilityType

The type of location this resource represents.

| string | Description |
|----------|------------------------------------|
| Building | A structure with a roof and walls. |

| string | Description |
|--------|---|
| Floor | A floor inside of a building. |
| Room | A room inside of a building or floor. |
| Site | A small area consisting of several buildings. |

6.47.5 Example response

```
{
  "@odata.type": "#Facility.v1_4_0.Facility",
  "Id": "Room237",
  "Name": "Room #237, 2nd Floor",
  "FacilityType": "Room",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "PostalAddress": {
      "Country": "US",
      "Territory": "OR",
      "City": "Portland",
      "Street": "1001 SW 5th Avenue",
      "HouseNumber": 1100,
      "Name": "DMTF, Inc.",
      "PostalCode": "97204",
      "Floor": "2",
      "Room": "237"
    }
  },
  "PowerDomains": {
    "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains"
  },
  "Links": {
    "ContainedByFacility": {
      "@odata.id": "/redfish/v1/Facilities/Building"
    },
    "RackPDUs": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Facilities/Room237"
}
```

6.48 Fan 1.5.0

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.2 | 2022.1 | 2021.1 | 2020.4 |

6.48.1 Description

The Fan schema describes a cooling fan unit for a computer system or similar devices contained within a chassis. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.48.2 URIs

`/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Fans/{FanId}`

6.48.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|--------------|-------------------------|---|
| Assembly { | object | | The link to the assembly associated with this fan. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| FanDiameterMm (v1.4+) | integer (mm) | <i>read-only (null)</i> | The diameter of the fan assembly in millimeters. |
| HotPluggable | boolean | <i>read-only (null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| Links (v1.2+) { | object | | The links to other resources that are related to this resource. |
| CoolingChassis (v1.2+) [{ | array | | An array of links to the chassis that are directly cooled by this fan. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Chassis</i> resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------|--|
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Location {} | object | | The location of the fan. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this fan. |
| Model | string | <i>read-only (null)</i> | The model number for this fan. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this fan. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this fan. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PowerWatts (v1.1+) { | object (excerpt) | | Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | <i>read-only (null)</i> | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only (null)</i> | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only (null)</i> | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only (null)</i> | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| } | | | |
| Replaceable (v1.3+) | boolean | <i>read-only (null)</i> | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| SecondarySpeedPercent (v1.5+) { | object (excerpt) | | The fan speed (percent) of the second rotor in a multi-rotor fan. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |

| Property | Type | Attributes | Notes |
|-------------------------|--------------------|-------------------------|---|
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only (null)</i> | The rotational speed. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this fan. |
| SparePartNumber | string | <i>read-only (null)</i> | The spare part number for this fan. |
| SpeedPercent { | object (excerpt) | | The fan speed (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only (null)</i> | The rotational speed. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.48.4 Property details

6.48.4.1 PhysicalContext

The area or device associated with this fan.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |

| string | Description |
|---------------------|---|
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |

| string | Description |
|------------------|-----------------------------------|
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.48.5 Example response

```
{
  "@odata.type": "#Fan.v1_5_0.Fan",
  "Id": "Bay1",
  "Name": "Fan Bay 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PhysicalContext": "Chassis",
  "Model": "RKS-440DC",
}
```

```

    "Manufacturer": "Contoso Fans",
    "PartNumber": "23456-133",
    "SparePartNumber": "93284-133",
    "LocationIndicatorActive": true,
    "HotPluggable": true,
    "SpeedPercent": {
      "Reading": 45,
      "SpeedRPM": 2200,
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/FanBay1"
    },
    "Location": {
      "PartLocation": {
        "ServiceLabel": "Chassis Fan Bay 1",
        "LocationType": "Bay",
        "LocationOrdinalValue": 0
      }
    },
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay1"
  }
}

```

6.49 Filter 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.49.1 Description

The Filter schema describes a filter unit for a cooling system or similar device.

6.49.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Pumps/{PumpId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Filters/{FilterId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps/{PumpId}/Filters/{FilterId}

```


/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs/{ReservoirId}/Filters/{FilterId}

6.49.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|--------------------|--------------------------|---|
| Assembly { | object | | The link to the assembly associated with this filter. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| HotPluggable | boolean | <i>read-only (null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| Location { } | object | | The location of the filter. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this filter. |
| Model | string | <i>read-only (null)</i> | The model number for this filter. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this filter. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this filter. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| RatedServiceHours | number | <i>read-only (null)</i> | The rated hours of service life for this filter. |
| Replaceable | boolean | <i>read-only (null)</i> | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this filter. |
| ServicedDate | string (date-time) | <i>read-write (null)</i> | The date this filter was put into service. |
| ServiceHours | number | <i>read-write (null)</i> | The hours of service this filter has provided. |

| Property | Type | Attributes | Notes |
|------------------------|--------|-----------------------------------|---|
| SparePartNumber | string | <i>read-only</i> <i>(null)</i> | The spare part number for this filter. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UserLabel | string | <i>read-write</i> | A user-assigned label. |

6.49.4 Property details

6.49.4.1 PhysicalContext

The area or device associated with this filter.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |

| string | Description |
|------------------|---|
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |

| string | Description |
|------------------|-----------------------------------|
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.49.5 Example response

```
{
  "@odata.type": "#Filter.v1_0_0.Filter",
  "Id": "1",
  "Name": "Cooling Loop Filter",
  "ServicedDate": "2020-12-24T08:00:00Z",
  "ServiceHours": 5791,
  "RatedServiceHours": 10000,
  "Manufacturer": "Contoso",
  "Model": "MyCoffee",
  "PartNumber": "Cone4",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "Placement": {
      "Row": "North 1"
    }
  },
  "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/Filters/1"
}
```

6.50 GraphicsController 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.1 |

6.50.1 Description

The GraphicsController schema defines a graphics controller that can be used to drive one or more display devices.

6.50.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}

6.50.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|--------|-----------------------------|--|
| AssetTag | string | <i>read-write</i> (null) | The user-assigned asset tag for this graphics controller. |
| BiosVersion | string | <i>read-only</i> (null) | The version of the graphics controller BIOS or primary graphics controller firmware. |
| DriverVersion | string | <i>read-only</i> (null) | The version of the graphics controller driver loaded in the operating system. |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCIeDevice { | object | (null) | A link to the PCIe device that represents this graphics controller. See the <i>PCIeDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCIeDevice</i> schema for details. |
| } | | | |
| Processors [{ | array | | An array of links to the processors that are a part of this graphics controller. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the graphics controller. For property details, see Location. |
| Manufacturer | string | <i>read-only</i> (null) | The manufacturer of this graphics controller. |

| Property | Type | Attributes | Notes |
|------------------------|--------|----------------------------|---|
| Model | string | <i>read-only</i> (null) | The product model number of this graphics controller. |
| PartNumber | string | <i>read-only</i> (null) | The part number for this graphics controller. |
| Ports { | object | | The ports of the graphics controller. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> (null) | The serial number for this graphics controller. |
| SKU | string | <i>read-only</i> (null) | The SKU for this graphics controller. |
| SparePartNumber | string | <i>read-only</i> (null) | The spare part number of the graphics controller. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.50.4 Example response

```
{
  "@odata.type": "#GraphicsController.v1_0_0.GraphicsController",
  "Id": "GPU1",
  "Name": "Contoso Graphics Controller 1",
  "AssetTag": "",
  "Manufacturer": "Contoso",
  "Model": "GPU1",
  "SKU": "80937",
  "SerialNumber": "2M220100SL",
  "PartNumber": "G37891",
  "SparePartNumber": "G37890",
  "BiosVersion": "90.02.17.00.7D",
  "DriverVersion": "27.21.14.6079 (Contoso 460.79) DCH / Win 10 64",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "PartLocation": {
      "ServiceLabel": "Slot 1",
      "LocationOrdinalValue": 1,

```

```

        "LocationType": "Slot",
        "Orientation": "LeftToRight",
        "Reference": "Rear"
    }
},
"Ports": {
    "@odata.id": "/redfish/v1/Systems/1/GraphicsControllers/GPU1/Ports"
},
"Links": {
    "Processors": [
        {
            "@odata.id": "/redfish/v1/Systems/1/Processors/GPU"
        }
    ]
},
"@odata.id": "/redfish/v1/Systems/1/GraphicsControllers/GPU1"
}

```

6.51 Heater 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2022.3 |

6.51.1 Description

The Heater schema describes a heating unit for devices contained within a chassis.

6.51.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Heaters/{HeaterId}

6.51.3 Properties

| Property | Type | Attributes | Notes |
|-------------------|--------|------------------|--|
| Assembly { | object | | The link to the assembly associated with this heater. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |

| Property | Type | Attributes | Notes |
|--------------------------------|---------|------------------------------------|--|
| } | | | |
| HotPluggable | boolean | <i>read-only</i> <i>(null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| Links { | object | | The links to other resources that are related to this resource. |
| Managers [{ | array | | An array of links to the managers heated by this heater. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Memory [{ | array | | An array of links to the memory devices heated by this heater. |
| @odata.id | string | <i>read-only</i> | Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details. |
| }] | | | |
| NetworkAdapters [{ | array | | An array of links to the network adapters heated by this heater. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkAdapter resource. See the Links section and the <i>NetworkAdapter</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Processors [{ | array | | An array of links to the processors heated by this heater. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| StorageControllers [{ | array | | An array of links to the storage controllers heated by this heater. |
| @odata.id | string | <i>read-only</i> | Link to a StorageController resource. See the Links section and the <i>StorageController</i> schema for details. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the heater. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |

| Property | Type | Attributes | Notes |
|------------------------|---------------|-------------------------|--|
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this heater. |
| Metrics { | object | | The link to the heater metrics resource associated with this heater. See the <i>HeaterMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a HeaterMetrics resource. See the Links section and the <i>HeaterMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only (null)</i> | The model number for this heater. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this heater. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this heater. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this heater. |
| SparePartNumber | string | <i>read-only (null)</i> | The spare part number for this heater. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.51.4 Property details

6.51.4.1 PhysicalContext

The area or device associated with this heater.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |

| string | Description |
|------------------|---|
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |

| string | Description |
|------------------|-----------------------------------|
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.51.5 Example response

```
{
  "@odata.type": "#Heater.v1_0_0.Heater",
  "Id": "CPU1Heater",
  "Description": "Heater for CPU1",
  "Name": "Heater 1",
  "PhysicalContext": "CPU",
  "Manufacturer": "Contoso Heaters",
  "Model": "CPUHeater",
  "SerialNumber": "SNDHM0123456789",
  "PartNumber": "12345-123",
  "SparePartNumber": "54321-321",
  "LocationIndicatorActive": false,
  "HotPluggable": true,
  "Status": {
```

```

    "Health": "OK",
    "State": "Enabled"
  },
  "Links": {
    "Processors": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU1"
      }
    ]
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Heaters/CPU1Heater/Metrics"
  },
  "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Heaters/CPU1Heater"
}

```

6.52 HeaterMetrics 1.0.0

| | |
|---------|--------|
| Version | v1.0 |
| Release | 2022.3 |

6.52.1 Description

The HeaterMetrics schema contains definitions for the metrics of a heater.

6.52.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Heaters/{HeaderId}/Metrics

6.52.3 Properties

| Property | Type | Attributes | Notes |
|----------------------|---------------------|---------------------|---|
| PowerWatts { | object (excerpt) | | Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | read-only (null) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------------------|-------------------------------------|---|
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| PrePowerOnHeatingTimeSeconds | integer | <i>read-only</i> (<i>null</i>) | The total number of seconds the heater was active while the device it heats was powered off. |
| RuntimeHeatingTimeSeconds | integer | <i>read-only</i> (<i>null</i>) | The total number of seconds the heater was active while the device it heats was powered on. |
| TemperatureReadingsCelsius [{ | array (excerpt) | | The temperatures (Celsius) from all related sensors for this device. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| DeviceName (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The name of the device. |
| PhysicalContext | string (enum) | <i>read-only</i> (<i>null</i>) | The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (<i>null</i>) | The usage or location within a device to which this sensor measurement applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| }] | | | |

6.52.4 Actions

6.52.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI

{Base URI of target resource}/Actions/HeaterMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.52.5 Property details

6.52.5.1 PhysicalContext

The area or device to which this sensor measurement applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |

| string | Description |
|------------------|---|
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |

| string | Description |
|------------------|-----------------------------------|
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.52.5.2 PhysicalSubContext

The usage or location within a device to which this sensor measurement applies.

| string | Description |
|--------|-------------|
| Input | The input. |
| Output | The output. |

6.52.6 Example response

```
{
  "@odata.type": "#HeaterMetrics.v1_0_0.HeaterMetrics",
  "Id": "HeaterMetrics",
  "Description": "Heater Metrics for CPU1 Heater",
  "Name": "CPU1 Heater Metrics",
  "PrePowerOnHeatingTimeSeconds": 600,
  "RuntimeHeatingTimeSeconds": 3600,
  "PowerWatts": {
    "Reading": 200.3
  },
  "TemperatureReadingsCelsius": [
    {
      "DeviceName": "Heater Average Temperature",
      "Reading": 2.5
    }
  ],
  "Actions": {
    "#HeaterMetrics.ResetMetrics": {
      "target": "/redfish/v1/Chassis/1U/ThermalSubsystem/Heaters/CPU1Heater/Metrics/HeaterMetrics.ResetMetric
    }
  },
  "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Heaters/CPU1Heater/Metrics"
```



```
}

```

6.53 HostInterface 1.3.0

| | | | | |
|----------------|--------|--------|--------|--------|
| Version | v1.3 | v1.2 | v1.1 | v1.0 |
| Release | 2020.3 | 2018.2 | 2017.1 | 2016.3 |

6.53.1 Description

The properties associated with a Host Interface. A Host Interface is a connection between host software and a Redfish Service.

6.53.2 URIs

`/redfish/v1/Managers/{ManagerId}/HostInterfaces/{HostInterfaceId}`

6.53.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------------|-----------------------------|---|
| AuthenticationModes [] | array (string (enum)) | <i>read-write</i> | The authentication modes available on this interface. <i>For the possible property values, see AuthenticationModes in Property details.</i> |
| AuthNoneRoleId (v1.2+) | string | <i>read-write</i> | The role when no authentication on this interface is used. |
| CredentialBootstrapping (v1.3+) { | object | | The credential bootstrapping settings for this interface. |
| EnableAfterReset (v1.3+) | boolean | <i>read-write</i> (null) | An indication of whether credential bootstrapping is enabled after a reset for this interface. |
| Enabled (v1.3+) | boolean | <i>read-write</i> (null) | An indication of whether credential bootstrapping is enabled for this interface. |
| RoleId (v1.3+) | string | <i>read-write</i> | The role used for the bootstrap account created for this interface. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------|--|
| ExternallyAccessible | boolean | <i>read-only (null)</i> | An indication of whether external entities can access this interface. External entities are non-host entities. For example, if the host and manager are connected through a switch and the switch also exposes an external port on the system, external clients can also use the interface, and this property value is <code>true</code> . |
| FirmwareAuthEnabled <i>(deprecated v1.3)</i> | boolean | <i>read-write (null)</i> | An indication of whether this firmware authentication is enabled for this interface. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| FirmwareAuthRoleId <i>(deprecated v1.3)</i> | string | <i>read-write</i> | The Role used for firmware authentication on this interface. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| HostEthernetInterfaces { | object | | A link to the collection of network interface controllers or cards (NICs) that a computer system uses to communicate with this Host Interface. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EthernetInterface</i> . See the <i>EthernetInterface</i> schema for details. |
| } | | | |
| HostInterfaceType | string (enum) | <i>read-only (null)</i> | The Host Interface type for this interface. <i>For the possible property values, see HostInterfaceType in Property details.</i> |
| InterfaceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this interface is enabled. |
| KernelAuthEnabled <i>(deprecated v1.3)</i> | boolean | <i>read-write (null)</i> | An indication of whether this kernel authentication is enabled for this interface. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| KernelAuthRoleId <i>(deprecated v1.3)</i> | string | <i>read-write</i> | The Role used for kernel authentication on this interface. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| Links { | object | | The links to other Resources that are related to this Resource. |
| AuthNoneRole <i>(v1.2+)</i> { | object | | The link to the Redfish Role that contains the privileges on this Host Interface when no authentication is performed. See the <i>Role</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Role resource. See the Links section and the <i>Role</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|--------|------------------|--|
| } | | | |
| ComputerSystems [{ | array | | An array of links to the computer systems connected to this Host Interface. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |
| CredentialBootstrappingRole (v1.3+) { | object | | The link to the role that contains the privileges for the bootstrap account created for this interface. See the <i>Role</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Role resource. See the Links section and the <i>Role</i> schema for details. |
| } | | | |
| FirmwareAuthRole (<i>deprecated v1.3</i>) { | object | | The link to the Redfish Role that has firmware authentication privileges on this Host Interface. See the <i>Role</i> schema for details on this property. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Role resource. See the Links section and the <i>Role</i> schema for details. |
| } | | | |
| KernelAuthRole (<i>deprecated v1.3</i>) { | object | | The link to the Redfish Role defining privileges for this Host Interface when using kernel authentication. See the <i>Role</i> schema for details on this property. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Role resource. See the Links section and the <i>Role</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| ManagerEthernetInterface { | object | | A link to a single network interface controllers or cards (NIC) that this manager uses for network communication with this Host Interface. See the <i>EthernetInterface</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|-------------------|--------|------------|--|
| @odata.id | string | read-only | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |
| } | | | |
| NetworkProtocol { | object | | A link to the network services and their settings that the manager controls. In this property, clients find configuration options for the network and network services. See the <i>ManagerNetworkProtocol</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a ManagerNetworkProtocol resource. See the Links section and the <i>ManagerNetworkProtocol</i> schema for details. |
| } | | | |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |

6.53.4 Property details

6.53.4.1 AuthenticationModes

The authentication modes available on this interface.

| string | Description |
|--------------------|--|
| AuthNone | Requests without any sort of authentication are allowed. |
| BasicAuth | Requests using HTTP Basic Authentication are allowed. |
| OemAuth | Requests using OEM authentication mechanisms are allowed. |
| RedfishSessionAuth | Requests using Redfish Session Authentication are allowed. |

6.53.4.2 HostInterfaceType

The Host Interface type for this interface.

| string | Description |
|----------------------|---|
| NetworkHostInterface | This interface is a Network Host Interface. |

6.53.5 Example response

```
{
  "@odata.type": "#HostInterface.v1_3_0.HostInterface",
  "Id": "1",
  "Name": "Host Interface",
  "Description": "Management Host Interface",
  "HostInterfaceType": "NetworkHostInterface",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "InterfaceEnabled": true,
  "ExternallyAccessible": false,
  "AuthenticationModes": [
    "AuthNone",
    "BasicAuth",
    "RedfishSessionAuth",
    "OemAuth"
  ],
  "CredentialBootstrapping": {
    "EnableAfterReset": true,
    "Enabled": true,
    "RoleId": "User"
  },
  "HostEthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/BMC/HostInterfaces/1/HostEthernetInterfaces"
  },
  "ManagerEthernetInterface": {
    "@odata.id": "/redfish/v1/Managers/BMC/EthernetInterfaces/ToHost"
  },
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
  },
  "Links": {
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/ORD144"
      }
    ],
    "CredentialBootstrappingRole": {
      "@odata.id": "/redfish/v1/AccountService/Roles/User"
    }
  },
  "@odata.id": "/redfish/v1/Managers/BMC/HostInterfaces/1"
}
```

6.54 Job 1.2.2

| | | | |
|----------------|--------|--------|--------|
| Version | v1.2 | v1.1 | v1.0 |
| Release | 2022.3 | 2022.1 | 2018.2 |

6.54.1 Description

The Job schema contains information about a job that a Redfish job service schedules or executes. Clients create jobs to describe a series of operations that occur at periodic intervals.

6.54.2 URIs

/redfish/v1/JobService/Jobs/{JobId}
 /redfish/v1/JobService/Jobs/{JobId}/Steps/{JobId2}

6.54.3 Properties

| Property | Type | Attributes | Notes |
|--|-----------------------|----------------------------|--|
| CreatedBy | string | <i>read-only</i> | The person or program that created this job entry. |
| EndTime | string (date-time) | <i>read-only</i> | The date and time when the job was completed. |
| EstimatedDuration (v1.1+) | string (duration) | <i>read-only</i> (null) | The estimated total time required to complete the job. |
| HidePayload | boolean | <i>read-only</i> | An indication of whether the contents of the payload should be hidden from view after the job has been created. If <code>true</code> , responses do not return the payload. If <code>false</code> , responses return the payload. If this property is not present when the job is created, the default is <code>false</code> . |
| JobState | string (enum) | <i>read-write</i> | The state of the job. <i>For the possible property values, see JobState in Property details.</i> |
| JobStatus | string (enum) | <i>read-only</i> | The status of the job. <i>For the possible property values, see JobStatus in Property details.</i> |
| Links (v1.2+) { | object | | Contains references to other resources that are related to this resource. |
| CreatedResources (v1.2+) [{ | array | | An array of URIs referencing the resources created as the result of this job. |

| Property | Type | Attributes | Notes |
|-------------------------|--------------------|--------------------------|--|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| MaxExecutionTime | string | <i>read-write (null)</i> | The maximum amount of time the job is allowed to execute. |
| Messages [{ }] | array (object) | | An array of messages associated with the job. For property details, see Message. |
| Payload { | object | | The HTTP and JSON request payload details for this job. |
| HttpHeaders [] | array (string) | <i>read-only</i> | An array of HTTP headers in this job. |
| HttpOperation | string | <i>read-only</i> | The HTTP operation that executes this job. |
| JsonBody | string | <i>read-only</i> | The JSON payload to use in the execution of this job. |
| TargetUri | string (URI) | <i>read-only</i> | The link to the target for this job. |
| } | | | |
| PercentComplete | integer (%) | <i>read-only (null)</i> | The completion percentage of this job. |
| Schedule {} | object | | The schedule settings for this job. For property details, see Schedule. |
| StartTime | string (date-time) | <i>read-only</i> | The date and time when the job was started or is scheduled to start. |
| StepOrder [] | array (string) | <i>read-only</i> | The serialized execution order of the job steps. |
| Steps { | object | | The link to a collection of steps for this job. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Job</i> . See the Job schema for details. |
| } | | | |

6.54.4 Property details

6.54.4.1 JobState

The state of the job.

| string | Description |
|------------------|--|
| Cancelled | Job was cancelled. |
| Completed | Job was completed. |
| Continue | Job is to resume operation. |
| Exception | Job has stopped due to an exception condition. |
| Interrupted | Job has been interrupted. |
| New | A new job. |
| Pending | Job is pending and has not started. |
| Running | Job is running normally. |
| Service | Job is running as a service. |
| Starting | Job is starting. |
| Stopping | Job is in the process of stopping. |
| Suspended | Job has been suspended. |
| UserIntervention | Job is waiting for user intervention. |

6.54.4.2 JobStatus

The status of the job.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.54.5 Example response

```
{
  "@odata.type": "#Job.v1_2_2.Job",
  "Id": "RebootRack",
  "Name": "Scheduled Nightly Reboot of the rack",
  "JobStatus": "OK",
  "JobState": "Running",
  "StartTime": "2018-04-01T00:01+6:00",
  "PercentComplete": 24,
  "Schedule": {
    "Lifetime": "P4Y",
    "InitialStartTime": "2018-01-01T01:00:00+06:00",
    "RecurrenceInterval": "P1D",
    "EnabledDaysOfWeek": [
      "Monday",
      "Tuesday",
      "Wednesday",
      "Thursday",
      "Friday"
    ]
  },
  "Steps": {
    "@odata.id": "/redfish/v1/JobService/Jobs/RebootRack/Steps"
  },
  "StepOrder": [
    "Red",
    "Orange",
    "Yellow",
    "Green",
    "Blue",
    "Indigo",
    "Violet"
  ],
  "@odata.id": "/redfish/v1/JobService/Jobs/RebootRack"
}
```

6.55 JobService 1.0.4

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2018.2 |

6.55.1 Description

The JobService schema contains properties for scheduling and execution of operations, represents the properties for the job service itself, and has links to jobs managed by the job service.

6.55.2 URIs

/redfish/v1/JobService

6.55.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------|-----------------------|--------------------------------------|---|
| DateTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The current date and time setting for the job service. |
| Jobs { | object | | The links to the jobs collection. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Job</i> . See the Job schema for details. |
| } | | | |
| Log { | object | | The link to a log service that the job service uses. This service can be a dedicated log service or a pointer a log service under another resource, such as a manager. See the <i>LogService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details. |
| } | | | |
| ServiceCapabilities { | object | | The supported capabilities of this job service implementation. |
| MaxJobs | integer | <i>read-only</i> (<i>null</i>) | The maximum number of jobs supported. |
| MaxSteps | integer | <i>read-only</i> (<i>null</i>) | The maximum number of job steps supported. |
| Scheduling | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether scheduling of jobs is supported. |
| } | | | |
| ServiceEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether this service is enabled. |

| Property | Type | Attributes | Notes |
|------------------|--------|------------|---|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.55.4 Example response

```
{
  "@odata.type": "#JobService.v1_0_4.JobService",
  "Id": "JobService",
  "Name": "Job Service",
  "DateTime": "2018-06-13T04:14+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "ServiceCapabilities": {
    "MaxJobs": 100,
    "MaxSteps": 50,
    "Scheduling": true
  },
  "Jobs": {
    "@odata.id": "/redfish/v1/JobService/Jobs"
  },
  "Log": {
    "@odata.id": "/redfish/v1/JobService/Log"
  },
  "Actions": {
    "Oem": {
      "#Contoso.EasyButton": {
        "target": "/redfish/v1/JobService/Contoso.EasyButton",
        "@Redfish.ActionInfo": "/redfish/v1/JobService/EasyButtonActionInfo"
      }
    }
  },
  "@odata.id": "/redfish/v1/JobService"
}
```

6.56 JsonSchemaFile 1.1.4

| | | |
|----------------|--------|------|
| Version | v1.1 | v1.0 |
| Release | 2017.1 | 1.0 |

6.56.1 Description

The JsonSchemaFile schema contains the properties that describe the locations, as URIs, of a Redfish Schema definition that a Redfish Service implements or references.

6.56.2 URIs

/redfish/v1/JsonSchemas/{JsonSchemaFileId}

6.56.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|-------------------|-------------------------------|---|
| Languages [] | array (string) | <i>read-only required</i> | The RFC5646-conformant language codes for the available schemas. |
| Location [{ | array | <i>required</i> | Location information for this schema file. |
| ArchiveFile | string | <i>read-only</i> | The name of the file in the archive, if the schema is hosted on the service in an archive file. |
| ArchiveUri | string (URI) | <i>read-only</i> | The link to an archive file, if the schema is hosted on the service in an archive file. |
| Language | string | <i>read-only</i> | The language code for the schema file. |
| PublicationUri | string (URI) | <i>read-only</i> | The link to publicly available (canonical) URI for schema. |
| Uri | string (URI) | <i>read-only</i> | The link to locally available URI for schema. |
| }] | | | |
| Schema | string | <i>read-only required</i> | The @odata.type name this schema describes. |

6.56.4 Example response

```
{
  "@odata.type": "#JsonSchemaFile.v1_1_4.JsonSchemaFile",
  "Id": "Chassis.v1_11_0",
  "Name": "Chassis Schema File",
  "Description": "Chassis Schema File Location",
  "Languages": [
```

```

    "en"
  ],
  "Schema": "#Chassis.v1_11_0.Chassis",
  "Location": [
    {
      "Language": "en",
      "ArchiveUri": "/Schemas.gz",
      "PublicationUri": "http://redfish.dmtf.org/schemas/v1/Chassis.v1_11_0.json",
      "ArchiveFile": "Chassis.v1_11_0.json"
    },
    {
      "Language": "zh",
      "ArchiveUri": "/Schemas.zh.gz",
      "PublicationUri": "http://schemas.contoso.com/Chassis.v1_11_0.zh.json",
      "ArchiveFile": "Chassis.v1_11_0.zh.json"
    },
    {
      "Language": "xy",
      "Uri": "/redfish/v1/JsonSchemas/Chassis.v1_11_0.xy.json",
      "PublicationUri": "http://schemas.contoso.com/Chassis.v1_11_0.xy.json"
    }
  ],
  "@odata.id": "/redfish/v1/JsonSchemas/Chassis.v1_11_0"
}

```

6.57 Key 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2023.2 | 2022.3 | 2022.1 | 2021.2 |

6.57.1 Description

The Key schema describes sensitive data for accessing devices or services.

6.57.2 URIs

```

/redfish/v1/AccountService/Accounts/{ManagerAccountId}/Keys/{KeyId}
/redfish/v1/AggregationService/AggregationSources/{AggregationSourceId}/PresentedPublicHostKey
/redfish/v1/AggregationService/AggregationSources/{AggregationSourceId}/PublicIdentityKey
/redfish/v1/AggregationService/AggregationSources/{AggregationSourceId}/TrustedPublicHostKeys/
{KeyId}
/redfish/v1/KeyService/NVMeoFSecrets/{KeyId}

```

```
/redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts/{ManagerAccountId}/Keys/
{KeyId}
/redfish/v1/UpdateService/RemoteServerSSHKeys/{KeyId}
```

6.57.3 Properties

| Property | Type | Attributes | Notes |
|--|----------------------------|--|--|
| KeyString | string | <i>read-only required on create (null)</i> | The string for the key. |
| KeyType | string (enum) | <i>read-only required on create (null)</i> | The format of the key. <i>For the possible property values, see KeyType in Property details.</i> |
| NVMeoF { | object | <i>(null)</i> | NVMe-oF specific properties. |
| HostKeyId | string | <i>read-write (null)</i> | The identifier of the host key paired with this target key. |
| NQN | string | <i>read-only required on create (null)</i> | The NVMe Qualified Name (NQN) of the host or target subsystem associated with this key. |
| OEMSecurityProtocolType | string | <i>read-only (null)</i> | The OEM security protocol that this key uses. |
| SecureHashAllowList [] | array (string enum)) | <i>read-only (null)</i> | The secure hash algorithms allowed with the usage of this key. <i>For the possible property values, see SecureHashAllowList in Property details.</i> |
| SecurityProtocolType | string (enum) | <i>read-only (null)</i> | The security protocol that this key uses. <i>For the possible property values, see SecurityProtocolType in Property details.</i> |
| } | | | |
| SSH (v1.2+) { | object | <i>(null)</i> | SSH specific properties. |
| Fingerprint (v1.2+) | string | <i>read-only (null)</i> | A fingerprint of the key. |
| RemoteServerHostName (v1.3+) | string | <i>read-only (null)</i> | The host name of the remote server associated with this key. |
| } | | | |

| Property | Type | Attributes | Notes |
|--------------------------------|--------|--------------------------|---|
| UserDescription (v1.1+) | string | <i>read-write (null)</i> | A user-defined string to describe this key. |

6.57.4 Property details

6.57.4.1 KeyType

The format of the key.

| string | Description |
|-------------|--------------------|
| NVMeoF | An NVMe-oF key. |
| SSH (v1.1+) | An SSH public key. |

6.57.4.2 SecureHashAllowList

The secure hash algorithms allowed with the usage of this key.

| string | Description |
|--------|-------------|
| SHA256 | SHA-256. |
| SHA384 | SHA-384. |
| SHA512 | SHA-512. |

6.57.4.3 SecurityProtocolType

The security protocol that this key uses.

| string | Description |
|---------|---|
| DHHC | Diffie-Hellman Hashed Message Authentication Code Challenge Handshake Authentication Protocol (DH-HMAC-CHAP). |
| OEM | OEM. |
| TLS_PSK | Transport Layer Security Pre-Shared Key (TLS PSK). |

6.57.5 Example response

```
{
  "@odata.type": "#Key.v1_3_0.Key",
  "Id": "0",
  "Name": "NVMeoF key 0, target subsystem",
  "KeyType": "NVMeoF",
  "KeyString": "DHHC-1:00:ia6zGod0r4SEG0Zzaw398rpY0wqipUwj4jWjUh4HWUz6aQ2n:",
  "NVMeoF": {
    "NQN": "nqn.corp.com:nvme:target-subsystem-0001",
    "SecurityProtocolType": "DHHC",
    "HostKeyId": "1",
    "SecureHashAllowList": [
      "SHA384",
      "SHA512"
    ]
  },
  "@odata.id": "/redfish/v1/KeyService/NVMeoFSecrets/0"
}
```

6.58 KeyPolicy 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.2 |

6.58.1 Description

The KeyPolicy schema describes settings for how keys are allowed to be used for accessing devices or services.

6.58.2 URIs

/redfish/v1/KeyService/NVMeoFKeyPolicies/{KeyPolicyId}

6.58.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------------|--|---|
| IsDefault | boolean | <i>read-write</i> <i>(null)</i> | Indicates if this is the default key policy. |
| KeyPolicyType | string (enum) | <i>read-only</i> <i>required</i> <i>on create</i> <i>(null)</i> | The type of key policy. <i>For the possible property values, see KeyPolicyType in Property details.</i> |
| NVMeoF { | object | <i>(null)</i> | NVMe-oF specific properties. |
| CipherSuiteAllowList [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | The cipher suites that this key policy allows. <i>For the possible property values, see CipherSuiteAllowList in Property details.</i> |
| DHGroupAllowList [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | The Diffie-Hellman (DH) groups that this key policy allows. <i>For the possible property values, see DHGroupAllowList in Property details.</i> |
| OEMSecurityProtocolAllowList [] | array (string, null) | <i>read-write</i> | The OEM security protocols that this key policy allows. |
| SecureHashAllowList [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | The secure hash algorithms that this key policy allows. <i>For the possible property values, see SecureHashAllowList in Property details.</i> |
| SecurityProtocolAllowList [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | The security protocols that this key policy allows. <i>For the possible property values, see SecurityProtocolAllowList in Property details.</i> |
| SecurityTransportAllowList [] | array (string (enum)) | <i>read-write</i> <i>(null)</i> | The security transports that this key policy allows. <i>For the possible property values, see SecurityTransportAllowList in Property details.</i> |
| } | | | |

6.58.4 Property details

6.58.4.1 CipherSuiteAllowList

The cipher suites that this key policy allows.

| string | Description |
|------------------------|-------------------------|
| TLS_AES_128_GCM_SHA256 | TLS_AES_128_GCM_SHA256. |
| TLS_AES_256_GCM_SHA384 | TLS_AES_256_GCM_SHA384. |

6.58.4.2 DHGroupAllowList

The Diffie-Hellman (DH) groups that this key policy allows.

| string | Description |
|-----------|-------------------------------------|
| FFDHE2048 | 2048-bit Diffie-Hellman (DH) group. |
| FFDHE3072 | 3072-bit Diffie-Hellman (DH) group. |
| FFDHE4096 | 4096-bit Diffie-Hellman (DH) group. |
| FFDHE6144 | 6144-bit Diffie-Hellman (DH) group. |
| FFDHE8192 | 8192-bit Diffie-Hellman (DH) group. |

6.58.4.3 KeyPolicyType

The type of key policy.

| string | Description |
|--------|------------------------|
| NVMeoF | An NVMe-oF key policy. |

6.58.4.4 SecureHashAllowList

The secure hash algorithms that this key policy allows.

| string | Description |
|--------|-------------|
| SHA256 | SHA-256. |
| SHA384 | SHA-384. |
| SHA512 | SHA-512. |

6.58.4.5 SecurityProtocolAllowList

The security protocols that this key policy allows.

| string | Description |
|---------|---|
| DHHC | Diffie-Hellman Hashed Message Authentication Code Challenge Handshake Authentication Protocol (DH-HMAC-CHAP). |
| OEM | OEM. |
| TLS_PSK | Transport Layer Security Pre-Shared Key (TLS PSK). |

6.58.4.6 SecurityTransportAllowList

The security transports that this key policy allows.

| string | Description |
|--------|------------------------------------|
| TLSv2 | Transport Layer Security (TLS) v2. |
| TLSv3 | Transport Layer Security (TLS) v3. |

6.58.5 Example response

```
{
  "@odata.type": "#KeyPolicy.v1_0_0.KeyPolicy",
  "Id": "0",
  "Name": "Default NVMeoF Key Policy",
  "IsDefault": true,
  "KeyPolicyType": "NVMeoF",
  "NVMeoF": {
    "SecurityTransportAllowList": [
      "TLSv2",
      "TLSv3"
    ],
    "CipherSuiteAllowList": [
      "TLS_AES_128_GCM_SHA256",
      "TLS_AES_256_GCM_SHA384"
    ],
    "SecurityProtocolAllowList": [
      "DHHC",
      "TLS_PSK"
    ],
  },
}
```

```

    "DHGroupAllowList": [
      "FFDHE2048",
      "FFDHE3072",
      "FFDHE4096",
      "FFDHE6144",
      "FFDHE8192"
    ],
    "SecureHashAllowList": [
      "SHA384",
      "SHA512"
    ]
  },
  "@odata.id": "/redfish/v1/KeyService/NVMeoFKeyPolicies/0"
}

```

6.59 KeyService 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.2 |

6.59.1 Description

The KeyService schema describes a key service that represents the actions available to manage keys.

6.59.2 URIs

/redfish/v1/KeyService

6.59.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|--------|------------|---|
| NVMeoFKeyPolicies { | object | | The NVMe-oF key policies maintained by this service. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>KeyPolicy</i> . See the KeyPolicy schema for details. |
| } | | | |
| NVMeoFSecrets { | object | | The NVMe-oF keys maintained by this service. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|-----------|--------|------------|--|
| @odata.id | string | read-only | Link to Collection of Key. See the Key schema for details. |
| } | | | |

6.59.4 Example response

```

{
  "@odata.type": "#KeyService.v1_0_0.KeyService",
  "Id": "KeyService",
  "Name": "Key Service",
  "NVMeoFSecrets": {
    "@odata.id": "/redfish/v1/KeyService/NVMeoFSecrets"
  },
  "NVMeoFKeyPolicies": {
    "@odata.id": "/redfish/v1/KeyService/NVMeoFKeyPolicies"
  },
  "@odata.id": "/redfish/v1/KeyService"
}

```

6.60 LeakDetection 1.0.0

| | |
|---------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.60.1 Description

The LeakDetection schema contains definitions for reporting leaks in liquid cooling systems or other equipment.

6.60.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/LeakDetection
 /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/LeakDetection
 /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/LeakDetection
 /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/LeakDetection

6.60.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------|---------------------|-----------------------------------|---|
| LeakDetectorGroups [{ | array | | The groups of leak detection equipment. |
| Detectors [{ | array (excerpt) | | The leak detection states from all related leak detection devices in this group. This object is an excerpt of the <i>LeakDetector</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this leak detector. |
| DetectorState | string (enum) | <i>read-only</i> <i>(null)</i> | The state of the leak detector. <i>For the possible property values, see DetectorState in Property details.</i> |
| PhysicalContext | string (enum) | <i>read-only</i> <i>(null)</i> | The area or device to which this leak detector applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> <i>(null)</i> | The usage or location within a device to which this leak detector applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| }] | | | |
| GroupName | string | <i>read-only</i> | The name of this leak detector group. |
| HumidityPercent { | object (excerpt) | | Humidity (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| } | | | |
| }] | | | |
| LeakDetectors { | object | | The link to the collection of leak detectors within this subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LeakDetector</i> . See the LeakDetector schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.60.4 Property details

6.60.4.1 DetectorState

The state of the leak detector.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.60.4.2 PhysicalContext

The area or device to which this leak detector applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |

| string | Description |
|------------------|---|
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |

| string | Description |
|------------------|-----------------------------------|
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.60.4.3 PhysicalSubContext

The usage or location within a device to which this leak detector applies.

| string | Description |
|--------|-------------|
| Input | The input. |
| Output | The output. |

6.60.5 Example response

```
{
  "@odata.type": "#LeakDetection.v1_0_0.LeakDetection",
  "Id": "LeakDetection",
  "Name": "Leak Detection Systems",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "Conditions": []
  },
  "LeakDetectorGroups": [
    {
      "GroupName": "Detectors under and around the CDU",
      "HumidityPercent": {
        "Reading": 45
      },
      "Detectors": [
        {
          "DataSourceUri": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection/LeakDetectors/Moisture",

```

```

        "DeviceName": "Moisture-type Leak Detector",
        "DetectorState": "OK"
    },
    {
        "DeviceName": "Leak Detection Rope 1",
        "DetectorState": "OK"
    },
    {
        "DataSourceUri": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection/LeakDetectors/Overflow",
        "DeviceName": "Overflow Float Switch",
        "DetectorState": "OK"
    }
]
},
"LeakDetectors": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection/LeakDetectors"
},
"@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection"
}

```

6.61 LeakDetector 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.61.1 Description

The LeakDetector schema describes a state-based or digital value leak detector and its properties.

6.61.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/LeakDetection/LeakDetectors/{LeakDetectorId}
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/LeakDetection/LeakDetectors/{LeakDetectorId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/LeakDetection/LeakDetectors/
{LeakDetectorId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/LeakDetection/LeakDetectors/
{LeakDetectorId}

```

6.61.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------|------------------|-------------------------------------|---|
| DetectorState | string (enum) | <i>read-only</i> (<i>null</i>) | The state of the leak detector. <i>For the possible property values, see DetectorState in Property details.</i> |
| LeakDetectorType | string (enum) | <i>read-only</i> (<i>null</i>) | The type of leak detection sensor. <i>For the possible property values, see LeakDetectorType in Property details.</i> |
| Location {} | object | | The location information for this leak detector. For property details, see Location. |
| Manufacturer | string | <i>read-only</i> (<i>null</i>) | The manufacturer of this leak detector. |
| Model | string | <i>read-only</i> (<i>null</i>) | The model number of the leak detector. |
| PartNumber | string | <i>read-only</i> (<i>null</i>) | The part number of the leak detector. |
| PhysicalContext | string (enum) | <i>read-only</i> (<i>null</i>) | The area or device to which this leak detector applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (<i>null</i>) | The usage or location within a device to which this leak detector applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| SensingFrequency | number | <i>read-only</i> (<i>null</i>) | The time interval between readings of the physical leak detector. |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number of the leak detector. |
| SKU | string | <i>read-only</i> (<i>null</i>) | The SKU of the leak detector. |
| SparePartNumber | string | <i>read-only</i> (<i>null</i>) | The spare part number of the leak detector. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.61.4 Property details

6.61.4.1 DetectorState

The state of the leak detector.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.61.4.2 LeakDetectorType

The type of leak detection sensor.

| string | Description |
|-------------|--------------------|
| FloatSwitch | A float switch. |
| Moisture | A moisture sensor. |

6.61.4.3 PhysicalContext

The area or device to which this leak detector applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |

| string | Description |
|------------------|---|
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |

| string | Description |
|------------------|-----------------------------------|
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.61.4.4 PhysicalSubContext

The usage or location within a device to which this leak detector applies.

| string | Description |
|--------|-------------|
| Input | The input. |
| Output | The output. |

6.61.5 Example response

```
{
  "@odata.type": "#LeakDetector.v1_0_0.LeakDetector",
  "Id": "Moisture",
  "Name": "Moisture-type Leak Detector",
  "LeakDetectorType": "Moisture",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "DetectorState": "OK",
  "PartNumber": "3493-A44",
  "SerialNumber": "916239",
  "Manufacturer": "Contoso Water Detection Systems",
  "Model": "Depends 3000",
}
```

```

    "Location": {
      "PartLocation": {
        "Reference": "Bottom",
        "ServiceLabel": "Leak Detector"
      }
    },
    "PhysicalContext": "Chassis",
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/LeakDetection/LeakDetectors/Moisture"
  }

```

6.62 License 1.1.1

| | | |
|---------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2022.3 | 2021.3 |

6.62.1 Description

The License schema describes a license for a feature.

6.62.2 URIs

/redfish/v1/LicenseService/Licenses/{LicenseId}

6.62.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------|------------------|---------------------|--|
| AuthorizationScope | string (enum) | read-only (null) | The authorization scope of the license. <i>For the possible property values, see AuthorizationScope in Property details.</i> |
| Contact { | object | | The contact of the license. |
| ContactName | string | read-only (null) | Name of this contact. |
| EmailAddress | string | read-only (null) | Email address for this contact. |
| PhoneNumber | string | read-only (null) | Phone number for this contact. |

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------|--|---|
| } | | | |
| DownloadURI | string (URI) | <i>read-only</i> | The URI at which to download the license file. |
| EntitlementId | string | <i>read-only</i> (<i>null</i>) | The entitlement identifier for this license. |
| ExpirationDate | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the license expires. |
| GracePeriodDays | integer | <i>read-only</i> (<i>null</i>) | The grace days of this license. |
| InstallDate | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the license was installed. |
| LicenseInfoURI | string (URI) | <i>read-only</i> (<i>null</i>) | The URI at which more information about this license can be obtained. |
| LicenseOrigin | string (enum) | <i>read-only</i> (<i>null</i>) | This indicates the origin of the license. <i>For the possible property values, see LicenseOrigin in Property details.</i> |
| LicenseString | string | <i>read-only</i> <i>required</i> <i>on create</i> (<i>null</i>) | The Base64-encoded string of the license. |
| LicenseType | string (enum) | <i>read-only</i> (<i>null</i>) | The type of the license. <i>For the possible property values, see LicenseType in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| AuthorizedDevices [{ | array | | An array of links to the devices authorized by the license. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| TargetServices (v1.1+)[{ | array | | An array of links to the managers where the license is installed. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|-----------------------------|----------------------|----------------------------|--|
| } | | | |
| Manufacturer | string | <i>read-only</i> (null) | The manufacturer or producer of this license. |
| MaxAuthorizedDevices | integer | <i>read-only</i> (null) | The maximum number of devices authorized by the license. |
| PartNumber | string | <i>read-only</i> (null) | The part number for this license. |
| RemainingDuration | string (duration) | <i>read-only</i> (null) | The remaining usage duration before the license expires. |
| RemainingUseCount | integer | <i>read-only</i> (null) | The remaining usage count before the license expires. |
| Removable | boolean | <i>read-only</i> (null) | An indication of whether the license is removable. |
| SerialNumber | string | <i>read-only</i> (null) | The serial number for this license. |
| SKU | string | <i>read-only</i> (null) | The SKU for this license. |
| Status {} | object | | The status of the license. For property details, see Status. |

6.62.4 Property details

6.62.4.1 AuthorizationScope

The authorization scope of the license.

| string | Description |
|----------|---|
| Capacity | The license authorizes functionality to a number of devices, but not restricted to specific device instances. |
| Device | The license authorizes functionality for specific device instances. |
| Service | The license authorizes functionality to a service. |

6.62.4.2 LicenseOrigin

This indicates the origin of the license.

| string | Description |
|-----------|--|
| BuiltIn | A license was provided with the product. |
| Installed | A license installed by user. |

6.62.4.3 LicenseType

The type of the license.

| string | Description |
|------------|---|
| Production | A license for use in production environments. |
| Prototype | A prototype version of license. |
| Trial | A trial license. |

6.62.5 Example response

```
{
  "@odata.type": "#License.v1_1_1.License",
  "Id": "KVM",
  "Name": "Blade KVM-IP License 3-Pack",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "EntitlementId": "LIC20180820LDLM5C",
  "LicenseType": "Production",
  "Removable": false,
  "LicenseOrigin": "BuiltIn",
  "AuthorizationScope": "Device",
  "GracePeriodDays": 60,
  "Manufacturer": "Contoso",
  "InstallDate": "2020-08-20T20:13:44Z",
  "ExpirationDate": "2022-08-20T20:13:43Z",
  "Links": {
    "AuthorizedDevices": [
      {
        "@odata.id": "/redfish/v1/Managers/Blade1"
      },
      {
        "@odata.id": "/redfish/v1/Managers/Blade4"
      }
    ]
  }
}
```

```

        "@odata.id": "/redfish/v1/Managers/Blade5"
    }
  ]
},
"Contact": {
  "ContactName": "Bob Johnson",
  "EmailAddress": "bjohnson@contoso.com"
},
"DownloadURI": "/dumpster/license111",
"LicenseInfoURI": "http://shop.contoso.com/licenses/blade-kvm",
"@odata.id": "/redfish/v1/LicenseService/Licenses/KVM"
}

```

6.63 LicenseService 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2022.3 | 2021.3 |

6.63.1 Description

The LicenseService schema describes the license service and the properties for the service itself with a link to the collection of licenses. The license service also provides methods for installing licenses in a Redfish service.

6.63.2 URIs

/redfish/v1/LicenseService

6.63.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|---------|-----------------------------|--|
| LicenseExpirationWarningDays | integer | <i>read-write</i> (null) | The number of days prior to a license expiration that a warning message is sent. A value of zero indicates no warning message is sent. |
| Licenses { | object | (null) | The link to the collection of licenses. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|-----------------------|---------|--------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>License</i> . See the License schema for details. |
| } | | | |
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this service is enabled. |

6.63.4 Actions

6.63.4.1 Install

Description

This action installs one or more licenses from a remote file.

Action URI

{Base URI of target resource}/Actions/LicenseService.Install

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--|-----------------|------------------|--|
| AuthorizedDevices (v1.1+)[{ | array | <i>optional</i> | An array of links to the devices to be authorized by the license. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| LicenseFileURI | string | <i>required</i> | The URI of the license file to install. |
| Password | string | <i>optional</i> | The password to access the URI specified by the LicenseFileURI parameter. |
| TargetServices (v1.1+)[{ | array | <i>optional</i> | An array of links to the managers where the license will be installed. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |

| Parameter Name | Type | Attributes | Notes |
|-------------------------|---------------|-----------------|--|
| TransferProtocol | string (enum) | <i>optional</i> | The network protocol that the license service uses to retrieve the license file located at the URI provided in LicenseFileURI. This parameter is ignored if the URI provided in LicenseFileURI contains a scheme. <i>For the possible property values, see TransferProtocol in Property details.</i> |
| Username | string | <i>optional</i> | The user name to access the URI specified by the LicenseFileURI parameter. |

Request Example

```
{
  "LicenseFileURI": "ftp://licensing.contoso.org/bmc_kvmpip_8RS247MKRQ8027.bin",
  "Username": "operations",
  "Password": "Pa55w0rd"
}
```

6.63.5 Property details

6.63.5.1 TransferProtocol

The network protocol that the license service uses to retrieve the license file located at the URI provided in LicenseFileURI. This parameter is ignored if the URI provided in LicenseFileURI contains a scheme.

| string | Description |
|--------|---|
| CIFS | Common Internet File System (CIFS). |
| FTP | File Transfer Protocol (FTP). |
| HTTP | Hypertext Transfer Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| NFS | Network File System (NFS). |
| OEM | A manufacturer-defined protocol. |
| SCP | Secure Copy Protocol (SCP). |
| SFTP | Secure File Transfer Protocol (SFTP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |

6.63.6 Example response

```
{
  "@odata.type": "#LicenseService.v1_1_0.LicenseService",
  "Name": "License Service",
  "ServiceEnabled": true,
  "LicenseExpirationWarningDays": 14,
  "Actions": {
    "#LicenseService.Install": {
      "target": "/redfish/v1/LicenseService/Actions/LicenseService.Install",
      "@Redfish.ActionInfo": "/redfish/v1/LicenseService/InstallActionInfo"
    }
  },
  "Licenses": {
    "@odata.id": "/redfish/v1/LicenseService/Licenses"
  },
  "@odata.id": "/redfish/v1/LicenseService"
}
```

6.64 LogEntry 1.15.1

| Version | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.1 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.3 | 2021.1 | 2020.4 | 2020.3 | 2020.1 | 2019.3 | ... |

6.64.1 Description

The LogEntry schema defines the record format for a log. It is designed for Redfish event logs, OEM-specific log formats, and the IPMI System Event Log (SEL). The EntryType field indicates the type of log and the resource includes several additional properties dependent on the EntryType.

6.64.2 URIs

```
/redfish/v1/Chassis/{ChassisId}/LogServices/{LogServiceId}/Entries/{LogEntryId}
/redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCleDeviceId}/CXLLogicalDevices/
{CXLLogicalDeviceId}/DeviceLog/Entries/{LogEntryId}
/redfish/v1/JobService/Log/Entries/{LogEntryId}
/redfish/v1/Managers/{ManagerId}/LogServices/{LogServiceId}/Entries/{LogEntryId}
/redfish/v1/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries/{LogEntryId}
/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/DeviceLog/Entries/{LogEntryId}
```

/redfish/v1/TelemetryService/LogService/Entries/{LogEntryId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.64.3 Properties

| Property | Type | Attributes | Notes |
|--|--------------------|--------------------|---|
| AdditionalDataSizeBytes (v1.7+) | integer (bytes) | read-only (null) | The size of the additional data for this log entry. |
| AdditionalDataURI (v1.7+) | string (URI) | read-only (null) | The URI at which to access the additional data for this log entry, such as diagnostic data, image captures, or other files. |
| CPER (v1.15+) { | object | | Details for a CPER section or record associated with this log entry. |
| NotificationType (v1.15+) | string (uuid) | read-only (null) | The CPER Notification Type for a CPER record. |
| Oem (v1.15+) {} | object | | See the Oem object definition in the Common properties section. |
| SectionType (v1.15+) | string (uuid) | read-only (null) | The CPER Section Type. |
| } | | | |
| Created | string (date-time) | read-only | The date and time when the log entry was created. |
| CXLEntryType (v1.14+) | string (enum) | read-only | The specific CXL entry type. <i>For the possible property values, see CXLEntryType in Property details.</i> |
| DiagnosticData (v1.15+) | string | read-only (null) | A Base64-encoded set of diagnostic data associated with this log entry. |
| DiagnosticDataType (v1.7+) | string (enum) | read-only (null) | The type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property. <i>For the possible property values, see DiagnosticDataType in Property details.</i> |
| EntryCode | string (enum) | read-only (null) | The entry code for the log entry if the entry type is SEL . <i>For the possible property values, see EntryCode in Property details.</i> |
| EntryType | string (enum) | read-only required | The type of log entry. <i>For the possible property values, see EntryType in Property details.</i> |
| EventGroupId (v1.4+) | integer | read-only (null) | An identifier that correlates events with the same cause. |
| EventId (v1.1+) | string | read-only | The unique instance identifier for an event. |

| Property | Type | Attributes | Notes |
|--|-----------------------|----------------------------|--|
| EventTimestamp (v1.1+) | string (date-time) | <i>read-only</i> | The date and time when the event occurred. |
| EventType (v1.1+, deprecated v1.4) | string (enum) | <i>read-only</i> | The type of event recorded in this log. <i>For the possible property values, see EventType in Property details. Deprecated in v1.4 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.</i> |
| FirstOverflowTimestamp (v1.14+) | string (date-time) | <i>read-only</i> | The timestamp of the first overflow captured after this log entry. |
| GeneratorId (v1.5+) | string | <i>read-only</i> (null) | An identifier of the device that has generated the IPMI SEL Event Record. |
| LastOverflowTimestamp (v1.14+) | string (date-time) | <i>read-only</i> | The timestamp of the last overflow captured after this log entry. |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| OriginOfCondition { | object | | The link to the resource that caused the log entry. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| RelatedItem (v1.12+) [{ | array | | An array of links to resources associated with this log entry. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| RelatedLogEntries (v1.12+) [{ | array | | An array of links to other log entries that are related to this log entry. |
| @odata.id | string | <i>read-only</i> | Link to another LogEntry resource. |
| }] | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|--------------------------------------|--------------------|-------------------------|--|
| Message | string | <i>read-only (null)</i> | The message of the log entry. This property decodes from the entry type. If the entry type is <code>Event</code> , this property contains a message. If the entry type is <code>SEL</code> , this property contains an SEL-specific message. If the entry type is <code>CXL</code> , this property contains a CXL event record. Otherwise, this property contains an OEM-specific log entry. In most cases, this property contains the actual log entry. |
| MessageArgs [] | array (string) | <i>read-only</i> | An array of message arguments that are substituted for the arguments in the message when looked up in the message registry. |
| MessageId | string | <i>read-only</i> | The MessageId, event data, or OEM-specific information. This property decodes from the entry type. If the entry type is <code>Event</code> , this property contains a Redfish Specification-defined MessageId. If the entry type is <code>SEL</code> , this property contains the Event Data. Otherwise, this property contains OEM-specific information. |
| Modified (v1.6+) | string (date-time) | <i>read-only</i> | The date and time when the log entry was last modified. |
| OEMDiagnosticDataType (v1.7+) | string | <i>read-only (null)</i> | The OEM-defined type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property. |
| OemLogEntryCode (v1.3+) | string | <i>read-only (null)</i> | The OEM-specific entry code, if the LogEntryCode type is <code>OEM</code> . |
| OemRecordFormat | string | <i>read-only (null)</i> | The OEM-specific format of the entry. If the entry type is <code>OEM</code> , this property contains more information about the record format from the OEM. |
| OemSensorType (v1.3+) | string | <i>read-only (null)</i> | The OEM-specific sensor type if the sensor type is <code>OEM</code> . |
| Originator (v1.11+) | string | <i>read-only</i> | The source of the log entry. |
| OriginatorType (v1.11+) | string (enum) | <i>read-only</i> | The type of originator data. <i>For the possible property values, see OriginatorType in Property details.</i> |
| OverflowErrorCount (v1.14+) | integer | <i>read-only</i> | The count of overflow errors that occurred after this log entry. |
| Persistency (v1.14+) | boolean | <i>read-only</i> | Indicates whether the log entry is persistent across a cold reset of the device. |
| Resolution (v1.9+) | string | <i>read-only</i> | Used to provide suggestions on how to resolve the situation that caused the log entry. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|--|
| Resolved (v1.8+) | boolean | <i>read-write</i> (null) | Indicates if the cause of the log entry has been resolved or repaired. |
| SensorNumber | integer | <i>read-only</i> (null) | The IPMI-defined sensor number. |
| SensorType | string (enum) | <i>read-only</i> (null) | The sensor type to which the log entry pertains if the entry type is <code>SEL</code> . For the possible property values, see <i>SensorType</i> in <i>Property details</i> . |
| ServiceProviderNotified (v1.9+) | boolean | <i>read-only</i> (null) | Indicates if the log entry has been sent to the service provider. |
| Severity | string (enum) | <i>read-only</i> (null) | The severity of the log entry. For the possible property values, see <i>Severity</i> in <i>Property details</i> . |
| SpecificEventExistsInGroup (v1.13+) | boolean | <i>read-only</i> | Indicates this log entry is equivalent to a more specific log entry within the same EventGroupId. |

6.64.4 Property details

6.64.4.1 CXLEntryType

The specific CXL entry type.

| string | Description |
|-----------------|-----------------------------------|
| DynamicCapacity | A CXL Dynamic Capacity log entry. |
| Failure | A CXL failure log entry. |
| Fatal | A CXL fatal log entry. |
| Informational | A CXL informational log entry. |
| Warning | A CXL warning log entry. |

6.64.4.2 DiagnosticDataType

The type of data available in the DiagnosticData property or retrieved from the URI specified by the AdditionalDataURI property.

| string | Description |
|----------------------|---|
| CPER (v1.10+) | UEFI Common Platform Error Record. |
| CPERSection (v1.10+) | A Section of a UEFI Common Platform Error Record. |
| Manager | Manager diagnostic data. |
| OEM | OEM diagnostic data. |
| OS | Operating system (OS) diagnostic data. |
| PreOS | Pre-OS diagnostic data. |

6.64.4.3 EntryCode

The entry code for the log entry if the entry type is `SEL`.

| string | Description |
|----------------------------------|---|
| Assert | The condition has been asserted. |
| D0 Power State | The ACPI-defined D0 power state. |
| D1 Power State | The ACPI-defined D1 power state. |
| D2 Power State | The ACPI-defined D2 power state. |
| D3 Power State | The ACPI-defined D3 power state. |
| Deassert | The condition has been deasserted. |
| Device Disabled | A device has been disabled. |
| Device Enabled | A device has been enabled. |
| Device Inserted / Device Present | A device has been inserted or is present. |
| Device Removed / Device Absent | A device has been removed or is absent. |
| Fully Redundant | Indicates that full redundancy has been regained. |
| Informational | An informational event. |
| Install Error | An install error has been detected. |
| Limit Exceeded | A limit has been exceeded. |
| Limit Not Exceeded | A limit has not been exceeded. |

| string | Description |
|--|--|
| Lower Critical - going high | The reading crossed the Lower Critical threshold while going high. |
| Lower Critical - going low | The reading crossed the Lower Critical threshold while going low. |
| Lower Non-critical - going high | The reading crossed the Lower Non-critical threshold while going high. |
| Lower Non-critical - going low | The reading crossed the Lower Non-critical threshold while going low. |
| Lower Non-recoverable - going high | The reading crossed the Lower Non-recoverable threshold while going high. |
| Lower Non-recoverable - going low | The reading crossed the Lower Non-recoverable threshold while going low. |
| Monitor | A monitor event. |
| Non-redundant:Insufficient Resources | Unit is non-redundant and has insufficient resources to maintain normal operation. |
| Non-redundant:Sufficient Resources from Insufficient Resources | Unit has regained minimum resources needed for normal operation. |
| Non-redundant:Sufficient Resources from Redundant | Redundancy has been lost but unit is functioning with minimum resources needed for normal operation. |
| OEM (v1.3+) | An OEM-defined event. |
| Performance Lags | Performance does not meet expectations. |
| Performance Met | Performance meets expectations. |
| Predictive Failure asserted | A Predictive Failure has been detected. |
| Predictive Failure deasserted | A Predictive Failure is no longer present. |
| Redundancy Degraded | Redundancy still exists, but at less than full level. |
| Redundancy Degraded from Fully Redundant | Unit has lost some redundant resource(s) but is still in a redundant state. |
| Redundancy Degraded from Non-redundant | Unit has regained some resource(s) and is redundant but not fully redundant. |
| Redundancy Lost | Entered any non-redundant state, including Non-redundant: Insufficient Resources. |
| State Asserted | The state has been asserted. |

| string | Description |
|--|--|
| State Deasserted | The state has been deasserted. |
| Transition to Active | The state transitioned to active. |
| Transition to Busy | The state transitioned to busy. |
| Transition to Critical from less severe | A state has changed to Critical from less severe. |
| Transition to Critical from Non-recoverable | A state has changed to Critical from Non-recoverable. |
| Transition to Degraded | A state has transitioned to Degraded. |
| Transition to Idle | The state transitioned to idle. |
| Transition to In Test | A state has transitioned to In Test. |
| Transition to Non-Critical from more severe | A state has changed to Non-Critical from more severe. |
| Transition to Non-Critical from OK | A state has changed to Non-Critical from OK. |
| Transition to Non-recoverable | A state has changed to Non-recoverable. |
| Transition to Non-recoverable from less severe | A state has changed to Non-recoverable from less severe. |
| Transition to Off Duty | A state has transitioned to Off Duty. |
| Transition to Off Line | A state has transitioned to Off Line. |
| Transition to OK | A state has changed to OK. |
| Transition to On Line | A state has transitioned to On Line. |
| Transition to Power Off | A state has transitioned to Power Off. |
| Transition to Power Save | A state has transitioned to Power Save. |
| Transition to Running | A state has transitioned to Running. |
| Upper Critical - going high | The reading crossed the Upper Critical threshold while going high. |
| Upper Critical - going low | The reading crossed the Upper Critical threshold while going low. |
| Upper Non-critical - going high | The reading crossed the Upper Non-critical threshold while going high. |

| string | Description |
|------------------------------------|---|
| Upper Non-critical - going low | The reading crossed the Upper Non-critical threshold while going low. |
| Upper Non-recoverable - going high | The reading crossed the Upper Non-recoverable threshold while going high. |
| Upper Non-recoverable - going low | The reading crossed the Upper Non-recoverable threshold while going low. |

6.64.4.4 EntryType

The type of log entry.

| string | Description |
|--------------|---|
| CXL (v1.14+) | A CXL log entry. |
| Event | A Redfish-defined message. |
| Oem | An entry in an OEM-defined format. |
| SEL | A legacy IPMI System Event Log (SEL) entry. |

6.64.4.5 EventType

The type of event recorded in this log.

| string | Description |
|-----------------|--|
| Alert | A condition requires attention. |
| MetricReport | The telemetry service is sending a metric report. |
| Other | Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType. |
| ResourceAdded | A resource has been added. |
| ResourceRemoved | A resource has been removed. |
| ResourceUpdated | A resource has been updated. |
| StatusChange | The status of a resource has changed. |

6.64.4.6 OriginatorType

The type of originator data.

| string | Description |
|-------------------|---|
| Client | A client of the service created this log entry. |
| Internal | A process running on the service created this log entry. |
| SupportingService | A process not running on the service but running on a supporting service, such as RDE implementations, UEFI, or host processes, created this log entry. |

6.64.4.7 SensorType

The sensor type to which the log entry pertains if the entry type is `SEL`.

| string | Description |
|-----------------------------------|---|
| Add-in Card | A sensor for an add-in card. |
| BaseOSBoot/ InstallationStatus | A sensor for a base OS boot or installation status event. |
| Battery | A sensor for a battery. |
| Boot Error | A sensor for a boot error event. |
| Button/Switch | A sensor for a button or switch. |
| Cable/Interconnect | A sensor for a cable or interconnect device type. |
| Chassis | A sensor for a chassis. |
| ChipSet | A sensor for a chipset. |
| CoolingDevice | A sensor for a cooling device. |
| Critical Interrupt | A sensor for a critical interrupt event. |
| Current | A current sensor. |
| Drive Slot/Bay | A sensor for a drive slot or bay. |
| Entity Presence | A sensor for an entity presence event. |
| Event Logging Disabled | A sensor for the event log. |

| string | Description |
|-------------------------------------|--|
| Fan | A fan sensor. |
| FRUState | A sensor for a FRU state event. |
| LAN | A sensor for a LAN device. |
| Management Subsystem Health | A sensor for a management subsystem health event. |
| Memory | A sensor for a memory device. |
| Microcontroller/ Coprocessor | A sensor for a microcontroller or coprocessor. |
| Module/Board | A sensor for a module or board. |
| Monitor ASIC/IC | A sensor for a monitor ASIC or IC. |
| OEM (v1.3+) | An OEM-defined sensor. |
| OS Stop/Shutdown | A sensor for an OS stop or shutdown event |
| Other FRU | A sensor for another type of FRU. |
| Other Units-based Sensor | A sensor for a miscellaneous analog sensor. |
| Physical Chassis Security | A physical security sensor. |
| Platform Alert | A sensor for a platform alert event. |
| Platform Security Violation Attempt | A platform security sensor. |
| POST Memory Resize | A sensor for a POST memory resize event. |
| Power Supply / Converter | A sensor for a power supply or DC-to-DC converter. |
| PowerUnit | A sensor for a power unit. |
| Processor | A sensor for a processor. |
| Session Audit | A sensor for a session audit event. |
| Slot/Connector | A sensor for a slot or connector. |
| System ACPI PowerState | A sensor for an ACPI power state event. |
| System Event | A sensor for a system event. |
| System Firmware Progress | A sensor for a system firmware progress event. |
| SystemBoot/Restart | A sensor for a system boot or restart event. |

| string | Description |
|----------------|--------------------------------------|
| Temperature | A temperature sensor. |
| Terminator | A sensor for a terminator. |
| Version Change | A sensor for a version change event. |
| Voltage | A voltage sensor. |
| Watchdog | A sensor for a watchdog event. |

6.64.4.8 Severity

The severity of the log entry.

| string | Description |
|----------|---|
| Critical | A critical condition that requires immediate attention. |
| OK | Informational or operating normally. |
| Warning | A condition that requires attention. |

6.64.5 Example response

```
{
  "@odata.type": "#LogEntry.v1_15_1.LogEntry",
  "Id": "1",
  "Name": "Log Entry 1",
  "EntryType": "Event",
  "Severity": "Critical",
  "Created": "2012-03-07T14:44:00Z",
  "Resolved": false,
  "Message": "Temperature threshold exceeded",
  "MessageId": "Contoso.1.0.TempAssert",
  "MessageArgs": [
    "42"
  ],
  "Links": {
    "OriginOfCondition": {
      "@odata.id": "/redfish/v1/Chassis/1U/Thermal"
    }
  },
  "@odata.id": "/redfish/v1/Systems/437XR1138R2/LogServices/Log1/Entries/1"
}
```

6.65 LogService 1.5.1

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|------|
| Release | 2023.2 | 2022.3 | 2021.2 | 2020.3 | 2017.3 | 1.0 |

6.65.1 Description

The LogService schema contains properties for monitoring and configuring a log service. When the Id property contains `DeviceLog`, the log contains device-resident log entries that follow the physical device when moved from system-to-system, and not a replication or subset of a system event log.

6.65.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/LogServices/{LogServiceId}
/redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/CXLLogicalDevices/
{CXLLogicalDeviceId}/DeviceLog
/redfish/v1/JobService/Log
/redfish/v1/Managers/{ManagerId}/LogServices/{LogServiceId}
/redfish/v1/Systems/{ComputerSystemId}/LogServices/{LogServiceId}
/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/DeviceLog
/redfish/v1/TelemetryService/LogService

```

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.65.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|-----------------------|-----------------------------|---|
| AutoDSTEnabled (v1.3+) | boolean | <i>read-write</i> | An indication of whether the log service is configured for automatic Daylight Saving Time (DST) adjustment. |
| DateTime | string (date-time) | <i>read-write</i> (null) | The current date and time with UTC offset of the log service. |
| DateTimeLocalOffset | string | <i>read-write</i> (null) | The time offset from UTC that the DateTime property is in <code>+HH:MM</code> format. |
| Entries { | object | | The link to the log entry collection. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LogEntry</i> . See the LogEntry schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------------|-----------------------------|--------------------------------------|--|
| LogEntryType (v1.1+) | string (enum) | <i>read-only</i> (<i>null</i>) | The format of the log entries. <i>For the possible property values, see LogEntryType in Property details.</i> |
| LogPurposes (v1.4+) [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The purposes of the log. <i>For the possible property values, see LogPurposes in Property details.</i> |
| MaxNumberOfRecords | integer | <i>read-only</i> | The maximum number of log entries that this service can have. |
| OEMLogPurpose (v1.4+) | string | <i>read-only</i> (<i>null</i>) | The OEM-specified purpose of the log if LogPurposes contains <code>OEM</code> . |
| Overflow (v1.4+) | boolean | <i>read-only</i> | Indicates whether the log service has overflowed. |
| OverWritePolicy | string (enum) | <i>read-only</i> | The overwrite policy for this service that takes place when the log is full. <i>For the possible property values, see OverWritePolicy in Property details.</i> |
| Persistency (v1.4+) | boolean | <i>read-only</i> | Indicates whether the log service is persistent across a cold reset. |
| ServiceEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether this service is enabled. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SyslogFilters (v1.2+) [{ | array | | A list of syslog message filters to be logged locally. |
| LogFacilities (v1.2+) [] | array (string (enum)) | <i>read-write</i> (<i>null</i>) | The types of programs that can log messages. <i>For the possible property values, see LogFacilities in Property details.</i> |
| LowestSeverity (v1.2+) | string (enum) | <i>read-write</i> (<i>null</i>) | The lowest severity level message that will be logged. <i>For the possible property values, see LowestSeverity in Property details.</i> |
| }] | | | |

6.65.4 Actions

6.65.4.1 ClearLog

Description

The action to clear the log for this log service.

Action URI

{Base URI of target resource}/Actions/LogService.ClearLog

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------------------------|--------|-----------------|--|
| LogEntriesETag (v1.3+) | string | <i>optional</i> | The ETag of the log entry collection within this log service. If the provided ETag does not match the current ETag of the log entry collection, the request is rejected. |

Request Example

```
{
  "LogEntriesEtag": "W/\\"2A90423A\\""
}
```

6.65.4.2 CollectDiagnosticData (v1.2+)

Description

The action to collect the diagnostic data for the given type. When the diagnostic data is collected, a new log entry will be created and the additional data referenced by the new log entry will contain the diagnostic data.

Action URI

{Base URI of target resource}/Actions/LogService.CollectDiagnosticData

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------------------|------------------|-----------------|--|
| DiagnosticDataType | string (enum) | <i>required</i> | The type of diagnostic data to collect. <i>For the possible property values, see DiagnosticDataType in Property details.</i> |
| OEMDiagnosticDataType | string | <i>optional</i> | The OEM-defined type of diagnostic data to collect. |

Request Example

```
{
  "DiagnosticDataType": "Manager"
}
```

```
}

```

6.65.5 Property details

6.65.5.1 DiagnosticDataType

The type of diagnostic data to collect.

| string | Description |
|---------|--|
| Manager | Manager diagnostic data. |
| OEM | OEM diagnostic data. |
| OS | Operating system (OS) diagnostic data. |
| PreOS | Pre-OS diagnostic data. |

6.65.5.2 LogEntryType

The format of the log entries.

| string | Description |
|-------------|---|
| CXL (v1.5+) | The log contains CXL log entries. |
| Event | The log contains Redfish-defined messages. |
| Multiple | The log contains multiple log entry types and, therefore, the log service cannot guarantee a single entry type. |
| OEM | The log contains entries in an OEM-defined format. |
| SEL | The log contains legacy IPMI System Event Log (SEL) entries. |

6.65.5.3 LogFacilities

The types of programs that can log messages.

| string | Description |
|-------------|---|
| Auth | Security/authentication messages. |
| Authpriv | Security/authentication messages. |
| Console | Log alert. |
| Cron | Clock daemon. |
| Daemon | System daemons. |
| FTP | FTP daemon. |
| Kern | Kernel messages. |
| Local0 | Locally used facility 0. |
| Local1 | Locally used facility 1. |
| Local2 | Locally used facility 2. |
| Local3 | Locally used facility 3. |
| Local4 | Locally used facility 4. |
| Local5 | Locally used facility 5. |
| Local6 | Locally used facility 6. |
| Local7 | Locally used facility 7. |
| LPR | Line printer subsystem. |
| Mail | Mail system. |
| News | Network news subsystem. |
| NTP | NTP subsystem. |
| Security | Log audit. |
| SolarisCron | Scheduling daemon. |
| Syslog | Messages generated internally by syslogd. |
| User | User-level messages. |
| UUCP | UUCP subsystem. |

6.65.5.4 LogPurposes

The purposes of the log.

| string | Description |
|----------------|--|
| Diagnostic | The log provides information for diagnosing hardware or software issues, such as error conditions, sensor threshold trips, or exception cases. |
| ExternalEntity | The log exposes log entries provided by external entities, such as external users, system firmware, operating systems, or management applications. |
| OEM | The log is used for an OEM-defined purpose. |
| Operations | The log provides information about management operations that have a significant impact on the system, such as firmware updates, system resets, and storage volume creation. |
| Security | The log provides security-related information such as authentication, authorization, and data access logging required for security audits. |
| Telemetry | The log provides telemetry history, typically collected on a regular basis. |

6.65.5.5 LowestSeverity

The lowest severity level message that will be logged.

| string | Description |
|---------------|--|
| Alert | A condition that should be corrected immediately, such as a corrupted system database. |
| All | A message of any severity. |
| Critical | Hard device errors. |
| Debug | Messages that contain information normally of use only when debugging a program. |
| Emergency | A panic condition. |
| Error | An Error. |
| Informational | Informational only. |
| Notice | Conditions that are not error conditions, but that might require special handling. |
| Warning | A Warning. |

6.65.5.6 OverWritePolicy

The overwrite policy for this service that takes place when the log is full.

| string | Description |
|-----------------|--|
| NeverOverWrites | When full, new entries to the log are discarded. |
| Unknown | The overwrite policy is not known or is undefined. |
| WrapsWhenFull | When full, new entries to the log overwrite earlier entries. |

6.65.6 Example response

```
{
  "@odata.type": "#LogService.v1_5_1.LogService",
  "Id": "Log1",
  "Name": "System Log Service",
  "Description": "This log contains entries related to the operation of the host Computer System.",
  "MaxNumberOfRecords": 1000,
  "OverWritePolicy": "WrapsWhenFull",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
  "ServiceEnabled": true,
  "LogEntryType": "Event",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Actions": {
    "#LogService.ClearLog": {
      "target": "/redfish/v1/Managers/1/LogServices/Log1/Actions/LogService.ClearLog"
    }
  },
  "Entries": {
    "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1/Entries"
  },
  "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1"
}
```

6.66 Manager 1.18.0

| Version | v1.18 | v1.17 | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.1 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | 2020.2 | 2020.1 | ... |

6.66.1 Description

In Redfish, a manager is a systems management entity that can implement or provide access to a Redfish service. Examples of managers are BMCs, enclosure managers, management controllers, and other subsystems that are assigned manageability functions. An implementation can have multiple managers, which might be directly accessible through a Redfish-defined interface.

6.66.2 URIs

/redfish/v1/Managers/{ManagerId}

6.66.3 Properties

| Property | Type | Attributes | Notes |
|--|---------|-------------------------------------|--|
| AdditionalFirmwareVersions (v1.15+) { | object | | The additional firmware versions of the manager. |
| Bootloader (v1.7+) | string | <i>read-only</i> (<i>null</i>) | The bootloader version contained in this software, such as U-Boot or UEFI. |
| Kernel (v1.7+) | string | <i>read-only</i> (<i>null</i>) | The kernel version contained in this software. |
| Microcode (v1.7+) | string | <i>read-only</i> (<i>null</i>) | The microcode version contained in this software, such as processor microcode. |
| Oem (v1.7+) {} | object | | See the Oem object definition in the Common properties section. |
| OSDistribution (v1.8+) | string | <i>read-only</i> (<i>null</i>) | The operating system name of this software. |
| } | | | |
| AutoDSTEnabled (v1.4+) | boolean | <i>read-write</i> | An indication of whether the manager is configured for automatic Daylight Saving Time (DST) adjustment. |
| Certificates (v1.13+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| CommandShell { | object | | The command shell service that this manager provides. |

| Property | Type | Attributes | Notes |
|--|-----------------------------|--------------------------------------|---|
| ConnectTypesSupported [] | array (string (enum)) | <i>read-only</i> | This property enumerates the command shell connection types that the implementation allows. <i>For the possible property values, see ConnectTypesSupported in Property details.</i> |
| MaxConcurrentSessions | integer | <i>read-only</i> | The maximum number of service sessions, regardless of protocol, that this manager can support. |
| ServiceEnabled | boolean | <i>read-write</i> | An indication of whether the service is enabled for this manager. |
| } | | | |
| DateTime | string (date- time) | <i>read-write</i> (<i>null</i>) | The current date and time with UTC offset of the manager. |
| DateTimeLocalOffset | string | <i>read-write</i> (<i>null</i>) | The time offset from UTC that the DateTime property is in <code>+HH:MM</code> format. |
| DedicatedNetworkPorts (v1.16+) { | object | | The dedicated network ports of the manager. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| EthernetInterfaces { | object | | The link to a collection of NICs that this manager uses for network communication. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details. |
| } | | | |
| FirmwareVersion | string | <i>read-only</i> (<i>null</i>) | The firmware version of this manager. |
| GraphicalConsole { | object | | The information about the graphical console service of this manager. |
| ConnectTypesSupported [] | array (string (enum)) | <i>read-only</i> | This property enumerates the graphical console connection types that the implementation allows. <i>For the possible property values, see ConnectTypesSupported in Property details.</i> |
| MaxConcurrentSessions | integer | <i>read-only</i> | The maximum number of service sessions, regardless of protocol, that this manager can support. |
| ServiceEnabled | boolean | <i>read-write</i> | An indication of whether the service is enabled for this manager. |
| } | | | |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------------------|-------------------|---|
| HostInterfaces (v1.3+) { | object | | The link to a collection of host interfaces that this manager uses for local host communication. Clients can find host interface configuration options and settings in this navigation property. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>HostInterface</i> . See the <i>HostInterface</i> schema for details. |
| } | | | |
| LastResetTime (v1.9+) | string (date-time) | <i>read-only</i> | The date and time when the manager was last reset or rebooted. |
| Links { | object | | The links to other resources that are related to this resource. |
| ActiveSoftwareImage (v1.6+) { | object | | The link to the software inventory resource that represents the active firmware image for this manager. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a <i>SoftwareInventory</i> resource. See the <i>Links</i> section and the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| ManagedBy (v1.9+) [{ | array | | The array of links to the managers responsible for managing this manager. |
| @odata.id | string | <i>read-only</i> | Link to another <i>Manager</i> resource. |
| }] | | | |
| ManagerForChassis [{ | array | | An array of links to the chassis this manager controls. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Chassis</i> resource. See the <i>Links</i> section and the <i>Chassis</i> schema for details. |
| }] | | | |
| ManagerForManagers (v1.9+) [{ | array | | An array of links to the managers that are managed by this manager. |
| @odata.id | string | <i>read-only</i> | Link to another <i>Manager</i> resource. |
| }] | | | |
| ManagerForServers [{ | array | | An array of links to the systems that this manager controls. |
| @odata.id | string | <i>read-only</i> | Link to a <i>ComputerSystem</i> resource. See the <i>Links</i> section and the <i>ComputerSystem</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|---------|------------------------------------|--|
| }] | | | |
| ManagerForSwitches (v1.4+) [{ | array | | An array of links to the switches that this manager controls. |
| @odata.id | string | <i>read-only</i> | Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details. |
| }] | | | |
| ManagerInChassis (v1.1+) { | object | | The link to the chassis where this manager is located. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SelectedNetworkPort (v1.18+) { | object | <i>(null)</i> | The network port currently used by this manager. This allows selection of shared or dedicated ports for managers that support one or the other. For managers that always have their dedicated port enabled this allows the selection of which shared port to use. See the <i>Port</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| } | | | |
| SoftwareImages (v1.6+) [{ | array | | The images that are associated with this manager. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| } | | | |
| Location (v1.11+) {} | object | | The location of the manager. For property details, see Location. |
| LocationIndicatorActive (v1.11+) | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |
| LogServices { | object | | The link to a collection of logs that the manager uses. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LogService</i> . See the <i>LogService</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|-------------------|---------------------|--|
| } | | | |
| ManagerDiagnosticData (v1.14+) { | object | (null) | The diagnostic data for this manager. See the <i>ManagerDiagnosticData</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a <i>ManagerDiagnosticData</i> resource. See the Links section and the <i>ManagerDiagnosticData</i> schema for details. |
| } | | | |
| ManagerType | string (enum) | read-only | The type of manager that this resource represents. <i>For the possible property values, see ManagerType in Property details.</i> |
| Manufacturer (v1.7+) | string | read-only (null) | The manufacturer of this manager. |
| Measurements (v1.13+, deprecated v1.14 [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | read-only | Link to a <i>MeasurementBlock</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| Model | string | read-only (null) | The model information of this manager, as defined by the manufacturer. |
| NetworkProtocol { | object | | The link to the network services and their settings that the manager controls. See the <i>ManagerNetworkProtocol</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a <i>ManagerNetworkProtocol</i> resource. See the Links section and the <i>ManagerNetworkProtocol</i> schema for details. |
| } | | | |
| PartNumber (v1.7+) | string | read-only (null) | The part number of the manager. |
| PowerState (v1.2+) | string (enum) | read-only (null) | The current power state of the manager. <i>For the possible property values, see PowerState in Property details.</i> |
| Redundancy [{ }] | array (object) | | The redundancy information for the managers of this system. For property details, see Redundancy. |
| RemoteAccountService (v1.5+) { | object | | The link to the account service resource for the remote manager that this resource represents. See the <i>AccountService</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|-----------------------|--------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a AccountService resource. See the Links section and the AccountService schema for details. |
| } | | | |
| RemoteRedfishServiceUri (v1.5+) | string (URI) | <i>read-only (null)</i> | The URI of the Redfish service root for the remote manager that this resource represents. |
| SecurityPolicy (v1.16+) { | object | <i>(null)</i> | The security policy settings for this manager. See the SecurityPolicy schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SecurityPolicy resource. See the Links section and the SecurityPolicy schema for details. |
| } | | | |
| SerialConsole (deprecated v1.10) { | object | | The serial console service that this manager provides. <i>Deprecated in v1.10 and later. This property has been deprecated in favor of the SerialConsole property in the ComputerSystem resource.</i> |
| ConnectTypesSupported [] | array (string (enum)) | <i>read-only</i> | This property enumerates the serial console connection types that the implementation allows. <i>For the possible property values, see ConnectTypesSupported in Property details.</i> |
| MaxConcurrentSessions | integer | <i>read-only</i> | The maximum number of service sessions, regardless of protocol, that this manager can support. |
| ServiceEnabled | boolean | <i>read-write</i> | An indication of whether the service is enabled for this manager. |
| } | | | |
| SerialInterfaces { | object | | The link to a collection of serial interfaces that this manager uses for serial and console communication. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of SerialInterface. See the SerialInterface schema for details. |
| } | | | |
| SerialNumber (v1.7+) | string | <i>read-only (null)</i> | The serial number of the manager. |
| ServiceEntryPointUUID | string (uuid) | <i>read-only (null)</i> | The UUID of the Redfish service that is hosted by this manager. |
| ServiceIdentification (v1.15+) | string | <i>read-write (null)</i> | A product instance identifier displayed in the Redfish service root. |

| Property | Type | Attributes | Notes |
|--|---------------|------------------|--|
| SharedNetworkPorts (v1.16+) { | object | | The shared network ports of the manager. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details. |
| } | | | |
| SparePartNumber (v1.11+) | string | read-only (null) | The spare part number of the manager. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| TimeZoneName (v1.10+) | string | read-write | The time zone of the manager. |
| USBPorts (v1.12+) { | object | | The USB ports of the manager. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details. |
| } | | | |
| UUID | string (uuid) | read-only (null) | The UUID for this manager. |
| Version (v1.17+) | string | read-only (null) | The hardware version of this manager. |
| VirtualMedia (deprecated v1.10) { | object | | The link to the Virtual Media services for this particular manager. Contains a link to a resource. <i>Deprecated in v1.10 and later. This property has been deprecated in favor of the VirtualMedia property in the ComputerSystem resource.</i> |
| @odata.id | string | read-only | Link to Collection of <i>VirtualMedia</i> . See the <i>VirtualMedia</i> schema for details. |
| } | | | |

6.66.4 Actions

6.66.4.1 ForceFailover

Description

The ForceFailover action forces a failover of this manager to the manager used in the parameter.

Action URI

{Base URI of target resource}/Actions/Manager.ForceFailover

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------------|--------|------------------|------------------------------------|
| NewManager { | object | <i>required</i> | The manager to which to fail over. |
| @odata.id | string | <i>read-only</i> | Link to another Manager resource. |
| } | | | |

Request Example

```
{
  "NewManager": [
    {
      "@odata.id": "/redfish/v1/Managers/3"
    }
  ]
}
```

6.66.4.2 ModifyRedundancySet**Description**

The ModifyRedundancySet operation adds members to or removes members from a redundant group of managers.

Action URI

{Base URI of target resource}/Actions/Manager.ModifyRedundancySet

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|------------------|---|
| Add [{ | array | <i>optional</i> | An array of managers to add to the redundancy set. |
| @odata.id | string | <i>read-only</i> | Link to another Manager resource. |
| }] | | | |
| Remove [{ | array | <i>optional</i> | An array of managers to remove from the redundancy set. |

| Parameter Name | Type | Attributes | Notes |
|----------------|--------|------------|-----------------------------------|
| @odata.id | string | read-only | Link to another Manager resource. |
| }] | | | |

Request Example

```

{
  "Add": [
    {
      "@odata.id": "/redfish/v1/Managers/4"
    }
  ]
}

```

6.66.4.3 Reset

Description

The reset action resets/reboots the manager.

Action URI

{Base URI of target resource}/Actions/Manager.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------|---------------|------------|---|
| ResetType | string (enum) | optional | The type of reset. For the possible property values, see ResetType in Property details. |

Request Example

```

{
  "ResetType": "ForceRestart"
}

```

6.66.4.4 ResetToDefaults (v1.8+)

Description

The reset action resets the manager settings to factory defaults. This can cause the manager to reset.

Action URI

{Base URI of target resource}/Actions/Manager.ResetToDefaults

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>required</i> | The type of reset to defaults. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "PreserveNetworkAndUsers"
}
```

6.66.5 Property details

6.66.5.1 ConnectTypesSupported

6.66.5.1.1 In CommandShell:

This property enumerates the command shell connection types that the implementation allows.

| string | Description |
|--------|---|
| IPMI | The controller supports a command shell connection through the IPMI Serial Over LAN (SOL) protocol. |
| Oem | The controller supports a command shell connection through an OEM-specific protocol. |
| SSH | The controller supports a command shell connection through the SSH protocol. |
| Telnet | The controller supports a command shell connection through the Telnet protocol. |

6.66.5.1.2 In GraphicalConsole:

This property enumerates the graphical console connection types that the implementation allows.

| string | Description |
|--------|---|
| KVMIP | The controller supports a graphical console connection through a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol. |
| Oem | The controller supports a graphical console connection through an OEM-specific protocol. |

6.66.5.1.3 In SerialConsole:

This property enumerates the serial console connection types that the implementation allows.

| string | Description |
|--------|--|
| IPMI | The controller supports a serial console connection through the IPMI Serial Over LAN (SOL) protocol. |
| Oem | The controller supports a serial console connection through an OEM-specific protocol. |
| SSH | The controller supports a serial console connection through the SSH protocol. |
| Telnet | The controller supports a serial console connection through the Telnet protocol. |

6.66.5.2 ManagerType

The type of manager that this resource represents.

| string | Description |
|----------------------|---|
| AuxiliaryController | A controller that provides management functions for a particular subsystem or group of devices. |
| BMC | A controller that provides management functions for a single computer system. |
| EnclosureManager | A controller that provides management functions for a chassis or group of devices or systems. |
| ManagementController | A controller that primarily monitors or manages the operation of a device or system. |
| RackManager | A controller that provides management functions for a whole or part of a rack. |
| Service (v1.4+) | A software-based service that provides management functions. |

6.66.5.3 PowerState

The current power state of the manager.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.66.5.4 ResetType

6.66.5.4.1 In Actions: Reset:

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |

| string | Description |
|-----------------|---|
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.66.5.4.2 In Actions: ResetToDefaults:

The type of reset to defaults.

| string | Description |
|-------------------------|---|
| PreserveNetwork | Reset all settings except network settings to factory defaults. |
| PreserveNetworkAndUsers | Reset all settings except network and local user names/passwords to factory defaults. |
| ResetAll | Reset all settings to factory defaults. |

6.66.6 Example response

```
{
  "@odata.type": "#Manager.v1_18_0.Manager",
  "Id": "BMC",
  "Name": "Manager",
  "ManagerType": "BMC",
  "Description": "Contoso BMC",
  "ServiceEntryPointUUID": "92384634-2938-2342-8820-489239905423",
  "UUID": "58893887-8974-2487-2389-841168418919",
  "Model": "Joo Janta 200",
  "FirmwareVersion": "4.4.6521",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PowerState": "On",
  "GraphicalConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 2,
    "ConnectTypesSupported": [
      "KVMIP"
    ]
  }
}
```

```
    ]
  },
  "CommandShell": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 4,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH"
    ]
  },
  "HostInterfaces": {
    "@odata.id": "/redfish/v1/Managers/9/HostInterfaces"
  },
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/BMC/NICs"
  },
  "SerialInterfaces": {
    "@odata.id": "/redfish/v1/Managers/BMC/SerialInterfaces"
  },
  "LogServices": {
    "@odata.id": "/redfish/v1/Managers/BMC/LogServices"
  },
  "VirtualMedia": {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/VirtualMedia"
  },
  "Links": {
    "ManagerForServers": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      }
    ],
    "ManagerForChassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/1U"
      }
    ],
    "ManagerInChassis": {
      "@odata.id": "/redfish/v1/Chassis/1U"
    }
  },
  "Actions": {
    "#Manager.Reset": {
      "target": "/redfish/v1/Managers/BMC/Actions/Manager.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceRestart",
        "GracefulRestart"
      ]
    }
  }
]
```

```

    },
    "@odata.id": "/redfish/v1/Managers/BMC"
  }
}

```

6.67 ManagerAccount 1.11.0

| | | | | | | | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Version | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | ... |
| Release | 2023.2 | 2022.3 | 2022.1 | 2021.1 | 2020.4 | 2020.1 | 2019.4 | 2019.3 | 2019.1 | 2018.3 | 2017.1 | ... |

6.67.1 Description

The ManagerAccount schema defines the user accounts that are owned by a manager. Changes to a manager account might affect the current Redfish service connection if this manager is responsible for the Redfish service.

6.67.2 URIs

/redfish/v1/AccountService/Accounts/{ManagerAccountId}
 /redfish/v1/Managers/{ManagerId}/RemoteAccountService/Accounts/{ManagerAccountId}

6.67.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|-----------------------|----------------------------|---|
| AccountExpiration (v1.8+) | string (date-time) | read-write (null) | Indicates the date and time when this account expires. If <code>null</code> , the account never expires. |
| AccountTypes (v1.4+) [] | array (string (enum)) | read-write required (null) | The list of services in the manager that the account is allowed to access. For the possible property values, see <i>AccountTypes</i> in Property details. |
| Certificates (v1.2+) { | object | | The link to a collection of user identity certificates for this account. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|-------------------------------------|---------|-----------------------------|---|
| EmailAddress (v1.11+) | string | <i>read-write</i> (null) | The email address associated with this account. |
| Enabled | boolean | <i>read-write</i> | An indication of whether an account is enabled. An administrator can disable it without deleting the user information. If <code>true</code> , the account is enabled and the user can log in. If <code>false</code> , the account is disabled and, in the future, the user cannot log in. |
| HostBootstrapAccount (v1.8+) | boolean | <i>read-only</i> | An indication of whether this account is a bootstrap account for the host interface. |
| Keys (v1.9+) { | object | | The link to the collection of keys that can be used to authenticate this account. For example, an SSH public key could be added to this collection to allow for SSH public key authentication. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of Key. See the Key schema for details. |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Role { | object | | The link to the Redfish role that defines the privileges for this account. See the <i>Role</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Role resource. See the Links section and the <i>Role</i> schema for details. |
| } | | | |
| } | | | |
| Locked | boolean | <i>read-write</i> | An indication of whether the account service automatically locked the account because the lockout threshold was exceeded. To manually unlock the account before the lockout duration period, an administrator can change the property to <code>false</code> to clear the lockout condition. |
| MFABypass (v1.10+) { | object | (null) | The multi-factor authentication bypass settings for this account. See the <i>AccountService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MFABypass resource. See the Links section and the <i>AccountService</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|----------------------------|---|--|
| } | | | |
| OEMAccountTypes (v1.4+) [] | array (string, null) | <i>read-write</i> | The OEM account types. |
| OneTimePasscodeDeliveryAddress (v1.11+) | string | <i>read-write</i> (<i>null</i>) | The address used to receive one-time passcode messages for multi-factor authentication. |
| Password | string | <i>read-write</i> <i>required</i> <i>on create</i> (<i>null</i>) | The password. Use this property with a PATCH or PUT to write the password for the account. This property is <code>null</code> in responses. |
| PasswordChangeRequired (v1.3+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the service requires that the password for this account be changed before further access to the account is allowed. |
| PasswordExpiration (v1.6+) | string (date- time) | <i>read-write</i> (<i>null</i>) | Indicates the date and time when this account password expires. If <code>null</code> , the account password never expires. |
| PhoneNumber (v1.11+) | string | <i>read-write</i> (<i>null</i>) | The contact phone number associated with this account. |
| RoleId | string | <i>read-write</i> <i>required</i> <i>on create</i> | The role for this account. |
| SNMP (v1.4+) { | object | (<i>null</i>) | The SNMP settings for this account. |
| AuthenticationKey (v1.4+) | string | <i>read-write</i> (<i>null</i>) | The secret authentication key for SNMPv3. |
| AuthenticationKeySet (v1.5+) | boolean | <i>read-only</i> | Indicates if the AuthenticationKey property is set. |
| AuthenticationProtocol (v1.4+) | string (enum) | <i>read-write</i> (<i>null</i>) | The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i> |
| EncryptionKey (v1.4+) | string | <i>read-write</i> (<i>null</i>) | The secret encryption key used in SNMPv3. |
| EncryptionKeySet (v1.5+) | boolean | <i>read-only</i> | Indicates if the EncryptionKey property is set. |
| EncryptionProtocol (v1.4+) | string (enum) | <i>read-write</i> (<i>null</i>) | The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i> |
| } | | | |

| Property | Type | Attributes | Notes |
|-----------------------------------|---------|--|--|
| StrictAccountTypes (v1.7+) | boolean | <i>read-write (null)</i> | Indicates if the service needs to use the account types exactly as specified when the account is created or updated. |
| UserName | string | <i>read-write required on create</i> | The user name for the account. |

6.67.4 Actions

6.67.4.1 ChangePassword (v1.11+)

Description

This action changes the account password.

Action URI

{Base URI of target resource}/Actions/ManagerAccount.ChangePassword

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------------|--------|-----------------|--|
| NewPassword | string | <i>required</i> | The new account password. |
| SessionAccountPassword | string | <i>required</i> | The password of the account tied to the current session. |

Request Example

```
{
  "SessionAccountPassword": "secret123",
  "NewPassword": "B3tters3cur1tY!"
}
```

6.67.5 Property details

6.67.5.1 AccountTypes

The list of services in the manager that the account is allowed to access.

| string | Description |
|----------------|---|
| HostConsole | Allow access to the host's console, which could be connected through Telnet, SSH, or other protocol. |
| IPMI | Allow access to the Intelligent Platform Management Interface service. |
| KVMIP | Allow access to a Keyboard-Video-Mouse over IP session. |
| ManagerConsole | Allow access to the manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol. |
| OEM | OEM account type. See the OEMAccountTypes property. |
| Redfish | Allow access to the Redfish service. |
| SNMP | Allow access to SNMP services. |
| VirtualMedia | Allow access to control virtual media. |
| WebUI | Allow access to a web user interface session, such as a graphical interface or another web-based protocol. |

6.67.5.2 AuthenticationProtocol

The authentication protocol for SNMPv3.

| string | Description |
|------------------------|----------------------------------|
| HMAC128_SHA224 (v1.7+) | HMAC-128-SHA-224 authentication. |
| HMAC192_SHA256 (v1.7+) | HMAC-192-SHA-256 authentication. |
| HMAC256_SHA384 (v1.7+) | HMAC-256-SHA-384 authentication. |
| HMAC384_SHA512 (v1.7+) | HMAC-384-SHA-512 authentication. |
| HMAC_MD5 | HMAC-MD5-96 authentication. |
| HMAC_SHA96 | HMAC-SHA-96 authentication. |
| None | No authentication. |

6.67.5.3 EncryptionProtocol

The encryption protocol for SNMPv3.

| string | Description |
|---------------|----------------------------|
| CBC_DES | CBC-DES encryption. |
| CFB128_AES128 | CFB128-AES-128 encryption. |
| None | No encryption. |

6.67.6 Example response

```
{
  "@odata.type": "#ManagerAccount.v1_11_0.ManagerAccount",
  "Id": "1",
  "Name": "User Account",
  "Description": "User Account",
  "Enabled": true,
  "Password": null,
  "PasswordChangeRequired": false,
  "AccountTypes": [
    "Redfish"
  ],
  "UserName": "Administrator",
  "RoleId": "Administrator",
  "Locked": false,
  "Links": {
    "Role": {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  },
  "Actions": {
    "#ManagerAccount.ChangePassword": {
      "target": "/redfish/v1/AccountService/Accounts/1/Actions/ManagerAccount.ChangePassword"
    }
  },
  "@odata.id": "/redfish/v1/AccountService/Accounts/1"
}
```

6.68 ManagerDiagnosticData 1.2.1

| Version | v1.2 | v1.1 |
|---------|--------|--------|
| Release | 2022.3 | 2021.4 |

6.68.1 Description

The ManagerDiagnosticData schema defines internal diagnostic data for a manager. It contains information that might be used by vendors to collect debug information about the manager. Clients should not make decisions for raising alerts, creating service events, or other actions based on information in this resource.

6.68.2 URIs

/redfish/v1/Managers/{ManagerId}/ManagerDiagnosticData

6.68.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|-------------------|-----------------------------------|---|
| BootTimeStatistics { | object | | The boot time statistics of the manager. |
| FirmwareTimeSeconds | number | <i>read-only</i> <i>(null)</i> | The number of seconds the manager spent in the firmware stage. |
| InitrdTimeSeconds | number | <i>read-only</i> <i>(null)</i> | The number of seconds the manager spent in the initrd boot stage. |
| KernelTimeSeconds | number | <i>read-only</i> <i>(null)</i> | The number of seconds the manager spent in the kernel stage. |
| LoaderTimeSeconds | number | <i>read-only</i> <i>(null)</i> | The number of seconds the manager spent in the loader stage. |
| UserSpaceTimeSeconds | number | <i>read-only</i> <i>(null)</i> | The number of seconds the manager spent in the user space boot stage. |
| } | | | |
| FreeStorageSpaceKiB | integer (KiBy) | <i>read-only</i> <i>(null)</i> | The available storage space on this manager in kibibytes (KiB). |
| I2CBuses [{ | array | | The statistics of the I2C buses. |
| BusErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of bus errors on this I2C bus. |
| I2CBusName | string | <i>read-only</i> | The name of the I2C bus. |
| NACKCount | integer | <i>read-only</i> <i>(null)</i> | The number of NACKs on this I2C bus. |

| Property | Type | Attributes | Notes |
|--|--------------------|-----------------------------------|--|
| TotalTransactionCount | integer | <i>read-only</i> <i>(null)</i> | The total number of transactions on this I2C bus. |
| }] | | | |
| MemoryECCStatistics { | object | | The memory ECC statistics of the manager. |
| CorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the correctable errors since reset. |
| UncorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the uncorrectable errors since reset. |
| } | | | |
| MemoryStatistics { | object | | The memory statistics of the manager. |
| AvailableBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of memory available in bytes for starting new processes without swapping. |
| BuffersAndCacheBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of memory used in bytes by kernel buffers, page caches, and slabs. |
| FreeBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of free memory in bytes. |
| SharedBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of shared memory in bytes. |
| TotalBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The total amount of memory in bytes. |
| UsedBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The amount of used memory in bytes. |
| } | | | |
| ProcessorStatistics { | object | | The processor statistics of the manager. |
| KernelPercent | number (%) | <i>read-only</i> <i>(null)</i> | The percentage of CPU time spent in kernel mode. |
| UserPercent | number (%) | <i>read-only</i> <i>(null)</i> | The percentage of CPU time spent in user mode. |
| } | | | |
| ServiceRootUptimeSeconds (v1.2+) | number | <i>read-only</i> <i>(null)</i> | The wall-clock time the service root hosted by this manager has been running in seconds. |
| TopProcesses [{ | array | | The statistics of the top processes of this manager. |

| Property | Type | Attributes | Notes |
|---|-----------------|-------------------------|---|
| CommandLine | string | <i>read-only</i> | The command line of this process. |
| KernelTimeSeconds | number | <i>read-only (null)</i> | The number of seconds this process executed in kernel space. |
| ResidentSetSizeBytes | integer (bytes) | <i>read-only (null)</i> | The resident set size of this process in bytes. |
| RestartAfterFailureCount (v1.1+) | integer | <i>read-only (null)</i> | The number of times this process has restarted unexpectedly. |
| RestartCount (v1.1+) | integer | <i>read-only (null)</i> | The number of times this process has restarted. |
| UptimeSeconds (v1.1+) | number | <i>read-only (null)</i> | The wall-clock time this process has been running in seconds. |
| UserTimeSeconds | number | <i>read-only (null)</i> | The number of seconds this process executed in user space. |
| }] | | | |

6.68.4 Actions

6.68.4.1 ResetMetrics

Description

Resets time intervals or counted values of the diagnostic data for this manager.

Action URI

{Base URI of target resource}/Actions/ManagerDiagnosticData.ResetMetrics

Action parameters

This action takes no parameters.

6.68.5 Example response

```
{
  "@odata.type": "#ManagerDiagnosticData.v1_2_1.ManagerDiagnosticData",
  "Id": "ManagerDiagnosticData",
  "Name": "Manager Diagnostic Data",
```

```
"I2CBuses": [
  {
    "I2CBusName": "i2c-0",
    "TotalTransactionCount": 10000,
    "BusErrorCount": 12,
    "NACKCount": 34
  },
  {
    "I2CBusName": "i2c-1",
    "TotalTransactionCount": 20000,
    "BusErrorCount": 56,
    "NACKCount": 78
  }
],
"MemoryStatistics": {
  "TotalBytes": 1013052000,
  "UsedBytes": 45084000,
  "FreeBytes": 894820000,
  "SharedBytes": 19864000,
  "BuffersAndCacheBytes": 73148000,
  "AvailableBytes": 928248000
},
"ProcessorStatistics": {
  "KernelPercent": 12.34,
  "UserPercent": 23.45
},
"TopProcesses": [
  {
    "CommandLine": "dbus-broker",
    "UserTimeSeconds": 14400,
    "KernelTimeSeconds": 10800,
    "ResidentSetSizeBytes": 2300000
  },
  {
    "CommandLine": "swampd",
    "UserTimeSeconds": 13200,
    "KernelTimeSeconds": 8441,
    "ResidentSetSizeBytes": 8883000
  },
  {
    "CommandLine": "ipmid",
    "UserTimeSeconds": 13100,
    "KernelTimeSeconds": 6650,
    "ResidentSetSizeBytes": 23400000
  },
  {
    "CommandLine": "phosphor-hwmon-readd -i iface1",
    "UserTimeSeconds": 5100,
    "KernelTimeSeconds": 3200,
    "ResidentSetSizeBytes": 564000
  }
]
```



```

    }
  ],
  "BootTimeStatistics": {
    "FirmwareTimeSeconds": 42.3,
    "LoaderTimeSeconds": 12.3,
    "KernelTimeSeconds": 33.1,
    "InitrdTimeSeconds": 3.2,
    "UserSpaceTimeSeconds": 81.1
  },
  "MemoryECCStatistics": {
    "CorrectableECCErrorCount": 1,
    "UncorrectableECCErrorCount": 2
  },
  "@odata.id": "/redfish/v1/Managers/BMC/ManagerDiagnosticData"
}

```

6.69 ManagerNetworkProtocol 1.9.1

| | | | | | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Version | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
| Release | 2022.2 | 2021.2 | 2020.4 | 2020.1 | 2019.3 | 2018.3 | 2018.2 | 2017.1 | 2016.3 | 1.0 |

6.69.1 Description

The network service settings for the manager.

6.69.2 URIs

/redfish/v1/Managers/{ManagerId}/NetworkProtocol

6.69.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------|--------|------------|--|
| DHCP (v1.1+) {} | object | | The settings for this manager's DHCPv4 protocol support. For more information about this property, see Protocol in Property Details. |
| DHCPv6 (v1.3+) {} | object | | The settings for this manager's DHCPv6 protocol support. For more information about this property, see Protocol in Property Details. |

| Property | Type | Attributes | Notes |
|--|----------------------------|--------------------------------------|--|
| FQDN | string | <i>read-only</i> (<i>null</i>) | The fully qualified domain name for the manager obtained by DNS including the host name and top-level domain name. |
| HostName | string | <i>read-only</i> (<i>null</i>) | The DNS host name of this manager, without any domain information. |
| HTTP {} | object | | The settings for this manager's HTTP protocol support. For more information about this property, see Protocol in Property Details. |
| HTTPS { | object | | The settings for this manager's HTTPS protocol support. |
| Certificates (<i>v1.4+</i>) { | object | | The link to a collection of certificates used for HTTPS by this manager. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| Port | integer | <i>read-write</i> (<i>null</i>) | The protocol port. |
| ProtocolEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the protocol is enabled. |
| } | | | |
| IPMI {} | object | | The settings for this manager's IPMI-over-LAN protocol support. For more information about this property, see Protocol in Property Details. |
| KVMIP {} | object | | The settings for this manager's KVM-IP protocol support that apply to all system instances controlled by this manager. For more information about this property, see Protocol in Property Details. |
| NTP (<i>v1.2+</i>) { | object | | The settings for this manager's NTP protocol support. |
| NetworkSuppliedServers (<i>v1.9+</i>) [] | array (string, null) | <i>read-only</i> | The NTP servers supplied by other network protocols to this manager. |
| NTPServers (<i>v1.2+</i>) [] | array (string, null) | <i>read-write</i> | Indicates to which user-supplied NTP servers this manager is subscribed. |
| Port | integer | <i>read-write</i> (<i>null</i>) | The protocol port. |

| Property | Type | Attributes | Notes |
|---------------------------------------|----------------------|--------------------------|--|
| ProtocolEnabled | boolean | <i>read-write (null)</i> | An indication of whether the protocol is enabled. |
| } | | | |
| Proxy (v1.8+) { | object | <i>(null)</i> | The HTTP/HTTPS proxy information for this manager. |
| Enabled (v1.8+) | boolean | <i>read-write</i> | Indicates if the manager uses the proxy server. |
| ExcludeAddresses (v1.8+) [] | array (string, null) | <i>read-write</i> | Addresses that do not require the proxy server to access. |
| Password (v1.8+) | string | <i>read-write (null)</i> | The password for the proxy. The value is <code>null</code> in responses. |
| PasswordSet (v1.8+) | boolean | <i>read-only</i> | Indicates if the Password property is set. |
| ProxyAutoConfigURI (v1.8+) | string (URI) | <i>read-write (null)</i> | The URI used to access a proxy auto-configuration (PAC) file. |
| ProxyServerURI (v1.8+) | string (URI) | <i>read-write</i> | The URI of the proxy server, including the scheme and any non-default port value. |
| Username (v1.8+) | string | <i>read-write</i> | The username for the proxy. |
| } | | | |
| RDP (v1.3+) {} | object | | The settings for this manager's Remote Desktop Protocol support. For more information about this property, see Protocol in Property Details. |
| RFB (v1.3+) {} | object | | The settings for this manager's Remote Frame Buffer protocol support, which can support VNC. For more information about this property, see Protocol in Property Details. |
| SNMP { | object | | The settings for this manager's SNMP support. |
| AuthenticationProtocol (v1.5+) | string (enum) | <i>read-write (null)</i> | The authentication protocol used for SNMP access to this manager. <i>For the possible property values, see AuthenticationProtocol in Property details.</i> |
| CommunityAccessMode (v1.5+) | string (enum) | <i>read-write (null)</i> | The access level of the SNMP community. <i>For the possible property values, see CommunityAccessMode in Property details.</i> |
| CommunityStrings (v1.5+) [{ | array | | The SNMP community strings. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|--|
| AccessMode (v1.5+) | string (enum) | <i>read-write</i> (null) | The access level of the SNMP community. <i>For the possible property values, see AccessMode in Property details.</i> |
| CommunityString (v1.5+) | string | <i>read-write</i> (null) | The SNMP community string. |
| Name (v1.5+) | string | <i>read-write</i> (null) | The name of the SNMP community. |
| }] | | | |
| EnableSNMPv1 (v1.5+) | boolean | <i>read-write</i> (null) | Indicates if access via SNMPv1 is enabled. |
| EnableSNMPv2c (v1.5+) | boolean | <i>read-write</i> (null) | Indicates if access via SNMPv2c is enabled. |
| EnableSNMPv3 (v1.5+) | boolean | <i>read-write</i> (null) | Indicates if access via SNMPv3 is enabled. |
| EncryptionProtocol (v1.5+) | string (enum) | <i>read-write</i> (null) | The encryption protocol used for SNMPv3 access to this manager. <i>For the possible property values, see EncryptionProtocol in Property details.</i> |
| EngineId (v1.5+) { | object | (null) | The engine ID. |
| ArchitectureId (v1.6+) | string | <i>read-write</i> (null) | The architecture identifier. |
| EnterpriseSpecificMethod (v1.5+) | string | <i>read-write</i> (null) | The enterprise specific method. |
| PrivateEnterpriseId (v1.5+) | string | <i>read-only</i> (null) | The private enterprise ID. |
| } | | | |
| HideCommunityStrings (v1.5+) | boolean | <i>read-write</i> (null) | Indicates if the community strings should be hidden. |
| Port | integer | <i>read-write</i> (null) | The protocol port. |
| ProtocolEnabled | boolean | <i>read-write</i> (null) | An indication of whether the protocol is enabled. |
| } | | | |
| SSDP { | object | | The settings for this manager's SSDP support. |

| Property | Type | Attributes | Notes |
|---------------------------------------|----------------------|--------------------------------------|---|
| NotifyIPv6Scope | string (enum) | <i>read-write</i> (<i>null</i>) | The IPv6 scope for multicast NOTIFY messages for SSDP. For the possible property values, see <i>NotifyIPv6Scope</i> in <i>Property details</i> . |
| NotifyMulticastIntervalSeconds | integer (seconds) | <i>read-write</i> (<i>null</i>) | The time interval, in seconds, between transmissions of the multicast NOTIFY ALIVE message from this service for SSDP. |
| NotifyTTL | integer | <i>read-write</i> (<i>null</i>) | The time-to-live hop count for SSDP multicast NOTIFY messages. |
| Port | integer | <i>read-write</i> (<i>null</i>) | The protocol port. |
| ProtocolEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the protocol is enabled. |
| } | | | |
| SSH {} | object | | The settings for this manager's Secure Shell (SSH) protocol support. For more information about this property, see <i>Protocol</i> in <i>Property Details</i> . |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see <i>Status</i> . |
| Telnet {} | object | | The settings for this manager's Telnet protocol support. For more information about this property, see <i>Protocol</i> in <i>Property Details</i> . |
| VirtualMedia {} | object | | The settings for this manager's virtual media support that apply to all system instances controlled by this manager. For more information about this property, see <i>Protocol</i> in <i>Property Details</i> . |

6.69.4 Property details

6.69.4.1 AccessMode

The access level of the SNMP community.

| string | Description |
|---------|-------------------------|
| Full | READ-WRITE access mode. |
| Limited | READ-ONLY access mode. |

6.69.4.2 AuthenticationProtocol

The authentication protocol used for SNMP access to this manager.

| string | Description |
|------------------------|---|
| Account | Authentication is determined by account settings. |
| CommunityString | SNMP community string authentication. |
| HMAC128_SHA224 (v1.7+) | HMAC-128-SHA-224 authentication. |
| HMAC192_SHA256 (v1.7+) | HMAC-192-SHA-256 authentication. |
| HMAC256_SHA384 (v1.7+) | HMAC-256-SHA-384 authentication. |
| HMAC384_SHA512 (v1.7+) | HMAC-384-SHA-512 authentication. |
| HMAC_MD5 | HMAC-MD5-96 authentication. |
| HMAC_SHA96 | HMAC-SHA-96 authentication. |

6.69.4.3 CommunityAccessMode

The access level of the SNMP community.

| string | Description |
|---------|-------------------------|
| Full | READ-WRITE access mode. |
| Limited | READ-ONLY access mode. |

6.69.4.4 EncryptionProtocol

The encryption protocol used for SNMPv3 access to this manager.

| string | Description |
|---------------|---|
| Account | Encryption is determined by account settings. |
| CBC_DES | CBC-DES encryption. |
| CFB128_AES128 | CFB128-AES-128 encryption. |
| None | No encryption. |

6.69.4.5 NotifyIPv6Scope

The IPv6 scope for multicast NOTIFY messages for SSDP.

| string | Description |
|--------------|--|
| Link | SSDP NOTIFY messages are sent to addresses in the IPv6 local link scope. |
| Organization | SSDP NOTIFY messages are sent to addresses in the IPv6 local organization scope. |
| Site | SSDP NOTIFY messages are sent to addresses in the IPv6 local site scope. |

6.69.4.6 Protocol

The settings for a network protocol associated with a manager.

| | | | |
|------------------------|---------|--------------------------|---|
| Port | integer | <i>read-write (null)</i> | The protocol port. |
| ProtocolEnabled | boolean | <i>read-write (null)</i> | An indication of whether the protocol is enabled. |

6.69.5 Example response

```
{
  "@odata.type": "#ManagerNetworkProtocol.v1_9_1.ManagerNetworkProtocol",
  "Id": "NetworkProtocol",
  "Name": "Manager Network Protocol",
  "Description": "Manager Network Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "HostName": "web483-bmc",
  "FQDN": "web483-bmc.dmtf.org",
  "HTTP": {
    "ProtocolEnabled": true,
    "Port": 80
  },
  "HTTPS": {
    "ProtocolEnabled": true,
    "Port": 443
  }
}
```

```

},
  "IPMI": {
    "ProtocolEnabled": true,
    "Port": 623
  },
  "SSH": {
    "ProtocolEnabled": true,
    "Port": 22
  },
  "SNMP": {
    "ProtocolEnabled": true,
    "Port": 161
  },
  "VirtualMedia": {
    "ProtocolEnabled": true,
    "Port": 17988
  },
  "SSDP": {
    "ProtocolEnabled": true,
    "Port": 1900,
    "NotifyMulticastIntervalSeconds": 600,
    "NotifyTTL": 5,
    "NotifyIPv6Scope": "Site"
  },
  "Telnet": {
    "ProtocolEnabled": true,
    "Port": 23
  },
  "KVMIP": {
    "ProtocolEnabled": true,
    "Port": 5288
  },
  "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
}

```

6.70 MediaController 1.3.0 (deprecated)

| Version | v1.3 Deprecated | v1.2 Deprecated | v1.1 | v1.0 |
|---------|-----------------|-----------------|--------|--------|
| Release | 2022.1 | 2021.1 | 2020.2 | 2019.4 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the FabricAdapter schema.

6.70.1 Description

The MediaController schema contains the definition of the media controller and its configuration.

6.70.2 URIs

/redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId} (deprecated)

6.70.3 Properties

| Property | Type | Attributes | Notes |
|--|------------------|----------------------------|---|
| EnvironmentMetrics (v1.2+) { | object | | The link to the environment metrics for this media controller. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Endpoints [{ | array | | An array of links to the endpoints that connect to this media controller. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| MemoryDomains [{ | array | | An array of links to the memory domains associated with this media controller. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Manufacturer | string | <i>read-only</i> (null) | The manufacturer of this media controller. |
| MediaControllerType | string (enum) | <i>read-only</i> (null) | The type of media controller. <i>For the possible property values, see MediaControllerType in Property details.</i> |
| Model | string | <i>read-only</i> (null) | The model of this media controller. |

| Property | Type | Attributes | Notes |
|---------------------|------------------|-----------------------------------|---|
| PartNumber | string | <i>read-only</i> <i>(null)</i> | The part number of this media controller. |
| Ports { | object | | The link to the collection of ports associated with this media controller. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> <i>(null)</i> | The serial number of this media controller. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UUID (v1.1+) | string (uuid) | <i>read-only</i> <i>(null)</i> | The UUID for this media controller. |

6.70.4 Actions

6.70.4.1 Reset

Description

This action resets this media controller.

Action URI

{Base URI of target resource}/Actions/MediaController.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
```

```

    "ResetType": "ForceRestart"
  }

```

6.70.5 Property details

6.70.5.1 MediaControllerType

The type of media controller.

| string | Description |
|--------|-------------------------------------|
| Memory | The media controller is for memory. |

6.70.5.2 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |

| string | Description |
|---------|---|
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.70.6 Example response

```
{
  "@odata.type": "#MediaController.v1_3_0.MediaController",
  "Id": "MediaController1",
  "Name": "Media Controller 1",
  "MediaControllerType": "Memory",
  "Manufacturer": "Contoso",
  "Model": "Contoso MediaController",
  "SerialNumber": "2M220100SL",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "UUID": "41784113-ed6b-2284-1414-916520dc1dd1",
  "Ports": {
    "@odata.id": "/redfish/v1/Chassis/GenZ/MediaControllers/1/Ports"
  },
  "Actions": {
    "#MediaController.Reset": {
      "target": "/redfish/v1/Chassis/GenZ/MediaControllers/1/Actions/MediaController.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceRestart"
      ]
    }
  },
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/1"
      }
    ],
    "MemoryDomains": [
      {
        "@odata.id": "/redfish/v1/Chassis/GenZ/MemoryDomains/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Chassis/GenZ/MediaControllers/1"
}
```

6.71 Memory 1.18.0

| | | | | | | | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Version | v1.18 | v1.17 | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | ... |
| Release | 2023.2 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | 2019.4 | 2019.2 | ... |

6.71.1 Description

The Memory schema represents a memory device, such as a DIMM, and its configuration. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.71.2 URIs

/redfish/v1/Chassis/{ChassisId}/Memory/{MemoryId}

/redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.71.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|----------------------------|--|
| AllocationAlignmentMiB (v1.2+) | integer (mebibytes) | <i>read-only</i> (null) | The boundary that memory regions are allocated on, measured in mebibytes (MiB). |
| AllocationIncrementMiB (v1.2+) | integer (mebibytes) | <i>read-only</i> (null) | The size of the smallest unit of allocation for a memory region in mebibytes (MiB). |
| AllowedSpeedsMHz [] | array (MHz) (integer) | <i>read-only</i> | Speeds supported by this memory device. |
| Assembly (v1.4+) { | object | | The link to the assembly resource associated with this memory device. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|------------------------|-------------------------------------|---|
| BaseModuleType | string (enum) | <i>read-only</i> (<i>null</i>) | The base module type of the memory device. <i>For the possible property values, see BaseModuleType in Property details.</i> |
| BusWidthBits | integer | <i>read-only</i> (<i>null</i>) | The bus width, in bits. |
| CacheSizeMiB (v1.4+) | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | Total size of the cache portion memory in MiB. |
| CapacityMiB | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | Memory capacity in mebibytes (MiB). |
| Certificates (v1.11+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ConfigurationLocked (v1.7+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the configuration of this memory device is locked and cannot be altered. |
| CXL (v1.17+) { | object | | CXL properties for this memory device. |
| LabelStorageSizeBytes (v1.17+) | integer (bytes) | <i>read-only</i> | The size of the label storage area in bytes of this memory device. |
| StagedNonVolatileSizeMiB (v1.17+) | integer (mebibytes) | <i>read-write</i> | Total device non-volatile memory capacity in MiB staged for next activation. The value is in multiples of 256MiB. |
| StagedVolatileSizeMiB (v1.17+) | integer (mebibytes) | <i>read-write</i> | Total device volatile memory capacity in MiB staged for next activation. This value is in multiples of 256 MiB. |
| } | | | |
| DataWidthBits | integer | <i>read-only</i> (<i>null</i>) | Data width in bits. |
| DeviceID (deprecated v1.3) | string | <i>read-only</i> (<i>null</i>) | Device ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of ModuleProductID.</i> |

| Property | Type | Attributes | Notes |
|--|----------------|-------------------------|---|
| DeviceLocator (<i>deprecated v1.9</i>) | string | <i>read-only (null)</i> | Location of the memory device in the platform. <i>Deprecated in v1.9 and later. This property has been deprecated in favor of the ServiceLabel property within Location.</i> |
| Enabled (<i>v1.12+</i>) | boolean | <i>read-write</i> | An indication of whether this memory is enabled. |
| EnvironmentMetrics (<i>v1.11+</i>) { | object | | The link to the environment metrics for this memory. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| ErrorCorrection | string (enum) | <i>read-only (null)</i> | Error correction scheme supported for this memory device. <i>For the possible property values, see ErrorCorrection in Property details.</i> |
| FirmwareApiVersion | string | <i>read-only (null)</i> | Version of API supported by the firmware. |
| FirmwareRevision | string | <i>read-only (null)</i> | Revision of firmware on the memory controller. |
| FunctionClasses (<i>deprecated v1.3</i>) [] | array (string) | <i>read-only</i> | Function classes by the memory device. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of OperatingMemoryModes at the root of the resource, or MemoryClassification found within RegionSet.</i> |
| HealthData (<i>v1.17+</i>) { | object | | The health data of this memory device. |
| PredictedMediaLifeLeftPercent (<i>v1.17+</i>) | number (%) | <i>read-only (null)</i> | The current health of the memory device as a percentage. |
| } | | | |
| IsRankSpareEnabled | boolean | <i>read-only (null)</i> | An indication of whether rank spare is enabled for this memory device. |
| IsSpareDeviceEnabled | boolean | <i>read-only (null)</i> | An indication of whether a spare device is enabled for this memory device. |
| Links (<i>v1.2+</i>) { | object | | The links to other resources that are related to this resource. |

| Property | Type | Attributes | Notes |
|--|--------|------------|---|
| Batteries (v1.15+) [{ | array | | The batteries that provide power to this memory device during a power loss event. |
| @odata.id | string | read-only | Link to a Battery resource. See the Links section and the <i>Battery</i> schema for details. |
| }] | | | |
| Chassis (v1.2+) { | object | | The link to the chassis that contains this memory device. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Endpoints (v1.17+) [{ | array | | An array of links to the endpoints associated with this memory. |
| @odata.id | string | read-only | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| MemoryMediaSources (v1.17+) [{ | array | | An array of memory chunks providing media for this memory. |
| @odata.id | string | read-only | Link to a MemoryChunks resource. See the Links section and the <i>MemoryChunks</i> schema for details. |
| }] | | | |
| MemoryRegionMediaSources (v1.18+) [{ | array | | An array of memory regions providing media for this memory. |
| @odata.id | string | read-only | Link to a MemoryRegion resource. See the Links section and the <i>MemoryRegion</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Processors (v1.11+) [{ | array | | An array of links to the processors associated with this memory device. |
| @odata.id | string | read-only | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|------------------------------------|--------------------------------------|--|
| }] | | | |
| } | | | |
| Location (v1.4+) {} | object | | The location of the memory device. For property details, see Location. |
| LocationIndicatorActive (v1.10+) | boolean | <i>read-write</i> (<i>null</i>) | An indicator allowing an operator to physically locate this resource. |
| Log (v1.13+) { | object | | The link to the log service associated with this memory. See the <i>LogService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details. |
| } | | | |
| LogicalSizeMiB (v1.4+) | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | Total size of the logical memory in MiB. |
| Manufacturer | string | <i>read-only</i> (<i>null</i>) | The memory device manufacturer. |
| MaxTDPMilliWatts [] | array (milliWatts) (integer) | <i>read-only</i> | Set of maximum power budgets supported by the memory device in milliwatts. |
| Measurements (v1.11+, deprecated v1.14 [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| MemoryDeviceType | string (enum) | <i>read-only</i> (<i>null</i>) | Type details of the memory device. <i>For the possible property values, see MemoryDeviceType in Property details.</i> |
| MemoryLocation { | object | | Memory connection information to sockets and memory controllers. |
| Channel | integer | <i>read-only</i> (<i>null</i>) | The channel number to which the memory device is connected. |

| Property | Type | Attributes | Notes |
|--|-----------------------------|-----------------------------------|---|
| MemoryController | integer | <i>read-only</i> <i>(null)</i> | The memory controller number to which the memory device is connected. |
| Slot | integer | <i>read-only</i> <i>(null)</i> | The slot number to which the memory device is connected. |
| Socket | integer | <i>read-only</i> <i>(null)</i> | The socket number to which the memory device is connected. |
| } | | | |
| MemoryMedia [] | array (string (enum)) | <i>read-only</i> | Media of this memory device. <i>For the possible property values, see MemoryMedia in Property details.</i> |
| MemorySubsystemControllerManufacturerID <i>(v1.3+)</i> | string | <i>read-only</i> <i>(null)</i> | The manufacturer ID of the memory subsystem controller of this memory device. |
| MemorySubsystemControllerProductID <i>(v1.3+)</i> | string | <i>read-only</i> <i>(null)</i> | The product ID of the memory subsystem controller of this memory device. |
| MemoryType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of memory device. <i>For the possible property values, see MemoryType in Property details.</i> |
| Metrics { | object | | The link to the metrics associated with this memory device. See the <i>MemoryMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryMetrics resource. See the Links section and the <i>MemoryMetrics</i> schema for details. |
| } | | | |
| Model <i>(v1.11+)</i> | string | <i>read-only</i> <i>(null)</i> | The product model number of this device. |
| ModuleManufacturerID <i>(v1.3+)</i> | string | <i>read-only</i> <i>(null)</i> | The manufacturer ID of this memory device. |
| ModuleProductID <i>(v1.3+)</i> | string | <i>read-only</i> <i>(null)</i> | The product ID of this memory device. |
| NonVolatileSizeLimitMiB <i>(v1.17+)</i> | integer (mebibytes) | <i>read-write</i> | The total non-volatile memory capacity in mebibytes (MiB). |
| NonVolatileSizeMiB <i>(v1.4+)</i> | integer (mebibytes) | <i>read-only</i> <i>(null)</i> | Total size of the non-volatile portion memory in MiB. |

| Property | Type | Attributes | Notes |
|--|-----------------------------|-----------------------------|--|
| OperatingMemoryModes [] | array (string (enum)) | <i>read-only</i> | Memory modes supported by the memory device. <i>For the possible property values, see OperatingMemoryModes in Property details.</i> |
| OperatingSpeedMhz | integer (MHz) | <i>read-only</i> (null) | Operating speed of the memory device in MHz or MT/s as appropriate. |
| OperatingSpeedRangeMHz (v1.13+) { | object (excerpt) | | Range of allowed operating speeds (MHz). This object is an excerpt of the <i>Control</i> resource located at the URI shown in DataSourceUri. |
| AllowableMax | number | <i>read-only</i> (null) | The maximum possible setting for this control. |
| AllowableMin | number | <i>read-only</i> (null) | The minimum possible setting for this control. |
| AllowableNumericValues [] | array (number, null) | <i>read-only</i> | The supported values for the set point. |
| ControlMode | string (enum) | <i>read-write</i> (null) | The current operating mode of the control. <i>For the possible property values, see ControlMode in Property details.</i> |
| DataSourceUri | string (URI) | <i>read-only</i> (null) | The link to the resource that provides the data for this control. |
| Reading | number | <i>read-only</i> (null) | The reading of the sensor associated with this control. |
| ReadingUnits | string | <i>read-only</i> (null) | The units of the sensor reading associated with this control. |
| SettingMax | number | <i>read-write</i> (null) | The maximum set point in the allowed range. |
| SettingMin | number | <i>read-write</i> (null) | The minimum set point in the allowed range. |
| } | | | |
| PartNumber | string | <i>read-only</i> (null) | The product part number of this device. |
| PersistentRegionNumberLimit (v1.2+) | integer | <i>read-only</i> (null) | Total number of persistent regions this memory device can support. |
| PersistentRegionSizeLimitMiB | integer (mebibytes) | <i>read-only</i> (null) | Total size of persistent regions in mebibytes (MiB). |

| Property | Type | Attributes | Notes |
|--|----------------------|----------------------------|---|
| PersistentRegionSizeMaxMiB (v1.2+) | integer (mebibytes) | <i>read-only</i> (null) | Maximum size of a single persistent region in mebibytes (MiB). |
| PoisonListMaxMediaErrorRecords (v1.17+) | integer | <i>read-write</i> | The maximum number of media error records this device can track in its poison list. |
| PowerManagementPolicy { | object | | Power management policy information. |
| AveragePowerBudgetMilliWatts | integer (milliWatts) | <i>read-only</i> (null) | Average power budget, in milliwatts. |
| MaxTDPMilliWatts | integer (milliWatts) | <i>read-only</i> (null) | Maximum TDP in milliwatts. |
| PeakPowerBudgetMilliWatts | integer (milliWatts) | <i>read-only</i> (null) | Peak power budget, in milliwatts. |
| PolicyEnabled | boolean | <i>read-only</i> (null) | An indication of whether the power management policy is enabled. |
| } | | | |
| RankCount | integer | <i>read-only</i> (null) | Number of ranks available in the memory device. |
| Regions [{ | array | | Memory regions information within the memory device. |
| MasterPassphraseEnabled (v1.17+) | boolean | <i>read-only</i> (null) | An indication of whether the master passphrase is enabled for this region. |
| MemoryClassification | string (enum) | <i>read-only</i> (null) | The classification of memory that the memory region occupies. <i>For the possible property values, see MemoryClassification in Property details.</i> |
| OffsetMiB | integer (mebibytes) | <i>read-only</i> (null) | Offset within the memory that corresponds to the start of this memory region in mebibytes (MiB). |
| PassphraseEnabled (v1.5+) | boolean | <i>read-only</i> (null) | An indication of whether the passphrase is enabled for this region. |
| PassphraseState (deprecated v1.5) | boolean | <i>read-only</i> (null) | An indication of whether the state of the passphrase for this region is enabled. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of PassphraseEnabled found within RegionSet.</i> |
| RegionId | string | <i>read-only</i> (null) | Unique region ID representing a specific region within the memory device. |

| Property | Type | Attributes | Notes |
|---|-----------------------|--------------------------|---|
| SizeMiB | integer (mebibytes) | <i>read-only (null)</i> | Size of this memory region in mebibytes (MiB). |
| }] | | | |
| SecurityCapabilities { | object | | Security capabilities of the memory device. |
| ConfigurationLockCapable (v1.7+) | boolean | <i>read-only (null)</i> | An indication of whether this memory device supports the locking, or freezing, of the configuration. |
| DataLockCapable (v1.7+) | boolean | <i>read-only (null)</i> | An indication of whether this memory device supports data locking. |
| MaxPassphraseCount | integer | <i>read-only (null)</i> | Maximum number of passphrases supported for this memory device. |
| PassphraseCapable | boolean | <i>read-only (null)</i> | An indication of whether the memory device is passphrase capable. |
| PassphraseLockLimit (v1.7+) | integer | <i>read-only (null)</i> | The maximum number of incorrect passphrase attempts allowed before memory device is locked. |
| SecurityStates (deprecated v1.7) [] | array (string (enum)) | <i>read-only</i> | Security states supported by the memory device. <i>For the possible property values, see SecurityStates in Property details. Deprecated in v1.7 and later. This property has been deprecated in favor of using the individual PassphraseCapable, DataLockCapable and ConfigurationLockCapable properties.</i> |
| } | | | |
| SecurityState (v1.7+) | string (enum) | <i>read-write (null)</i> | The current security state of this memory device. <i>For the possible property values, see SecurityState in Property details.</i> |
| SecurityStates (v1.17+) { | object | | The security states of this memory device. |
| MasterPassphraseAttemptCountReached (v1.17+) | boolean | <i>read-only (null)</i> | An indication of whether an incorrect master passphrase attempt count has been reached. |
| UserPassphraseAttemptCountReached (v1.17+) | boolean | <i>read-only (null)</i> | An indication of whether an incorrect user passphrase attempt count has been reached. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The product serial number of this device. |

| Property | Type | Attributes | Notes |
|--|---------------------|-------------------------|--|
| SpareDeviceCount | integer | <i>read-only (null)</i> | Number of unused spare devices available in the memory device. |
| SparePartNumber (v1.11+) | string | <i>read-only (null)</i> | The spare part number of the memory. |
| Status (v1.1+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SubsystemDeviceID (deprecated v1.3) | string | <i>read-only (null)</i> | Subsystem device ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerProductID.</i> |
| SubsystemVendorID (deprecated v1.3) | string | <i>read-only (null)</i> | SubSystem vendor ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerManufacturerID.</i> |
| VendorID (deprecated v1.3) | string | <i>read-only (null)</i> | Vendor ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of ModuleManufacturerID.</i> |
| VolatileRegionNumberLimit (v1.2+) | integer | <i>read-only (null)</i> | Total number of volatile regions this memory device can support. |
| VolatileRegionSizeLimitMiB | integer (mebibytes) | <i>read-only (null)</i> | Total size of volatile regions in mebibytes (MiB). |
| VolatileRegionSizeMaxMiB (v1.2+) | integer (mebibytes) | <i>read-only (null)</i> | Maximum size of a single volatile region in mebibytes (MiB). |
| VolatileSizeLimitMiB (v1.17+) | integer (mebibytes) | <i>read-write</i> | The total volatile memory capacity in mebibytes (MiB). |
| VolatileSizeMiB (v1.4+) | integer (mebibytes) | <i>read-only (null)</i> | Total size of the volatile portion memory in MiB. |

6.71.4 Actions

6.71.4.1 DisableMasterPassphrase (v1.17+)

Description

Disables the master passphrase for given region.

Action URI

{Base URI of target resource}/Actions/Memory.DisableMasterPassphrase

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | The master passphrase for the specified region. |
| RegionId | string | <i>required</i> | The memory region ID to which to disable the master passphrase. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.4.2 DisablePassphrase

Description

Disable passphrase for given regions.

Action URI

{Base URI of target resource}/Actions/Memory.DisablePassphrase

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | Passphrase for doing the operation. |
| RegionId | string | <i>required</i> | The memory region ID to which to apply this action. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

```
}
```

6.71.4.3 FreezeSecurityState (v1.17+)

Description

Freezes the security state of the memory device.

Action URI

{Base URI of target resource}/Actions/Memory.FreezeSecurityState

Action parameters

This action takes no parameters.

6.71.4.4 InjectPersistentPoison (v1.17+)

Description

Injects poison to a specific persistent memory address in the memory device.

Action URI

{Base URI of target resource}/Actions/Memory.InjectPersistentPoison

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------------|--------|-----------------|--|
| PhysicalAddress | string | <i>required</i> | The device persistent physical address in which to perform a poison injection as a hex-encoded string. |

Request Example

```
{  
  "PhysicalAddress": "0x8000000"  
}
```


6.71.4.5 OverwriteUnit (v1.6+)

Description

This contains the action for securely erasing given regions using the NIST SP800-88 Purge: Overwrite.

Action URI

{Base URI of target resource}/Actions/Memory.OverwriteUnit

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | Passphrase for doing the operation. |
| RegionId | string | <i>required</i> | The memory region ID to which to apply this action. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.4.6 Reset (v1.8+)

Description

This action resets this memory device.

Action URI

{Base URI of target resource}/Actions/Memory.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ForceRestart"
}
```

6.71.4.7 ResetToDefaults (v1.16+)

Description

The action resets the values of writable properties to factory defaults.

Action URI

{Base URI of target resource}/Actions/Memory.ResetToDefaults

Action parameters

This action takes no parameters.

6.71.4.8 ScanMedia (v1.17+)

Description

Scans the media of the memory device.

Action URI

{Base URI of target resource}/Actions/Memory.ScanMedia

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------|---------|-----------------|---|
| Length | integer | <i>required</i> | The length of the target region to scan in bytes from the physical address. |

| Parameter Name | Type | Attributes | Notes |
|------------------------|---------|-----------------|---|
| NoEventLog | boolean | <i>optional</i> | Indicates whether events related to the media scan are not logged. |
| PhysicalAddress | string | <i>required</i> | The starting device physical address to scan as a hex-encoded string. |

Request Example

```
{
  "PhysicalAddress": "0x8000000",
  "Length": 2097152
}
```

6.71.4.9 SecureEraseUnit

Description

This contains the action for securely erasing given regions using the NIST SP800-88 Purge: Cryptographic Erase.

Action URI

{Base URI of target resource}/Actions/Memory.SecureEraseUnit

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | Passphrase for doing the operation. |
| RegionId | string | <i>required</i> | The memory region ID to which to apply this action. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.4.10 SetMasterPassphrase (v1.17+)

Description

Sets the master passphrase for the given region.

Action URI

{Base URI of target resource}/Actions/Memory.SetMasterPassphrase

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | The master passphrase to set for the specified region. |
| RegionId | string | <i>required</i> | The memory region ID to which to apply the master passphrase. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.4.11 SetPassphrase

Description

Set passphrase for the given regions.

Action URI

{Base URI of target resource}/Actions/Memory.SetPassphrase

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|-------------------------------------|
| Passphrase | string | <i>required</i> | Passphrase for doing the operation. |

| Parameter Name | Type | Attributes | Notes |
|-----------------|--------|-----------------|---|
| RegionId | string | <i>required</i> | The memory region ID to which to apply this action. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.4.12 UnlockUnit

Description

This contains the action for unlocking given regions.

Action URI

{Base URI of target resource}/Actions/Memory.UnlockUnit

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|--------|-----------------|---|
| Passphrase | string | <i>required</i> | The passphrase required to complete the operation. |
| RegionId | string | <i>required</i> | The memory region ID to which to apply this action. |

Request Example

```
{
  "Passphrase": "FluffyBunny",
  "RegionId": 2
}
```

6.71.5 Property details

6.71.5.1 BaseModuleType

The base module type of the memory device.

| string | Description |
|--------------|-------------------------|
| Die (v1.7+) | A die within a package. |
| LRDIMM | Load Reduced. |
| Mini_RDIMM | Mini_RDIMM. |
| Mini_UDIMM | Mini_UDIMM. |
| RDIMM | Registered DIMM. |
| SO_DIMM | SO_DIMM. |
| SO_DIMM_16b | SO_DIMM_16b. |
| SO_DIMM_32b | SO_DIMM_32b. |
| SO_RDIMM_72b | SO_RDIMM_72b. |
| SO_UDIMM_72b | SO_UDIMM_72b. |
| UDIMM | UDIMM. |

6.71.5.2 ControlMode

The current operating mode of the control.

| string | Description |
|-----------|---|
| Automatic | Automatically adjust control to meet the set point. |
| Disabled | The control has been disabled. |
| Manual | No automatic adjustments are made to the control. |
| Override | User override of the automatic set point value. |

6.71.5.3 ErrorCorrection

Error correction scheme supported for this memory device.

| string | Description |
|---------------|---|
| AddressParity | Address parity errors can be corrected. |
| MultiBitECC | Multibit data errors can be corrected by ECC. |
| NoECC | No ECC available. |
| SingleBitECC | Single bit data errors can be corrected by ECC. |

6.71.5.4 MemoryClassification

The classification of memory that the memory region occupies.

| string | Description |
|--------------------------|------------------------------------|
| Block | Block-accessible memory. |
| ByteAccessiblePersistent | Byte-accessible persistent memory. |
| Volatile | Volatile memory. |

6.71.5.5 MemoryDeviceType

Type details of the memory device.

| string | Description |
|--------------------------|---------------------------|
| DDR | DDR. |
| DDR2 | DDR2. |
| DDR2_SDRAM | DDR2 SDRAM. |
| DDR2_SDRAM_FB_DIMM | DDR2 SDRAM FB_DIMM. |
| DDR2_SDRAM_FB_DIMM_PROBE | DDR2 SDRAM FB_DIMM PROBE. |
| DDR3 | DDR3. |
| DDR3_SDRAM | DDR3 SDRAM. |

| string | Description |
|-----------------|---|
| DDR4 | DDR4. |
| DDR4_SDRAM | DDR4 SDRAM. |
| DDR4E_SDRAM | DDR4E SDRAM. |
| DDR5 (v1.11+) | Double data rate type five synchronous dynamic random-access memory. |
| DDR_SDRAM | DDR SDRAM. |
| DDR_SGRAM | DDR SGRAM. |
| EDO | EDO. |
| FastPageMode | Fast Page Mode. |
| GDDR (v1.11+) | Synchronous graphics random-access memory. |
| GDDR2 (v1.11+) | Double data rate type two synchronous graphics random-access memory. |
| GDDR3 (v1.11+) | Double data rate type three synchronous graphics random-access memory. |
| GDDR4 (v1.11+) | Double data rate type four synchronous graphics random-access memory. |
| GDDR5 (v1.11+) | Double data rate type five synchronous graphics random-access memory. |
| GDDR5X (v1.11+) | Double data rate type five X synchronous graphics random-access memory. |
| GDDR6 (v1.11+) | Double data rate type six synchronous graphics random-access memory. |
| HBM (v1.7+) | High Bandwidth Memory. |
| HBM2 (v1.7+) | The second generation of High Bandwidth Memory. |
| HBM2E (v1.17+) | An updated version of the second generation of High Bandwidth Memory. |
| HBM3 (v1.11+) | The third generation of High Bandwidth Memory. |
| Logical (v1.4+) | Logical device, such as when the memory is fabric-attached. |
| LPDDR3_SDRAM | LPDDR3 SDRAM. |
| LPDDR4_SDRAM | LPDDR4 SDRAM. |
| OEM (v1.11+) | OEM-defined. |
| PipelinedNibble | Pipelined Nibble. |
| ROM | ROM. |
| SDRAM | SDRAM. |

6.71.5.6 MemoryMedia

Media of this memory device.

| string | Description |
|---------------|------------------------|
| DRAM | DRAM media. |
| Intel3DXPoint | Intel 3D XPoint media. |
| NAND | NAND media. |
| Proprietary | Proprietary media. |

6.71.5.7 MemoryType

The type of memory device.

| string | Description |
|---------------------|--|
| DRAM | The memory device is comprised of volatile memory. |
| IntelOptane (v1.6+) | The memory device is an Intel Optane Persistent Memory Module. |
| NVDIMM_F | The memory device is comprised of non-volatile memory. |
| NVDIMM_N | The memory device is comprised of volatile memory backed by non-volatile memory. |
| NVDIMM_P | The memory device is comprised of a combination of non-volatile and volatile memory. |

6.71.5.8 OperatingMemoryModes

Memory modes supported by the memory device.

| string | Description |
|----------|--|
| Block | Block-accessible system memory. |
| PMEM | Persistent memory, byte-accessible through system address space. |
| Volatile | Volatile memory. |

6.71.5.9 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.71.5.10 SecurityState

The current security state of this memory device.

| string | Description |
|--------------------------|--|
| Disabled | Secure mode is disabled. |
| Enabled | Secure mode is enabled and access to the data is allowed. |
| Frozen (deprecated v1.7) | Secure state is frozen and cannot be modified until reset. <i>Deprecated in v1.7 and later. This value has been deprecated in favor of using the ConfigurationLocked to indicate that the configuration has been frozen.</i> |

| string | Description |
|-------------------------------------|---|
| Locked | Secure mode is enabled and access to the data is locked. |
| Passphraselimit | Number of attempts to unlock the memory exceeded limit. |
| Unlocked (<i>deprecated v1.7</i>) | Secure mode is enabled and access to the data is unlocked. <i>Deprecated in v1.7 and later. This value has been deprecated in favor of 'Enabled' to indicate normal security operation.</i> |

6.71.5.11 SecurityStates

Security states supported by the memory device.

| string | Description |
|-----------------|--|
| Disabled | Secure mode is disabled. |
| Enabled | Secure mode is enabled and access to the data is allowed. |
| Frozen | Secure state is frozen and cannot be modified until reset. |
| Locked | Secure mode is enabled and access to the data is locked. |
| Passphraselimit | Number of attempts to unlock the memory exceeded limit. |
| Unlocked | Secure mode is enabled and access to the data is unlocked. |

6.71.6 Example response

```
{
  "@odata.type": "#Memory.v1_18_0.Memory",
  "Name": "Regular Memory",
  "Id": "1",
  "RankCount": 1,
  "MaxTDPMilliWatts": [
    12000
  ],
  "CapacityMiB": 8192,
  "DataWidthBits": 64,
  "BusWidthBits": 72,
  "ErrorCorrection": "MultiBitECC",
  "MemoryLocation": {
    "Socket": 1,
    "MemoryController": 1,
    "Channel": 1,
    "Slot": 1
  }
}
```

```

    },
    "MemoryType": "DRAM",
    "MemoryDeviceType": "DDR4",
    "BaseModuleType": "RDIMM",
    "MemoryMedia": [
        "DRAM"
    ],
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Metrics": {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1/MemoryMetrics"
    },
    "EnvironmentMetrics": {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1/EnvironmentMetrics"
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Socket 1_A",
            "LocationType": "Socket",
            "LocationOrdinalValue": 0
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1"
}

```

6.72 MemoryChunks 1.6.0

| Version | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2022.3 | 2020.3 | 2019.4 | 2017.3 | 2017.1 | 2016.2 |

6.72.1 Description

The schema definition of a memory chunk and its configuration.

6.72.2 URIs

*/redfish/v1/Chassis/{ChassisId}/MemoryDomains/{MemoryDomainId}/MemoryChunks/
{MemoryChunksId}*

*/redfish/v1/Systems/{ComputerSystemId}/MemoryDomains/{MemoryDomainId}/MemoryChunks/
{MemoryChunksId}*

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.72.3 Properties

| Property | Type | Attributes | Notes |
|---|------------------------|---|--|
| AddressRangeOffsetMiB (v1.3+) | integer (mebibytes) | <i>read-only</i> (null) | Offset of the memory chunk in the address range in MiB. |
| AddressRangeType | string (enum) | <i>read-only</i> <i>required</i> (null) | Memory type of this memory chunk. <i>For the possible property values, see AddressRangeType in Property details.</i> |
| DisplayName (v1.4+) | string | <i>read-write</i> (null) | A user-configurable string to name the memory chunk. |
| InterleaveSets [{ | array | | The interleave sets for the memory chunk. |
| Memory { | object | | Describes a memory device of the interleave set. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| MemoryLevel | integer | <i>read-only</i> (null) | Level of the interleave set for multi-level tiered memory. |
| OffsetMiB | integer (mebibytes) | <i>read-only</i> (null) | Offset within the DIMM that corresponds to the start of this memory region, measured in mebibytes (MiB). |
| RegionId | string | <i>read-only</i> (null) | DIMM region identifier. |
| SizeMiB | integer (mebibytes) | <i>read-only</i> (null) | Size of this memory region measured in mebibytes (MiB). |
| }] | | | |
| IsMirrorEnabled | boolean | <i>read-only</i> (null) | An indication of whether memory mirroring is enabled for this memory chunk. |
| IsSpare | boolean | <i>read-only</i> (null) | An indication of whether sparing is enabled for this memory chunk. |
| Links (v1.3+) { | object | | The links to other resources that are related to this resource. |
| CXLLogicalDevices (v1.5+) [{ | array | | An array of links to the CXL logical devices associated with this memory chunk. |
| @odata.id | string | <i>read-only</i> | Link to a CXLLogicalDevice resource. See the Links section and the <i>CXLLogicalDevice</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|---------------------|--------------------------|---|
| }] | | | |
| Endpoints (v1.3+) [{ | array | | An array of links to the endpoints that connect to this memory chunk. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| MemoryRegions (v1.6+) [{ | array | | An array of links to the memory regions for which this memory chunk provides capacity. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryRegion resource. See the Links section and the <i>MemoryRegion</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| MediaLocation (v1.5+) | string (enum) | <i>read-write (null)</i> | The location of the memory media for this memory chunk. <i>For the possible property values, see MediaLocation in Property details.</i> |
| MemoryChunkSizeMiB | integer (mebibytes) | <i>read-only (null)</i> | Size of the memory chunk measured in mebibytes (MiB). |
| RequestedOperationalState (v1.5+) | string (enum) | <i>read-write (null)</i> | The requested operational state of this memory chunk. <i>For the possible property values, see RequestedOperationalState in Property details.</i> |
| Status (v1.2+) { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.72.4 Property details

6.72.4.1 AddressRangeType

Memory type of this memory chunk.

| string | Description |
|--------|------------------------------------|
| Block | Block accessible memory. |
| PMEM | Byte accessible persistent memory. |

| string | Description |
|----------|------------------|
| Volatile | Volatile memory. |

6.72.4.2 MediaLocation

The location of the memory media for this memory chunk.

| string | Description |
|--------|---|
| Local | The memory chunk was created using local media. |
| Mixed | The memory chunk was created using both local media and remote media accessible through a fabric. |
| Remote | The memory chunk was created using remote media accessible through a fabric. |

6.72.4.3 RequestedOperationalState

The requested operational state of this memory chunk.

| string | Description |
|---------|--|
| Offline | Memory chunk cannot be used. Consumers of this memory chunk should perform cleanup operations as needed to prepare for the removal of this memory chunk. |
| Online | Memory chunk can be used. |

6.72.5 Example response

```
{
  "@odata.type": "#MemoryChunks.v1_6_0.MemoryChunks",
  "Name": "Memory Chunk - Whole System",
  "Id": "1",
  "MemoryChunkSizeMiB": 32768,
  "AddressRangeType": "Volatile",
  "IsMirrorEnabled": false,
  "IsSpare": false,
  "InterleaveSets": [
    {
      "Memory": {
        "@odata.id": "/redfish/v1/Systems/2/Memory/1"
      }
    }
  ]
}
```

```

    },
    {
      "Memory": {
        "@odata.id": "/redfish/v1/Systems/2/Memory/2"
      }
    },
    {
      "Memory": {
        "@odata.id": "/redfish/v1/Systems/2/Memory/3"
      }
    },
    {
      "Memory": {
        "@odata.id": "/redfish/v1/Systems/2/Memory/4"
      }
    }
  ],
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_3_5.Settings",
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1/MemoryChunks/1/SD"
    },
    "Time": "2012-03-07T14:44.30-05:00",
    "ETag": "someetag",
    "Messages": [
      {
        "MessageId": "Base.1.0.Success"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1/MemoryChunks/1"
}

```

6.73 MemoryDomain 1.5.0

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2022.3 | 2022.1 | 2019.4 | 2017.1 | 2016.3 | 2016.2 |

6.73.1 Description

The MemoryDomain schema describes a memory domain and its configuration. Memory domains indicate to the client which memory, or DIMMs, can be grouped together in memory chunks to represent addressable memory.

6.73.2 URIs

/redfish/v1/Chassis/{ChassisId}/MemoryDomains/{MemoryDomainId}

/redfish/v1/Systems/{ComputerSystemId}/MemoryDomains/{MemoryDomainId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.73.3 Properties

| Property | Type | Attributes | Notes |
|------------------------------------|---------|----------------------------|--|
| AllowsBlockProvisioning | boolean | <i>read-only</i> (null) | An indication of whether this memory domain supports the provisioning of blocks of memory. |
| AllowsMemoryChunkCreation | boolean | <i>read-only</i> (null) | An indication of whether this memory domain supports the creation of memory chunks. |
| AllowsMirroring (v1.1+) | boolean | <i>read-only</i> (null) | An indication of whether this memory domain supports the creation of memory chunks with mirroring enabled. |
| AllowsSparing (v1.1+) | boolean | <i>read-only</i> (null) | An indication of whether this memory domain supports the creation of memory chunks with sparing enabled. |
| InterleavableMemorySets [{ | array | | The interleave sets for the memory chunk. |
| MemorySet [{ | array | | The set of memory for a particular interleave set. |
| @odata.id | string | <i>read-only</i> | Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details. |
| }] | | | |
| }] | | | |
| Links (v1.3+) { | object | | The links to other Resources that are related to this Resource. |
| CXLLogicalDevices (v1.5+) | array | | An array of links to the CXL logical devices associated with this memory domain. |
| [{ | | | |
| @odata.id | string | <i>read-only</i> | Link to a CXLLogicalDevice resource. See the Links section and the <i>CXLLogicalDevice</i> schema for details. |
| }] | | | |
| FabricAdapters (v1.5+) [{ | array | | An array of links to the fabric adapters that present this memory domain to a fabric. |
| @odata.id | string | <i>read-only</i> | Link to a FabricAdapter resource. See the Links section and the <i>FabricAdapter</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|---------------------|-------------------------|--|
| }] | | | |
| MediaControllers (v1.3+, deprecated v1.4) [{ | array | | An array of links to the media controllers for this memory domain. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of the FabricAdapters property.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MediaController resource. See the Links section and the <i>MediaController</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions (v1.5+) [{ | array | | An array of links to the PCIe functions representing this memory domain. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| } | | | |
| MemoryChunkIncrementMiB (v1.5+) | integer (mebibytes) | <i>read-only (null)</i> | The incremental size, from the minimum size, allowed for a memory chunk within this domain in mebibytes (MiB). |
| MemoryChunks { | object | | The link to the collection of memory chunks associated with this memory domain. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MemoryChunks</i> . See the <i>MemoryChunks</i> schema for details. |
| } | | | |
| MemorySizeMiB (v1.5+) | integer (mebibytes) | <i>read-only (null)</i> | The total size of the memory domain in mebibytes (MiB). |
| MinMemoryChunkSizeMiB (v1.5+) | integer (mebibytes) | <i>read-only (null)</i> | The minimum size allowed for a memory chunk within this domain in mebibytes (MiB). |
| Status (v1.5+) { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.73.4 Example response

```
{
  "@odata.type": "#MemoryDomain.v1_5_0.MemoryDomain",
```

```

    "Name": "Memory Domain - Whole System Mirroring Only",
    "Id": "1",
    "MemoryChunks": {
      "@odata.id": "/redfish/v1/Systems/4/MemoryDomains/1/MemoryChunks"
    },
    "AllowsMemoryChunkCreation": false,
    "AllowsBlockProvisioning": false,
    "InterleavableMemorySets": [
      {
        "MemorySet": [
          {
            "@odata.id": "/redfish/v1/Systems/2/Memory/1"
          },
          {
            "@odata.id": "/redfish/v1/Systems/2/Memory/2"
          },
          {
            "@odata.id": "/redfish/v1/Systems/2/Memory/3"
          },
          {
            "@odata.id": "/redfish/v1/Systems/2/Memory/4"
          }
        ]
      }
    ],
    "@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1"
  }

```

6.74 MemoryMetrics 1.7.1

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.1 | 2022.3 | 2022.1 | 2020.3 | 2020.1 | 2019.2 | 2016.2 | 2016.1 |

6.74.1 Description

The usage and health statistics for a memory device or system memory summary.

6.74.2 URIs

/redfish/v1/Chassis/{ChassisId}/Memory/{MemoryId}/MemoryMetrics
 /redfish/v1/Systems/{ComputerSystemId}/Memory/{MemoryId}/MemoryMetrics
 /redfish/v1/Systems/{ComputerSystemId}/MemorySummary/MemoryMetrics

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/MemorySummary/MemoryMetrics

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.74.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------|----------------------------|--|
| BandwidthPercent (v1.2+) | number (%) | <i>read-only</i> (null) | The memory bandwidth utilization as a percentage. |
| BlockSizeBytes | integer (bytes) | <i>read-only</i> (null) | The block size, in bytes. |
| CapacityUtilizationPercent (v1.7+) | number (%) | <i>read-only</i> (null) | The memory capacity utilization as a percentage. |
| CorrectedPersistentErrorCount (v1.6+) | integer | <i>read-only</i> (null) | The number of corrected errors in persistent memory. |
| CorrectedVolatileErrorCount (v1.6+) | integer | <i>read-only</i> (null) | The number of corrected errors in volatile memory. |
| CurrentPeriod { | object | | The memory metrics since the last reset or ClearCurrentPeriod action. |
| BlocksRead | integer | <i>read-only</i> (null) | The number of blocks read since reset. |
| BlocksWritten | integer | <i>read-only</i> (null) | The number of blocks written since reset. |
| CorrectableECCErrorCount (v1.4+) | integer | <i>read-only</i> (null) | The number of the correctable errors since reset. |
| IndeterminateCorrectableErrorCount (v1.5+) | integer | <i>read-only</i> (null) | The number of indeterminate correctable errors since reset. |
| IndeterminateUncorrectableErrorCount (v1.5+) | integer | <i>read-only</i> (null) | The number of indeterminate uncorrectable errors since reset. |
| UncorrectableECCErrorCount (v1.4+) | integer | <i>read-only</i> (null) | The number of the uncorrectable errors since reset. |
| } | | | |
| CXL (v1.6+) { | object | (null) | The memory metrics specific to CXL devices. |
| AlertCapabilities (v1.6+) { | object | (null) | The conditions that would generate an alert to the CXL Fabric Manager or host. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------|----------------------------|---|
| CorrectableECCError (v1.6+) | boolean | <i>read-only</i> (null) | Indicates whether correctable ECC errors generate an alert to the CXL Fabric Manager or host. |
| SpareBlock (v1.6+) | boolean | <i>read-only</i> (null) | Indicates whether spare block conditions generate an alert to the CXL Fabric Manager or host. |
| Temperature (v1.6+) | boolean | <i>read-only</i> (null) | Indicates whether temperature conditions generate an alert to the CXL Fabric Manager or host. |
| UncorrectableECCError (v1.6+) | boolean | <i>read-only</i> (null) | Indicates whether uncorrectable ECC errors generate an alert to the CXL Fabric Manager or host. |
| } | | | |
| } | | | |
| DirtyShutdownCount (v1.6+) | integer | <i>read-only</i> (null) | The number of shutdowns while outstanding writes have not completed to persistent memory. |
| HealthData { | object | | The health information of the memory. |
| AlarmTrips { | object | | Alarm trip information about the memory. |
| AddressParityError | boolean | <i>read-only</i> (null) | An indication of whether an address parity error was detected that a retry could not correct. |
| CorrectableECCError | boolean | <i>read-only</i> (null) | An indication of whether the correctable error threshold crossing alarm trip was detected. |
| SpareBlock | boolean | <i>read-only</i> (null) | An indication of whether the spare block capacity crossing alarm trip was detected. |
| Temperature | boolean | <i>read-only</i> (null) | An indication of whether a temperature threshold alarm trip was detected. |
| UncorrectableECCError | boolean | <i>read-only</i> (null) | An indication of whether the uncorrectable error threshold alarm trip was detected. |
| } | | | |
| DataLossDetected | boolean | <i>read-only</i> (null) | An indication of whether data loss was detected. |
| LastShutdownSuccess | boolean | <i>read-only</i> (null) | An indication of whether the last shutdown succeeded. |
| PerformanceDegraded | boolean | <i>read-only</i> (null) | An indication of whether performance has degraded. |

| Property | Type | Attributes | Notes |
|---|---------------|------------------|--|
| PredictedMediaLifeLeftPercent (v1.1+) | number (%) | read-only (null) | The percentage of reads and writes that are predicted to still be available for the media. |
| RemainingSpareBlockPercentage | number (%) | read-only (null) | The remaining spare blocks, as a percentage. |
| } | | | |
| LifeTime { | object | | The memory metrics for the lifetime of the memory. |
| BlocksRead | integer | read-only (null) | The number of blocks read for the lifetime of the memory. |
| BlocksWritten | integer | read-only (null) | The number of blocks written for the lifetime of the memory. |
| CorrectableECCErrorCount (v1.4+) | integer | read-only (null) | The number of the correctable errors for the lifetime of the memory. |
| IndeterminateCorrectableErrorCount (v1.5+) | integer | read-only (null) | The number of indeterminate correctable errors for the lifetime of the memory. |
| IndeterminateUncorrectableErrorCount (v1.5+) | integer | read-only (null) | The number of indeterminate uncorrectable errors for the lifetime of the memory. |
| UncorrectableECCErrorCount (v1.4+) | integer | read-only (null) | The number of the uncorrectable errors for the lifetime of the memory. |
| } | | | |
| OperatingSpeedMHz (v1.3+) | integer (MHz) | read-only (null) | Operating speed of memory in MHz or MT/s as appropriate. |

6.74.4 Actions

6.74.4.1 ClearCurrentPeriod

Description

This action sets the CurrentPeriod property's values to 0.

Action URI

{Base URI of target resource}/Actions/MemoryMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.74.5 Example response

```
{
  "@odata.type": "#MemoryMetrics.v1_7_1.MemoryMetrics",
  "Name": "Memory Metrics",
  "Id": "Metrics",
  "BlockSizeBytes": 4096,
  "CurrentPeriod": {
    "BlocksRead": 0,
    "BlocksWritten": 0
  },
  "LifeTime": {
    "BlocksRead": 0,
    "BlocksWritten": 0
  },
  "HealthData": {
    "RemainingSpareBlockPercentage": 50,
    "LastShutdownSuccess": true,
    "DataLossDetected": false,
    "PerformanceDegraded": false,
    "AlarmTrips": {
      "Temperature": true,
      "SpareBlock": false,
      "UncorrectableECCError": false,
      "CorrectableECCError": false
    }
  },
  "Actions": {
    "#MemoryMetrics.ClearCurrentPeriod": {
      "target": "/redfish/v1/Systems/1/Memory/1/Actions/MemoryMetrics.ClearCurrentPeriod"
    }
  },
  "@odata.id": "/redfish/v1/Systems/1/Memory/1/MemoryMetrics"
}
```

6.75 MemoryRegion 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.2 |

6.75.1 Description

The schema definition of a memory region and its configuration.

6.75.2 URIs

```
/redfish/v1/Chassis/{ChassisId}/PCleDevices/{PCleDeviceId}/CXLLogicalDevices/
{CXLLogicalDeviceId}/MemoryRegions/{MemoryRegionId}
```

6.75.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|------------------------|-------------------------------------|--|
| BlockSizeMiB | integer (mebibytes) | <i>read-write</i> | The memory region block size in mebibytes (MiB). |
| ExtentsCount | integer | <i>read-only</i> (<i>null</i>) | The number of extents defined for this memory region. |
| HardwareManagedCoherencyRegion | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the device manages the cache coherency across hosts for this memory region. |
| MemoryChunks [{ | array | | The set of memory chunks providing capacity for this memory region. |
| ChunkLink { | object | | The link to the memory chunk providing capacity to the memory region. See the <i>MemoryChunks</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>MemoryChunks</i> resource. See the Links section and the <i>MemoryChunks</i> schema for details. |
| } | | | |
| ChunkOffsetMiB | integer (mebibytes) | <i>read-only</i> | Offset of the memory chunk within the memory region in mebibytes (MiB). |
| } | | | |
| } | | | |
| MemoryExtents [{ | array | | The set of memory extents defined for this memory region. |
| ExtentOffsetMiB | integer (mebibytes) | <i>read-only</i> | Offset of the memory extent within the memory region in mebibytes (MiB). |
| ExtentSizeMiB | integer (mebibytes) | <i>read-only</i> | Size of the memory extent in mebibytes (MiB). |

| Property | Type | Attributes | Notes |
|----------------------------|---------------------|---------------------------|---|
| SequenceNumber | integer | <i>read-only (null)</i> | The memory extent sequence number. |
| Tag | string | <i>read-only</i> | The user-assigned tag of this memory extent. |
| }] | | | |
| NonVolatileRegion | boolean | <i>read-only (null)</i> | An indication of whether memory region represents non-volatile memory. |
| RegionBaseOffsetMiB | integer (mebibytes) | <i>read-only</i> | The offset of the memory region in the device address range in mebibytes (MiB). |
| RegionNumber | integer | <i>read-only</i> | The memory region number. |
| RegionSizeMiB | integer (mebibytes) | <i>read-only</i> | The size of the memory region in mebibytes (MiB). |
| RegionType | string (enum) | <i>read-only required</i> | The type of memory region. <i>For the possible property values, see RegionType in Property details.</i> |
| SanitizeOnRelease | boolean | <i>read-write (null)</i> | An indication of whether the capacity released from this memory region will be sanitized before it is made available to any host. |
| ShareableRegion | boolean | <i>read-only (null)</i> | An indication of whether memory region can be shared across multiple hosts. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.75.4 Property details

6.75.4.1 RegionType

The type of memory region.

| string | Description |
|---------|--|
| Dynamic | Dynamic memory region. The address range coverage may be changes in the runtime. |
| Static | Static memory region. The whole address range is always covered by memory. |

6.75.5 Example response

```
{
  "@odata.type": "#MemoryRegion.v1_0_0.MemoryRegion",
  "Id": "1",
  "Name": "Dynamic Memory Region 1",
  "Description": "CXL Dynamic Memory Region 1 of LD 1 in Device 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "RegionType": "Dynamic",
  "RegionNumber": 0,
  "RegionBaseOffsetMiB": 0,
  "RegionSizeMiB": 65536,
  "ShareableRegion": false,
  "SanitizeOnRelease": true,
  "BlockSizeMiB": 128,
  "ExtentsCount": 1,
  "MemoryExtents": [
    {
      "ExtentOffsetMiB": 0,
      "ExtentSizeMiB": 4096,
      "Tag": "User Defined Tag",
      "SequenceNumber": 0
    }
  ],
  "MemoryChunks": [
    {
      "ChunkOffsetMiB": 0,
      "ChunkLink": {
        "@odata.id": "/redfish/v1/Chassis/1/MemoryDomains/1/MemoryChunks/1"
      }
    }
  ],
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/1/CXLLogicalDevices/1/MemoryRegions/1"
}
```

6.76 MessageRegistry 1.6.1

| Version | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|------|
| Release | 2022.3 | 2021.3 | 2020.1 | 2019.1 | 2018.2 | 2017.1 | 1.0 |

6.76.1 Description

The MessageRegistry schema describes all message registries. It represents the properties for the message registries themselves.

6.76.2 Properties

| Property | Type | Attributes | Notes |
|--|----------------------|-------------------------------|--|
| Language | string | <i>read-only required</i> | The RFC5646-conformant language code for the message registry. |
| Messages { | object | <i>required</i> | The message keys contained in the message registry. |
| (pattern) { | object | | Property names follow regular expression pattern "[A-Za-z0-9]+" |
| ArgDescriptions (v1.3+) [] | array (string, null) | <i>read-only</i> | The MessageArg descriptions, in order, used for this message. |
| ArgLongDescriptions (v1.3+) [] | array (string, null) | <i>read-only</i> | The MessageArg normative descriptions, in order, used for this message. |
| ClearingLogic (v1.2+) { | object | | The clearing logic associated with this message. The properties within indicate that what messages are cleared by this message as well as under what conditions. |
| ClearsAll (v1.2+) | boolean | <i>read-only (null)</i> | An indication of whether all prior conditions and messages are cleared, provided the ClearsIf condition is met. |
| ClearsIf (v1.2+) | string (enum) | <i>read-only (null)</i> | The condition when the event is cleared. <i>For the possible property values, see ClearsIf in Property details.</i> |
| ClearsMessage (v1.2+) [] | array (string, null) | <i>read-only</i> | The array of MessageIds that this message clears when the other conditions are met. |
| } | | | |
| Deprecated (v1.5+) | string | <i>read-only (null)</i> | The reason the message has been deprecated. |
| Description | string | <i>read-only required</i> | A short description of how and when to use this message. |
| LongDescription (v1.3+) | string | <i>read-only (null)</i> | The normative language that describes this message's usage. |

| Property | Type | Attributes | Notes |
|---|-----------------------------|--|---|
| MapsToGeneralMessages (v1.6+) [] | array (string, null) | <i>read-only</i> | The general or less-specific messages related to this message. |
| Message | string | <i>read-only required</i> | The actual message. |
| MessageSeverity (v1.4+) | string (enum) | <i>read-only required (null)</i> | The severity of the message. <i>For the possible property values, see MessageSeverity in Property details.</i> |
| NumberOfArgs | integer | <i>read-only required</i> | The number of arguments in the message. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| ParamTypes [] | array (string (enum)) | <i>read-only</i> | The data types of the message arguments, prior to conversion to strings for inclusion in a message. <i>For the possible property values, see ParamTypes in Property details.</i> |
| ReplacedBy (v1.6+) | string | <i>read-only (null)</i> | The message identifier that replaces this message. |
| Resolution | string | <i>read-only required</i> | Used to provide suggestions on how to resolve the situation that caused the error. |
| Severity (deprecated v1.4) | string | <i>read-only required</i> | The severity of the message. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.</i> |
| VersionAdded (v1.5+) | string | <i>read-only (null)</i> | The registry version which added this message. |
| VersionDeprecated (v1.5+) | string | <i>read-only (null)</i> | The registry version when the the message was deprecated. |
| } | | | |
| } | | | |
| OwningEntity | string | <i>read-only required</i> | The organization or company that publishes this message registry. |
| RegistryPrefix | string | <i>read-only required</i> | The single-word prefix that is used in forming and decoding MessageIds. |
| RegistryVersion | string | <i>read-only required</i> | The message registry version in the middle portion of a MessageId. |

6.76.3 Property details

6.76.3.1 Clearself

The condition when the event is cleared.

| string | Description |
|-----------------------|---|
| SameOriginOfCondition | Indicates the message for an event is cleared by the other messages in the ClearingLogic property, provided the OriginOfCondition for both events are the same. |

6.76.3.2 MessageSeverity

The severity of the message.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.76.3.3 ParamTypes

The data types of the message arguments, prior to conversion to strings for inclusion in a message.

| string | Description |
|--------|---|
| number | The argument is a number converted to a string. |
| string | The argument is a string. |

6.76.4 Example response

```
{
  "@odata.type": "#MessageRegistry.v1_3_1.MessageRegistry",
  "Id": "Basic.1.2.0",
  "Name": "Simple Message Registry",
  "Language": "en",
}
```

```

    "Description": "Collection of Basic messages for numerous use cases",
    "RegistryPrefix": "Basic",
    "RegistryVersion": "1.2.0",
    "OwningEntity": "Contoso",
    "Messages": {
      "Success": {
        "Description": "Indicates that all conditions of a successful operation have been met.",
        "Message": "Successfully Completed Request",
        "Severity": "OK",
        "NumberOfArgs": 0,
        "Resolution": "None"
      },
      "GeneralError": {
        "Description": "Indicates that a general error has occurred.",
        "Message": "A general error has occurred. See ExtendedInfo for more information.",
        "Severity": "Critical",
        "NumberOfArgs": 0,
        "Resolution": "See ExtendedInfo for more information."
      },
      "ResourceAtUriUnauthorized": {
        "Description": "Indicates that the attempt to access the resource/file/image at the URI was unauthorized.",
        "Message": "While accessing the resource at %1, the service received an authorization error %2.",
        "Severity": "Critical",
        "NumberOfArgs": 2,
        "ParamTypes": [
          "string",
          "string"
        ],
        "Resolution": "Ensure that the appropriate access is provided for the service in order for it to access"
      }
    }
  }
}

```

6.77 MessageRegistryFile 1.1.3

| Version | v1.1 | v1.0 |
|---------|--------|--------|
| Release | 2017.1 | 2016.1 |

6.77.1 Description

The MessageRegistryFile schema describes the Message Registry file locator Resource.

6.77.2 URIs

/redfish/v1/Registries/{MessageRegistryFileId}

6.77.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|----------------|---------------------------|---|
| Languages [] | array (string) | <i>read-only required</i> | The RFC5646-conformant language codes for the available Message Registries. |
| Location [{ | array | <i>required</i> | The location information for this Message Registry file. |
| ArchiveFile | string | <i>read-only</i> | If the service hosts the Message Registry in an archive file, the name of the file within the archive. |
| ArchiveUri | string (URI) | <i>read-only</i> | If the Message Registry is hosted on the service in an archive file, the link to the archive file. |
| Language | string | <i>read-only</i> | The language code for the Message Registry file. |
| PublicationUri | string (URI) | <i>read-only</i> | The link to publicly available (canonical) URI for the Message Registry. |
| Uri | string (URI) | <i>read-only</i> | The link to locally available URI for the Message Registry. |
| }] | | | |
| Registry | string | <i>read-only required</i> | The registry name and its major and minor versions. This registry can be any type of registry, such as a Message Registry, Privilege Registry, or Attribute Registry. |

6.77.4 Example response

```
{
  "@odata.type": "#MessageRegistryFile.v1_1_3.MessageRegistryFile",
  "Id": "Base.1.0.0",
  "Name": "Base Message Registry File",
  "Description": "Base Message Registry File locations",
  "Languages": [
    "en"
  ],
  "Registry": "Base.1.0",
  "Location": [
    {
```

```

    "Language": "en",
    "ArchiveUri": "/FileRepo/Registries.gz",
    "PublicationUri": "http://redfish.dmtf.org/registries/v1/Base.1.0.0.json",
    "ArchiveFile": "Base.1.0.0.json"
  },
  {
    "Language": "zh",
    "ArchiveUri": "/FileRepo/Registries.zh.gz",
    "PublicationUri": "http://redfish.dmtf.org/registries/v1/zh/Base.1.0.0.zh.json",
    "ArchiveFile": "Base.1.0.0.zh.json"
  }
],
"@odata.id": "/redfish/v1/Registries/Base.1.0.0"
}

```

6.78 MetricDefinition 1.3.2

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2022.1 | 2021.1 | 2020.3 | 2018.2 |

6.78.1 Description

The MetricDefinition schema describes the metadata information for a metric.

6.78.2 URIs

/redfish/v1/TelemetryService/MetricDefinitions/{MetricDefinitionId}

6.78.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|------------------|------------------------------------|---|
| Accuracy | number | <i>read-only</i> <i>(null)</i> | The estimated percent error of measured versus actual values. |
| Calculable | string (enum) | <i>read-write</i> <i>(null)</i> | An indication of whether the metric can be used in a calculation. <i>For the possible property values, see Calculable in Property details.</i> |
| CalculationAlgorithm | string (enum) | <i>read-only</i> <i>(null)</i> | The calculation that is performed on a source metric to obtain the metric being defined. <i>For the possible property values, see CalculationAlgorithm in Property details.</i> |

| Property | Type | Attributes | Notes |
|------------------------------------|----------------------------|--------------------------|---|
| CalculationParameters [{ | array | | The metric properties that are part of a calculation that this metric definition defines. |
| ResultMetric | string | <i>read-only (null)</i> | The URI with wildcards and property identifiers of the metric property that stores the result of the calculation. If the URI has wildcards, the wildcards are substituted as specified in the Wildcards property. |
| SourceMetric | string | <i>read-only (null)</i> | The URI with wildcards and property identifiers of the metric property used as the input into the calculation. If the URI has wildcards, the wildcards are substituted as specified in the Wildcards property. |
| }] | | | |
| CalculationTimeInterval | string (duration) | <i>read-write (null)</i> | The time interval over which the metric calculation is performed. |
| Calibration | number | <i>read-only (null)</i> | The calibration offset added to the metric reading. |
| DiscreteValues [] | array (string, null) | <i>read-write</i> | This array property specifies possible values of a discrete metric. |
| Implementation | string (enum) | <i>read-only (null)</i> | The implementation of the metric. <i>For the possible property values, see Implementation in Property details.</i> |
| IsLinear | boolean | <i>read-write (null)</i> | An indication of whether the metric values are linear versus non-linear. |
| LogicalContexts (v1.3+) [] | array (string (enum)) | <i>read-only</i> | The logical contexts related to the metric. <i>For the possible property values, see LogicalContexts in Property details.</i> |
| MaxReadingRange | number | <i>read-only (null)</i> | Maximum value for metric reading. |
| MetricDataType | string (enum) | <i>read-write (null)</i> | The data type of the metric. <i>For the possible property values, see MetricDataType in Property details.</i> |
| MetricProperties [] | array (URI) (string, null) | <i>read-write</i> | The list of URIs with wildcards and property identifiers that this metric definition defines. If a URI has wildcards, the wildcards are substituted as specified in the Wildcards property. |
| MetricType | string (enum) | <i>read-write (null)</i> | The type of metric. <i>For the possible property values, see MetricType in Property details.</i> |
| MinReadingRange | number | <i>read-only (null)</i> | Minimum value for metric reading. |

| Property | Type | Attributes | Notes |
|---|----------------------------|--------------------------------------|---|
| OEMCalculationAlgorithm (v1.1+) | string | <i>read-only</i> (<i>null</i>) | The OEM-defined calculation that is performed on a source metric to obtain the metric being defined. |
| PhysicalContext | string (enum) | <i>read-only</i> (<i>null</i>) | The physical context of the metric. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| Precision | integer | <i>read-only</i> (<i>null</i>) | Number of significant digits in the metric reading. |
| SensingInterval | string (duration) | <i>read-write</i> (<i>null</i>) | The time interval between when a metric is updated. |
| TimestampAccuracy | string (duration) | <i>read-only</i> (<i>null</i>) | The accuracy of the timestamp. |
| Units | string | <i>read-write</i> (<i>null</i>) | The units of measure for this metric. |
| Wildcards [{ | array | | The wildcards and their substitution values for the entries in the MetricProperties array property. |
| Name | string | <i>read-only</i> (<i>null</i>) | The string used as a wildcard. |
| Values [] | array (string, null) | <i>read-only</i> | An array of values to substitute for the wildcard. |
| }] | | | |

6.78.4 Property details

6.78.4.1 Calculable

An indication of whether the metric can be used in a calculation.

| string | Description |
|-----------------|--|
| NonCalculatable | No calculations should be performed on the metric reading. |
| NonSummable | The sum of the metric reading across multiple instances is not meaningful. |
| Summable | The sum of the metric reading across multiple instances is meaningful. |

6.78.4.2 CalculationAlgorithm

The calculation that is performed on a source metric to obtain the metric being defined.

| string | Description |
|-------------|--|
| Average | The metric is calculated as the average metric reading over a sliding time interval. |
| Maximum | The metric is calculated as the maximum metric reading over during a time interval. |
| Minimum | The metric is calculated as the minimum metric reading over a sliding time interval. |
| OEM (v1.1+) | The metric is calculated as specified by an OEM. |

6.78.4.3 Implementation

The implementation of the metric.

| string | Description |
|----------------|--|
| Calculated | The metric is implemented by applying a calculation on another metric property. The calculation is specified in the CalculationAlgorithm property. |
| DigitalMeter | The metric is implemented as digital meter. |
| PhysicalSensor | The metric is implemented as a physical sensor. |
| Synthesized | The metric is implemented by applying a calculation on one or more metric properties. The calculation is not provided. |

6.78.4.4 LogicalContexts

The logical contexts related to the metric.

| string | Description |
|-------------|--------------------------------------|
| Capacity | Capacity related logical context. |
| Environment | Environment related logical context. |
| Network | Network related logical context. |
| Performance | Performance related logical context. |
| Security | Security related logical context. |

| string | Description |
|---------|----------------------------------|
| Storage | Storage related logical context. |

6.78.4.5 MetricDataType

The data type of the metric.

| string | Description |
|-------------|--|
| Boolean | The JSON boolean definition. |
| DateTime | The JSON string definition with the date-time format. |
| Decimal | The JSON decimal definition. |
| Enumeration | The JSON string definition with a set of defined enumerations. |
| Integer | The JSON integer definition. |
| String | The JSON string definition. |

6.78.4.6 MetricType

The type of metric.

| string | Description |
|----------------|--|
| Countdown | The metric is a countdown metric. The metric reading is a non-negative integer that decreases monotonically. When a counter reaches its minimum, the value resets to preset value and resumes counting down. |
| Counter | The metric is a counter metric. The metric reading is a non-negative integer that increases monotonically. When a counter reaches its maximum, the value resets to 0 and resumes counting. |
| Discrete | The metric is a discrete metric. The metric value is discrete. The possible values are listed in the DiscreteValues property. |
| Gauge | The metric is a gauge metric. The metric value is a real number. When the metric value reaches the gauge's extrema, it stays at that value, until the reading falls within the extrema. |
| Numeric | The metric is a numeric metric. The metric value is any real number. |
| String (v1.2+) | The metric is a non-discrete string metric. The metric reading is a non-discrete string that displays some non-discrete, non-numeric data. |

6.78.4.7 PhysicalContext

The physical context of the metric.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |

| string | Description |
|------------------|--|
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.78.5 Example response

```
{
  "@odata.type": "#MetricDefinition.v1_3_2.MetricDefinition",
  "Id": "PowerConsumedWatts",
  "Name": "Power Consumed Watts Metric Definition",
  "MetricType": "Numeric",
  "Implementation": "PhysicalSensor",
  "PhysicalContext": "PowerSupply",
  "MetricDataType": "Decimal",
  "Units": "W",
  "Precision": 4,
  "Accuracy": 1,
  "Calibration": 2,
  "MinReadingRange": 0,
  "MaxReadingRange": 50,
  "SensingInterval": "PT1S",
  "TimestampAccuracy": "PT1S",
  "Wildcards": [
    {
      "Name": "ChassisID",
      "Values": [
        "1"
      ]
    }
  ],
  "MetricProperties": [
    "/redfish/v1/Chassis/{ChassisID}/Power#/PowerControl/0/PowerConsumedWatts"
  ],
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/PowerConsumedWatts"
}
```

6.79 MetricReport 1.5.0

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2020.2 | 2019.4 | 2019.2 | 2018.3 | 2018.2 |

6.79.1 Description

The MetricReport schema represents a set of collected metrics.

6.79.2 URIs

/redfish/v1/TelemetryService/MetricReports/{MetricReportId}

6.79.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------|-------------------------------------|---|
| Context (v1.4+) | string | <i>read-only</i> | A context can be supplied at subscription time. This property is the context value supplied by the subscriber. |
| MetricReportDefinition { | object | | The link to the definition of this metric report. See the <i>MetricReportDefinition</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>MetricReportDefinition</i> resource. See the Links section and the <i>MetricReportDefinition</i> schema for details. |
| } | | | |
| MetricValues [{ | array | | An array of metric values for the metered items of this metric report. |
| MetricDefinition (<i>deprecated v1.5</i>) { | object | | The link to the metric definition for this metric. See the <i>MetricDefinition</i> schema for details on this property. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the MetricId property.</i> |
| @odata.id | string | <i>read-only</i> | Link to a <i>MetricDefinition</i> resource. See the Links section and the <i>MetricDefinition</i> schema for details. |
| } | | | |
| MetricId | string | <i>read-only</i> (<i>null</i>) | The metric definitions identifier that contains additional information for the source metric. |
| MetricProperty | string (URI) | <i>read-only</i> (<i>null</i>) | The URI for the property from which this metric is derived. |
| MetricValue | string | <i>read-only</i> (<i>null</i>) | The metric value, as a string. |
| Oem (v1.2+) { } | object | | See the <i>Oem</i> object definition in the Common properties section. |
| Timestamp | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the metric is obtained. A management application can establish a time series of metric data by retrieving the instances of metric value and sorting them according to their timestamp. |
| } | | | |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|-----------------------|-------------------------------------|---|
| ReportSequence (<i>deprecated v1.3</i>) | string | <i>read-only</i> | The current sequence identifier for this metric report. <i>Deprecated in v1.3 and later. This property has been deprecated due to specification changes with regards to Server-Sent Events.</i> |
| Timestamp (<i>v1.1+</i>) | string (date-time) | <i>read-only</i> (<i>null</i>) | The time associated with the metric report in its entirety. The time of the metric report can be relevant when the time of individual metrics are minimally different. |

6.79.4 Example response

```
{
  "@odata.type": "#MetricReport.v1_5_0.MetricReport",
  "Id": "AvgPlatformPowerUsage",
  "Name": "Average Platform Power Usage metric report",
  "MetricReportDefinition": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/AvgPlatformPowerUsage"
  },
  "MetricValues": [
    {
      "MetricId": "AverageConsumedWatts",
      "MetricValue": "100",
      "Timestamp": "2016-11-08T12:25:00-05:00",
      "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
    },
    {
      "MetricId": "AverageConsumedWatts",
      "MetricValue": "94",
      "Timestamp": "2016-11-08T13:25:00-05:00",
      "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
    },
    {
      "MetricId": "AverageConsumedWatts",
      "MetricValue": "100",
      "Timestamp": "2016-11-08T14:25:00-05:00",
      "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
    }
  ],
  "@odata.id": "/redfish/v1/TelemetryService/MetricReports/AvgPlatformPowerUsage"
}
```

6.80 MetricReportDefinition 1.4.4

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|------|------|------|------|------|
| | | | | | |

| | | | | | |
|----------------|--------|--------|--------|--------|--------|
| Release | 2020.4 | 2019.2 | 2019.1 | 2018.3 | 2018.2 |
|----------------|--------|--------|--------|--------|--------|

6.80.1 Description

The MetricReportDefinition schema describes set of metrics that are collected into a metric report.

6.80.2 URIs

/redfish/v1/TelemetryService/MetricReportDefinitions/{*MetricReportDefinitionId*}

6.80.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|----------------------------|-------------------|--|
| AppendLimit | integer | <i>read-only</i> | The maximum number of entries that can be appended to a metric report. When the metric report reaches its limit, its behavior is dictated by the ReportUpdates property. |
| Links (v1.2+) { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Triggers (v1.2+) [{ | array | | The triggers that cause this metric report definition to generate a new metric report upon a trigger occurrence when the TriggerActions property contains <code>RedfishMetricReport</code> . |
| @odata.id | string | <i>read-only</i> | Link to a Triggers resource. See the Links section and the <i>Triggers</i> schema for details. |
| }] | | | |
| } | | | |
| MetricProperties [] | array (URI) (string, null) | <i>read-write</i> | The list of URIs with wildcards and property identifiers to include in the metric report. If a URI has wildcards, the wildcards are substituted as specified in the Wildcards property. |
| MetricReport { | object | | The most recent metric report produced by this metric report definition. See the <i>MetricReport</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MetricReport resource. See the Links section and the <i>MetricReport</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|-------------------------------------|--------------------------------------|--|
| MetricReportDefinitionEnabled (v1.2+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the generation of new metric reports is enabled. |
| MetricReportDefinitionType | string (enum) | <i>read-write</i> (<i>null</i>) | Specifies when the metric report is generated. <i>For the possible property values, see MetricReportDefinitionType in Property details.</i> |
| MetricReportHeartbeatInterval (v1.2+) | string (duration) | <i>read-write</i> (<i>null</i>) | The interval at which to send the complete metric report because the Redfish client wants refreshed metric data even when the data has not changed. This property value is always greater than the recurrence interval of a metric report, and it only applies when the SuppressRepeatedMetricValue property is <code>true</code> . |
| Metrics [{ | array | | The list of metrics to include in the metric report. The metrics might include calculations to apply to metric properties. |
| CollectionDuration | string (duration) | <i>read-write</i> (<i>null</i>) | The duration over which the function is computed. |
| CollectionFunction | string (enum) | <i>read-write</i> (<i>null</i>) | Specifies the function to perform on each of the metric properties listed in the MetricProperties property or the metric properties specified in the MetricDefinition referenced by the MetricId property. If not specified, calculations are not performed on the metric properties. <i>For the possible property values, see CollectionFunction in Property details.</i> |
| CollectionTimeScope | string (enum) | <i>read-write</i> (<i>null</i>) | The scope of time over which the function is applied. <i>For the possible property values, see CollectionTimeScope in Property details.</i> |
| MetricId | string | <i>read-write</i> (<i>null</i>) | The metric definition identifier that contains the metric properties to include in the metric report. |
| MetricProperties [] | array (URI) (string, null) | <i>read-write</i> | The list of URIs with wildcards and property identifiers to include in the metric report. If a URI has wildcards, the wildcards are substituted as specified in the Wildcards property. |
| Oem (v1.4+) {} | object | | See the Oem object definition in the Common properties section. |
| }] | | | |
| ReportActions [] | array (string (enum)) | <i>read-write</i> | The set of actions to perform when a metric report is generated. <i>For the possible property values, see ReportActions in Property details.</i> |
| ReportTimespan (v1.3+) | string (duration) | <i>read-write</i> (<i>null</i>) | The maximum timespan that a metric report can cover. |

| Property | Type | Attributes | Notes |
|---|----------------------------|-----------------------------|---|
| ReportUpdates | string (enum) | <i>read-write</i> | The behavior for how subsequent metric reports are handled in relationship to an existing metric report created from the metric report definition. Namely, whether to overwrite, append, or create a metric report. <i>For the possible property values, see ReportUpdates in Property details.</i> |
| Schedule {} | object | | The schedule for generating the metric report. For property details, see Schedule. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SuppressRepeatedMetricValue (v1.2+) | boolean | <i>read-write</i> (null) | An indication of whether any metrics are suppressed from the generated metric report. If <code>true</code> , any metric that equals the same value in the previously generated metric report is suppressed from the current report. Also, duplicate metrics are suppressed. If <code>false</code> , no metrics are suppressed from the current report. The current report might contain no metrics if all metrics equal the values in the previously generated metric report. |
| Wildcards [{ | array | | The set of wildcards and their substitution values for the entries in the MetricProperties property. |
| Keys (deprecated v1.1) [] | array (string, null) | <i>read-write</i> | An array of values to substitute for the wildcard. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of using the property Values.</i> |
| Name | string | <i>read-write</i> (null) | The string used as a wildcard. |
| Values (v1.1+) [] | array (string, null) | <i>read-write</i> | An array of values to substitute for the wildcard. |
| }] | | | |

6.80.4 Property details

6.80.4.1 CollectionFunction

Specifies the function to perform on each of the metric properties listed in the MetricProperties property or the metric properties specified in the MetricDefinition referenced by the MetricId property. If not specified, calculations are not performed on the metric properties.

| string | Description |
|-----------|---|
| Average | The metric is calculated as the average metric reading over a duration. |
| Maximum | The metric is calculated as the maximum metric reading over a duration. |
| Minimum | The metric is calculated as the minimum metric reading over a duration. |
| Summation | The metric is calculated as the sum of the values over a duration. |

6.80.4.2 CollectionTimeScope

The scope of time over which the function is applied.

| string | Description |
|-----------------|---|
| Interval | The corresponding metric values apply to a time interval. On the corresponding metric value instances, the Timestamp property value in the metric report specifies the end of the time interval and the CollectionDuration property specifies its duration. |
| Point | The corresponding metric values apply to a point in time. On the corresponding metric value instances, the Timestamp property value in the metric report specifies the point in time. |
| StartupInterval | The corresponding metric values apply to a time interval that began at the startup of the measured resource. On the corresponding metric value instances, the Timestamp property value in the metric report specifies the end of the time interval. The CollectionDuration property value specifies the duration between the startup of resource and timestamp. |

6.80.4.3 MetricReportDefinitionType

Specifies when the metric report is generated.

| string | Description |
|-----------|---|
| OnChange | The metric report is generated when any of the metric values change. |
| OnRequest | The metric report is generated when a HTTP GET is performed on the specified metric report. |
| Periodic | The metric report is generated at a periodic time interval, specified in the Schedule property. |

6.80.4.4 ReportActions

The set of actions to perform when a metric report is generated.

| string | Description |
|------------------------------|--|
| LogToMetricReportsCollection | Record the occurrence to the metric report collection. |
| RedfishEvent | Send a Redfish event message containing the metric report. |

6.80.4.5 ReportUpdates

The behavior for how subsequent metric reports are handled in relationship to an existing metric report created from the metric report definition. Namely, whether to overwrite, append, or create a metric report.

| string | Description |
|---------------------|---|
| AppendStopsWhenFull | New information is appended to the metric report. The service stops adding entries when the metric report has reached its maximum capacity. |
| AppendWrapsWhenFull | New information is appended to the metric report. The metric report entries are overwritten with new entries when the metric report has reached its maximum capacity. |
| NewReport | A new metric report is created, whose identifier is a service-defined identifier concatenated with the timestamp. |
| Overwrite | Overwrite the metric report. |

6.80.5 Example response

```
{
  "@odata.type": "#MetricReportDefinition.v1_4_4.MetricReportDefinition",
  "Id": "PlatformPowerUsage",
  "Name": "Transmit and Log Platform Power Usage",
  "MetricReportDefinitionType": "Periodic",
  "Schedule": {
    "RecurrenceInterval": "PT1H"
  },
  "ReportActions": [
    "RedfishEvent",
    "LogToMetricReportsCollection"
  ],
  "ReportUpdates": "AppendWrapsWhenFull",
  "AppendLimit": 256,
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/PlatformPowerUsage"
  },
  "Status": {
```

```

    "State": "Enabled"
  },
  "Wildcards": [
    {
      "Name": "PWild",
      "Values": [
        "0"
      ]
    },
    {
      "Name": "TWild",
      "Values": [
        "Tray_1",
        "Tray_2"
      ]
    }
  ],
  "MetricProperties": [
    "/redfish/v1/Chassis/{TWild}/Power#/PowerControl/{PWild}/PowerConsumedWatts"
  ],
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/PlatformPowerUsage"
}

```

6.81 NetworkAdapter 1.9.0

| Version | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | 2020.2 | 2019.2 | 2018.2 | 2017.3 | 2016.3 |

6.81.1 Description

The NetworkAdapter schema represents a physical network adapter capable of connecting to a computer network. Examples include but are not limited to Ethernet, Fibre Channel, and converged network adapters.

6.81.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}

6.81.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|---------|--------------------------------------|--|
| Assembly (v1.1+) { | object | | The link to the assembly resource associated with this adapter. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| Certificates (v1.6+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the <i>Certificate</i> schema for details. |
| } | | | |
| Controllers [{ | array | | The set of network controllers ASICs that make up this NetworkAdapter. |
| ControllerCapabilities { | object | | The capabilities of this controller. |
| DataCenterBridging { | object | | Data center bridging (DCB) for this controller. |
| Capable | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this controller is capable of data center bridging (DCB). |
| } | | | |
| NetworkDeviceFunctionCount | integer | <i>read-only</i> (<i>null</i>) | The maximum number of physical functions available on this controller. |
| NetworkPortCount | integer | <i>read-only</i> (<i>null</i>) | The number of physical ports on this controller. |
| NPAR (v1.2+) { | object | | NIC Partitioning (NPAR) capabilities for this controller. |
| NparCapable (v1.2+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the controller supports NIC function partitioning. |
| NparEnabled (v1.2+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether NIC function partitioning is active on this controller. |
| } | | | |
| NPIV { | object | | N_Port ID Virtualization (NPIV) capabilities for this controller. |

| Property | Type | Attributes | Notes |
|------------------------------------|-------------------|-----------------------------------|---|
| MaxDeviceLogins | integer | <i>read-only</i> <i>(null)</i> | The maximum number of N_Port ID Virtualization (NPIV) logins allowed simultaneously from all ports on this controller. |
| MaxPortLogins | integer | <i>read-only</i> <i>(null)</i> | The maximum number of N_Port ID Virtualization (NPIV) logins allowed per physical port on this controller. |
| } | | | |
| VirtualizationOffload { | object | | Virtualization offload for this controller. |
| SRIOV { | object | | Single-root input/output virtualization (SR-IOV) capabilities. |
| SRIOVVEPACapable | boolean | <i>read-only</i> <i>(null)</i> | An indication of whether this controller supports single root input/output virtualization (SR-IOV) in Virtual Ethernet Port Aggregator (VEPA) mode. |
| } | | | |
| VirtualFunction { | object | | The virtual function of the controller. |
| DeviceMaxCount | integer | <i>read-only</i> <i>(null)</i> | The maximum number of virtual functions supported by this controller. |
| MinAssignmentGroupSize | integer | <i>read-only</i> <i>(null)</i> | The minimum number of virtual functions that can be allocated or moved between physical functions for this controller. |
| NetworkPortMaxCount | integer | <i>read-only</i> <i>(null)</i> | The maximum number of virtual functions supported per network port for this controller. |
| } | | | |
| } | | | |
| } | | | |
| FirmwarePackageVersion | string | <i>read-only</i> <i>(null)</i> | The version of the user-facing firmware package. |
| Identifiers (v1.3+) [{ }] | array (object) | | The durable names for the network adapter controller. For property details, see Identifier. |
| Links { | object | | The links to other resources that are related to this resource. |
| NetworkDeviceFunctions [{ | array | | An array of links to the network device functions associated with this network controller. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| NetworkPorts (<i>deprecated v1.5</i>) [{ | array | | An array of links to the network ports associated with this network controller. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the Ports property.</i> |
| @odata.id | string | <i>read-only</i> | Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleDevices [{ | array | | An array of links to the PCIe devices associated with this network controller. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| }] | | | |
| Ports (<i>v1.5+</i>) [{ | array | | An array of links to the ports associated with this network controller. |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| } | | | |
| Location (<i>v1.1+</i>) { } | object | | The location of the network adapter controller. For property details, see Location. |
| PCleInterface (<i>v1.2+</i>) { | object | | The PCIe interface details for this controller. |
| LanesInUse (<i>v1.3+</i>) | integer | <i>read-only</i> <i>(null)</i> | The number of PCIe lanes in use by this device. |
| MaxLanes (<i>v1.3+</i>) | integer | <i>read-only</i> <i>(null)</i> | The number of PCIe lanes supported by this device. |
| MaxPCleType (<i>v1.3+</i>) | string (enum) | <i>read-only</i> <i>(null)</i> | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCleType in Property details.</i> |

| Property | Type | Attributes | Notes |
|---|----------------|-------------------------|---|
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCleType (v1.3+) | string (enum) | <i>read-only (null)</i> | The version of the PCIe specification in use by this device. For the possible property values, see <i>PCleType</i> in Property details. |
| } | | | |
| }] | | | |
| EnvironmentMetrics (v1.7+) { | object | | The link to the environment metrics for this network adapter. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| Identifiers (v1.4+) [{ }] | array (object) | | The durable names for the network adapter. For property details, see Identifier. |
| LLDPEnabled (v1.7+) | boolean | <i>read-write</i> | Enable or disable LLDP globally for an adapter. |
| Location (v1.4+) {} | object | | The location of the network adapter. For property details, see Location. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer or OEM of this network adapter. |
| Measurements (v1.6+, deprecated v1.9 [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.9 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| Metrics (v1.7+) { | object | <i>(null)</i> | The link to the metrics associated with this adapter. See the <i>NetworkAdapterMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkAdapterMetrics resource. See the Links section and the <i>NetworkAdapterMetrics</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|--------|-----------------------------------|---|
| Model | string | <i>read-only</i> <i>(null)</i> | The model string for this network adapter. |
| NetworkDeviceFunctions { | object | | The link to the collection of network device functions associated with this network adapter. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkDeviceFunction</i> . See the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| NetworkPorts (<i>deprecated v1.5</i>) { | object | | The link to the collection of network ports associated with this network adapter. Contains a link to a resource. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the Ports property.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkPort</i> . See the <i>NetworkPort</i> schema for details. |
| } | | | |
| PartNumber | string | <i>read-only</i> <i>(null)</i> | Part number for this network adapter. |
| Ports (<i>v1.5+</i>) { | object | | The link to the collection of ports associated with this network adapter. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details. |
| } | | | |
| Processors (<i>v1.8+</i>) { | object | | The link to the collection of offload processors contained in this network adapter. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Processor</i> . See the <i>Processor</i> schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only</i> <i>(null)</i> | The serial number for this network adapter. |
| SKU | string | <i>read-only</i> <i>(null)</i> | The manufacturer SKU for this network adapter. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |

6.81.4 Actions

6.81.4.1 ResetSettingsToDefault

Description

This action is to clear the settings back to factory defaults.

Action URI

{Base URI of target resource}/Actions/NetworkAdapter.ResetSettingsToDefault

Action parameters

This action takes no parameters.

6.81.5 Property details

6.81.5.1 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.81.5.2 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |

| string | Description |
|--------|-------------------|
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.81.6 Example response

```
{
  "@odata.type": "#NetworkAdapter.v1_9_0.NetworkAdapter",
  "Id": "9fa725a1",
  "Name": "Network Adapter View",
  "Manufacturer": "Contoso",
  "Model": "599TPS-T",
  "SKU": "Contoso TPS-Net 2-Port Base-T",
  "SerialNumber": "003BFLRT00023234",
  "PartNumber": "975421-B20",
  "Ports": {
    "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Ports"
  },
  "NetworkDeviceFunctions": {
    "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions"
  },
  "Controllers": [
    {
      "FirmwarePackageVersion": "7.4.10",
      "Links": {
        "PCIeDevices": [
          {
            "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
          }
        ],
        "Ports": [
          {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Ports/1"
          }
        ],
        "NetworkDeviceFunctions": [
          {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/1111111"
          }
        ]
      },
      "ControllerCapabilities": {
        "NetworkPortCount": 2,
        "NetworkDeviceFunctionCount": 8,
        "DataCenterBridging": {

```

```

        "Capable": true
    },
    "VirtualizationOffload": {
        "VirtualFunction": {
            "DeviceMaxCount": 256,
            "NetworkPortMaxCount": 128,
            "MinAssignmentGroupSize": 4
        },
        "SRIOV": {
            "SRIOVVEPACapable": true
        }
    },
    "NPIV": {
        "MaxDeviceLogins": 4,
        "MaxPortLogins": 2
    },
    "NPAR": {
        "NparCapable": true,
        "NparEnabled": false
    }
},
"PCIeInterface": {
    "PCIeType": "Gen2",
    "MaxPCIeType": "Gen3",
    "LanesInUse": 1,
    "MaxLanes": 4
},
"Location": {
    "PartLocation": {
        "ServiceLabel": "Slot 1",
        "LocationType": "Slot",
        "LocationOrdinalValue": 0,
        "Reference": "Rear",
        "Orientation": "LeftToRight"
    }
}
},
],
"Actions": {
    "#NetworkAdapter.ResetSettingsToDefault": {
        "target": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Actions/NetworkAdapter.ResetSettingsToDefault"
    }
},
"@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1"
}

```

6.82 NetworkAdapterMetrics 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.1 |

6.82.1 Description

The NetworkAdapterMetrics schema contains usage and health statistics for a network adapter.

6.82.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Metrics

6.82.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------|-----------------|-------------------------|---|
| CPUCorePercent | number (%) | <i>read-only (null)</i> | The device CPU core utilization as a percentage. |
| HostBusRXPercent | number (%) | <i>read-only (null)</i> | The host bus, such as PCIe, RX utilization as a percentage. |
| HostBusTXPercent | number (%) | <i>read-only (null)</i> | The host bus, such as PCIe, TX utilization as a percentage. |
| NCSIRXBytes | integer (bytes) | <i>read-only (null)</i> | The total number of NC-SI bytes received since reset. |
| NCSIRXFrames | integer | <i>read-only (null)</i> | The total number of NC-SI frames received since reset. |
| NCSITXBytes | integer (bytes) | <i>read-only (null)</i> | The total number of NC-SI bytes sent since reset. |
| NCSITXFrames | integer | <i>read-only (null)</i> | The total number of NC-SI frames sent since reset. |
| RXBytes | integer (bytes) | <i>read-only (null)</i> | The total number of bytes received since reset. |
| RXMulticastFrames | integer | <i>read-only (null)</i> | The total number of good multicast frames received since reset. |

| Property | Type | Attributes | Notes |
|--------------------------|--------------------|-----------------------------------|--|
| RXUnicastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good unicast frames received since reset. |
| TXBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The total number of bytes transmitted since reset. |
| TXMulticastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good multicast frames transmitted since reset. |
| TXUnicastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good unicast frames transmitted since reset. |

6.82.4 Example response

```
{
  "@odata.type": "#NetworkAdapterMetrics.v1_0_1.NetworkAdapterMetrics",
  "Id": "NetworkAdapterMetrics",
  "Name": "Network Adapter Metrics",
  "HostBusRXPercent": 35.53,
  "HostBusTXPercent": 14.17,
  "CPUCorePercent": 8.35,
  "NCSIRXFrames": 0,
  "NCSITXFrames": 0,
  "NCSIRXBytes": 0,
  "NCSITXBytes": 0,
  "RXBytes": 7754199970,
  "RXMulticastFrames": 1941,
  "RXUnicastFrames": 27193387,
  "TXBytes": 9436506547,
  "TXMulticastFrames": 153,
  "TXUnicastFrames": 18205770,
  "@odata.id": "/redfish/v1/Chassis/1U/NetworkAdapters/Slot1/Metrics"
}
```

6.83 NetworkDeviceFunction 1.9.0

| Version | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2021.4 | 2021.2 | 2021.1 | 2020.3 | 2020.1 | 2018.2 | 2017.3 | 2017.1 | 2016.3 |

6.83.1 Description

The NetworkDeviceFunction schema represents a logical interface that a network adapter exposes.

6.83.2 URIs

```
/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}
```

6.83.3 Properties

| Property | Type | Attributes | Notes |
|--|---------------|-------------------|---|
| AllowDeny (v1.7+) { | object | | The link to the collection of allow and deny permissions for packets leaving and arriving to this network device function. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>AllowDeny</i> . See the <i>AllowDeny</i> schema for details. |
| } | | | |
| AssignablePhysicalNetworkPorts (v1.5+) [{ | array | | An array of physical ports to which this network device function can be assigned. |
| @odata.id | string | read-only | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| }] | | | |
| AssignablePhysicalPorts (deprecated v1.5) [{ | array | | An array of physical ports to which this network device function can be assigned. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the AssignablePhysicalNetworkPorts property.</i> |
| @odata.id | string | read-only | Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details. |
| }] | | | |
| BootMode | string (enum) | read-write (null) | The boot mode configured for this network device function. <i>For the possible property values, see BootMode in Property details.</i> |
| DeviceEnabled | boolean | read-write (null) | An indication of whether the network device function is enabled. |

| Property | Type | Attributes | Notes |
|-------------------------------------|---------|---|---|
| Ethernet { | object | | The Ethernet capabilities, status, and configuration values for this network device function. |
| EthernetInterfaces (v1.7+) { | object | (null) | The Ethernet interface collection that represents all the Ethernet Interfaces on this network device function. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details. |
| } | | | |
| MACAddress | string | read-write (null) | The currently configured MAC address. |
| MTUSize | integer | read-write (null) | The maximum transmission unit (MTU) configured for this network device function. |
| MTUSizeMaximum (v1.5+) | integer | read-only (null) | The largest maximum transmission unit (MTU) size supported for this network device function. |
| PermanentMACAddress | string | read-only (null) | The permanent MAC address assigned to this function. |
| VLAN (v1.3+) { | object | | The VLAN information for this interface. If this network interface supports more than one VLAN, this property is not present. |
| Tagged (v1.3+) | boolean | read-write (null) | An indication of whether this VLAN is tagged or untagged for this interface. |
| VLANEnable | boolean | read-write required on create (null) | An indication of whether this VLAN is enabled for this VLAN network interface. |
| VLANId | integer | read-write required on create (null) | The ID for this VLAN. |
| VLANPriority (v1.2+) | integer | read-write (null) | The priority for this VLAN. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|---------|--------------------------|---|
| VLANs (v1.3+, deprecated v1.7 { | object | | The link to a collection of VLANs. This property is used only if the interface supports more than one VLAN. Contains a link to a resource. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of representing multiple VLANs as EthernetInterface resources.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VlanNetworkInterface</i> . See the <i>VlanNetworkInterface</i> schema for details. |
| } | | | |
| } | | | |
| FibreChannel { | object | | The Fibre Channel capabilities, status, and configuration values for this network device function. |
| AllowFIPVLANDiscovery | boolean | <i>read-write (null)</i> | An indication of whether the FCoE Initialization Protocol (FIP) populates the FCoE VLAN ID. |
| BootTargets [{ | array | | An array of Fibre Channel boot targets configured for this network device function. |
| BootPriority | integer | <i>read-write (null)</i> | The relative priority for this entry in the boot targets array. |
| LUNID | string | <i>read-write (null)</i> | The logical unit number (LUN) ID from which to boot on the device to which the corresponding WWPN refers. |
| WWPN | string | <i>read-write (null)</i> | The World Wide Port Name (WWPN) from which to boot. |
| }] | | | |
| FCoEActiveVLANId | integer | <i>read-only (null)</i> | The active FCoE VLAN ID. |
| FCoELocalVLANId | integer | <i>read-write (null)</i> | The locally configured FCoE VLAN ID. |
| FibreChannelId (v1.3+) | string | <i>read-only (null)</i> | The Fibre Channel ID that the switch assigns for this interface. |
| PermanentWWNN | string | <i>read-only (null)</i> | The permanent World Wide Node Name (WWNN) address assigned to this function. |
| PermanentWWPN | string | <i>read-only (null)</i> | The permanent World Wide Port Name (WWPN) address assigned to this function. |
| WWNN | string | <i>read-write (null)</i> | The currently configured World Wide Node Name (WWNN) address of this function. |

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------------------|--------------------------------------|---|
| WWNSource | string (enum) | <i>read-write</i> (<i>null</i>) | The configuration source of the World Wide Names (WWN) for this World Wide Node Name (WWNN) and World Wide Port Name (WWPN) connection. <i>For the possible property values, see WWNSource in Property details.</i> |
| WWPN | string | <i>read-write</i> (<i>null</i>) | The currently configured World Wide Port Name (WWPN) address of this function. |
| } | | | |
| HTTPBoot (v1.9+) { | object | | The HTTP and HTTPS boot capabilities, status, and configuration values for this network device function. |
| BootMediaURI (v1.9+) | string (URI) | <i>read-write</i> (<i>null</i>) | The URI of the boot media loaded with this network device function. |
| } | | | |
| InfiniBand (v1.5+) { | object | | The InfiniBand capabilities, status, and configuration values for this network device function. |
| MTUSize (v1.5+) | integer | <i>read-write</i> (<i>null</i>) | The maximum transmission unit (MTU) configured for this network device function. |
| NodeGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | This is the currently configured node GUID of the network device function. |
| PermanentNodeGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The permanent node GUID assigned to this network device function. |
| PermanentPortGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The permanent port GUID assigned to this network device function. |
| PermanentSystemGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The permanent system GUID assigned to this network device function. |
| PortGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | The currently configured port GUID of the network device function. |
| SupportedMTUSizes (v1.5+) [] | array (integer, null) | <i>read-only</i> | The maximum transmission unit (MTU) sizes supported for this network device function. |
| SystemGUID (v1.5+) | string | <i>read-only</i> (<i>null</i>) | This is the currently configured system GUID of the network device function. |
| } | | | |
| iSCSIBoot { | object | | The iSCSI boot capabilities, status, and configuration values for this network device function. |

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|--------------------------------------|---|
| AuthenticationMethod | string (enum) | <i>read-write</i> (<i>null</i>) | The iSCSI boot authentication method for this network device function. <i>For the possible property values, see AuthenticationMethod in Property details.</i> |
| CHAPSecret | string | <i>read-write</i> (<i>null</i>) | The shared secret for CHAP authentication. |
| CHAPUsername | string | <i>read-write</i> (<i>null</i>) | The user name for CHAP authentication. |
| InitiatorDefaultGateway | string | <i>read-write</i> (<i>null</i>) | The IPv6 or IPv4 iSCSI boot default gateway. |
| InitiatorIPAddress | string | <i>read-write</i> (<i>null</i>) | The IPv6 or IPv4 address of the iSCSI initiator. |
| InitiatorName | string | <i>read-write</i> (<i>null</i>) | The iSCSI initiator name. |
| InitiatorNetmask | string | <i>read-write</i> (<i>null</i>) | The IPv6 or IPv4 netmask of the iSCSI boot initiator. |
| IPAddressType | string (enum) | <i>read-write</i> (<i>null</i>) | The type of IP address being populated in the iSCSIBoot IP address fields. <i>For the possible property values, see IPAddressType in Property details.</i> |
| IPMaskDNSViaDHCP | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask. |
| MutualCHAPSecret | string | <i>read-write</i> (<i>null</i>) | The CHAP secret for two-way CHAP authentication. |
| MutualCHAPUsername | string | <i>read-write</i> (<i>null</i>) | The CHAP user name for two-way CHAP authentication. |
| PrimaryDNS | string | <i>read-write</i> (<i>null</i>) | The IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator. |
| PrimaryLUN | integer | <i>read-write</i> (<i>null</i>) | The logical unit number (LUN) for the primary iSCSI boot target. |
| PrimaryTargetIPAddress | string | <i>read-write</i> (<i>null</i>) | The IPv4 or IPv6 address for the primary iSCSI boot target. |
| PrimaryTargetName | string | <i>read-write</i> (<i>null</i>) | The name of the iSCSI primary boot target. |
| PrimaryTargetTCPPort | integer | <i>read-write</i> (<i>null</i>) | The TCP port for the primary iSCSI boot target. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|--|
| PrimaryVLANEnable | boolean | <i>read-write</i> (null) | An indication of whether the primary VLAN is enabled. |
| PrimaryVLANId | integer | <i>read-write</i> (null) | The 802.1q VLAN ID to use for iSCSI boot from the primary target. |
| RouterAdvertisementEnabled | boolean | <i>read-write</i> (null) | An indication of whether IPv6 router advertisement is enabled for the iSCSI boot target. |
| SecondaryDNS | string | <i>read-write</i> (null) | The IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator. |
| SecondaryLUN | integer | <i>read-write</i> (null) | The logical unit number (LUN) for the secondary iSCSI boot target. |
| SecondaryTargetIPAddress | string | <i>read-write</i> (null) | The IPv4 or IPv6 address for the secondary iSCSI boot target. |
| SecondaryTargetName | string | <i>read-write</i> (null) | The name of the iSCSI secondary boot target. |
| SecondaryTargetTCPPort | integer | <i>read-write</i> (null) | The TCP port for the secondary iSCSI boot target. |
| SecondaryVLANEnable | boolean | <i>read-write</i> (null) | An indication of whether the secondary VLAN is enabled. |
| SecondaryVLANId | integer | <i>read-write</i> (null) | The 802.1q VLAN ID to use for iSCSI boot from the secondary target. |
| TargetInfoViaDHCP | boolean | <i>read-write</i> (null) | An indication of whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP. |
| } | | | |
| Limits (v1.7+) [{ | array | | The byte and packet limits for this network device function. |
| BurstBytesPerSecond (v1.7+) | integer | <i>read-write</i> (null) | The maximum number of bytes per second in a burst for this network device function. |
| BurstPacketsPerSecond (v1.7+) | integer | <i>read-write</i> (null) | The maximum number of packets per second in a burst for this network device function. |
| Direction (v1.7+) | string (enum) | <i>read-write</i> (null) | Indicates the direction of the data to which this limit applies. <i>For the possible property values, see Direction in Property details.</i> |
| SustainedBytesPerSecond (v1.7+) | integer | <i>read-write</i> (null) | The maximum number of sustained bytes per second for this network device function. |

| Property | Type | Attributes | Notes |
|---|---------|--------------------------------------|--|
| SustainedPacketsPerSecond (v1.7+) | integer | <i>read-write</i> (<i>null</i>) | The maximum number of sustained packets per second for this network device function. |
| }] | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Endpoints (v1.2+) [{ | array | | An array of links to endpoints associated with this network device function. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| EthernetInterface (v1.4+, deprecated v1.7 { | object | | The link to a virtual Ethernet interface that was created when one of the network device function VLANs is represented as a virtual NIC for the purpose of showing the IP address associated with that VLAN. See the <i>EthernetInterface</i> schema for details on this property. <i>Deprecated in v1.7 and later. This property has been deprecated in favor of EthernetInterfaces as each NetworkDeviceFunction could have more than one EthernetInterface.</i> |
| @odata.id | string | <i>read-only</i> | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |
| } | | | |
| EthernetInterfaces (v1.7+) [{ | array | | The links to Ethernet interfaces that were created when one of the network device function VLANs is represented as a virtual NIC for the purpose of showing the IP address associated with that VLAN. |
| @odata.id | string | <i>read-only</i> | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| OffloadProcessors (v1.7+) [{ | array | | The processors that perform offload computation for this network function, such as with a SmartNIC. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|---------|------------------|---|
| OffloadSystem (v1.7+) { | object | | The system that performs offload computation for this network function, such as with a SmartNIC. See the <i>ComputerSystem</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| } | | | |
| PCleFunction { | object | | The link to the PCIe function associated with this network device function. See the <i>PCleFunction</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| } | | | |
| PhysicalNetworkPortAssignment (v1.5+) { | object | | The physical port to which this network device function is currently assigned. See the <i>Port</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| } | | | |
| PhysicalPortAssignment (v1.3+, deprecated v1.5) { | object | | The physical port to which this network device function is currently assigned. See the <i>NetworkPort</i> schema for details on this property. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the PhysicalNetworkPortAssignment property.</i> |
| @odata.id | string | read-only | Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details. |
| } | | | |
| } | | | |
| MaxVirtualFunctions | integer | read-only (null) | The number of virtual functions that are available for this network device function. |
| Metrics (v1.6+) { | object | (null) | The link to the metrics associated with this network function. See the <i>NetworkDeviceFunctionMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a NetworkDeviceFunctionMetrics resource. See the Links section and the <i>NetworkDeviceFunctionMetrics</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|-----------------------------|--------------------------------------|---|
| } | | | |
| NetDevFuncCapabilities [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | An array of capabilities for this network device function. For the possible property values, see <i>NetDevFuncCapabilities</i> in Property details. |
| NetDevFuncType | string (enum) | <i>read-write</i> (<i>null</i>) | The configured capability of this network device function. For the possible property values, see <i>NetDevFuncType</i> in Property details. |
| PhysicalNetworkPortAssignment (v1.5+, deprecated v1.8 { | object | | The physical port to which this network device function is currently assigned. See the <i>Port</i> schema for details on this property. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of PhysicalNetworkPortAssignment within Links to avoid loops on expand.</i> |
| @odata.id | string | <i>read-only</i> | Link to a Port resource. See the Links section and the <i>Port</i> schema for details. |
| } | | | |
| PhysicalPortAssignment (deprecated v1.3) { | object | | The physical port to which this network device function is currently assigned. See the <i>NetworkPort</i> schema for details on this property. <i>Deprecated in v1.3 and later. This property has been deprecated and moved to the Links property to avoid loops on expand.</i> |
| @odata.id | string | <i>read-only</i> | Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details. |
| } | | | |
| SAVIEEnabled (v1.7+) | boolean | <i>read-write</i> (<i>null</i>) | Indicates if Source Address Validation Improvement (SAVI) is enabled for this network device function. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| VirtualFunctionsEnabled | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether single root input/output virtualization (SR-IOV) virtual functions are enabled for this network device function. |

6.83.4 Property details

6.83.4.1 AuthenticationMethod

The iSCSI boot authentication method for this network device function.

| string | Description |
|------------|---|
| CHAP | iSCSI Challenge Handshake Authentication Protocol (CHAP) authentication is used. |
| MutualCHAP | iSCSI Mutual Challenge Handshake Authentication Protocol (CHAP) authentication is used. |
| None | No iSCSI authentication is used. |

6.83.4.2 BootMode

The boot mode configured for this network device function.

| string | Description |
|--------------------------|--|
| Disabled | Do not indicate to UEFI/BIOS that this device is bootable. |
| FibreChannel | Boot this device by using the embedded Fibre Channel support and configuration. Only applicable if the NetDevFuncType is <code>FibreChannel</code> . |
| FibreChannelOverEthernet | Boot this device by using the embedded Fibre Channel over Ethernet (FCoE) boot support and configuration. Only applicable if the NetDevFuncType is <code>FibreChannelOverEthernet</code> . |
| HTTP (v1.9+) | Boot this device by using the embedded HTTP/HTTPS support. Only applicable if the NetDevFuncType is <code>Ethernet</code> . |
| iSCSI | Boot this device by using the embedded iSCSI boot support and configuration. Only applicable if the NetDevFuncType is <code>iSCSI</code> or <code>Ethernet</code> . |
| PXE | Boot this device by using the embedded PXE support. Only applicable if the NetDevFuncType is <code>Ethernet</code> or <code>InfiniBand</code> . |

6.83.4.3 Direction

Indicates the direction of the data to which this limit applies.

| string | Description |
|---------|--|
| Egress | Indicates that this limit is enforced on packets and bytes transmitted by the network device function. |
| Ingress | Indicates that this limit is enforced on packets and bytes received by the network device function. |
| None | Indicates that this limit not enforced. |

6.83.4.4 IPAddressType

The type of IP address being populated in the iSCSIBoot IP address fields.

| string | Description |
|--------|---|
| IPv4 | IPv4 addressing is used for all IP-fields in this object. |
| IPv6 | IPv6 addressing is used for all IP-fields in this object. |

6.83.4.5 NetDevFuncCapabilities

An array of capabilities for this network device function.

| string | Description |
|--------------------------|--|
| Disabled | Neither enumerated nor visible to the operating system. |
| Ethernet | Appears to the operating system as an Ethernet device. |
| FibreChannel | Appears to the operating system as a Fibre Channel device. |
| FibreChannelOverEthernet | Appears to the operating system as an FCoE device. |
| InfiniBand | Appears to the operating system as an InfiniBand device. |
| iSCSI | Appears to the operating system as an iSCSI device. |

6.83.4.6 NetDevFuncType

The configured capability of this network device function.

| string | Description |
|--------------------------|--|
| Disabled | Neither enumerated nor visible to the operating system. |
| Ethernet | Appears to the operating system as an Ethernet device. |
| FibreChannel | Appears to the operating system as a Fibre Channel device. |
| FibreChannelOverEthernet | Appears to the operating system as an FCoE device. |
| InfiniBand (v1.5+) | Appears to the operating system as an InfiniBand device. |
| iSCSI | Appears to the operating system as an iSCSI device. |

6.83.4.7 WWNSource

The configuration source of the World Wide Names (WWN) for this World Wide Node Name (WWNN) and World Wide Port Name (WWPN) connection.

| string | Description |
|-------------------|--|
| ConfiguredLocally | The set of FC/FCoE boot targets was applied locally through API or UI. |
| ProvidedByFabric | The set of FC/FCoE boot targets was applied by the Fibre Channel fabric. |

6.83.5 Example response

```
{
  "@odata.type": "#NetworkDeviceFunction.v1_9_0.NetworkDeviceFunction",
  "Id": "111111111100",
  "Name": "Network Device Function View",
  "NetDevFuncType": "Ethernet",
  "DeviceEnabled": true,
  "NetDevFuncCapabilities": [
    "Ethernet",
    "FibreChannel"
  ],
  "Ethernet": {
    "PermanentMACAddress": "00:0C:29:9A:98:ED",
    "MACAddress": "00:0C:29:9A:98:ED",
    "MTUSize": 1500,
    "VLAN": {
      "VLANEnable": true,
      "VLANId": 101
    }
  },
  "iSCSIBoot": {
    "IPAddressType": "IPv4",
    "InitiatorIPAddress": "16.0.11.6",
    "InitiatorName": "iqn.2005-03.com.acme:database-server",
    "InitiatorDefaultGateway": "169.0.16.1",
    "InitiatorNetmask": "255.255.252.0",
    "TargetInfoViaDHCP": false,
    "PrimaryTargetName": "iqn.2005-03.com.acme:image-server",
    "PrimaryTargetIPAddress": "169.0.15.1",
    "PrimaryTargetTCPPort": 3260,
    "PrimaryLUN": 5,
    "PrimaryVLANEnable": true,
    "PrimaryVLANId": 1001,
    "PrimaryDNS": "16.0.10.21",
  }
}
```

```

    "SecondaryTargetName": "iqn.2005-03.com.acme:image-server",
    "SecondaryTargetIPAddress": "16.0.11.5",
    "SecondaryTargetTCPPort": 3260,
    "SecondaryLUN": 5,
    "SecondaryVLANEnable": true,
    "SecondaryVLANId": 1002,
    "SecondaryDNS": "169.0.10.22",
    "IPMaskDNSViaDHCP": false,
    "RouterAdvertisementEnabled": false,
    "AuthenticationMethod": "CHAP",
    "CHAPUsername": "yosemite",
    "CHAPSecret": "usrpasswd",
    "MutualCHAPUsername": "yosemite",
    "MutualCHAPSecret": "usrpasswd"
  },
  "FibreChannel": {
    "PermanentWWPN": "10:00:B0:5A:DD:BB:74:E0",
    "PermanentWWNN": "10:00:B0:5A:DD:BB:A1:B3",
    "WWPN": "10:00:B0:5A:DD:BB:74:E0",
    "WWNN": "10:00:B0:5A:DD:C4:D3:BB",
    "WNNSource": "ConfiguredLocally",
    "FCoELocalVLANId": 1001,
    "AllowFIPVLANDiscovery": true,
    "FCoEActiveVLANId": 2001,
    "BootTargets": [
      {
        "WWPN": "10:00:B0:5A:DD:BB:74:FA",
        "LUNID": "3",
        "BootPriority": 0
      }
    ]
  },
  "AssignablePhysicalNetworkPorts": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Ports/1"
    }
  ],
  "BootMode": "Disabled",
  "VirtualFunctionsEnabled": true,
  "MaxVirtualFunctions": 16,
  "Links": {
    "PCIeFunction": {
      "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC/PCIeFunctions/1"
    },
    "PhysicalNetworkPortAssignment": {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Ports/1"
    }
  },
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
}

```

6.84 NetworkDeviceFunctionMetrics 1.1.1

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2021.2 | 2021.1 |

6.84.1 Description

The NetworkDeviceFunctionMetrics schema contains usage and health statistics for a network function of a network adapter.

6.84.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/Metrics

6.84.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|---------|-----------------------------------|--|
| Ethernet { | object | | The network function metrics specific to Ethernet adapters. |
| NumOffloadedIPv4Conns | integer | <i>read-only</i> <i>(null)</i> | The total number of offloaded TCP/IPv4 connections. |
| NumOffloadedIPv6Conns | integer | <i>read-only</i> <i>(null)</i> | The total number of offloaded TCP/IPv6 connections. |
| } | | | |
| FibreChannel (v1.1+) { | object | | The network function metrics specific to Fibre Channel adapters. |
| PortLoginAccepts (v1.1+) | integer | <i>read-only</i> <i>(null)</i> | The total number of port login (PLOGI) accept (ACC) responses. |
| PortLoginRejects (v1.1+) | integer | <i>read-only</i> <i>(null)</i> | The total number of port login (PLOGI) reject (RJT) responses. |
| PortLoginRequests (v1.1+) | integer | <i>read-only</i> <i>(null)</i> | The total number of port login (PLOGI) requests transmitted. |
| RXCongestionFPINs (v1.1+) | integer | <i>read-only</i> <i>(null)</i> | The total number of Congestion Fabric Performance Impact Notifications (FPINs) received. |

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------|----------------------------|---|
| RXDeliveryFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Delivery Fabric Performance Impact Notifications (FPINs) received. |
| RXExchanges (v1.1+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel exchanges received. |
| RXLinkIntegrityFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) received. |
| RXPeerCongestionFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) received. |
| RXSequences (v1.1+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel sequences received. |
| TXCongestionFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Congestion Fabric Performance Impact Notifications (FPINs) sent. |
| TXDeliveryFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Delivery Fabric Performance Impact Notifications (FPINs) sent. |
| TXExchanges (v1.1+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel exchanges transmitted. |
| TXLinkIntegrityFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) sent. |
| TXPeerCongestionFPINs (v1.1+) | integer | <i>read-only</i> (null) | The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) sent. |
| TXSequences (v1.1+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel sequences transmitted. |
| } | | | |
| RXAvgQueueDepthPercent | number (%) | <i>read-only</i> (null) | The average RX queue depth as the percentage. |
| RXBytes | integer (bytes) | <i>read-only</i> (null) | The total number of bytes received on a network function. |
| RXFrames | integer | <i>read-only</i> (null) | The total number of frames received on a network function. |
| RXMulticastFrames | integer | <i>read-only</i> (null) | The total number of good multicast frames received on a network function since reset. |
| RXQueuesEmpty | boolean | <i>read-only</i> (null) | Whether nothing is in a network function's RX queues to DMA. |

| Property | Type | Attributes | Notes |
|-------------------------------|-----------------|-----------------------------------|--|
| RXQueuesFull | integer | <i>read-only</i> <i>(null)</i> | The number of RX queues that are full. |
| RXUnicastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good unicast frames received on a network function since reset. |
| TXAvgQueueDepthPercent | number (%) | <i>read-only</i> <i>(null)</i> | The average TX queue depth as the percentage. |
| TXBytes | integer (bytes) | <i>read-only</i> <i>(null)</i> | The total number of bytes sent on a network function. |
| TXFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of frames sent on a network function. |
| TXMulticastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good multicast frames transmitted on a network function since reset. |
| TXQueuesEmpty | boolean | <i>read-only</i> <i>(null)</i> | Whether all TX queues for a network function are empty. |
| TXQueuesFull | integer | <i>read-only</i> <i>(null)</i> | The number of TX queues that are full. |
| TXUnicastFrames | integer | <i>read-only</i> <i>(null)</i> | The total number of good unicast frames transmitted on a network function since reset. |

6.84.4 Example response

```
{
  "@odata.type": "#NetworkDeviceFunctionMetrics.v1_1_1.NetworkDeviceFunctionMetrics",
  "Id": "NetworkDeviceFunctionMetrics",
  "Name": "Network Device Function Metrics",
  "TXAvgQueueDepthPercent": 13.7,
  "RXAvgQueueDepthPercent": 21.2,
  "RXFrames": 27193387,
  "RXBytes": 7754199970,
  "RXUnicastFrames": 26193387,
  "RXMulticastFrames": 1000000,
  "TXFrames": 18205770,
  "TXBytes": 9436506547,
  "TXUnicastFrames": 17205770,
  "TXMulticastFrames": 1000000,
  "TXQueuesEmpty": false,
  "RXQueuesEmpty": false,
  "TXQueuesFull": 0,
  "RXQueuesFull": 0,
}
```

```

    "Ethernet": {
      "NumOffloadedIPv4Conns": 0,
      "NumOffloadedIPv6Conns": 0
    },
    "@odata.id": "/redfish/v1/Chassis/1U/NetworkAdapters/Slot1/NetworkDeviceFunctions/SC2KP1F0/Metrics"
  }

```

6.85 NetworkInterface 1.2.1

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|
| Release | 2020.3 | 2017.1 | 2016.3 |

6.85.1 Description

The NetworkInterface schema describes links to the network adapters, network ports, and network device functions, and represents the functionality available to the containing system.

6.85.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.85.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------|--------|------------------|--|
| Links { | object | | The links to other resources that are related to this resource. |
| NetworkAdapter { | object | | The link to the network adapter that contains this network interface. See the <i>NetworkAdapter</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkAdapter resource. See the Links section and the <i>NetworkAdapter</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|--------|------------------|---|
| NetworkDeviceFunctions { | object | | The link to the network device functions associated with this network interface. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkDeviceFunction</i> . See the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| NetworkPorts (<i>deprecated v1.2</i>) { | object | | The link to the network ports associated with this network interface. Contains a link to a resource. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the Ports property.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>NetworkPort</i> . See the <i>NetworkPort</i> schema for details. |
| } | | | |
| Ports (<i>v1.2+</i>) { | object | | The link to the ports associated with this network interface. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |

6.85.4 Example response

```
{
  "@odata.type": "#NetworkInterface.v1_2_1.NetworkInterface",
  "Id": "9fa725a1",
  "Name": "Network Device View",
  "NetworkPorts": {
    "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1/NetworkPorts"
  },
  "NetworkDeviceFunctions": {
    "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1/NetworkDeviceFunctions"
  },
  "Links": {
    "NetworkAdapter": {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1"
    }
  },
  "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1"
}
```

6.86 NetworkPort 1.4.1 (deprecated)

| Version | v1.4 Deprecated | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|-----------------|--------|--------|--------|--------|
| Release | 2020.4 | 2020.3 | 2018.2 | 2017.1 | 2016.3 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the Port schema.

6.86.1 Description

The NetworkPort schema describes a network port, which is a discrete physical port that can connect to a network.

6.86.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkPorts/{NetworkPortId} (deprecated)

6.86.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|----------------------|-------------------|---|
| ActiveLinkTechnology | string (enum) | read-write (null) | Network port active link technology. <i>For the possible property values, see ActiveLinkTechnology in Property details.</i> |
| AssociatedNetworkAddresses [] | array (string, null) | read-only | An array of configured MAC or WWN network addresses that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |
| CurrentLinkSpeedMbps (v1.2+) | integer (Mbit/s) | read-write (null) | Network port current link speed. |
| EEEEnabled | boolean | read-write (null) | An indication of whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled for this network port. |
| FCFabricName (v1.2+) | string | read-only (null) | The FC Fabric Name provided by the switch. |

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------|-------------------|--|
| FCPortConnectionType (v1.2+) | string (enum) | read-only (null) | The connection type of this port. <i>For the possible property values, see FCPortConnectionType in Property details.</i> |
| FlowControlConfiguration | string (enum) | read-write (null) | The locally configured 802.3x flow control setting for this network port. <i>For the possible property values, see FlowControlConfiguration in Property details.</i> |
| FlowControlStatus | string (enum) | read-only (null) | The 802.3x flow control behavior negotiated with the link partner for this network port (Ethernet-only). <i>For the possible property values, see FlowControlStatus in Property details.</i> |
| LinkStatus | string (enum) | read-only (null) | The status of the link between this port and its link partner. <i>For the possible property values, see LinkStatus in Property details.</i> |
| MaxFrameSize (v1.2+) | integer (bytes) | read-only (null) | The maximum frame size supported by the port. |
| NetDevFuncMaxBWAlloc [{ | array | | An array of maximum bandwidth allocation percentages for the network device functions associated with this port. |
| MaxBWAllocPercent | integer (%) | read-write (null) | The maximum bandwidth allocation percentage allocated to the corresponding network device function instance. |
| NetworkDeviceFunction { | object | | The link to the network device function associated with this bandwidth setting of this network port. See the <i>NetworkDeviceFunction</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| }] | | | |
| NetDevFuncMinBWAlloc [{ | array | | An array of minimum bandwidth allocation percentages for the network device functions associated with this port. |
| MinBWAllocPercent | integer (%) | read-write (null) | The minimum bandwidth allocation percentage allocated to the corresponding network device function instance. |
| NetworkDeviceFunction { | object | | The link to the network device function associated with this bandwidth setting of this network port. See the <i>NetworkDeviceFunction</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|-----------------------------|--------------------------------------|---|
| NumberDiscoveredRemotePorts (v1.2+) | integer | <i>read-only</i> (<i>null</i>) | The number of ports not on this adapter that this port has discovered. |
| PhysicalPortNumber | string | <i>read-only</i> (<i>null</i>) | The physical port number label for this port. |
| PortMaximumMTU | integer | <i>read-only</i> (<i>null</i>) | The largest maximum transmission unit (MTU) that can be configured for this network port. |
| SignalDetected | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the port has detected enough signal on enough lanes to establish a link. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedEthernetCapabilities [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The set of Ethernet capabilities that this port supports. <i>For the possible property values, see SupportedEthernetCapabilities in Property details.</i> |
| SupportedLinkCapabilities [{ | array | | The link capabilities of this port. |
| AutoSpeedNegotiation (v1.2+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the port is capable of autonegotiating speed. |
| CapableLinkSpeedMbps (v1.2+) [] | array (integer, null) | <i>read-only</i> | The set of link speed capabilities of this port. |
| LinkNetworkTechnology | string (enum) | <i>read-only</i> (<i>null</i>) | The link network technology capabilities of this port. <i>For the possible property values, see LinkNetworkTechnology in Property details.</i> |
| LinkSpeedMbps (<i>deprecated</i> v1.2) | integer (Mbit/s) | <i>read-only</i> (<i>null</i>) | The speed of the link in Mbit/s when this link network technology is active. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the CapableLinkSpeedMbps.</i> |
| }] | | | |
| VendorId (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The vendor Identification for this port. |
| WakeOnLANEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether Wake on LAN (WoL) is enabled for this network port. |

6.86.4 Property details

6.86.4.1 ActiveLinkTechnology

Network port active link technology.

| string | Description |
|--------------|---|
| Ethernet | The port is capable of connecting to an Ethernet network. |
| FibreChannel | The port is capable of connecting to a Fibre Channel network. |
| InfiniBand | The port is capable of connecting to an InfiniBand network. |

6.86.4.2 FCPortConnectionType

The connection type of this port.

| string | Description |
|----------------|---|
| ExtenderFabric | This port connection type is an extender fabric port. |
| Generic | This port connection type is a generic fabric port. |
| NotConnected | This port is not connected. |
| NPort | This port connects through an N-port to a switch. |
| PointToPoint | This port connects in a point-to-point configuration. |
| PrivateLoop | This port connects in a private loop configuration. |
| PublicLoop | This port connects in a public configuration. |

6.86.4.3 FlowControlConfiguration

The locally configured 802.3x flow control setting for this network port.

| string | Description |
|--------|---|
| None | No IEEE 802.3x flow control is enabled on this port. |
| RX | The link partner can initiate IEEE 802.3x flow control. |

| string | Description |
|--------|---|
| TX | This station can initiate IEEE 802.3x flow control. |
| TX_RX | This station or the link partner can initiate IEEE 802.3x flow control. |

6.86.4.4 FlowControlStatus

The 802.3x flow control behavior negotiated with the link partner for this network port (Ethernet-only).

| string | Description |
|--------|---|
| None | No IEEE 802.3x flow control is enabled on this port. |
| RX | The link partner can initiate IEEE 802.3x flow control. |
| TX | This station can initiate IEEE 802.3x flow control. |
| TX_RX | This station or the link partner can initiate IEEE 802.3x flow control. |

6.86.4.5 LinkNetworkTechnology

The link network technology capabilities of this port.

| string | Description |
|--------------|---|
| Ethernet | The port is capable of connecting to an Ethernet network. |
| FibreChannel | The port is capable of connecting to a Fibre Channel network. |
| InfiniBand | The port is capable of connecting to an InfiniBand network. |

6.86.4.6 LinkStatus

The status of the link between this port and its link partner.

| string | Description |
|------------------|---|
| Down | The port is enabled but link is down. |
| Starting (v1.3+) | This link on this interface is starting. A physical link has been established, but the port is not able to transfer data. |

| string | Description |
|------------------|---|
| Training (v1.3+) | This physical link on this interface is training. |
| Up | The port is enabled and link is good (up). |

6.86.4.7 SupportedEthernetCapabilities

The set of Ethernet capabilities that this port supports.

| string | Description |
|-----------|---|
| EEE | IEEE 802.3az Energy-Efficient Ethernet (EEE) is supported on this port. |
| WakeOnLAN | Wake on LAN (WoL) is supported on this port. |

6.86.5 Example response

```
{
  "@odata.type": "#NetworkPort.v1_4_1.NetworkPort",
  "Id": "1",
  "Name": "Network Port View",
  "PhysicalPortNumber": "1",
  "LinkStatus": "Up",
  "SupportedLinkCapabilities": [
    {
      "AutoSpeedNegotiation": true,
      "LinkNetworkTechnology": "Ethernet",
      "CapableLinkSpeedMbps": [
        10,
        100,
        10000
      ]
    }
  ],
  "ActiveLinkTechnology": "Ethernet",
  "SupportedEthernetCapabilities": [
    "WakeOnLAN",
    "EEE"
  ],
  "NetDevFuncMinBWAlloc": [
    {
      "NetworkDeviceFunction": {
        "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/11111111100"
      },
      "MinBWAllocPercent": 25
    }
  ]
}
```

```

    }
  ],
  "NetDevFuncMaxBWAlloc": [
    {
      "NetworkDeviceFunction": {
        "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/11111111100"
      },
      "MaxBWAllocPercent": 100
    }
  ],
  "AssociatedNetworkAddresses": [
    "00:0C:29:9A:98:ED",
    "00:0C:29:9A:98:EF"
  ],
  "EEEEnabled": true,
  "WakeOnLANEnabled": true,
  "PortMaximumMTU": 1500,
  "FlowControlStatus": "None",
  "FlowControlConfiguration": "None",
  "SignalDetected": true,
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts/1"
}

```

6.87 OperatingConfig 1.0.2

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2020.2 |

6.87.1 Description

The OperatingConfig schema specifies a configuration that can be used when the processor is operational.

6.87.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/OperatingConfigs/{OperatingConfigId}

6.87.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------------|-------------------------|---|
| BaseSpeedMHz | integer (MHz) | <i>read-only (null)</i> | The base (nominal) clock speed of the processor in MHz. |
| BaseSpeedPrioritySettings [{ | array | | The clock speed for sets of cores when the configuration is operational. |
| BaseSpeedMHz | integer (MHz) | <i>read-only (null)</i> | The clock speed to configure the set of cores in MHz. |
| CoreCount | integer | <i>read-only (null)</i> | The number of cores to configure with a specified speed. |
| CoreIDs [] | array (integer, null) | <i>read-only</i> | The identifier of the cores to configure with the specified speed. |
| }] | | | |
| MaxJunctionTemperatureCelsius | integer (Celsius) | <i>read-only (null)</i> | The maximum temperature of the junction in degrees Celsius. |
| MaxSpeedMHz | integer (MHz) | <i>read-only (null)</i> | The maximum clock speed to which the processor can be configured in MHz. |
| TDPWatts | integer (Watts) | <i>read-only (null)</i> | The thermal design point of the processor in watts. |
| TotalAvailableCoreCount | integer | <i>read-only (null)</i> | The number of cores in the processor that can be configured. |
| TurboProfile [{ | array | | The turbo profiles for the processor. A turbo profile is the maximum turbo clock speed as a function of the number of active cores. |
| ActiveCoreCount | integer | <i>read-only (null)</i> | The number of active cores to be configured with the specified maximum clock speed. |
| MaxSpeedMHz | integer (MHz) | <i>read-only (null)</i> | The maximum turbo clock speed that correspond to the number of active cores in MHz. |
| }] | | | |

6.87.4 Example response

```
{
  "@odata.type": "#OperatingConfig.v1_0_2.OperatingConfig",
  "Id": "0",
  "Name": "Processor Profile",
  "TotalAvailableCoreCount": 28,
  "TDPWatts": 150,
  "BaseSpeedMHz": 2500,
  "MaxSpeedMHz": 4100,
  "MaxJunctionTemperatureCelsius": 90,
  "TurboProfile": [
    {
      "ActiveCoreCount": 2,
      "MaxSpeedMHz": 4100
    },
    {
      "ActiveCoreCount": 4,
      "MaxSpeedMHz": 4000
    },
    {
      "ActiveCoreCount": 8,
      "MaxSpeedMHz": 3800
    },
    {
      "ActiveCoreCount": 28,
      "MaxSpeedMHz": 3200
    }
  ],
  "BaseSpeedPrioritySettings": [
    {
      "CoreCount": 8,
      "CoreIDs": [
        0,
        2,
        3,
        4,
        5,
        6,
        7,
        8
      ],
      "BaseSpeedMHz": 2900
    },
    {
      "CoreCount": 20,
      "BaseSpeedMHz": 2200
    }
  ],
}
```

```
"@odata.id": "/redfish/v1/Systems/operating-config-example/Processors/CPU1/OperatingConfigs/0"
}
```

6.88 OperatingSystem 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.2 |

6.88.1 Description

The OperatingSystem schema represents the operating system and software running on a computer system.

6.88.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/OperatingSystem

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.88.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|----------------------------|-------------------------|--|
| Applications { | object | | The link to the collection of applications running under this operating system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Application</i> . See the Application schema for details. |
| } | | | |
| ContainerEngines [{ | array | | The container engines running in this operating system. |
| ManagementURIs [] | array (URI) (string, null) | <i>read-only</i> | The URIs to manage this container engine. |
| SupportedImageTypes [] | array (string (enum)) | <i>read-only (null)</i> | The supported image types for this container engine. <i>For the possible property values, see SupportedImageTypes in Property details.</i> |

| Property | Type | Attributes | Notes |
|--------------------------|------------------|-------------------------------------|--|
| Type | string (enum) | <i>read-only</i> (<i>null</i>) | The type of container engine. <i>For the possible property values, see Type in Property details.</i> |
| Version | string | <i>read-only</i> (<i>null</i>) | The version of this container engine. |
| }] | | | |
| ContainerImages { | object | | The link to the collection of container images available to container engines on this operating system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ContainerImage</i> . See the ContainerImage schema for details. |
| } | | | |
| Containers { | object | | The link to the collection of containers running under this operating system. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Container</i> . See the Container schema for details. |
| } | | | |
| Kernel { | object | (<i>null</i>) | The kernel information for this operating system. |
| Machine | string | <i>read-only</i> (<i>null</i>) | The machine hardware name of the kernel. |
| Name | string | <i>read-only</i> (<i>null</i>) | The name of the kernel. |
| Release | string | <i>read-only</i> (<i>null</i>) | The release of the kernel. |
| Version | string | <i>read-only</i> (<i>null</i>) | The version of the kernel. |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SoftwareImage { | object | | The link to the software image for this operating system. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |

| Property | Type | Attributes | Notes |
|----------------------------------|----------------------------|-------------------------|--|
| } | | | |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Type | string (enum) | <i>read-only (null)</i> | The type of operating system. <i>For the possible property values, see Type in Property details.</i> |
| UptimeSeconds | integer | <i>read-only (null)</i> | The wall-clock time this operating system has been running in seconds. |
| VirtualMachineEngines [{ | array | | The virtual machine engines running in this operating system. |
| ManagementURIs [] | array (URI) (string, null) | <i>read-only</i> | The URIs to manage this virtual machine engine. |
| SupportedImageTypes [] | array (string (enum)) | <i>read-only (null)</i> | The supported image types for this container engine. <i>For the possible property values, see SupportedImageTypes in Property details.</i> |
| Type | string (enum) | <i>read-only (null)</i> | The type of virtual machine engine. <i>For the possible property values, see Type in Property details.</i> |
| Version | string | <i>read-only (null)</i> | The version of this virtual machine engine. |
| }] | | | |

6.88.4 Property details

6.88.4.1 SupportedImageTypes

6.88.4.1.1 In ContainerEngines:

The supported image types for this container engine.

| string | Description |
|----------|-------------|
| DockerV1 | Docker V1. |
| DockerV2 | Docker V2. |

| string | Description |
|--------|----------------------------------|
| OCI | OCI (Open Container Initiative). |

6.88.4.1.2 In VirtualMachineEngines:

The supported image types for this container engine.

| string | Description |
|--------|---------------------------------------|
| OVA | OVA (Open Virtual Appliance). |
| OVF | OVF (Open Virtualization Format). |
| QCOW | QCOW (QEMU Copy-on-Write). |
| QCOW2 | QCOW2 (QEMU Copy-on-Write version 2). |
| Raw | Raw disk image. |
| VDI | VDI (Virtual Disk Image). |
| VHD | VHD (Virtual Hard Disk). |
| VMDK | VMDK (Virtual Machine Disk). |

6.88.4.2 Type

6.88.4.2.1 In top level:

The type of operating system.

| string | Description |
|------------|---------------------------------|
| AIX | IBM AIX. |
| BSD | Berkeley Software Distribution. |
| HPUX | HPE HP-UX. |
| Hypervisor | A bare metal hypervisor. |
| IBMi | IBM i. |
| Linux | Linux. |
| macOS | Apple macOS. |

| string | Description |
|---------|--------------------|
| Solaris | Oracle Solaris. |
| Windows | Microsoft Windows. |

6.88.4.2.2 In ContainerEngines:

The type of container engine.

| string | Description |
|------------|-------------|
| containerd | containerd. |
| CRIO | CRI-O . |
| Docker | Docker. |

6.88.4.2.3 In VirtualMachineEngines:

The type of virtual machine engine.

| string | Description |
|------------|-------------------------------------|
| HyperV | Microsoft Hyper-V. |
| KVM | KVM (Kernel-based Virtual Machine). |
| PowerVM | IBM PowerVM. |
| QEMU | QEMU (Quick Emulator). |
| VirtualBox | Oracle VM VirtualBox. |
| VMwareESX | VMware ESX or ESXi. |
| Xen | Xen. |

6.88.5 Example response

```
{
  "@odata.type": "#OperatingSystem.v1_0_0.OperatingSystem",
  "Id": "OperatingSystem",
  "Name": "OperatingSystem running on web-srv344",
}
```

```

    "UptimeSeconds": 6720,
    "Kernel": {
      "Name": "Linux",
      "Release": "5.10.13-x86_64",
      "Version": "#1 SMP Thu Feb 4 13:56:42 EST 2021",
      "Machine": "x86_64"
    },
    "Type": "Linux",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "Applications": {
      "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Applications"
    },
    "ContainerEngines": [
      {
        "Type": "Docker",
        "Version": "20.10.5",
        "SupportedImageTypes": [
          "DockerV1",
          "DockerV2",
          "OCI"
        ],
        "ManagementURIs": [
          "https://192.168.0.12:5555"
        ]
      }
    ],
    "ContainerImages": {
      "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/ContainerImages"
    },
    "Containers": {
      "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem/Containers"
    },
    "Links": {
      "SoftwareImage": {
        "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory/ContosoLinux"
      }
    },
    "@odata.id": "/redfish/v1/Systems/VM1/OperatingSystem"
  }

```

6.89 OutboundConnection 1.0.0

| | |
|---------|------|
| Version | v1.0 |
|---------|------|

| | |
|----------------|--------|
| Release | 2023.2 |
|----------------|--------|

6.89.1 Description

The OutboundConnection schema defines how the Redfish service connects to a remote client over a WebSocket connection. This allows a service behind a firewall to establish a connection to a remote client outside of the firewall.

6.89.2 URIs

/redfish/v1/AccountService/OutboundConnections/{OutboundConnectionId}

6.89.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|------------------|--|---|
| Authentication | string (enum) | <i>read-only required on create (null)</i> | The authentication mechanism for the WebSocket connection. For the possible property values, see <i>Authentication in Property details</i> . |
| Certificates { | object | | The link to a collection of server certificates for the remote client referenced by the EndpointURI property. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ClientCertificates { | object | | The link to a collection of client identity certificates provided to the remote client referenced by the EndpointURI property. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ConnectionEnabled | boolean | <i>read-write (null)</i> | Indicates if the outbound connection is enabled. |
| EndpointURI | string (URI) | <i>read-only required on create</i> | The URI of the WebSocket connection to the remote client. |

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------------|--------------------------------------|--|
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Session { | object | (null) | The link to the session for this outbound connection. See the <i>Session</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a Session resource. See the Links section and the <i>Session</i> schema for details. |
| } | | | |
| } | | | |
| PreUpgradeHTTPHeaders { | object | | The HTTP headers to send to the remote client during the initial connection prior to the WebSocket upgrade. This property is an empty object in responses. |
| (pattern) | string | read-write | Property names follow regular expression pattern " <code>^[^:\s]+</code> " |
| } | | | |
| RetryPolicy { | object | | The retry policy for this outbound connection. |
| ConnectionRetryPolicy | string (enum) | read-only (null) | The type of retry policy for this outbound connection. <i>For the possible property values, see ConnectionRetryPolicy in Property details.</i> |
| RetryCount | integer | read-write (null) | The number of retries to attempt if the retry policy specifies a maximum number of retries. |
| RetryIntervalMinutes | integer | read-write (null) | The retry interval in minutes. |
| } | | | |
| Roles [] | array (string, null) | read-only required on create | The Redfish roles that contain the privileges of the remote client for the outbound connection. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| WebSocketPingIntervalMinutes | integer | read-write required on create (null) | Interval for sending the WebSocket ping opcode in minutes. The value 0 indicates the ping opcode is not sent. |

6.89.4 Property details

6.89.4.1 Authentication

The authentication mechanism for the WebSocket connection.

| string | Description |
|--------|--------------------|
| JWT | JSON Web Token. |
| MTLS | Mutual TLS. |
| None | No authentication. |
| OEM | OEM-specific. |

6.89.4.2 ConnectionRetryPolicy

The type of retry policy for this outbound connection.

| string | Description |
|--------------|---|
| None | No retries. |
| RetryCount | Retry until a maximum count is reached. |
| RetryForever | Retry forever. |

6.89.5 Example response

```
{
  "@odata.type": "#OutboundConnection.v1_0_0.OutboundConnection",
  "Id": "1",
  "Name": "Outbound Connection to contoso app",
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "Authentication": "MTLS",
  "Certificates": {
    "@odata.id": "/redfish/v1/AccountService/OutboundConnections/1/Certificates"
  },
}
```

```

"ClientCertificates": {
  "@odata.id": "/redfish/v1/AccountService/OutboundConnections/1/ClientCertificates"
},
"ConnectionEnabled": true,
"EndpointURI": "wss://ws.contoso.com:443",
"RetryPolicy": {
  "ConnectionRetryPolicy": "RetryCount",
  "RetryIntervalMinutes": 5,
  "RetryCount": 60
},
"Roles": [
  "Administrator"
],
"WebSocketPingIntervalMinutes": 10,
"@odata.id": "/redfish/v1/AccountService/OutboundConnections/1"
}

```

6.90 Outlet 1.4.1

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|
| Release | 2021.4 | 2021.3 | 2021.2 | 2020.3 | 2019.4 |

6.90.1 Description

The Outlet schema contains definition for an electrical outlet.

6.90.2 URIs

```

/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Outlets/{OutletId}
/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Outlets/{OutletId}
/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Outlets/{OutletId}
/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Outlets/{OutletId}
/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Outlets/{OutletId}

```

6.90.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|---------|-------------------|--|
| ConfigurationLocked (v1.4+) | boolean | <i>read-write</i> | Indicates whether the configuration is locked. |

| Property | Type | Attributes | Notes |
|---|----------------------|-------------------|---|
| CurrentAmps {} | object | | The current (A) for this single phase outlet. For more information about this property, see <i>SensorCurrentExcerpt</i> in <i>Property Details</i> . |
| ElectricalConsumerNames (v1.3+) [] | array (string, null) | read-write | An array of names of downstream devices that are powered by this outlet. |
| ElectricalContext | string (enum) | read-only (null) | The combination of current-carrying conductors. <i>For the possible property values, see ElectricalContext in Property details.</i> |
| EnergykWh { | object (excerpt) | | The energy (kWh) for this outlet. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| ApparentkVAh (v1.5+) | number (kV.A.h) | read-only (null) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | read-only (null) | The total accumulation value for this sensor. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | read-only (null) | Reactive energy (kVARh). |
| Reading | number | read-only (null) | The sensor value. |
| SensorResetTime | string (date-time) | read-only (null) | The date and time when the time-based properties were last reset. |
| } | | | |
| FrequencyHz { | object (excerpt) | | The frequency (Hz) for this outlet. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | read-only (null) | The sensor value. |
| } | | | |
| IndicatorLED (deprecated v1.1) | string (enum) | read-write (null) | The state of the indicator LED, which identifies the outlet. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.1 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| Links { | object | | The links to other resources that are related to this resource. |

| Property | Type | Attributes | Notes |
|---|---------------|-------------------|---|
| BranchCircuit { | object | (null) | A reference to the branch circuit related to this outlet. See the <i>Circuit</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a Circuit resource. See the Links section and the <i>Circuit</i> schema for details. |
| } | | | |
| Chassis (v1.3+) [{ | array | | Any array of links to chassis connected to this outlet. |
| @odata.id | string | read-write | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| DistributionCircuits (v1.3+) [{ | array | | An array of links to mains or input circuits powered by this outlet. |
| @odata.id | string | read-write | Link to a Circuit resource. See the Links section and the <i>Circuit</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PowerSupplies (v1.3+) [{ | array | | An array of links to the power supplies connected to this outlet. |
| @odata.id | string | read-write | Link to a PowerSupply resource. See the Links section and the <i>PowerSupply</i> schema for details. |
| }] | | | |
| } | | | |
| LocationIndicatorActive (v1.1+) | boolean | read-write (null) | An indicator allowing an operator to physically locate this resource. |
| NominalVoltage | string (enum) | read-only (null) | The nominal voltage for this outlet. <i>For the possible property values, see NominalVoltage in Property details.</i> |
| OutletType | string (enum) | read-only (null) | The type of receptacle according to NEMA, IEC, or regional standards. <i>For the possible property values, see OutletType in Property details.</i> |
| PhaseWiringType | string (enum) | read-only (null) | The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). <i>For the possible property values, see PhaseWiringType in Property details.</i> |
| PolyPhaseCurrentAmps { | object | (null) | The current readings for this outlet. |

| Property | Type | Attributes | Notes |
|-----------------------------------|---------|----------------------|--|
| Line1 {} | object | | Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Line2 {} | object | | Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Line3 {} | object | | Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| Neutral {} | object | | Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details. |
| } | | | |
| PolyPhaseVoltage { | object | (null) | The voltage readings for this outlet. |
| Line1ToLine2 {} | object | | The Line 1 to Line 2 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line1ToNeutral {} | object | | The Line 1 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line2ToLine3 {} | object | | The Line 2 to Line 3 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line2ToNeutral {} | object | | The Line 2 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line3ToLine1 {} | object | | The Line 3 to Line 1 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| Line3ToNeutral {} | object | | The Line 3 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| } | | | |
| PowerControlLocked (v1.4+) | boolean | read-write | Indicates whether power control requests are locked. |
| PowerCycleDelaySeconds | number | read-write (null) | The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay. |
| PowerEnabled | boolean | read-only (null) | Indicates if the outlet can be powered. |

| Property | Type | Attributes | Notes |
|--|---------------------|--------------------------------------|---|
| PowerLoadPercent (v1.2+) { | object (excerpt) | | The power load (percent) for this outlet. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| PowerOffDelaySeconds | number | <i>read-write</i> (<i>null</i>) | The number of seconds to delay power off after a <i>PowerControl</i> action. Zero seconds indicates no delay to power off. |
| PowerOnDelaySeconds | number | <i>read-write</i> (<i>null</i>) | The number of seconds to delay power up after a power cycle or a <i>PowerControl</i> action. Zero seconds indicates no delay to power up. |
| PowerRestoreDelaySeconds | number | <i>read-write</i> (<i>null</i>) | The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay. |
| PowerRestorePolicy | string (enum) | <i>read-write</i> | The desired power state of the outlet when power is restored after a power loss. <i>For the possible property values, see PowerRestorePolicy in Property details.</i> |
| PowerState | string (enum) | <i>read-only</i> (<i>null</i>) | The power state of the outlet. <i>For the possible property values, see PowerState in Property details.</i> |
| PowerStateInTransition (v1.4+) | boolean | <i>read-only</i> | Indicates whether the power state is undergoing a delayed transition. |
| PowerWatts { | object (excerpt) | | The power (W) for this outlet. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (<i>Reading</i>) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |

| Property | Type | Attributes | Notes |
|--------------------------|---------------|-------------------------|---|
| } | | | |
| RatedCurrentAmps | number (A) | <i>read-only (null)</i> | The rated maximum current allowed for this outlet. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UserLabel (v1.3+) | string | <i>read-write</i> | A user-assigned label. |
| Voltage {} | object | | The voltage (V) for this single phase outlet. For more information about this property, see SensorVoltageExcerpt in Property Details. |
| VoltageType | string (enum) | <i>read-only (null)</i> | The type of voltage applied to the outlet. <i>For the possible property values, see VoltageType in Property details.</i> |

6.90.4 Actions

6.90.4.1 PowerControl

Description

This action turns the outlet on or off.

Action URI

{Base URI of target resource}/Actions/Outlet.PowerControl

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|---------------|-----------------|---|
| PowerState | string (enum) | <i>optional</i> | The desired power state of the outlet. <i>For the possible property values, see PowerState in Property details.</i> |

Request Example

```
{
  "PowerState": "PowerCycle"
}
```

6.90.4.2 ResetMetrics

Description

This action resets metrics related to this outlet.

Action URI

{Base URI of target resource}/Actions/Outlet.ResetMetrics

Action parameters

This action takes no parameters.

6.90.5 Property details

6.90.5.1 ElectricalContext

The combination of current-carrying conductors.

| string | Description |
|-----------------------|---|
| Line1 | The circuits that share the L1 current-carrying conductor. |
| Line1ToLine2 | The circuit formed by L1 and L2 current-carrying conductors. |
| Line1ToNeutral | The circuit formed by L1 and neutral current-carrying conductors. |
| Line1ToNeutralAndL1L2 | The circuit formed by L1, L2, and neutral current-carrying conductors. |
| Line2 | The circuits that share the L2 current-carrying conductor. |
| Line2ToLine3 | The circuit formed by L2 and L3 current-carrying conductors. |
| Line2ToNeutral | The circuit formed by L2 and neutral current-carrying conductors. |
| Line2ToNeutralAndL1L2 | The circuit formed by L1, L2, and Neutral current-carrying conductors. |
| Line2ToNeutralAndL2L3 | The circuits formed by L2, L3, and neutral current-carrying conductors. |
| Line3 | The circuits that share the L3 current-carrying conductor. |
| Line3ToLine1 | The circuit formed by L3 and L1 current-carrying conductors. |
| Line3ToNeutral | The circuit formed by L3 and neutral current-carrying conductors. |
| Line3ToNeutralAndL3L1 | The circuit formed by L3, L1, and neutral current-carrying conductors. |

| string | Description |
|---------------|--|
| LineToLine | The circuit formed by two current-carrying conductors. |
| LineToNeutral | The circuit formed by a line and neutral current-carrying conductor. |
| Neutral | The grounded current-carrying return circuit of current-carrying conductors. |
| Total | The circuit formed by all current-carrying conductors. |

6.90.5.2 IndicatorLED

The state of the indicator LED, which identifies the outlet.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |

6.90.5.3 NominalVoltage

The nominal voltage for this outlet.

| string | Description |
|----------------|--------------------------|
| AC100To127V | AC 100-127V nominal. |
| AC100To240V | AC 100-240V nominal. |
| AC100To277V | AC 100-277V nominal. |
| AC120V | AC 120V nominal. |
| AC200To240V | AC 200-240V nominal. |
| AC200To277V | AC 200-277V nominal. |
| AC208V | AC 208V nominal. |
| AC230V | AC 230V nominal. |
| AC240AndDC380V | AC 200-240V and DC 380V. |
| AC240V | AC 240V nominal. |

| string | Description |
|----------------|--------------------------|
| AC277AndDC380V | AC 200-277V and DC 380V. |
| AC277V | AC 277V nominal. |
| AC400V | AC 400V or 415V nominal. |
| AC480V | AC 480V nominal. |
| DC12V | DC 12V nominal. |
| DC16V | DC 16V nominal. |
| DC1_8V | DC 1.8V nominal. |
| DC240V | DC 240V nominal. |
| DC380V | High Voltage DC (380V). |
| DC3_3V | DC 3.3V nominal. |
| DC48V | DC 48V nominal. |
| DC5V | DC 5V nominal. |
| DC9V | DC 9V nominal. |
| DCNeg48V | -48V DC. |

6.90.5.4 OutletType

The type of receptacle according to NEMA, IEC, or regional standards.

| string | Description |
|-----------------------|-----------------------------|
| BS_1363_Type_G | BS 1363 Type G (250V; 13A). |
| BusConnection (v1.3+) | Electrical bus connection. |
| CEE_7_Type_E | CEE 7/7 Type E (250V; 16A). |
| CEE_7_Type_F | CEE 7/7 Type F (250V; 16A). |
| IEC_60320_C13 | IEC C13 (250V; 10A or 15A). |
| IEC_60320_C19 | IEC C19 (250V; 16A or 20A). |
| NEMA_5_15R | NEMA 5-15R (120V; 15A). |
| NEMA_5_20R | NEMA 5-20R (120V; 20A). |

| string | Description |
|------------------|-------------------------------|
| NEMA_L5_20R | NEMA L5-20R (120V; 20A). |
| NEMA_L5_30R | NEMA L5-30R (120V; 30A). |
| NEMA_L6_20R | NEMA L6-20R (250V; 20A). |
| NEMA_L6_30R | NEMA L6-30R (250V; 30A). |
| SEV_1011_TYPE_12 | SEV 1011 Type 12 (250V; 10A). |
| SEV_1011_TYPE_23 | SEV 1011 Type 23 (250V; 16A). |

6.90.5.5 PhaseWiringType

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

| string | Description |
|--------------------|---|
| OneOrTwoPhase3Wire | Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth). |
| OnePhase3Wire | Single-phase / 3-Wire (Line1, Neutral, Protective Earth). |
| ThreePhase4Wire | Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth). |
| ThreePhase5Wire | Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth). |
| TwoPhase3Wire | Two-phase / 3-Wire (Line1, Line2, Protective Earth). |
| TwoPhase4Wire | Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth). |

6.90.5.6 PowerRestorePolicy

The desired power state of the outlet when power is restored after a power loss.

| string | Description |
|-----------|--|
| AlwaysOff | Always remain powered off when external power is applied. |
| AlwaysOn | Always power on when external power is applied. |
| LastState | Return to the last power state (on or off) when external power is applied. |

6.90.5.7 PowerState

6.90.5.7.1 In top level:

The power state of the outlet.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.90.5.7.2 In Actions: PowerControl:

The desired power state of the outlet.

| string | Description |
|------------|--------------|
| Off | Power off. |
| On | Power on. |
| PowerCycle | Power cycle. |

6.90.5.8 SensorCurrentExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|-------------------------------|--------|----------------------------|-----------------------------------|
| CrestFactor (v1.1+) | number | <i>read-only</i> (null) | The crest factor for this sensor. |
|-------------------------------|--------|----------------------------|-----------------------------------|

| | | | |
|------------------------------|--------------|-------------------------|--|
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only (null)</i> | The total harmonic distortion percent (% THD). |

6.90.5.9 SensorVoltageExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|-------------------------------|--------------|-------------------------|--|
| CrestFactor (v1.1+) | number | <i>read-only (null)</i> | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only (null)</i> | The total harmonic distortion percent (% THD). |

6.90.5.10 VoltageType

The type of voltage applied to the outlet.

| string | Description |
|--------|----------------------------------|
| AC | Alternating Current (AC) outlet. |
| DC | Direct Current (DC) outlet. |

6.90.6 Example response

```
{
  "@odata.type": "#Outlet.v1_4_1.Outlet",
  "Id": "A1",
  "Name": "Outlet A1, Branch Circuit A",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "PhaseWiringType": "OnePhase3Wire",
  "VoltageType": "AC",
  "OutletType": "NEMA_5_20R",
  "RatedCurrentAmps": 20,
  "NominalVoltage": "AC120V",
  "LocationIndicatorActive": true,
  "PowerOnDelaySeconds": 4,
  "PowerOffDelaySeconds": 0,
  "PowerState": "On",
  "PowerEnabled": true,
  "Voltage": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
    "Reading": 117.5
  },
  "PolyPhaseVoltage": {
    "Line1ToNeutral": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
      "Reading": 117.5
    }
  },
  "CurrentAmps": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
    "Reading": 1.68
  },
  "PolyPhaseCurrentAmps": {
    "Line1": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
      "Reading": 1.68
    }
  },
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
    "Reading": 197.4,
    "ApparentVA": 197.4,
    "ReactiveVAR": 0,
    "PowerFactor": 1
  },
  "FrequencyHz": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA1",
```

```

        "Reading": 60
    },
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA1",
        "Reading": 36166
    },
    "Actions": {
        "#Outlet.PowerControl": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.PowerControl"
        },
        "#Outlet.ResetMetrics": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.ResetMetrics"
        }
    },
    "Links": {
        "BranchCircuit": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
}

```

6.91 OutletGroup 1.1.1

| | | |
|---------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2021.4 | 2019.4 |

6.91.1 Description

The OutletGroup schema contains definitions for an electrical outlet group.

6.91.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/OutletGroups/{OutletGroupId}
 /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/OutletGroups/{OutletGroupId}
 /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/OutletGroups/{OutletGroupId}
 /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/OutletGroups/{OutletGroupId}

6.91.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|--------------------------------------|--|
| ConfigurationLocked (v1.1+) | boolean | <i>read-write</i> | Indicates whether the configuration is locked. |
| CreatedBy | string | <i>read-write</i> (<i>null</i>) | The creator of this outlet group. |
| EnergykWh { | object (excerpt) | | The energy (kWh) for this outlet group. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| ApparentkVAh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The total accumulation value for this sensor. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |
| } | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Outlets [{ | array | | The set of outlets in this outlet group. |
| @odata.id | string | <i>read-write</i> | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| }] | | | |
| } | | | |
| PowerControlLocked (v1.1+) | boolean | <i>read-write</i> | Indicates whether power control requests are locked. |
| PowerCycleDelaySeconds | number | <i>read-write</i> (<i>null</i>) | The number of seconds to delay power on after a <i>PowerControl</i> action to cycle power. Zero seconds indicates no delay. |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------|---|
| PowerEnabled | boolean | <i>read-only (null)</i> | Indicates if the outlet group can be powered. |
| PowerOffDelaySeconds | number | <i>read-write (null)</i> | The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off. |
| PowerOnDelaySeconds | number | <i>read-write (null)</i> | The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up. |
| PowerRestoreDelaySeconds | number | <i>read-write (null)</i> | The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay. |
| PowerRestorePolicy | string (enum) | <i>read-write</i> | The desired power state of the outlet group when power is restored after a power loss. <i>For the possible property values, see PowerRestorePolicy in Property details.</i> |
| PowerState | string (enum) | <i>read-only (null)</i> | The power state of the outlet group. <i>For the possible property values, see PowerState in Property details.</i> |
| PowerStateInTransition (v1.1+) | boolean | <i>read-only</i> | Indicates whether the power state is undergoing a delayed transition. |
| PowerWatts { | object (excerpt) | | The power (W) for this outlet group. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | <i>read-only (null)</i> | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only (null)</i> | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only (null)</i> | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only (null)</i> | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.91.4 Actions

6.91.4.1 PowerControl

Description

This action turns the outlet group on or off.

Action URI

{Base URI of target resource}/Actions/OutletGroup.PowerControl

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------|------------------|-----------------|---|
| PowerState | string (enum) | <i>optional</i> | The desired power state of the outlet group. <i>For the possible property values, see PowerState in Property details.</i> |

Request Example

```
{  
  "PowerState": "Off"  
}
```

6.91.4.2 ResetMetrics

Description

This action resets metrics related to this outlet group.

Action URI

{Base URI of target resource}/Actions/OutletGroup.ResetMetrics

Action parameters

This action takes no parameters.

6.91.5 Property details

6.91.5.1 PowerRestorePolicy

The desired power state of the outlet group when power is restored after a power loss.

| string | Description |
|-----------|--|
| AlwaysOff | Always remain powered off when external power is applied. |
| AlwaysOn | Always power on when external power is applied. |
| LastState | Return to the last power state (on or off) when external power is applied. |

6.91.5.2 PowerState

6.91.5.2.1 In top level:

The power state of the outlet group.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.91.5.2.2 In Actions: PowerControl:

The desired power state of the outlet group.

| string | Description |
|--------|-------------|
| Off | Power off. |

| string | Description |
|------------|--------------|
| On | Power on. |
| PowerCycle | Power cycle. |

6.91.6 Example response

```
{
  "@odata.type": "#OutletGroup.v1_1_1.OutletGroup",
  "Id": "Rack5Storage",
  "Name": "Outlet Group Rack5Storage",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "CreatedBy": "Bob",
  "PowerOnDelaySeconds": 4,
  "PowerOffDelaySeconds": 0,
  "PowerState": "On",
  "PowerEnabled": true,
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupPowerA",
    "Reading": 412.36
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupEnergyA",
    "Reading": 26880
  },
  "Links": {
    "Outlets": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
      }
    ]
  },
  "Actions": {
    "#OutletGroup.PowerControl": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.PowerControl"
    },
    "#OutletGroup.ResetMetrics": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.ResetMetrics"
    }
  }
}
```



```

    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage"
  }
}

```

6.92 PCIeDevice 1.12.0

| Version | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.2 | 2022.3 | 2022.2 | 2021.4 | 2021.3 | 2021.1 | 2020.4 | 2020.3 | 2019.2 | 2018.2 | 2017.3 | ... |

6.92.1 Description

The PCIeDevice schema describes the properties of a PCIe device that is attached to a system. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.92.2 URIs

`/redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCIeDeviceId}`

`/redfish/v1/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}`

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.92.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|--------|-----------------------------|---|
| Assembly (v1.2+) { | object | | The link to the assembly associated with this PCIe device. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write</i> (null) | The user-assigned asset tag for this PCIe device. |
| CXLDevice (v1.11+) { | object | (null) | The CXL-specific properties of this PCIe device. |

| Property | Type | Attributes | Notes |
|---|--|-------------------------------------|---|
| DeviceType (v1.11+) | string (enum) | <i>read-only</i> (<i>null</i>) | The CXL device type. <i>For the possible property values, see DeviceType in Property details.</i> |
| DynamicCapacity (v1.12+) { | object | (<i>null</i>) | The CXL dynamic capacity device (DCD) information for this CXL device. |
| AddCapacityPoliciesSupported (v1.12+) [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The set of selection policies supported by the CXL device when dynamic capacity is added. <i>For the possible property values, see AddCapacityPoliciesSupported in Property details.</i> |
| MaxDynamicCapacityRegions (v1.12+) | integer | <i>read-only</i> (<i>null</i>) | The maximum number of dynamic capacity memory regions available per host from this CXL device. |
| MaxHosts (v1.12+) | integer | <i>read-only</i> (<i>null</i>) | The maximum number of hosts supported by this CXL device. |
| MemoryBlockSizesSupported (v1.12+) [{ | array | | The set of memory block sizes supported by memory regions in this CXL device. |
| BlockSizeMiB (v1.12+) [] | array (mebibytes) (integer, null) | <i>read-only</i> | Set of memory block sizes supported by this memory region defined in mebibytes (MiB). |
| RegionNumber (v1.12+) | integer | <i>read-only</i> (<i>null</i>) | The memory region number. |
| }] | | | |
| ReleaseCapacityPoliciesSupported (v1.12+) [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The set of removal policies supported by the CXL device when dynamic capacity is released. <i>For the possible property values, see ReleaseCapacityPoliciesSupported in Property details.</i> |
| SanitizationOnReleaseSupport (v1.12+) [{ | array | | An indication of whether the sanitization on capacity release is configurable for the memory regions in this CXL device. |
| RegionNumber (v1.12+) | integer | <i>read-only</i> (<i>null</i>) | The memory region number. |
| SanitizationOnReleaseSupported (v1.12+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the sanitization on capacity release is configurable for this memory region. |
| }] | | | |

| Property | Type | Attributes | Notes |
|---|---------------------|------------------|--|
| TotalDynamicCapacityMiB (v1.12+) | integer (mebibytes) | read-only (null) | The total memory media capacity of the CXL device available for dynamic assignment in mebibytes (MiB). |
| } | | | |
| EgressPortCongestionSupport (v1.11+) | boolean | read-only (null) | Indicates whether the CXL device supports egress port congestion management. |
| MaxNumberLogicalDevices (v1.11+) | number | read-only (null) | The maximum number of logical devices supported by this CXL device. |
| ThroughputReductionSupport (v1.11+) | boolean | read-only (null) | Indicates whether the CXL device supports throughput reduction. |
| Timestamp (v1.11+) | string (date-time) | read-write | The timestamp set on the CXL device. |
| } | | | |
| CXLLogicalDevices (v1.11+) { | object | | The link to the collection of CXL logical devices within this PCIe device. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>CXLLogicalDevice</i> . See the <i>CXLLogicalDevice</i> schema for details. |
| } | | | |
| DeviceType | string (enum) | read-only | The device type for this PCIe device. <i>For the possible property values, see DeviceType in Property details.</i> |
| EnvironmentMetrics (v1.7+) { | object | | The link to the environment metrics for this PCIe device. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a <i>EnvironmentMetrics</i> resource. See the <i>Links</i> section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FirmwareVersion | string | read-only (null) | The version of firmware for this PCIe device. |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis [{ | array | | An array of links to the chassis in which the PCIe device is contained. |

| Property | Type | Attributes | Notes |
|---|---------|--------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions (<i>deprecated v1.4</i>) [{ | array | | An array of links to PCIe functions exposed by this device. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of the PCleFunctions property in the root that provides a link to a resource collection.</i> |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| Processors (<i>v1.12+</i>) [{ | array | | An array of links to the processors that are directly connected or directly bridged to this PCIe device. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| Switch (<i>v1.10+</i>) { | object | <i>(null)</i> | The link to a switch that is associated with this PCIe device. See the <i>Switch</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details. |
| } | | | |
| } | | | |
| LocationIndicatorActive (<i>v1.12+</i>) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this PCIe device. |
| Model | string | <i>read-only (null)</i> | The model number for the PCIe device. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this PCIe device. |

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|-----------------------------|---|
| PCleFunctions (v1.4+) { | object | | The link to the collection of PCIe functions associated with this PCIe device. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PCleFunction</i> . See the <i>PCleFunction</i> schema for details. |
| } | | | |
| PCleInterface (v1.3+) { | object | | The PCIe interface details for this PCIe device. |
| LanesInUse (v1.3+) | integer | <i>read-only</i> (null) | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only</i> (null) | The number of PCIe lanes supported by this device. |
| MaxPCleType (v1.3+) | string (enum) | <i>read-only</i> (null) | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCleType in Property details.</i> |
| Oem (v1.3+) { } | object | | See the Oem object definition in the Common properties section. |
| PCleType (v1.3+) | string (enum) | <i>read-only</i> (null) | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCleType in Property details.</i> |
| } | | | |
| ReadyToRemove (v1.7+) | boolean | <i>read-write</i> (null) | An indication of whether the PCIe device is prepared by the system for removal. |
| SerialNumber | string | <i>read-only</i> (null) | The serial number for this PCIe device. |
| SKU | string | <i>read-only</i> (null) | The SKU for this PCIe device. |
| Slot (v1.9+) { | object | (null) | Information about the slot for this PCIe device. |
| HotPluggable (v1.12+) | boolean | <i>read-only</i> (null) | An indication of whether this PCIe slot supports hotplug. |
| Lanes (v1.9+) | integer | <i>read-only</i> (null) | The number of PCIe lanes supported by this slot. |

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|-------------------------------------|--|
| LaneSplitting (v1.9+) | string (enum) | <i>read-only</i> (<i>null</i>) | The lane splitting strategy used in the PCIe slot. <i>For the possible property values, see LaneSplitting in Property details.</i> |
| Location (v1.9+) {} | object | | The location of the PCIe slot. For property details, see Location. |
| PCIeType (v1.9+) | string (enum) | <i>read-only</i> (<i>null</i>) | The PCIe specification this slot supports. <i>For the possible property values, see PCIeType in Property details.</i> |
| SlotType (v1.9+) | string (enum) | <i>read-only</i> (<i>null</i>) | The PCIe slot type. <i>For the possible property values, see SlotType in Property details.</i> |
| } | | | |
| SparePartNumber (v1.6+) | string | <i>read-only</i> (<i>null</i>) | The spare part number of the PCIe device. |
| StagedVersion (v1.11+) | string | <i>read-only</i> | The staged firmware version for this PCIe device, but is not yet active. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UUID (v1.5+) | string (uuid) | <i>read-only</i> (<i>null</i>) | The UUID for this PCIe device. |

6.92.4 Property details

6.92.4.1 AddCapacityPoliciesSupported

The set of selection policies supported by the CXL device when dynamic capacity is added.

| string | Description |
|--------------|-------------------------------------|
| Contiguous | Contiguous add capacity policy. |
| Free | Free add capacity policy. |
| Prescriptive | Prescriptive add or release policy. |
| TagBased | Tag-based release policy. |

6.92.4.2 DeviceType

6.92.4.2.1 In top level:

The device type for this PCIe device.

| string | Description |
|------------------|--|
| MultiFunction | A multi-function PCIe device. |
| Retimer (v1.10+) | A PCIe retimer device. |
| Simulated | A PCIe device that is not currently physically present, but is being simulated by the PCIe infrastructure. |
| SingleFunction | A single-function PCIe device. |

6.92.4.2.2 In CXLDevice:

The CXL device type.

| string | Description |
|--------|----------------------|
| Type1 | A CXL Type 1 device. |
| Type2 | A CXL Type 2 device. |
| Type3 | A CXL Type 3 device. |

6.92.4.3 LaneSplitting

The lane splitting strategy used in the PCIe slot.

| string | Description |
|------------|--|
| Bifurcated | The slot is bifurcated to split the lanes with associated devices. |
| Bridged | The slot has a bridge to share the lanes with associated devices. |
| None | The slot has no lane splitting. |

6.92.4.4 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.92.4.5 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.92.4.6 ReleaseCapacityPoliciesSupported

The set of removal policies supported by the CXL device when dynamic capacity is released.

| string | Description |
|--------------|-------------------------------------|
| Contiguous | Contiguous add capacity policy. |
| Free | Free add capacity policy. |
| Prescriptive | Prescriptive add or release policy. |
| TagBased | Tag-based release policy. |

6.92.4.7 SlotType

The PCIe slot type.

| string | Description |
|------------|--|
| FullLength | Full-Length PCIe slot. |
| HalfLength | Half-Length PCIe slot. |
| LowProfile | Low-Profile or Slim PCIe slot. |
| M2 | PCIe M.2 slot. |
| Mini | Mini PCIe slot. |
| OCP3Large | Open Compute Project 3.0 large form factor slot. |
| OCP3Small | Open Compute Project 3.0 small form factor slot. |
| OEM | An OEM-specific slot. |
| U2 | U.2 / SFF-8639 slot or bay. |

6.92.5 Example response

```
{
  "@odata.type": "#PCIeDevice.v1_12_0.PCIeDevice",
  "Id": "NIC",
  "Name": "Simple Two-Port NIC",
  "Description": "Simple Two-Port NIC PCIe Device",
  "AssetTag": "ORD-4302015-18432RS",
  "Manufacturer": "Contoso",
  "Model": "SuperNIC 2000",
  "SKU": "89587433",
  "SerialNumber": "2M220100SL",
  "PartNumber": "232-4598D7",
  "DeviceType": "MultiFunction",
  "FirmwareVersion": "12.342-343",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "PCIeInterface": {
    "PCIeType": "Gen2",
    "MaxPCIeType": "Gen3",
  }
}
```

```

        "LanesInUse": 4,
        "MaxLanes": 4
    },
    "PCIeFunctions": {
        "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC/PCIeFunctions"
    },
    "Links": {
        "Chassis": [
            {
                "@odata.id": "/redfish/v1/Chassis/1"
            }
        ]
    },
    "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
}

```

6.93 PCIeFunction 1.5.0

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2022.3 | 2022.2 | 2021.1 | 2018.1 | 2017.1 | 2016.2 |

6.93.1 Description

The PCIeFunction schema describes the properties of a PCIe function that is attached to a system.

6.93.2 URIs

/redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions/{PCIeFunctionId}
 /redfish/v1/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}/PCIeFunctions/
 {PCIeFunctionId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.93.3 Properties

| Property | Type | Attributes | Notes |
|------------------|--------|-------------------------------------|---------------------------------------|
| ClassCode | string | <i>read-only</i> (<i>null</i>) | The Class Code of this PCIe function. |

| Property | Type | Attributes | Notes |
|--------------------------------------|------------------|----------------------------|---|
| DeviceClass | string (enum) | <i>read-only</i> | The class for this PCIe function. <i>For the possible property values, see DeviceClass in Property details.</i> |
| DeviceId | string | <i>read-only</i> (null) | The Device ID of this PCIe function. |
| Enabled (v1.3+) | boolean | <i>read-write</i> | An indication of whether this PCIe device function is enabled. |
| FunctionId | integer | <i>read-only</i> (null) | The PCIe function number. |
| FunctionProtocol (v1.5+) | string (enum) | <i>read-only</i> (null) | The PCIe function protocol. <i>For the possible property values, see FunctionProtocol in Property details.</i> |
| FunctionType | string (enum) | <i>read-only</i> | The type of the PCIe function. <i>For the possible property values, see FunctionType in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| CXLLogicalDevice (v1.5+) { | object | (null) | The link to the CXL logical device to which this function is assigned. See the <i>CXLLogicalDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a CXLLogicalDevice resource. See the Links section and the <i>CXLLogicalDevice</i> schema for details. |
| } | | | |
| Drives [{ | array | | An array of links to the drives that this PCIe function produces. |
| @odata.id | string | <i>read-only</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| EthernetInterfaces [{ | array | | An array of links to the Ethernet interfaces that this PCIe function produces. |
| @odata.id | string | <i>read-only</i> | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |
| }] | | | |
| MemoryDomains (v1.5+) [{ | array | | An array of links to the memory domains that the PCIe function produces. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|--------|-----------------------------------|---|
| NetworkDeviceFunctions (v1.2+) [{ | array | | An array of links to the network device functions that the PCIe function produces. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleDevice { | object | | The link to the PCIe device on which this function resides. See the <i>PCleDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PCleDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| } | | | |
| Processor (v1.4+) { | object | <i>(null)</i> | The link to a processor that is hosted on this PCIe function. See the <i>Processor</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| } | | | |
| StorageControllers [{ | array | | An array of links to the storage controllers that this PCIe function produces. |
| @odata.id | string | <i>read-only</i> | Link to a StorageController resource. See the Links section and the <i>Storage</i> schema for details. |
| }] | | | |
| } | | | |
| RevisionId | string | <i>read-only</i> <i>(null)</i> | The Revision ID of this PCIe function. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SubsystemId | string | <i>read-only</i> <i>(null)</i> | The Subsystem ID of this PCIe function. |
| SubsystemVendorId | string | <i>read-only</i> <i>(null)</i> | The Subsystem Vendor ID of this PCIe function. |
| VendorId | string | <i>read-only</i> <i>(null)</i> | The Vendor ID of this PCIe function. |

6.93.4 Property details

6.93.4.1 DeviceClass

The class for this PCIe function.

| string | Description |
|-----------------------------------|--|
| Bridge | A bridge. |
| CommunicationController | A communication controller. |
| Coprocessor | A coprocessor. |
| DisplayController | A display controller. |
| DockingStation | A docking station. |
| EncryptionController | An encryption controller. |
| GenericSystemPeripheral | A generic system peripheral. |
| InputDeviceController | An input device controller. |
| IntelligentController | An intelligent controller. |
| MassStorageController | A mass storage controller. |
| MemoryController | A memory controller. |
| MultimediaController | A multimedia controller. |
| NetworkController | A network controller. |
| NonEssentialInstrumentation | A non-essential instrumentation. |
| Other | Other class. The function Class Code needs to be verified. |
| ProcessingAccelerators | A processing accelerators. |
| Processor | A processor. |
| SatelliteCommunicationsController | A satellite communications controller. |
| SerialBusController | A serial bus controller. |
| SignalProcessingController | A signal processing controller. |
| UnassignedClass | An unassigned class. |
| UnclassifiedDevice | An unclassified device. |

| string | Description |
|--------------------|------------------------|
| WirelessController | A wireless controller. |

6.93.4.2 FunctionProtocol

The PCIe function protocol.

| string | Description |
|--------|--|
| CXL | A PCIe function supporting CXL extensions. |
| PCIe | A standard PCIe function. |

6.93.4.3 FunctionType

The type of the PCIe function.

| string | Description |
|----------|---------------------------|
| Physical | A physical PCIe function. |
| Virtual | A virtual PCIe function. |

6.93.5 Example response

```
{
  "@odata.type": "#PCIeFunction.v1_5_0.PCIeFunction",
  "Id": "2",
  "Name": "FC Port 2",
  "Description": "FC Port 2",
  "FunctionId": 2,
  "FunctionType": "Physical",
  "DeviceClass": "NetworkController",
  "DeviceId": "0xABCD",
  "VendorId": "0xABCD",
  "ClassCode": "0x010802",
  "RevisionId": "0x00",
  "SubsystemId": "0xABCD",
  "SubsystemVendorId": "0xABCD",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
  }
}
```

```

        "HealthRollup": "OK"
    },
    "Links": {
        "PCIeDevice": {
            "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/FC"
        }
    },
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/FC/PCIeFunctions/2"
}

```

6.94 PCIeSlots 1.6.0 (deprecated)

| Version | v1.6 <i>Deprecated</i> | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|---------------------------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2021.3 | 2020.3 | 2020.1 | 2019.4 | 2019.1 | 2018.2 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the PCIeDevice schema. Empty PCIe slots should be represented by PCIeDevice resources using the `Absent` value of the State property within Status.

6.94.1 Description

The PCIeSlots schema describes PCIe slot properties.

6.94.2 URIs

/redfish/v1/Chassis/{ChassisId}/PCIeSlots

6.94.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|---------|----------------------------|---|
| Slots [{ | array | | An array of PCI Slot information. |
| HotPluggable (v1.1+) | boolean | <i>read-only</i> (null) | An indication of whether this PCIe slot supports hotplug. |
| Lanes | integer | <i>read-only</i> (null) | The number of PCIe lanes supported by this slot. |

| Property | Type | Attributes | Notes |
|--|---------------|--------------------------|---|
| Links { | object | | The links to other Resources that are related to this Resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleDevice [{ | array | | An array of links to the PCIe devices contained in this slot. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| }] | | | |
| Processors (v1.5+) [{ | array | | An array of links to the processors that are directly connected or directly bridged to this PCIe slot. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the PCIe slot. For property details, see Location. |
| LocationIndicatorActive (v1.4+) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleType | string (enum) | <i>read-only (null)</i> | The PCIe specification supported by this slot. <i>For the possible property values, see PCleType in Property details.</i> |
| SlotType | string (enum) | <i>read-only (null)</i> | The PCIe slot type for this slot. <i>For the possible property values, see SlotType in Property details.</i> |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| }] | | | |

6.94.4 Property details

6.94.4.1 PCleType

The PCIe specification supported by this slot.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.94.4.2 SlotType

The PCIe slot type for this slot.

| string | Description |
|-------------------|--|
| FullLength | Full-Length PCIe slot. |
| HalfLength | Half-Length PCIe slot. |
| LowProfile | Low-Profile or Slim PCIe slot. |
| M2 | PCIe M.2 slot. |
| Mini | Mini PCIe slot. |
| OCP3Large (v1.2+) | Open Compute Project 3.0 large form factor slot. |
| OCP3Small (v1.2+) | Open Compute Project 3.0 small form factor slot. |
| OEM | An OEM-specific slot. |
| U2 (v1.3+) | U.2 / SFF-8639 slot or bay. |

6.94.5 Example response

```
{
  "@odata.type": "#PCIESlots.v1_6_0.PCIESlots",
  "Id": "1",
  "Name": "PCIe Slot Information",
  "Slots": [
    {
      "PCIeType": "Gen3",
      "Lanes": 16,
      "SlotType": "FullLength",
    }
  ]
}
```

```
"Status": {
  "State": "Enabled"
},
"Location": {
  "PartLocation": {
    "ServiceLabel": "Slot 1",
    "LocationOrdinalValue": 1,
    "LocationType": "Slot",
    "Orientation": "LeftToRight",
    "Reference": "Rear"
  }
},
"Links": {
  "PCIeDevice": [
    {
      "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
    }
  ]
},
{
  "PCIeType": "Gen4",
  "Lanes": 4,
  "SlotType": "FullLength",
  "Status": {
    "State": "Absent"
  },
  "Location": {
    "PartLocation": {
      "ServiceLabel": "Slot 2",
      "LocationOrdinalValue": 2,
      "LocationType": "Slot",
      "Orientation": "LeftToRight",
      "Reference": "Rear"
    }
  }
},
{
  "PCIeType": "Gen3",
  "Lanes": 1,
  "SlotType": "HalfLength",
  "Status": {
    "State": "Absent"
  },
  "Location": {
    "PartLocation": {
      "ServiceLabel": "Slot 3",
      "LocationOrdinalValue": 3,
      "LocationType": "Slot",
      "Orientation": "LeftToRight",

```

```

        "Reference": "Rear"
      }
    }
  ],
  "@odata.id": "/redfish/v1/Chassis/1/PCIEslots"
}

```

6.95 Port 1.10.0

| Version | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.3 | 2022.2 | 2021.4 | 2021.2 | 2021.1 | 2020.3 | 2019.4 | 2017.3 | 2016.2 |

6.95.1 Description

The Port schema contains properties that describe a port of a switch, controller, chassis, or any other device that could be connected to another entity.

6.95.2 URIs

- /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}
- /redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId}/Ports/{PortId}
- /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Ports/{PortId}
- /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}
- /redfish/v1/Managers/{ManagerId}/DedicatedNetworkPorts/{PortId}
- /redfish/v1/Managers/{ManagerId}/USBPorts/{PortId}
- /redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports/{PortId}
- /redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports/{PortId}
- /redfish/v1/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports/{PortId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.95.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------------|--------------------------|---|
| ActiveWidth (v1.2+) | integer | <i>read-only</i> | The number of active lanes for this interface. |
| CapableProtocolVersions (v1.4+) [] | array (string, null) | <i>read-only</i> | The protocol versions capable of being sent over this port. |
| CurrentProtocolVersion (v1.4+) | string | <i>read-only (null)</i> | The protocol version being sent over this port. |
| CurrentSpeedGbps | number (Gbit/s) | <i>read-only (null)</i> | The current speed of this port. |
| CXL (v1.8+) { | object | <i>(null)</i> | CXL properties for this port. |
| Congestion (v1.8+) { | object | <i>(null)</i> | The congestion properties for this CXL port. |
| BackpressureSampleInterval (v1.8+) | integer | <i>read-write (null)</i> | The interval for the CXL Specification-defined 'Egress Port Congestion' mechanism to take samples in nanoseconds. |
| CompletionCollectionInterval (v1.8+) | integer | <i>read-write (null)</i> | The interval for the CXL Specification-defined 'Completion Counting' mechanism to collect the number of transmitted responses in a single counter in nanoseconds. |
| CongestionTelemetryEnabled (v1.8+) | boolean | <i>read-write (null)</i> | Indicates whether congestion telemetry collection is enabled for this port. |
| EgressModeratePercentage (v1.8+) | integer (%) | <i>read-write (null)</i> | The threshold for moderate egress port congestion as a percentage. |
| EgressSeverePercentage (v1.8+) | integer (%) | <i>read-write (null)</i> | The threshold for severe egress port congestion as a percentage. |
| MaxSustainedRequestCmpBias (v1.8+) | integer | <i>read-write (null)</i> | The estimated maximum sustained sum of requests and recent responses across the entire device, serving as the basis for the CXL Specification-defined 'QoS Limit Fraction'. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|------------------|----------------------|--|
| ConnectedDeviceMode (v1.8+) | string (enum) | read-only (null) | The connected device mode. For the possible property values, see <i>ConnectedDeviceMode</i> in Property details. |
| ConnectedDeviceType (v1.8+) | string (enum) | read-only (null) | The connected device type. For the possible property values, see <i>ConnectedDeviceType</i> in Property details. |
| CurrentPortConfigurationState (v1.8+) | string (enum) | read-only (null) | The current port configuration state. For the possible property values, see <i>CurrentPortConfigurationState</i> in Property details. |
| MaxLogicalDeviceCount (v1.8+) | integer | read-only (null) | The maximum number of logical devices supported. |
| QoSTelemetryCapabilities (v1.8+) { | object | (null) | The quality of service telemetry capabilities for this CXL port. |
| EgressPortBackpressureSupported (v1.8+) | boolean | read-only (null) | Indicates whether the port supports the CXL Specification-defined 'Egress Port Backpressure' mechanism. |
| TemporaryThroughputReductionSupported (v1.8+) | boolean | read-only (null) | Indicates whether the port supports the CXL Specification-defined 'Temporary Throughput Reduction' mechanism. |
| } | | | |
| TemporaryThroughputReductionEnabled (v1.8+) | boolean | read-write (null) | Indicates whether temporary throughput reduction is enabled. |
| } | | | |
| Enabled (v1.4+, deprecated v1.10) | boolean | read-write | An indication of whether this port is enabled. <i>Deprecated in v1.10 and later. This property has been deprecated in favor of InterfaceEnabled.</i> |
| EnvironmentMetrics (v1.4+) { | object | | The link to the environment metrics for this port or any attached small form-factor pluggable (SFP) device. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|----------------------------|----------------------|--|
| Ethernet (v1.3+) { | object | (null) | Ethernet properties for this port. |
| AssociatedMACAddresses (v1.4+) [] | array (string, null) | read-only | An array of configured MAC addresses that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |
| EEEEnabled (v1.5+) | boolean | read-write (null) | Indicates whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled on this port. |
| FlowControlConfiguration (v1.3+) | string (enum) | read-write (null) | The locally configured 802.3x flow control setting for this port. <i>For the possible property values, see FlowControlConfiguration in Property details.</i> |
| FlowControlStatus (v1.3+) | string (enum) | read-only (null) | The 802.3x flow control behavior negotiated with the link partner for this port. <i>For the possible property values, see FlowControlStatus in Property details.</i> |
| LLDPEnabled (v1.4+) | boolean | read-write | Enable/disable LLDP for this port. |
| LLDPReceive (v1.4+) { | object | (null) | LLDP data being received on this link. |
| ChassisId (v1.4+) | string | read-only (null) | Link Layer Data Protocol (LLDP) chassis ID received from the remote partner across this link. |
| ChassisIdSubtype (v1.4+) | string (enum) | read-only (null) | The type of identifier used for the chassis ID received from the remote partner across this link. <i>For the possible property values, see ChassisIdSubtype in Property details.</i> |
| ManagementAddressIPv4 (v1.4+) | string | read-only (null) | The IPv4 management address received from the remote partner across this link. |
| ManagementAddressIPv6 (v1.4+) | string | read-only (null) | The IPv6 management address received from the remote partner across this link. |
| ManagementAddressMAC (v1.4+) | string | read-only (null) | The management MAC address received from the remote partner across this link. |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------------|-----------------------------|---|
| ManagementVlanId (v1.4+) | integer | <i>read-only</i> (null) | The management VLAN ID received from the remote partner across this link. |
| PortId (v1.4+) | string | <i>read-only</i> (null) | A colon delimited string of hexadecimal octets identifying a port. |
| PortIdSubtype (v1.4+) | string (enum) | <i>read-only</i> (null) | The port ID subtype received from the remote partner across this link. <i>For the possible property values, see PortIdSubtype in Property details.</i> |
| SystemCapabilities (v1.8+) [] | array (string (enum)) | <i>read-only</i> (null) | The system capabilities received from the remote partner across this link. <i>For the possible property values, see SystemCapabilities in Property details.</i> |
| SystemDescription (v1.8+) | string | <i>read-only</i> (null) | The system description received from the remote partner across this link. |
| SystemName (v1.8+) | string | <i>read-only</i> (null) | The system name received from the remote partner across this link. |
| } | | | |
| LLDPTransmit (v1.4+) { | object | (null) | LLDP data being transmitted on this link. |
| ChassisId (v1.4+) | string | <i>read-write</i> (null) | Link Layer Data Protocol (LLDP) chassis ID. |
| ChassisIdSubtype (v1.4+) | string (enum) | <i>read-write</i> (null) | The type of identifier used for the chassis ID. <i>For the possible property values, see ChassisIdSubtype in Property details.</i> |
| ManagementAddressIPv4 (v1.4+) | string | <i>read-write</i> (null) | The IPv4 management address to be transmitted from this endpoint. |
| ManagementAddressIPv6 (v1.4+) | string | <i>read-write</i> (null) | The IPv6 management address to be transmitted from this endpoint. |
| ManagementAddressMAC (v1.4+) | string | <i>read-write</i> (null) | The management MAC address to be transmitted from this endpoint. |
| ManagementVlanId (v1.4+) | integer | <i>read-write</i> (null) | The management VLAN ID to be transmitted from this endpoint. |
| PortId (v1.4+) | string | <i>read-write</i> (null) | A colon delimited string of hexadecimal octets identifying a port to be transmitted from this endpoint. |

| Property | Type | Attributes | Notes |
|---|-----------------------------|--------------------------------------|---|
| PortIdSubtype (v1.4+) | string (enum) | <i>read-write</i> (<i>null</i>) | The port ID subtype to be transmitted from this endpoint. <i>For the possible property values, see PortIdSubtype in Property details.</i> |
| SystemCapabilities (v1.8+) [] | array (string (enum)) | <i>read-write</i> (<i>null</i>) | The system capabilities to be transmitted from this endpoint. <i>For the possible property values, see SystemCapabilities in Property details.</i> |
| SystemDescription (v1.8+) | string | <i>read-write</i> (<i>null</i>) | The system description to be transmitted from this endpoint. |
| SystemName (v1.8+) | string | <i>read-write</i> (<i>null</i>) | The system name to be transmitted from this endpoint. |
| } | | | |
| SupportedEthernetCapabilities (v1.3+, deprecated v1.5 [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The set of Ethernet capabilities that this port supports. <i>For the possible property values, see SupportedEthernetCapabilities in Property details. Deprecated in v1.5 and later. This property has been deprecated in favor of individual fields for the various properties.</i> |
| WakeOnLANEnabled (v1.5+) | boolean | <i>read-write</i> (<i>null</i>) | Indicates whether Wake on LAN (WoL) is enabled on this port. |
| } | | | |
| FibreChannel (v1.3+) { | object | (<i>null</i>) | Fibre Channel properties for this port. |
| AssociatedWorldWideNames (v1.4+) [] | array (string, null) | <i>read-only</i> | An array of configured World Wide Names (WWN) that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |
| FabricName (v1.3+) | string | <i>read-only</i> (<i>null</i>) | The Fibre Channel Fabric Name provided by the switch. |
| NumberDiscoveredRemotePorts (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of ports not on the associated device that the associated device has discovered through this port. |

| Property | Type | Attributes | Notes |
|---|------------------|--------------------------------------|--|
| PortConnectionType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The connection type of this port. <i>For the possible property values, see PortConnectionType in Property details.</i> |
| } | | | |
| FunctionMaxBandwidth (v1.4+) [{ | array | | An array of maximum bandwidth allocation percentages for the functions associated with this port. |
| AllocationPercent (v1.4+) | integer (%) | <i>read-write</i> (<i>null</i>) | The maximum bandwidth allocation percentage allocated to the corresponding network device function instance. |
| NetworkDeviceFunction (v1.4+) { | object | | The link to the network device function associated with this bandwidth setting of this network port. See the <i>NetworkDeviceFunction</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| }] | | | |
| FunctionMinBandwidth (v1.4+) [{ | array | | An array of minimum bandwidth allocation percentages for the functions associated with this port. |
| AllocationPercent (v1.4+) | integer (%) | <i>read-write</i> (<i>null</i>) | The minimum bandwidth allocation percentage allocated to the corresponding network device function instance. |
| NetworkDeviceFunction (v1.4+) { | object | | The link to the network device function associated with this bandwidth setting of this network port. See the <i>NetworkDeviceFunction</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| } | | | |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|----------------------------|------------------|---|
| GenZ (v1.2+) { | object | | Gen-Z specific properties. |
| LPRT (v1.2+) { | object | | The Linear Packet Relay Table for the port. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details. |
| } | | | |
| MPRT (v1.2+) { | object | | the Multi-subnet Packet Relay Table for the port. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details. |
| } | | | |
| VCAT (v1.2+) { | object | | the Virtual Channel Action Table for the port. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details. |
| } | | | |
| } | | | |
| InfiniBand (v1.6+) { | object | (<i>null</i>) | InfiniBand properties for this port. |
| AssociatedNodeGUIDs (v1.6+) [] | array (string, null) | <i>read-only</i> | An array of configured node GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |
| AssociatedPortGUIDs (v1.6+) [] | array (string, null) | <i>read-only</i> | An array of configured port GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |

| Property | Type | Attributes | Notes |
|--|-------------------------------|--------------------------|---|
| AssociatedSystemGUIDs (v1.6+) [] | array (string, null) | <i>read-only</i> | An array of configured system GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses. |
| } | | | |
| InterfaceEnabled (v1.2+) | boolean | <i>read-write (null)</i> | An indication of whether the port is enabled. |
| LinkConfiguration (v1.3+) [{ | array | | The link configuration of this port. |
| AutoSpeedNegotiationCapable (v1.3+) | boolean | <i>read-only (null)</i> | An indication of whether the port is capable of autonegotiating speed. |
| AutoSpeedNegotiationEnabled (v1.3+) | boolean | <i>read-write (null)</i> | Controls whether this port is configured to enable autonegotiating speed. |
| CapableLinkSpeedGbps (v1.3+) [] | array (Gbit/s) (number, null) | <i>read-only</i> | The set of link speed capabilities of this port. |
| ConfiguredNetworkLinks (v1.3+) [{ | array | | The set of link speed and width pairs this port is configured to use for autonegotiation. |
| ConfiguredLinkSpeedGbps (v1.3+) | number (Gbit/s) | <i>read-write (null)</i> | The link speed per lane this port is configured to use for autonegotiation. |
| ConfiguredWidth (v1.3+) | integer | <i>read-write (null)</i> | The link width this port is configured to use for autonegotiation in conjunction with the link speed. |
| }] | | | |
| } | | | |
| LinkNetworkTechnology (v1.2+) | string (enum) | <i>read-only (null)</i> | The link network technology capabilities of this port. <i>For the possible property values, see LinkNetworkTechnology in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| AssociatedEndpoints [{ | array | | An array of links to the endpoints at the other end of the link. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------|------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| Cables (v1.5+) [{ | array | | An array of links to the cables connected to this port. |
| @odata.id | string | <i>read-only</i> | Link to a Cable resource. See the Links section and the <i>Cable</i> schema for details. |
| }] | | | |
| ConnectedPorts (v1.2+) [{ | array | | An array of links to the remote device ports at the other end of the link. |
| @odata.id | string | <i>read-only</i> | Link to another Port resource. |
| }] | | | |
| ConnectedSwitches [{ | array | | An array of links to the switches at the other end of the link. |
| @odata.id | string | <i>read-only</i> | Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details. |
| }] | | | |
| ConnectedSwitchPorts [{ | array | | An array of links to the switch ports at the other end of the link. |
| @odata.id | string | <i>read-only</i> | Link to another Port resource. |
| }] | | | |
| EthernetInterfaces (v1.7+) [{ | array | | The links to the Ethernet interfaces this port provides. |
| @odata.id | string | <i>read-only</i> | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|--------------------|-----------------------------|--|
| LinkState (v1.2+) | string (enum) | <i>read-write</i> | The desired link state for this interface. <i>For the possible property values, see LinkState in Property details.</i> |
| LinkStatus (v1.2+) | string (enum) | <i>read-only</i> | The link status for this interface. <i>For the possible property values, see LinkStatus in Property details.</i> |
| LinkTransitionIndicator (v1.2+) | integer | <i>read-write</i> | The number of link state transitions for this interface. |
| Location (v1.1+) {} | object | | The location of the port. For property details, see Location. |
| LocationIndicatorActive (v1.3+) | boolean | <i>read-write</i> (null) | An indicator allowing an operator to physically locate this resource. |
| MaxFrameSize (v1.3+) | integer (bytes) | <i>read-only</i> (null) | The maximum frame size supported by the port. |
| MaxSpeedGbps | number (Gbit/s) | <i>read-only</i> (null) | The maximum speed of this port as currently configured. |
| Metrics (v1.2+) { | object | (null) | The link to the metrics associated with this port. See the <i>PortMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PortMetrics resource. See the Links section and the <i>PortMetrics</i> schema for details. |
| } | | | |
| PortId | string | <i>read-only</i> (null) | The label of this port on the physical package for this port. |
| PortMedium (v1.2+) | string (enum) | <i>read-only</i> (null) | The physical connection medium for this port. <i>For the possible property values, see PortMedium in Property details.</i> |
| PortProtocol | string (enum) | <i>read-only</i> (null) | The protocol being sent over this port. <i>For the possible property values, see PortProtocol in Property details.</i> |
| PortType | string (enum) | <i>read-only</i> (null) | The type of this port. <i>For the possible property values, see PortType in Property details.</i> |
| RemotePortId (v1.8+) | string | <i>read-only</i> (null) | The identifier of the remote port to which this port is connected. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------------------------|---------------------|---|
| SFP (v1.4+) { | object | (null) | The small form-factor pluggable (SFP) device associated with this port. |
| FiberConnectionType (v1.4+) | string (enum) | read-only (null) | The type of fiber connection currently used by this SFP. <i>For the possible property values, see FiberConnectionType in Property details.</i> |
| Manufacturer (v1.4+) | string | read-only (null) | The manufacturer of this SFP. |
| MediumType (v1.4+) | string (enum) | read-only (null) | The medium type connected to this SFP. <i>For the possible property values, see MediumType in Property details.</i> |
| PartNumber (v1.4+) | string | read-only (null) | The part number for this SFP. |
| SerialNumber (v1.4+) | string | read-only (null) | The serial number for this SFP. |
| Status (v1.4+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedSFPTypes (v1.4+) [] | array (string enum) | read-only (null) | The types of SFP devices that can be attached to this port. <i>For the possible property values, see SupportedSFPTypes in Property details.</i> |
| Type (v1.4+) | string (enum) | read-only (null) | The type of SFP device that is attached to this port. <i>For the possible property values, see Type in Property details.</i> |
| } | | | |
| SignalDetected (v1.2+) | boolean | read-only (null) | An indication of whether a signal is detected on this interface. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Width | integer | read-only (null) | The number of lanes, phys, or other physical transport links that this port contains. |

6.95.4 Actions

6.95.4.1 Reset

Description

This action resets this port.

Action URI

{Base URI of target resource}/Actions/Port.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. For the possible property values, see <i>ResetType</i> in Property details. |

Request Example

```
{  
  "ResetType": "ForceRestart"  
}
```

6.95.4.2 ResetPPB (v1.8+)

Description

This action resets the PCI-to-PCI bridge (PPB) for this port.

Action URI

{Base URI of target resource}/Actions/Port.ResetPPB

Action parameters

This action takes no parameters.

6.95.5 Property details

6.95.5.1 ChassisIdSubtype

The type of identifier used for the chassis ID received from the remote partner across this link.

| string | Description |
|----------------|---|
| AgentId | Agent circuit ID, based on the agent-local identifier of the circuit as defined in RFC3046. |
| ChassisComp | Chassis component, based in the value of entPhysicalAlias in RFC4133. |
| IfAlias | Interface alias, based on the ifAlias MIB object. |
| IfName | Interface name, based on the ifName MIB object. |
| LocalAssign | Locally assigned, based on a alpha-numeric value locally assigned. |
| MacAddr | MAC address, based on an agent detected unicast source address as defined in IEEE standard 802. |
| NetworkAddr | Network address, based on an agent detected network address. |
| NotTransmitted | No data to be sent to/received from remote partner. |
| PortComp | Port component, based in the value of entPhysicalAlias in RFC4133. |

6.95.5.2 ConnectedDeviceMode

The connected device mode.

| string | Description |
|-----------------------------|---|
| CXL68BFlitAndVH | CXL 68B flit and VH. |
| CXLLatencyOptimized256BFlit | CXL latency-optimized 256B flit. |
| Disconnected | The connection is not CXL or is disconnected. |
| PBR | Port-based routing (PBR). |
| RCD | Restricted CXL device (RCD). |
| Standard256BFlit | Standard 256B flit. |

6.95.5.3 ConnectedDeviceType

The connected device type.

| string | Description |
|------------|---|
| None | No device detected. |
| PCleDevice | PCIe device. |
| Type1 | CXL Type 1 device. |
| Type2 | CXL Type 2 device. |
| Type3MLD | CXL Type 3 multi-logical device (MLD). |
| Type3SLD | CXL Type 3 single logical device (SLD). |

6.95.5.4 CurrentPortConfigurationState

The current port configuration state.

| string | Description |
|------------------|------------------------|
| BindInProgress | Bind in progress. |
| Disabled | Disabled. |
| DSP | Downstream port (DSP). |
| Reserved | Reserved. |
| UnbindInProgress | Unbind in progress. |
| USP | Upstream port (USP). |

6.95.5.5 FiberConnectionType

The type of fiber connection currently used by this SFP.

| string | Description |
|------------|--|
| MultiMode | The connection is using multi mode operation. |
| SingleMode | The connection is using single mode operation. |

6.95.5.6 FlowControlConfiguration

The locally configured 802.3x flow control setting for this port.

| string | Description |
|--------|--|
| None | No IEEE 802.3x flow control is enabled on this port. |
| RX | IEEE 802.3x flow control might be initiated by the link partner. |
| TX | IEEE 802.3x flow control might be initiated by this station. |
| TX_RX | IEEE 802.3x flow control might be initiated by this station or the link partner. |

6.95.5.7 FlowControlStatus

The 802.3x flow control behavior negotiated with the link partner for this port.

| string | Description |
|--------|--|
| None | No IEEE 802.3x flow control is enabled on this port. |
| RX | IEEE 802.3x flow control might be initiated by the link partner. |
| TX | IEEE 802.3x flow control might be initiated by this station. |
| TX_RX | IEEE 802.3x flow control might be initiated by this station or the link partner. |

6.95.5.8 LinkNetworkTechnology

The link network technology capabilities of this port.

| string | Description |
|--------------|---|
| Ethernet | The port is capable of connecting to an Ethernet network. |
| FibreChannel | The port is capable of connecting to a Fibre Channel network. |
| GenZ | The port is capable of connecting to a Gen-Z fabric. |
| InfiniBand | The port is capable of connecting to an InfiniBand network. |
| PCIe (v1.8+) | The port is capable of connecting to PCIe and CXL fabrics. |

6.95.5.9 LinkState

The desired link state for this interface.

| string | Description |
|----------|---|
| Disabled | The link is disabled and not operational. |
| Enabled | The link is enabled and operational. |

6.95.5.10 LinkStatus

The link status for this interface.

| string | Description |
|----------|---|
| LinkDown | The link on this interface is down. |
| LinkUp | This link on this interface is up. |
| NoLink | No physical link detected on this interface. |
| Starting | This link on this interface is starting. A physical link has been established, but the port is not able to transfer data. |
| Training | This physical link on this interface is training. |

6.95.5.11 MediumType

The medium type connected to this SFP.

| string | Description |
|------------|--------------------------------------|
| Copper | The medium connected is copper. |
| FiberOptic | The medium connected is fiber optic. |

6.95.5.12 PortConnectionType

The connection type of this port.

| string | Description |
|----------------|--|
| DPort (v1.5+) | This port connection type is a diagnostic port. |
| EPort (v1.5+) | This port connection type is an extender fabric port. |
| EXPort (v1.5+) | This port connection type is an external fabric port. |
| ExtenderFabric | This port connection type is an extender fabric port. |
| FLPort (v1.5+) | This port connects in a fabric loop configuration. |
| FPort (v1.5+) | This port connection type is a fabric port. |
| Generic | This port connection type is a generic fabric port. |
| GPort (v1.5+) | This port connection type is a generic fabric port. |
| NLPort (v1.5+) | This port connects in a node loop configuration. |
| NotConnected | This port is not connected. |
| NPort | This port connects through an N-Port to a switch. |
| NPPort (v1.5+) | This port connection type is a proxy N port for N-Port virtualization. |
| PointToPoint | This port connects in a Point-to-point configuration. |
| PrivateLoop | This port connects in a private loop configuration. |
| PublicLoop | This port connects in a public configuration. |
| TEPort (v1.5+) | This port connection type is a trunking extender fabric port. |
| UPort (v1.5+) | This port connection type is unassigned. |

6.95.5.13 PortIdSubtype

The port ID subtype received from the remote partner across this link.

| string | Description |
|-------------|---|
| AgentId | Agent circuit ID, based on the agent-local identifier of the circuit as defined in RFC3046. |
| ChassisComp | Chassis component, based in the value of entPhysicalAlias in RFC4133. |
| IfAlias | Interface alias, based on the ifAlias MIB object. |
| IfName | Interface name, based on the ifName MIB object. |
| LocalAssign | Locally assigned, based on a alpha-numeric value locally assigned. |

| string | Description |
|----------------|---|
| MacAddr | MAC address, based on an agent detected unicast source address as defined in IEEE standard 802. |
| NetworkAddr | Network address, based on an agent detected network address. |
| NotTransmitted | No data to be sent to/received from remote partner. |
| PortComp | Port component, based in the value of entPhysicalAlias in RFC4133. |

6.95.5.14 PortMedium

The physical connection medium for this port.

| string | Description |
|------------|---|
| Electrical | This port has an electrical cable connection. |
| Optical | This port has an optical cable connection. |

6.95.5.15 PortProtocol

The protocol being sent over this port.

| string | Description |
|-------------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |

| string | Description |
|-----------------|---|
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |

| string | Description |
|--------|---|
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.95.5.16 PortType

The type of this port.

| string | Description |
|-------------------|---|
| BidirectionalPort | This port connects to any type of device. |
| DownstreamPort | This port connects to a target device. |
| InterswitchPort | This port connects to another switch. |
| ManagementPort | This port connects to a switch manager. |
| UnconfiguredPort | This port has not yet been configured. |
| UpstreamPort | This port connects to a host device. |

6.95.5.17 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |

| string | Description |
|-----------------|---|
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.95.5.18 SupportedEthernetCapabilities

The set of Ethernet capabilities that this port supports.

| string | Description |
|-----------|---|
| EEE | IEEE 802.3az Energy-Efficient Ethernet (EEE) is supported on this port. |
| WakeOnLAN | Wake on LAN (WoL) is supported on this port. |

6.95.5.19 SupportedSFPTypes

The types of SFP devices that can be attached to this port.

| string | Description |
|-----------|---|
| cSFP | The SFP conforms to the CSFP MSA Specification. |
| MiniSASHD | The SFP conforms to the SFF Specification SFF-8644. |
| OSFP | The SFP conforms to the OSFP Specification. |
| QSFP | The SFP conforms to the SFF Specification for QSFP. |
| QSFP14 | The SFP conforms to the SFF Specification for QSFP14. |
| QSFP28 | The SFP conforms to the SFF Specification for QSFP28. |
| QSFP56 | The SFP conforms to the SFF Specification for QSFP56. |

| string | Description |
|---------|--|
| QSPDD | The SFP conforms to the QSFP Double Density Specification. |
| QSPPlus | The SFP conforms to the SFF Specification for QSFP+. |
| SFP | The SFP conforms to the SFF Specification for SFP. |
| SFP28 | The SFP conforms to the SFF Specification for SFP+ and IEEE 802.3by Specification. |
| SFPDD | The SFP conforms to the SFP-DD MSA Specification. |
| SFPPlus | The SFP conforms to the SFF Specification for SFP+. |

6.95.5.20 SystemCapabilities

The system capabilities received from the remote partner across this link.

| string | Description |
|-------------------|---|
| Bridge | Bridge. |
| DOCSISCableDevice | DOCSIS cable device. |
| None | The system capabilities are transmitted, but no capabilities are set. |
| Other | Other. |
| Repeater | Repeater. |
| Router | Router. |
| Station | Station. |
| Telephone | Telephone. |
| WLANAccessPoint | WLAN access point. |

6.95.5.21 Type

The type of SFP device that is attached to this port.

| string | Description |
|-----------|---|
| cSFP | The SFP conforms to the CSFP MSA Specification. |
| MiniSASHD | The SFP conforms to the SFF Specification SFF-8644. |

| string | Description |
|----------------|--|
| OSFP (v1.9+) | The SFP conforms to the OSFP Specification. |
| QSFP | The SFP conforms to the SFF Specification for QSFP. |
| QSFP14 | The SFP conforms to the SFF Specification for QSFP14. |
| QSFP28 | The SFP conforms to the SFF Specification for QSFP28. |
| QSFP56 | The SFP conforms to the SFF Specification for QSFP56. |
| QSFPDD (v1.9+) | The SFP conforms to the QSFP Double Density Specification. |
| QSFPPlus | The SFP conforms to the SFF Specification for QSFP+. |
| SFP | The SFP conforms to the SFF Specification for SFP. |
| SFP28 | The SFP conforms to the SFF Specification for SFP+ and IEEE 802.3by Specification. |
| SFPDD | The SFP conforms to the SFP-DD MSA Specification. |
| SFPPlus | The SFP conforms to the SFF Specification for SFP+. |

6.95.6 Example response

```
{
  "@odata.type": "#Port.v1_10_0.Port",
  "Id": "1",
  "Name": "SAS Port 1",
  "Description": "SAS Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "SAS",
  "PortType": "BidirectionalPort",
  "CurrentSpeedGbps": 48,
  "Width": 4,
  "MaxSpeedGbps": 48,
  "Links": {
    "AssociatedEndpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports/1"
}
```

```
}

```

6.96 PortMetrics 1.5.0

| | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|
| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
| Release | 2023.2 | 2022.3 | 2022.1 | 2021.2 | 2021.1 | 2019.4 |

6.96.1 Description

The PortMetrics schema contains usage and health statistics for a switch device or component port summary.

6.96.2 URIs

/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/Metrics
 /redfish/v1/Chassis/{ChassisId}/MediaControllers/{MediaControllerId}/Ports/{PortId}/Metrics
 /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Ports/{PortId}/Metrics
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/Metrics
 /redfish/v1/Managers/{ManagerId}/DedicatedNetworkPorts/{PortId}/Metrics
 /redfish/v1/Managers/{ManagerId}/USBPorts/{PortId}/Metrics
 /redfish/v1/Storage/{StorageId}/Controllers/{StorageControllerId}/Ports/{PortId}/Metrics
 /redfish/v1/Storage/{StorageId}/StorageControllers/{StorageControllerId}/Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/GraphicsControllers/{ControllerId}/Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{StorageControllerId}/
 Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StorageControllers/
 {StorageControllerId}/Ports/{PortId}/Metrics
 /redfish/v1/Systems/{ComputerSystemId}/USBControllers/{ControllerId}/Ports/{PortId}/Metrics

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.96.3 Properties

| Property | Type | Attributes | Notes |
|----------------------|--------|------------|---|
| CXL (v1.4+) { | object | | The port metrics specific to CXL ports. |

| Property | Type | Attributes | Notes |
|---|--------------|----------------------------|---|
| BackpressureAveragePercentage (v1.4+) | integer (%) | <i>read-only</i> | The average congestion of the port as a percentage. |
| } | | | |
| FibreChannel (v1.2+) { | object | | The Fibre Channel-specific port metrics for network ports. |
| CorrectableFECErrors (v1.2+) | integer | <i>read-only</i> (null) | The total number of correctable forward error correction (FEC) errors. |
| InvalidCRCs (v1.2+) | integer | <i>read-only</i> (null) | The total number of invalid cyclic redundancy checks (CRCs). |
| InvalidTXWords (v1.2+) | integer | <i>read-only</i> (null) | The total number of invalid transmission words. |
| LinkFailures (v1.2+) | integer | <i>read-only</i> (null) | The total number of link failures. |
| LossesOfSignal (v1.2+) | integer | <i>read-only</i> (null) | The total number of losses of signal. |
| LossesOfSync (v1.2+) | integer | <i>read-only</i> (null) | The total number of losses of sync. |
| RXBBCreditZero (v1.2+) | integer | <i>read-only</i> (null) | The number of times the receive buffer-to-buffer credit count transitioned to zero. |
| RXExchanges (v1.2+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel exchanges received. |
| RXSequences (v1.2+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel sequences received. |
| TXBBCredits (v1.2+) | integer | <i>read-only</i> (null) | The number of transmit buffer-to-buffer credits the port is configured to use. |
| TXBBCreditZero (v1.2+) | integer | <i>read-only</i> (null) | The number of times the transmit buffer-to-buffer credit count transitioned to zero. |
| TXBBCreditZeroDurationMilliseconds (v1.2+) | integer (ms) | <i>read-only</i> (null) | The total amount of time the port has been blocked from transmitting due to lack of buffer credits. |
| TXExchanges (v1.2+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel exchanges transmitted. |
| TXSequences (v1.2+) | integer | <i>read-only</i> (null) | The total number of Fibre Channel sequences transmitted. |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------|-------------------------------------|---|
| UncorrectableFECErrors (v1.2+) | integer | <i>read-only</i> (<i>null</i>) | The total number of uncorrectable forward error correction (FEC) errors. |
| } | | | |
| GenZ { | object | | The port metrics specific to Gen-Z ports. |
| AccessKeyViolations | integer | <i>read-only</i> (<i>null</i>) | The total number of Access Key Violations detected. |
| EndToEndCRCErrors | integer | <i>read-only</i> (<i>null</i>) | The total number of ECRC transient errors detected. |
| LinkNTE | integer | <i>read-only</i> (<i>null</i>) | The total number of link-local non-transient errors detected. |
| LLRRecovery | integer | <i>read-only</i> (<i>null</i>) | The total number of times Link-Level Reliability (LLR) recovery has been initiated. |
| MarkedECN | integer | <i>read-only</i> (<i>null</i>) | The number of packets with the Congestion ECN bit set. |
| NonCRCTransientErrors | integer | <i>read-only</i> (<i>null</i>) | The total number transient errors detected that are unrelated to CRC validation. |
| PacketCRCErrors | integer | <i>read-only</i> (<i>null</i>) | The total number of PCRC transient errors detected. |
| PacketDeadlineDiscards | integer | <i>read-only</i> (<i>null</i>) | The number of packets discarded due to the Congestion Deadline sub-field reaching zero. |
| ReceivedECN | integer | <i>read-only</i> (<i>null</i>) | The number of packets received on this interface with the Congestion ECN bit set. |
| RXStompedECRC | integer | <i>read-only</i> (<i>null</i>) | The total number of packets received with a stomped ECRC field. |
| TXStompedECRC | integer | <i>read-only</i> (<i>null</i>) | The total number of packets that this interface stomped the ECRC field. |
| } | | | |
| Networking (v1.1+) { | object | | The port metrics for network ports, including Ethernet, Fibre Channel, and InfiniBand, that are not specific to one of these protocols. |
| RDMAProtectionErrors (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The total number of RDMA protection errors. |
| RDMAProtocolErrors (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The total number of RDMA protocol errors. |

| Property | Type | Attributes | Notes |
|---------------------------------------|---------|----------------------------|---|
| RDMARXBytes (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA bytes received on a port since reset. |
| RDMARXRequests (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA requests received on a port since reset. |
| RDMATXBytes (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA bytes transmitted on a port since reset. |
| RDMATXReadRequests (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA read requests transmitted on a port since reset. |
| RDMATXRequests (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA requests transmitted on a port since reset. |
| RDMATXSendRequests (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA send requests transmitted on a port since reset. |
| RDMATXWriteRequests (v1.1+) | integer | <i>read-only</i> (null) | The total number of RDMA write requests transmitted on a port since reset. |
| RXBroadcastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of valid broadcast frames received on a port since reset. |
| RXDiscards (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames discarded in a port's receive path since reset. |
| RXFalseCarrierErrors (v1.1+) | integer | <i>read-only</i> (null) | The total number of false carrier errors received from phy on a port since reset. |
| RXFCSErrors (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames received with frame check sequence (FCS) errors on a port since reset. |
| RXFrameAlignmentErrors (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames received with alignment errors on a port since reset. |
| RXFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames received on a port since reset. |
| RXMulticastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of valid multicast frames received on a port since reset. |
| RXOversizeFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames that exceed the maximum frame size. |
| RXPauseXOFFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of flow control frames from the network to pause transmission. |
| RXPauseXONFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of flow control frames from the network to resume transmission. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------|----------------------------|--|
| RXPFCFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of priority flow control (PFC) frames received on a port since reset. |
| RXUndersizeFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames that are smaller than the minimum frame size of 64 bytes. |
| RXUnicastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of valid unicast frames received on a port since reset. |
| TXBroadcastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of good broadcast frames transmitted on a port since reset. |
| TXDiscards (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames discarded in a port's transmit path since reset. |
| TXExcessiveCollisions (v1.1+) | integer | <i>read-only</i> (null) | The number of times a single transmitted frame encountered more than 15 collisions. |
| TXFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of frames transmitted on a port since reset. |
| TXLateCollisions (v1.1+) | integer | <i>read-only</i> (null) | The total number of collisions that occurred after one slot time as defined by IEEE 802.3. |
| TXMulticastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of good multicast frames transmitted on a port since reset. |
| TXMultipleCollisions (v1.1+) | integer | <i>read-only</i> (null) | The times that a transmitted frame encountered 2-15 collisions. |
| TXPauseXOFFFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of XOFF frames transmitted to the network. |
| TXPauseXONFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of XON frames transmitted to the network. |
| TXPFCFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of priority flow control (PFC) frames sent on a port since reset. |
| TXSingleCollisions (v1.1+) | integer | <i>read-only</i> (null) | The times that a successfully transmitted frame encountered a single collision. |
| TXUnicastFrames (v1.1+) | integer | <i>read-only</i> (null) | The total number of good unicast frames transmitted on a port since reset. |
| } | | | |
| PCIErrors (v1.3+) { | object | | The PCIe errors associated with this port. |
| CorrectableErrorCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of the PCIe correctable errors for this device. |

| Property | Type | Attributes | Notes |
|--|--------------------|----------------------------|---|
| FatalErrorCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of the PCIe fatal errors for this device. |
| L0ToRecoveryCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of times the PCIe link states transitioned from L0 to the recovery state for this device. |
| NAKReceivedCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of NAKs issued on the PCIe link by the receiver. |
| NAKSentCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of NAKs issued on the PCIe link by this device. |
| NonFatalErrorCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of the PCIe non-fatal errors for this device. |
| ReplayCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of the PCIe replays issued by this device. |
| ReplayRolloverCount (v1.8+) | integer | <i>read-only</i> (null) | The total number of the PCIe replay rollovers issued by this device. |
| } | | | |
| RXBytes (v1.1+) | integer (bytes) | <i>read-only</i> (null) | The total number of bytes received on a port since reset. |
| RXErrors (v1.1+) | integer | <i>read-only</i> (null) | The total number of received errors on a port since reset. |
| SAS (v1.1+) [{ | array | | The physical (phy) metrics for Serial Attached SCSI (SAS). Each member represents a single phy. |
| InvalidDwordCount (v1.1+) | integer | <i>read-only</i> (null) | The number of invalid dwords that have been received by the phy outside of phy reset sequences. |
| LossOfDwordSynchronizationCount (v1.1+) | integer | <i>read-only</i> (null) | The number of times the phy has restarted the link reset sequence because it lost dword synchronization. |
| PhyResetProblemCount (v1.5+) | integer | <i>read-only</i> (null) | The number of times a phy reset problem has occurred. |
| RunningDisparityErrorCount (v1.1+) | integer | <i>read-only</i> (null) | The number of dwords containing running disparity errors that have been received by the phy outside of phy reset sequences. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|---------------------|------------------|---|
| Transceivers (v1.1+)[{ | array | | The metrics for the transceivers in this port. Each member represents a single transceiver. |
| RXInputPowerMilliWatts (v1.1+) | number (milliWatts) | read-only (null) | The RX input power value of a small form-factor pluggable (SFP) transceiver. |
| SupplyVoltage (v1.1+) | number (Volts) | read-only (null) | The supply voltage of a small form-factor pluggable (SFP) transceiver. |
| TXBiasCurrentMilliAmps (v1.1+) | number (mA) | read-only (null) | The TX bias current value of a small form-factor pluggable (SFP) transceiver. |
| TXOutputPowerMilliWatts (v1.1+) | number (milliWatts) | read-only (null) | The TX output power value of a small form-factor pluggable (SFP) transceiver. |
| }] | | | |
| TXBytes (v1.1+) | integer (bytes) | read-only (null) | The total number of bytes transmitted on a port since reset. |
| TXErrors (v1.1+) | integer | read-only (null) | The total number of transmission errors on a port since reset. |

6.96.4 Example response

```
{
  "@odata.type": "#PortMetrics.v1_5_0.PortMetrics",
  "Id": "Metrics",
  "Name": "Gen-Z Port 1 Metrics",
  "GenZ": {
    "PacketCRCErrors": 24,
    "EndToEndCRCErrors": 3,
    "RXStompedECRC": 1,
    "TXStompedECRC": 2,
    "NonCRCTransientErrors": 2,
    "LLRRecovery": 1,
    "MarkedECN": 1,
    "PacketDeadlineDiscards": 1,
    "AccessKeyViolations": 1,
    "LinkNTE": 1,
    "ReceivedECN": 1
  },
  "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/Metrics"
}
```

6.97 Power 1.7.1 (deprecated)

| Version | <i>v1.7 Deprecated</i> | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|----------------------------|--------|--------|--------|--------|--------|--------|------|
| Release | 2020.4 | 2019.3 | 2017.3 | 2017.2 | 2017.1 | 2016.2 | 2016.1 | 1.0 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the PowerSubsystem schema.

6.97.1 Description

The Power schema describes power metrics and represents the properties for power consumption and power limiting.

6.97.2 URIs

/redfish/v1/Chassis/{ChassisId}/Power (deprecated)

6.97.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|--------------|-------------------------------|---|
| PowerControl [{ | array | | The set of power control functions, including power reading and limiting. |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions (v1.3+) { } | object | | The available actions for this resource. |
| MemberId | string | <i>read-only required</i> | The identifier for the member within the collection. |
| Name | string | <i>read-only (null)</i> | The power control function name. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |

| Property | Type | Attributes | Notes |
|--------------------------------|-------------------|--------------------------------------|--|
| PhysicalContext (v1.4+) | string (enum) | <i>read-only</i> | The area, device, or set of devices to which this power control applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PowerAllocatedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The total amount of power that has been allocated or budgeted to chassis. |
| PowerAvailableWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The amount of reserve power capacity, in watts, that remains. This value is the PowerCapacityWatts value minus the PowerAllocatedWatts value. |
| PowerCapacityWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The total amount of power that can be allocated to the chassis. This value can be either the power supply capacity or the power budget that an upstream chassis assigns to this chassis. |
| PowerConsumedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The actual power that the chassis consumes, in watts. |
| PowerLimit { | object | | The power limit status and configuration information for this chassis. |
| CorrectionInMs | integer (ms) | <i>read-write</i> (<i>null</i>) | The time required for the limiting process to reduce power consumption to below the limit. |
| LimitException | string (enum) | <i>read-write</i> (<i>null</i>) | The action that is taken if the power cannot be maintained below the LimitInWatts. <i>For the possible property values, see LimitException in Property details.</i> |
| LimitInWatts | number (Watts) | <i>read-write</i> (<i>null</i>) | The power limit, in watts. If <i>null</i> , power capping is disabled. |
| } | | | |
| PowerMetrics { | object | | The power readings for this chassis. |
| AverageConsumedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The average power level over the measurement window over the last IntervalInMin minutes. |
| IntervalInMin | integer (min) | <i>read-only</i> (<i>null</i>) | The time interval, or window, over which the power metrics are measured. |
| MaxConsumedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The highest power consumption level, in watts, that has occurred over the measurement window within the last IntervalInMin minutes. |
| MinConsumedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The lowest power consumption level, in watts, over the measurement window that occurred within the last IntervalInMin minutes. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------------|-------------------|--------------------------------------|--|
| PowerRequestedWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The potential power, in watts, that the chassis requests, which might be higher than the current level being consumed because the requested power includes a budget that the chassis wants for future use. |
| RelatedItem [{ | array | | An array of links to resources or objects associated with this power limit. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| }] | | | |
| PowerSupplies [{ | array | | The set of power supplies associated with this system or device. |
| @odata.id | string (URI) | <i>read-only</i> <i>required</i> | The unique identifier for a resource. |
| Actions (v1.3+) { } | object | | The available actions for this resource. |
| Assembly (v1.5+) { | object | | The link to the assembly resource associated with this power supply. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| EfficiencyPercent (v1.5+) | number (%) | <i>read-only</i> (<i>null</i>) | The measured efficiency of this power supply as a percentage. |
| FirmwareVersion | string | <i>read-only</i> (<i>null</i>) | The firmware version for this power supply. |
| HotPluggable (v1.5+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| IndicatorLED (v1.2+) | string (enum) | <i>read-write</i> (<i>null</i>) | The state of The indicator LED, which identifies the power supply. <i>For the possible property values, see IndicatorLED in Property details.</i> |
| InputRanges (v1.1+) [{ | array | | The input ranges that the power supply can use. |
| InputType (v1.1+) | string (enum) | <i>read-only</i> (<i>null</i>) | The Input type (AC or DC). <i>For the possible property values, see InputType in Property details.</i> |

| Property | Type | Attributes | Notes |
|--------------------------------------|-------------------|-------------------------------------|--|
| MaximumFrequencyHz (v1.1+) | number (Hz) | <i>read-only</i> (<i>null</i>) | The maximum line input frequency at which this power supply input range is effective. |
| MaximumVoltage (v1.1+) | number (Volts) | <i>read-only</i> (<i>null</i>) | The maximum line input voltage at which this power supply input range is effective. |
| MinimumFrequencyHz (v1.1+) | number (Hz) | <i>read-only</i> (<i>null</i>) | The minimum line input frequency at which this power supply input range is effective. |
| MinimumVoltage (v1.1+) | number (Volts) | <i>read-only</i> (<i>null</i>) | The minimum line input voltage at which this power supply input range is effective. |
| Oem (v1.1+) {} | object | | See the Oem object definition in the Common properties section. |
| OutputWattage (v1.1+) | number (Watts) | <i>read-only</i> (<i>null</i>) | The maximum capacity of this power supply when operating in this input range. |
| }] | | | |
| LastPowerOutputWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The average power output of this power supply. |
| LineInputVoltage | number (Volts) | <i>read-only</i> (<i>null</i>) | The line input voltage at which the power supply is operating. |
| LineInputVoltageType | string (enum) | <i>read-only</i> (<i>null</i>) | The line voltage type supported as an input to this power supply. <i>For the possible property values, see LineInputVoltageType in Property details.</i> |
| Location (v1.5+) {} | object | | The location of the power supply. For property details, see Location. |
| Manufacturer (v1.1+) | string | <i>read-only</i> (<i>null</i>) | The manufacturer of this power supply. |
| MemberId | string | <i>read-only</i> <i>required</i> | The identifier for the member within the collection. |
| Model | string | <i>read-only</i> (<i>null</i>) | The model number for this power supply. |
| Name | string | <i>read-only</i> (<i>null</i>) | The name of the power supply. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PartNumber | string | <i>read-only</i> (<i>null</i>) | The part number for this power supply. |

| Property | Type | Attributes | Notes |
|---------------------------------|-------------------|-------------------------------------|---|
| PowerCapacityWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The maximum capacity of this power supply. |
| PowerInputWatts (v1.5+) | number (Watts) | <i>read-only</i> (<i>null</i>) | The measured input power of this power supply. |
| PowerOutputWatts (v1.5+) | number (Watts) | <i>read-only</i> (<i>null</i>) | The measured output power of this power supply. |
| PowerSupplyType | string (enum) | <i>read-only</i> (<i>null</i>) | The power supply type (AC or DC). <i>For the possible property values, see PowerSupplyType in Property details.</i> |
| Redundancy [{ }] | array (object) | | The set of redundancy groups for this power supply. For property details, see Redundancy. |
| RelatedItem [{ | array | | An array of links to resources or objects associated with this power supply. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number for this power supply. |
| SparePartNumber | string | <i>read-only</i> (<i>null</i>) | The spare part number for this power supply. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| }] | | | |
| Redundancy [{ }] | array (object) | | The redundancy information for the set of power supplies in this chassis. For property details, see Redundancy. |
| Voltages [{ | array | | The set of voltage sensors for this chassis. |
| @odata.id | string (URI) | <i>read-only</i> <i>required</i> | The unique identifier for a resource. |
| Actions (v1.3+) { } | object | | The available actions for this resource. |
| LowerThresholdCritical | number (Volts) | <i>read-only</i> (<i>null</i>) | The value at which the reading is below normal range but not yet fatal. |
| LowerThresholdFatal | number (Volts) | <i>read-only</i> (<i>null</i>) | The value at which the reading is below normal range and fatal. |

| Property | Type | Attributes | Notes |
|----------------------------------|----------------|---------------------------|---|
| LowerThresholdNonCritical | number (Volts) | <i>read-only (null)</i> | The value at which the reading is below normal range. |
| MaxReadingRange | number (Volts) | <i>read-only (null)</i> | Maximum value for this sensor. |
| MemberId | string | <i>read-only required</i> | The identifier for the member within the collection. |
| MinReadingRange | number (Volts) | <i>read-only (null)</i> | Minimum value for this sensor. |
| Name | string | <i>read-only (null)</i> | Voltage sensor name. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device to which this voltage measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| ReadingVolts | number (Volts) | <i>read-only (null)</i> | The reading of the voltage sensor. |
| RelatedItem [{ | array | | An array of links to resources or objects to which this voltage measurement applies. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| SensorNumber | integer | <i>read-only (null)</i> | A numerical identifier to represent the voltage sensor. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UpperThresholdCritical | number (Volts) | <i>read-only (null)</i> | The value at which the reading is above normal range but not yet fatal. |
| UpperThresholdFatal | number (Volts) | <i>read-only (null)</i> | The value at which the reading is above normal range and fatal. |
| UpperThresholdNonCritical | number (Volts) | <i>read-only (null)</i> | The value at which the reading is above normal range. |
| }] | | | |

6.97.4 Actions

6.97.4.1 PowerSupplyReset (v1.6+)

Description

This action resets the targeted power supply.

Action URI

{Base URI of target resource}/Actions/Power.PowerSupplyReset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| MemberId | string | <i>required</i> | The MemberId of the power supply within the PowerSupplies array on which to perform the reset. |
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "MemberId": "0",
  "ResetType": "ForceRestart"
}
```

6.97.5 Property details

6.97.5.1 IndicatorLED

The state of The indicator LED, which identifies the power supply.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |

| string | Description |
|--------|---------------------------|
| Off | The indicator LED is off. |

6.97.5.2 InputType

The Input type (AC or DC).

| string | Description |
|--------|---------------------------------------|
| AC | Alternating Current (AC) input range. |
| DC | Direct Current (DC) input range. |

6.97.5.3 LimitException

The action that is taken if the power cannot be maintained below the LimitInWatts.

| string | Description |
|--------------|--|
| HardPowerOff | Turn the power off immediately when the limit is exceeded. |
| LogEventOnly | Log an event when the limit is exceeded, but take no further action. |
| NoAction | Take no action when the limit is exceeded. |
| Oem | Take an OEM-defined action. |

6.97.5.4 LineInputVoltageType

The line voltage type supported as an input to this power supply.

| string | Description |
|--------------------------|----------------------------|
| AC120V (v1.1+) | AC 120V nominal input. |
| AC240V (v1.1+) | AC 240V nominal input. |
| AC277V (v1.1+) | AC 277V nominal input. |
| ACandDCWideRange (v1.1+) | Wide range AC or DC input. |

| string | Description |
|-------------------------------------|--|
| ACHighLine <i>(deprecated v1.1)</i> | 277V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC277V.</i> |
| ACLowLine <i>(deprecated v1.1)</i> | 100-127V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC120V.</i> |
| ACMidLine <i>(deprecated v1.1)</i> | 200-240V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC240V.</i> |
| ACWideRange <i>(v1.1+)</i> | Wide range AC input. |
| DC240V <i>(v1.1+)</i> | DC 240V nominal input. |
| DC380V | High Voltage DC input (380V). |
| DCNeg48V | -48V DC input. |
| Unknown | The power supply line input voltage type cannot be determined. |

6.97.5.5 PhysicalContext

The area, device, or set of devices to which this power control applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |

| string | Description |
|------------------|---|
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |

| string | Description |
|------------------|-----------------------------------|
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.97.5.6 PowerSupplyType

The power supply type (AC or DC).

| string | Description |
|---------|---|
| AC | Alternating Current (AC) power supply. |
| ACorDC | The power supply supports both DC or AC. |
| DC | Direct Current (DC) power supply. |
| Unknown | The power supply type cannot be determined. |

6.97.5.7 ResetType

The type of reset.

| string | Description |
|-----------------|--|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |

| string | Description |
|------------------|---|
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.97.6 Example response

```
{
  "@odata.type": "#Power.v1_7_1.Power",
  "Id": "Power",
  "Name": "Power",
  "PowerControl": [
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Power#/PowerControl/0",
      "MemberId": "0",
      "Name": "Server Power Control",
      "PowerConsumedWatts": 344,
      "PowerRequestedWatts": 800,
      "PowerAvailableWatts": 0,
      "PowerCapacityWatts": 800,
      "PowerAllocatedWatts": 800,
      "PowerMetrics": {
        "IntervalInMin": 30,
        "MinConsumedWatts": 271,
        "MaxConsumedWatts": 489,
        "AverageConsumedWatts": 319
      },
      "PowerLimit": {
        "LimitInWatts": 500,
        "LimitException": "LogEventOnly",
        "CorrectionInMs": 50
      }
    }
  ]
}
```

```
    },
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1U"
      }
    ],
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    }
  }
],
"Voltages": [
  {
    "@odata.id": "/redfish/v1/Chassis/1U/Power#/Voltages/0",
    "MemberId": "0",
    "Name": "VRM1 Voltage",
    "SensorNumber": 11,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingVolts": 12,
    "UpperThresholdNonCritical": 12.5,
    "UpperThresholdCritical": 13,
    "UpperThresholdFatal": 15,
    "LowerThresholdNonCritical": 11.5,
    "LowerThresholdCritical": 11,
    "LowerThresholdFatal": 10,
    "MinReadingRange": 0,
    "MaxReadingRange": 20,
    "PhysicalContext": "VoltageRegulator",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1U"
      }
    ]
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1U/Power#/Voltages/1",
    "MemberId": "1",
    "Name": "VRM2 Voltage",
    "SensorNumber": 12,
    "Status": {
```

```
        "State": "Enabled",
        "Health": "OK"
    },
    "ReadingVolts": 5,
    "UpperThresholdNonCritical": 5.5,
    "UpperThresholdCritical": 7,
    "LowerThresholdNonCritical": 4.75,
    "LowerThresholdCritical": 4.5,
    "MinReadingRange": 0,
    "MaxReadingRange": 20,
    "PhysicalContext": "VoltageRegulator",
    "RelatedItem": [
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/1U"
        }
    ]
},
],
"PowerSupplies": [
    {
        "@odata.id": "/redfish/v1/Chassis/1U/Power#/PowerSupplies/0",
        "MemberId": "0",
        "Name": "Power Supply Bay",
        "Status": {
            "State": "Enabled",
            "Health": "Warning"
        },
        "PowerSupplyType": "AC",
        "LineInputVoltageType": "ACWideRange",
        "LineInputVoltage": 120,
        "PowerCapacityWatts": 800,
        "LastPowerOutputWatts": 325,
        "Model": "499253-B21",
        "Manufacturer": "ManufacturerName",
        "FirmwareVersion": "1.00",
        "SerialNumber": "1Z0000001",
        "PartNumber": "0000001A3A",
        "SparePartNumber": "0000001A3A",
        "InputRanges": [
            {
                "InputType": "AC",
                "MinimumVoltage": 100,
                "MaximumVoltage": 120,
                "OutputWattage": 800
            },
            {
                "InputType": "AC",
```

```

        "MinimumVoltage": 200,
        "MaximumVoltage": 240,
        "OutputWattage": 1300
    }
  ],
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Chassis/1U"
    }
  ]
},
"Actions": {
  "#Power.PowerSupplyReset": {
    "target": "/redfish/v1/Chassis/1U/Power/Actions/Power.PowerSupplyReset"
  }
},
"@odata.id": "/redfish/v1/Chassis/1U/Power"
}

```

6.98 PowerDistribution 1.3.2

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2022.3 | 2021.3 | 2021.2 | 2019.4 |

6.98.1 Description

This is the schema definition for a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

6.98.2 URIs

```

/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}
/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}
/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}
/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}
/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}
/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}

```


6.98.3 Properties

| Property | Type | Attributes | Notes |
|------------------------|---------------|---------------------------|---|
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag for this equipment. |
| Branches { | object | | A link to the branch circuits for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Circuit</i> . See the <i>Circuit</i> schema for details. |
| } | | | |
| EquipmentType | string (enum) | <i>read-only required</i> | The type of equipment this resource represents. <i>For the possible property values, see EquipmentType in Property details.</i> |
| Feeders { | object | | A link to the feeder circuits for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Circuit</i> . See the <i>Circuit</i> schema for details. |
| } | | | |
| FirmwareVersion | string | <i>read-only</i> | The firmware version of this equipment. |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis [{ | array | | An array of links to the chassis that contain this equipment. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| Facility { | object | | A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details. |
| } | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this equipment. |

| Property | Type | Attributes | Notes |
|-----------------------------------|--------|-------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Location {} | object | | The location of the equipment. For property details, see Location. |
| Mains { | object | | A link to the power input circuits for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Circuit</i> . See the Circuit schema for details. |
| } | | | |
| MainsRedundancy (v1.1+) {} | object | | The redundancy information for the mains (input) circuits for this equipment. For property details, see RedundantGroup. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this equipment. |
| Metrics { | object | | A link to the summary metrics for this equipment. See the <i>PowerDistributionMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PowerDistributionMetrics resource. See the Links section and the <i>PowerDistributionMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only (null)</i> | The product model number of this equipment. |
| OutletGroups { | object | | A link to the outlet groups for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>OutletGroup</i> . See the OutletGroup schema for details. |
| } | | | |
| Outlets { | object | | A link to the outlets for this equipment. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|--|--------------------|-------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Outlet</i> . See the Outlet schema for details. |
| } | | | |
| PartNumber | string | <i>read-only (null)</i> | The part number for this equipment. |
| PowerSupplies (<i>v1.1+, deprecated v1.3</i>) { | object | | The link to the collection of power supplies for this equipment. Contains a link to a resource. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of the PowerSupplies link in the Chassis resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerSupply</i> . See the PowerSupply schema for details. |
| } | | | |
| PowerSupplyRedundancy (<i>v1.1+, deprecated v1.3</i>) [{ }] | array (object) | | The redundancy information for the set of power supplies for this equipment. For property details, see <i>RedundantGroup</i> . <i>Deprecated in v1.3 and later. This property has been deprecated in favor of the PowerSupplyRedundancy property in the Chassis resource.</i> |
| ProductionDate | string (date-time) | <i>read-only (null)</i> | The production or manufacturing date of this equipment. |
| Sensors (<i>deprecated v1.3</i>) { | object | | A link to the collection of sensors located in the equipment and sub-components. Contains a link to a resource. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of the Sensors link in the Chassis resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Sensor</i> . See the Sensor schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this equipment. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| Subfeeds { | object | | A link to the subfeed circuits for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Circuit</i> . See the Circuit schema for details. |

| Property | Type | Attributes | Notes |
|---------------------------------------|----------------|----------------------|---|
| } | | | |
| TransferConfiguration { | object | (null) | The configuration settings for an automatic transfer switch. |
| ActiveMainsId | string | read-write (null) | The mains circuit that is switched on and qualified to supply power to the output circuit. |
| AutoTransferEnabled | boolean | read-write (null) | Indicates if the qualified alternate mains circuit is automatically switched on when the preferred mains circuit becomes unqualified and is automatically switched off. |
| ClosedTransitionAllowed | boolean | read-write (null) | Indicates if a make-before-break switching sequence of the mains circuits is permitted when they are both qualified and in synchronization. |
| ClosedTransitionTimeoutSeconds | integer | read-write (null) | The time in seconds to wait for a closed transition to occur. |
| PreferredMainsId | string | read-write (null) | The preferred source for the mains circuit to this equipment. |
| RetransferDelaySeconds | integer | read-write (null) | The time in seconds to delay the automatic transfer from the alternate mains circuit back to the preferred mains circuit. |
| RetransferEnabled | boolean | read-write (null) | Indicates if the automatic transfer is permitted from the alternate mains circuit back to the preferred mains circuit after the preferred mains circuit is qualified again and the Retransfer Delay time has expired. |
| TransferDelaySeconds | integer | read-write (null) | The time in seconds to delay the automatic transfer from the preferred mains circuit to the alternate mains circuit when the preferred mains circuit is disqualified. |
| TransferInhibit | boolean | read-write (null) | Indicates if any transfer is inhibited. |
| } | | | |
| TransferCriteria { | object | (null) | The criteria used to initiate a transfer for an automatic transfer switch. |
| OverNominalFrequencyHz | number (Hz) | read-write (null) | The frequency in hertz over the nominal value that satisfies a criterion for transfer. |
| OverVoltageRMSPercentage | number (%) | read-write (null) | The positive percentage of voltage RMS over the nominal value that satisfies a criterion for transfer. |

| Property | Type | Attributes | Notes |
|----------------------------------|------------------|--------------------------------------|---|
| TransferSensitivity | string (enum) | <i>read-write</i> (<i>null</i>) | The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer. <i>For the possible property values, see TransferSensitivity in Property details.</i> |
| UnderNominalFrequencyHz | number (Hz) | <i>read-write</i> (<i>null</i>) | The frequency in hertz under the nominal value that satisfies a criterion for transfer. |
| UnderVoltageRMSPercentage | number (%) | <i>read-write</i> (<i>null</i>) | The negative percentage of voltage RMS under the nominal value that satisfies a criterion for transfer. |
| } | | | |
| UserLabel (v1.3+) | string | <i>read-write</i> | A user-assigned label. |
| UUID | string (uuid) | <i>read-only</i> (<i>null</i>) | The UUID for this equipment. |
| Version | string | <i>read-only</i> (<i>null</i>) | The hardware version of this equipment. |

6.98.4 Actions

6.98.4.1 TransferControl

Description

This action transfers control to the alternative input circuit.

Action URI

{Base URI of target resource}/Actions/PowerDistribution.TransferControl

Action parameters

This action takes no parameters.

6.98.5 Property details

6.98.5.1 EquipmentType

The type of equipment this resource represents.

| string | Description |
|-------------------------|--|
| AutomaticTransferSwitch | An automatic power transfer switch. |
| BatteryShelf (v1.3+) | A battery shelf or battery-backed unit (BBU). |
| Bus (v1.2+) | An electrical bus. |
| FloorPDU | A power distribution unit providing feeder circuits for further power distribution. |
| ManualTransferSwitch | A manual power transfer switch. |
| PowerShelf (v1.1+) | A power shelf. |
| RackPDU | A power distribution unit providing outlets for a rack or similar quantity of devices. |
| Switchgear | Electrical switchgear. |

6.98.5.2 TransferSensitivity

The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer.

| string | Description |
|--------|---|
| High | High sensitivity for initiating a transfer. |
| Low | Low sensitivity for initiating a transfer. |
| Medium | Medium sensitivity for initiating a transfer. |

6.98.6 Example response

```
{
  "@odata.type": "#PowerDistribution.v1_3_2.PowerDistribution",
  "Id": "1",
  "EquipmentType": "RackPDU",
  "Name": "RackPDU1",
  "FirmwareVersion": "4.3.0",
  "Version": "1.03b",
  "ProductionDate": "2017-01-11T08:00:00Z",
  "Manufacturer": "Contoso",
  "Model": "ZAP4000",
  "SerialNumber": "29347ZT536",
  "PartNumber": "AA-23",
  "UUID": "32354641-4135-4332-4a35-313735303734",
  "AssetTag": "PDX-92381",
}
```

```

    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "Location": {
      "Placement": {
        "Row": "North 1"
      }
    },
    "Mains": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Mains"
    },
    "Branches": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches"
    },
    "Outlets": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets"
    },
    "OutletGroups": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups"
    },
    "Metrics": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
    },
    "Sensors": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors"
    },
    "Links": {
      "Facility": {
        "@odata.id": "/redfish/v1/Facilities/Room237"
      }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
  }
}

```

6.99 PowerDistributionMetrics 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2021.4 | 2021.2 | 2021.1 | 2019.4 |

6.99.1 Description

This is the schema definition for the metrics of a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

6.99.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/{PowerDistributionId}/Metrics
 /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Metrics
 /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Metrics
 /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Metrics
 /redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Metrics
 /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Metrics

6.99.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|-------------------------------------|---|
| AbsoluteHumidity (v1.3+) {} | object | | Absolute humidity (g/cu m). For more information about this property, see SensorExcerpt in Property Details. |
| EnergykWh { | object (excerpt) | | Energy consumption (kWh). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentkVAh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The total accumulation value for this sensor. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |
| } | | | |
| HumidityPercent (v1.1+) {} | object | | Humidity (percent). For more information about this property, see SensorExcerpt in Property Details. |
| PowerLoadPercent (v1.2+) {} | object | | The power load (percent) for this equipment. For more information about this property, see SensorExcerpt in Property Details. |
| PowerWatts { | object (excerpt) | | Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |

| Property | Type | Attributes | Notes |
|--|-----------------|-------------------------------------|--|
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (<i>v1.5+</i>) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| TemperatureCelsius (<i>v1.1+</i>) {} | object | | Temperature (Celsius). For more information about this property, see SensorExcerpt in Property Details. |

6.99.4 Actions

6.99.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI

{Base URI of target resource}/Actions/PowerDistributionMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.99.5 Property details

6.99.5.1 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|--------------|-------------------------|--|
| DataSourceUri | string (URI) | <i>read-only (null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only (null)</i> | The sensor value. |

6.99.6 Example response

```
{
  "@odata.type": "#PowerDistributionMetrics.v1_3_0.PowerDistributionMetrics",
  "Id": "Metrics",
  "Name": "Summary Metrics",
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUPower",
    "Reading": 6438,
    "ApparentVA": 6300,
    "ReactiveVAR": 100,
    "PowerFactor": 0.93
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUEnergy",
    "Reading": 56438
  },
  "TemperatureCelsius": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUTemp",
    "Reading": 26.3
  },
  "HumidityPercent": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUHumidity",
    "Reading": 52.7
  },
  "Actions": {
    "#PowerDistributionMetrics.ResetMetrics": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics/PowerDistributionMetrics.ResetMetrics"
    }
  },
  "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
}
```

6.100 PowerDomain 1.2.0

| | | | |
|----------------|------|------|------|
| Version | v1.2 | v1.1 | v1.0 |
|----------------|------|------|------|

| | | | |
|----------------|--------|--------|--------|
| Release | 2021.3 | 2021.2 | 2019.4 |
|----------------|--------|--------|--------|

6.100.1 Description

The PowerDomain schema contains definition for the DCIM power domain.

6.100.2 URIs

/redfish/v1/Facilities/{FacilityId}/PowerDomains/{PowerDomainId}

6.100.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|--------|-------------------|--|
| Links { | object | | The links to other resources that are related to this resource. |
| ElectricalBuses (v1.2+)[{ | array | | An array of links to the electrical buses in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| FloorPDUs [{ | array | | An array of links to the floor power distribution units in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| ManagedBy [{ | array | | An array of links to the managers responsible for managing this power domain. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PowerShelves (v1.1+)[{ | array | | An array of links to the power shelves in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |

| Property | Type | Attributes | Notes |
|--------------------------------|--------|-------------------|---|
| }] | | | |
| RackPDUs [{ | array | | An array of links to the rack-level power distribution units in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| Switchgear [{ | array | | An array of links to the switchgear in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| TransferSwitches [{ | array | | An array of links to the transfer switches in this power domain. |
| @odata.id | string | <i>read-write</i> | Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details. |
| }] | | | |
| } | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.100.4 Example response

```
{
  "@odata.type": "#PowerDomain.v1_2_0.PowerDomain",
  "Id": "Row1",
  "Name": "Row #1 Domain",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Links": {
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/BMC"
      }
    ],
    "RackPDUs": [
```

```

        {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
        }
    ],
    "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains/Row1"
}
    
```

6.101 PowerEquipment 1.2.0

| | | | |
|----------------|--------|--------|--------|
| Version | v1.2 | v1.1 | v1.0 |
| Release | 2021.3 | 2021.2 | 2019.4 |

6.101.1 Description

This is the schema definition for the set of power equipment.

6.101.2 URIs

/redfish/v1/PowerEquipment

6.101.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|--------|------------------|---|
| ElectricalBuses (v1.2+) { | object | | The link to a collection of electrical buses. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details. |
| } | | | |
| FloorPDUs { | object | | A link to a collection of floor power distribution units. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------------|--------|------------------|---|
| Links { | object | | The links to other resources that are related to this resource. |
| ManagedBy [| array | | An array of links to the managers responsible for managing this power equipment. |
| { | | | |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| PowerShelves (v1.1+) { | object | | A link to a collection of power shelves. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the PowerDistribution schema for details. |
| } | | | |
| RackPDUs { | object | | A link to a collection of rack-level power distribution units. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the PowerDistribution schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Switchgear { | object | | A link to a collection of switchgear. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the PowerDistribution schema for details. |
| } | | | |
| TransferSwitches { | object | | A link to a collection of transfer switches. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerDistribution</i> . See the PowerDistribution schema for details. |
| } | | | |

6.101.4 Example response

```
{
  "@odata.type": "#PowerEquipment.v1_2_0.PowerEquipment",
  "Id": "PowerEquipment",
  "Name": "DCIM Power Equipment",
  "Status": {
    "State": "Enabled",
    "HealthRollup": "OK"
  },
  "FloorPDUs": {
    "@odata.id": "/redfish/v1/PowerEquipment/FloorPDUs"
  },
  "RackPDUs": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs"
  },
  "TransferSwitches": {
    "@odata.id": "/redfish/v1/PowerEquipment/TransferSwitches"
  },
  "@odata.id": "/redfish/v1/PowerEquipment"
}
```

6.102 PowerSubsystem 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2021.2 | 2020.4 |

6.102.1 Description

This PowerSubsystem schema contains the definition for the power subsystem of a chassis.

6.102.2 URIs

/redfish/v1/Chassis/{ChassisId}/PowerSubsystem

6.102.3 Properties

| Property | Type | Attributes | Notes |
|---|-------------------|-----------------------------------|--|
| Allocation { | object | | Power allocation for this subsystem. |
| AllocatedWatts | number (Watts) | <i>read-only</i> <i>(null)</i> | The total amount of power that has been allocated or budgeted to this subsystem. |
| RequestedWatts | number (Watts) | <i>read-only</i> <i>(null)</i> | The potential power, in watts, that the subsystem requests, which might be higher than the current level being consumed because the requested power includes a budget that the subsystem wants for future use. |
| } | | | |
| Batteries (v1.1+) { | object | | The link to the collection of batteries within this subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Battery</i> . See the Battery schema for details. |
| } | | | |
| CapacityWatts | number (Watts) | <i>read-only</i> <i>(null)</i> | The total amount of power that can be allocated to this subsystem. This value can be either the power supply capacity or the power budget that an upstream chassis assigns to this subsystem. |
| PowerSupplies { | object | | The link to the collection of power supplies within this subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>PowerSupply</i> . See the PowerSupply schema for details. |
| } | | | |
| PowerSupplyRedundancy [{ }] | array (object) | | The redundancy information for the set of power supplies in this subsystem. For property details, see RedundantGroup. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.102.4 Example response

```
{
  "@odata.type": "#PowerSubsystem.v1_1_0.PowerSubsystem",
  "Id": "PowerSubsystem",
  "Name": "Power Subsystem for Chassis",
```



```

"CapacityWatts": 2000,
"Allocation": {
  "RequestedWatts": 1500,
  "AllocatedWatts": 1200
},
"PowerSupplyRedundancy": [
  {
    "RedundancyType": "Failover",
    "MaxSupportedInGroup": 2,
    "MinNeededInGroup": 1,
    "RedundancyGroup": [
      {
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay2"
      }
    ],
    "Status": {
      "State": "UnavailableOffline",
      "Health": "OK"
    }
  }
],
"PowerSupplies": {
  "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies"
},
"Status": {
  "State": "Enabled",
  "Health": "OK"
},
"@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem"
}

```

6.103 PowerSupply 1.5.2

| Version | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2022.1 | 2021.4 | 2021.3 | 2021.1 | 2020.4 |

6.103.1 Description

The PowerSupply schema describes a power supply unit. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.103.2 URIs

/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/PowerSupplies/{PowerSupplyId}
 /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/PowerSupplies/{PowerSupplyId}
 (deprecated)

6.103.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------------------|-------------------------|--|
| Assembly { | object | | The link to the assembly associated with this power supply. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| EfficiencyRatings [{ | array | | The efficiency ratings of this power supply. |
| EfficiencyPercent | number (%) | <i>read-only (null)</i> | The rated efficiency of this power supply at the specified load. |
| LoadPercent | number (%) | <i>read-only (null)</i> | The electrical load for this rating. |
| }] | | | |
| ElectricalSourceManagerURIs (v1.2+) [] | array (URI) (string, null) | <i>read-write</i> | The URIs of the management interfaces for the upstream electrical source connections for this power supply. |
| ElectricalSourceNames (v1.2+) [] | array (string, null) | <i>read-write</i> | The names of the upstream electrical sources, such as circuits or outlets, connected to this power supply. |
| FirmwareVersion | string | <i>read-only (null)</i> | The firmware version for this power supply. |
| HotPluggable | boolean | <i>read-only (null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| InputNominalVoltageType | string (enum) | <i>read-only (null)</i> | The nominal voltage type of the line input to this power supply. <i>For the possible property values, see InputNominalVoltageType in Property details.</i> |
| InputRanges [{ | array | | The input ranges that the power supply can use. |

| Property | Type | Attributes | Notes |
|------------------------------------|-------------------|--------------------------------------|---|
| CapacityWatts | number (Watts) | <i>read-only</i> (<i>null</i>) | The maximum capacity of this power supply when operating in this input range. |
| NominalVoltageType | string (enum) | <i>read-only</i> (<i>null</i>) | The input voltage range. <i>For the possible property values, see NominalVoltageType in Property details.</i> |
| }] | | | |
| LineInputStatus (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The status of the line input. <i>For the possible property values, see LineInputStatus in Property details.</i> |
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Outlet (deprecated v1.4) { | object | | A link to the outlet connected to this power supply. See the <i>Outlet</i> schema for details on this property. <i>Deprecated in v1.4 and later. This property has been deprecated in favor of the PowerOutlets property to allow for consistent modeling of power supplies with multiple outlet support.</i> |
| @odata.id | string | <i>read-write</i> | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| } | | | |
| PoweringChassis (v1.4+) [{ | array | | An array of links to the chassis that are directly powered by this power supply. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| PowerOutlets (v1.2+) [{ | array | | An array of links to the outlets that provide power to this power supply. |
| @odata.id | string | <i>read-write</i> | Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the power supply. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write</i> (<i>null</i>) | An indicator allowing an operator to physically locate this resource. |

| Property | Type | Attributes | Notes |
|---|--------------------|-------------------------|---|
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this power supply. |
| Metrics { | object | | The link to the power supply metrics resource associated with this power supply. See the <i>PowerSupplyMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>PowerSupplyMetrics</i> resource. See the Links section and the <i>PowerSupplyMetrics</i> schema for details. |
| } | | | |
| Model | string | <i>read-only (null)</i> | The model number for this power supply. |
| OutputNominalVoltageType (v1.5+) | string (enum) | <i>read-only (null)</i> | The nominal output voltage type of this power supply. <i>For the possible property values, see OutputNominalVoltageType in Property details.</i> |
| OutputRails [{ | array | | The output power rails provided by this power supply. |
| NominalVoltage | number | <i>read-only (null)</i> | The nominal voltage of this output power rail. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device to which this power rail applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| }] | | | |
| PartNumber | string | <i>read-only (null)</i> | The part number for this power supply. |
| PhaseWiringType | string (enum) | <i>read-only (null)</i> | The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires) provided for the power supply input connector. <i>For the possible property values, see PhaseWiringType in Property details.</i> |
| PlugType | string (enum) | <i>read-only (null)</i> | The type of plug according to NEMA, IEC, or regional standards. <i>For the possible property values, see PlugType in Property details.</i> |
| PowerCapacityWatts | number (Watts) | <i>read-only (null)</i> | The maximum capacity of this power supply. |
| PowerSupplyType | string (enum) | <i>read-only (null)</i> | The power supply type (AC or DC). <i>For the possible property values, see PowerSupplyType in Property details.</i> |
| ProductionDate (v1.1+) | string (date-time) | <i>read-only (null)</i> | The production or manufacturing date of this power supply. |

| Property | Type | Attributes | Notes |
|----------------------------|---------|-------------------------------------|--|
| Replaceable (v1.5+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| SerialNumber | string | <i>read-only</i> (<i>null</i>) | The serial number for this power supply. |
| SparePartNumber | string | <i>read-only</i> (<i>null</i>) | The spare part number for this power supply. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Version (v1.1+) | string | <i>read-only</i> (<i>null</i>) | The hardware version of this power supply. |

6.103.4 Actions

6.103.4.1 Reset

Description

This action resets the power supply.

Action URI

{Base URI of target resource}/Actions/PowerSupply.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ForceRestart"
}
```

6.103.5 Property details

6.103.5.1 InputNominalVoltageType

The nominal voltage type of the line input to this power supply.

| string | Description |
|----------------|--------------------------|
| AC100To127V | AC 100-127V nominal. |
| AC100To240V | AC 100-240V nominal. |
| AC100To277V | AC 100-277V nominal. |
| AC120V | AC 120V nominal. |
| AC200To240V | AC 200-240V nominal. |
| AC200To277V | AC 200-277V nominal. |
| AC208V | AC 208V nominal. |
| AC230V | AC 230V nominal. |
| AC240AndDC380V | AC 200-240V and DC 380V. |
| AC240V | AC 240V nominal. |
| AC277AndDC380V | AC 200-277V and DC 380V. |
| AC277V | AC 277V nominal. |
| AC400V | AC 400V or 415V nominal. |
| AC480V | AC 480V nominal. |
| DC12V | DC 12V nominal. |
| DC16V | DC 16V nominal. |
| DC1_8V | DC 1.8V nominal. |
| DC240V | DC 240V nominal. |
| DC380V | High Voltage DC (380V). |
| DC3_3V | DC 3.3V nominal. |
| DC48V | DC 48V nominal. |
| DC5V | DC 5V nominal. |

| string | Description |
|----------|----------------|
| DC9V | DC 9V nominal. |
| DCNeg48V | -48V DC. |

6.103.5.2 LineInputStatus

The status of the line input.

| string | Description |
|-------------|---|
| LossOfInput | No power detected at line input. |
| Normal | Line input is within normal operating range. |
| OutOfRange | Line input voltage or current is outside of normal operating range. |

6.103.5.3 NominalVoltageType

The input voltage range.

| string | Description |
|----------------|--------------------------|
| AC100To127V | AC 100-127V nominal. |
| AC100To240V | AC 100-240V nominal. |
| AC100To277V | AC 100-277V nominal. |
| AC120V | AC 120V nominal. |
| AC200To240V | AC 200-240V nominal. |
| AC200To277V | AC 200-277V nominal. |
| AC208V | AC 208V nominal. |
| AC230V | AC 230V nominal. |
| AC240AndDC380V | AC 200-240V and DC 380V. |
| AC240V | AC 240V nominal. |
| AC277AndDC380V | AC 200-277V and DC 380V. |
| AC277V | AC 277V nominal. |

| string | Description |
|----------|--------------------------|
| AC400V | AC 400V or 415V nominal. |
| AC480V | AC 480V nominal. |
| DC12V | DC 12V nominal. |
| DC16V | DC 16V nominal. |
| DC1_8V | DC 1.8V nominal. |
| DC240V | DC 240V nominal. |
| DC380V | High Voltage DC (380V). |
| DC3_3V | DC 3.3V nominal. |
| DC48V | DC 48V nominal. |
| DC5V | DC 5V nominal. |
| DC9V | DC 9V nominal. |
| DCNeg48V | -48V DC. |

6.103.5.4 OutputNominalVoltageType

The nominal output voltage type of this power supply.

| string | Description |
|----------------|--------------------------|
| AC100To127V | AC 100-127V nominal. |
| AC100To240V | AC 100-240V nominal. |
| AC100To277V | AC 100-277V nominal. |
| AC120V | AC 120V nominal. |
| AC200To240V | AC 200-240V nominal. |
| AC200To277V | AC 200-277V nominal. |
| AC208V | AC 208V nominal. |
| AC230V | AC 230V nominal. |
| AC240AndDC380V | AC 200-240V and DC 380V. |
| AC240V | AC 240V nominal. |

| string | Description |
|----------------|--------------------------|
| AC277AndDC380V | AC 200-277V and DC 380V. |
| AC277V | AC 277V nominal. |
| AC400V | AC 400V or 415V nominal. |
| AC480V | AC 480V nominal. |
| DC12V | DC 12V nominal. |
| DC16V | DC 16V nominal. |
| DC1_8V | DC 1.8V nominal. |
| DC240V | DC 240V nominal. |
| DC380V | High Voltage DC (380V). |
| DC3_3V | DC 3.3V nominal. |
| DC48V | DC 48V nominal. |
| DC5V | DC 5V nominal. |
| DC9V | DC 9V nominal. |
| DCNeg48V | -48V DC. |

6.103.5.5 PhaseWiringType

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires) provided for the power supply input connector.

| string | Description |
|--------------------|---|
| OneOrTwoPhase3Wire | Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth). |
| OnePhase3Wire | Single-phase / 3-Wire (Line1, Neutral, Protective Earth). |
| ThreePhase4Wire | Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth). |
| ThreePhase5Wire | Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth). |
| TwoPhase3Wire | Two-phase / 3-Wire (Line1, Line2, Protective Earth). |
| TwoPhase4Wire | Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth). |

6.103.5.6 PhysicalContext

The area or device to which this power rail applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |

| string | Description |
|------------------|--|
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.103.5.7 PlugType

The type of plug according to NEMA, IEC, or regional standards.

| string | Description |
|---------------------|--|
| California_CS8265 | California Standard CS8265 (Single-phase 250V; 50A; 2P3W). |
| California_CS8365 | California Standard CS8365 (Three-phase 250V; 50A; 3P4W). |
| Field_208V_3P4W_60A | Field-wired; Three-phase 200-250V; 60A; 3P4W. |
| Field_400V_3P5W_32A | Field-wired; Three-phase 200-240/346-415V; 32A; 3P5W. |
| IEC_60309_316P6 | IEC 60309 316P6 (Single-phase 200-250V; 16A; 1P3W; Blue, 6-hour). |
| IEC_60309_332P6 | IEC 60309 332P6 (Single-phase 200-250V; 32A; 1P3W; Blue, 6-hour). |
| IEC_60309_363P6 | IEC 60309 363P6 (Single-phase 200-250V; 63A; 1P3W; Blue, 6-hour). |
| IEC_60309_460P9 | IEC 60309 460P9 (Three-phase 200-250V; 60A; 3P4W; Blue; 9-hour). |
| IEC_60309_516P6 | IEC 60309 516P6 (Three-phase 200-240/346-415V; 16A; 3P5W; Red; 6-hour). |
| IEC_60309_532P6 | IEC 60309 532P6 (Three-phase 200-240/346-415V; 32A; 3P5W; Red; 6-hour). |
| IEC_60309_560P9 | IEC 60309 560P9 (Three-phase 120-144/208-250V; 60A; 3P5W; Blue; 9-hour). |
| IEC_60309_563P6 | IEC 60309 563P6 (Three-phase 200-240/346-415V; 63A; 3P5W; Red; 6-hour). |
| IEC_60320_C14 | IEC C14 (Single-phase 250V; 10A; 1P3W). |
| IEC_60320_C20 | IEC C20 (Single-phase 250V; 16A; 1P3W). |
| NEMA_5_15P | NEMA 5-15P (Single-phase 125V; 15A; 1P3W). |
| NEMA_5_20P | NEMA 5-20P (Single-phase 125V; 20A; 1P3W). |
| NEMA_6_15P | NEMA 6-15P (Single-phase 250V; 15A; 2P3W). |
| NEMA_6_20P | NEMA 6-20P (Single-phase 250V; 20A; 2P3W). |
| NEMA_L14_20P | NEMA L14-20P (Split-phase 125/250V; 20A; 2P4W). |
| NEMA_L14_30P | NEMA L14-30P (Split-phase 125/250V; 30A; 2P4W). |
| NEMA_L15_20P | NEMA L15-20P (Three-phase 250V; 20A; 3P4W). |
| NEMA_L15_30P | NEMA L15-30P (Three-phase 250V; 30A; 3P4W). |
| NEMA_L21_20P | NEMA L21-20P (Three-phase 120/208V; 20A; 3P5W). |
| NEMA_L21_30P | NEMA L21-30P (Three-phase 120/208V; 30A; 3P5W). |
| NEMA_L22_20P | NEMA L22-20P (Three-phase 277/480V; 20A; 3P5W). |
| NEMA_L22_30P | NEMA L22-30P (Three-phase 277/480V; 30A; 3P5W). |

| string | Description |
|-------------|---|
| NEMA_L5_15P | NEMA L5-15P (Single-phase 125V; 15A; 1P3W). |
| NEMA_L5_20P | NEMA L5-20P (Single-phase 125V; 20A; 1P3W). |
| NEMA_L5_30P | NEMA L5-30P (Single-phase 125V; 30A; 1P3W). |
| NEMA_L6_15P | NEMA L6-15P (Single-phase 250V; 15A; 2P3W). |
| NEMA_L6_20P | NEMA L6-20P (Single-phase 250V; 20A; 2P3W). |
| NEMA_L6_30P | NEMA L6-30P (Single-phase 250V; 30A; 2P3W). |

6.103.5.8 PowerSupplyType

The power supply type (AC or DC).

| string | Description |
|---------------------|--|
| AC | Alternating Current (AC) power supply. |
| ACorDC | The power supply supports both DC or AC. |
| DC | Direct Current (DC) power supply. |
| DCRegulator (v1.5+) | Direct Current (DC) voltage regulator. |

6.103.5.9 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |

| string | Description |
|-----------------|---|
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.103.6 Example response

```
{
  "@odata.type": "#PowerSupply.v1_5_2.PowerSupply",
  "Id": "Bay1",
  "Name": "Power Supply Bay 1",
  "Status": {
    "State": "Enabled",
    "Health": "Warning"
  },
  "LineInputStatus": "Normal",
  "Model": "RKS-440DC",
  "Manufacturer": "Contoso Power",
  "FirmwareVersion": "1.00",
  "SerialNumber": "3488247",
  "PartNumber": "23456-133",
  "SparePartNumber": "93284-133",
  "LocationIndicatorActive": false,
  "HotPluggable": false,
  "PowerCapacityWatts": 400,
  "PhaseWiringType": "OnePhase3Wire",
  "PlugType": "IEC_60320_C14",
  "InputRanges": [
    {
      "NominalVoltageType": "AC200To240V",
      "CapacityWatts": 400
    },
    {
      "NominalVoltageType": "AC120V",
      "CapacityWatts": 350
    }
  ],
}
```

```
{
  "NominalVoltageType": "DC380V",
  "CapacityWatts": 400
},
"EfficiencyRatings": [
  {
    "LoadPercent": 25,
    "EfficiencyPercent": 75
  },
  {
    "LoadPercent": 50,
    "EfficiencyPercent": 85
  },
  {
    "LoadPercent": 90,
    "EfficiencyPercent": 80
  }
],
"OutputRails": [
  {
    "NominalVoltage": 3.3,
    "PhysicalContext": "SystemBoard"
  },
  {
    "NominalVoltage": 5,
    "PhysicalContext": "SystemBoard"
  },
  {
    "NominalVoltage": 12,
    "PhysicalContext": "StorageDevice"
  }
],
"Location": {
  "PartLocation": {
    "ServiceLabel": "PSU 1",
    "LocationType": "Bay",
    "LocationOrdinalValue": 0
  }
},
"Links": {
  "Outlet": {
    "@odata.id": "https://redfishpdu.contoso.com/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A4"
  }
},
"Assembly": {
  "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Assembly"
},
"Metrics": {
  "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics"
}
```

```

    },
    "Actions": {
      "#PowerSupply.Reset": {
        "target": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/PowerSupply.Reset"
      }
    },
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1"
  }
}

```

6.104 PowerSupplyMetrics 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2023.1 | 2020.4 |

6.104.1 Description

The PowerSupplyMetrics schema contains definitions for the metrics of a power supply.

6.104.2 URIs

/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/PowerSupplies/{PowerSupplyId}/Metrics
 /redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/PowerSupplies/{PowerSupplyId}/Metrics

6.104.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|---------------------|---------------------|---|
| EnergykWh { | object (excerpt) | | The energy consumption (kWh) of this unit. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentkVAh (v1.5+) | number (kV.A.h) | read-only (null) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | read-only (null) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | read-only (null) | The total accumulation value for this sensor. |

| Property | Type | Attributes | Notes |
|--|-----------------------|-------------------------------------|---|
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |
| } | | | |
| FanSpeedPercent (<i>deprecated v1.1</i>) { | object (excerpt) | | The fan speed (percent) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . <i>Deprecated in v1.1 and later. This property has been deprecated in favor of FanSpeedsPercent to support multiple fans within a power supply.</i> |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only</i> (<i>null</i>) | The rotational speed. |
| } | | | |
| FanSpeedsPercent (v1.1+) [{ | array (excerpt) | | Fan speeds (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| DeviceName (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The name of the device. |
| PhysicalContext | string (enum) | <i>read-only</i> (<i>null</i>) | The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (<i>null</i>) | The usage or location within a device to which this sensor measurement applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only</i> (<i>null</i>) | The rotational speed. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|---------------------|-------------------------------------|---|
| FrequencyHz { | object (excerpt) | | The frequency (Hz) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| InputCurrentAmps { | object (excerpt) | | The input current (A) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (<i>v1.1+</i>) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| THDPercent (<i>v1.1+</i>) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| } | | | |
| InputPowerWatts { | object (excerpt) | | The input power (W) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (<i>v1.5+</i>) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------------|---------------------|-------------------------------------|--|
| InputVoltage { | object (excerpt) | | The input voltage (V) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| CrestFactor (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| } | | | |
| OutputPowerWatts { | object (excerpt) | | The total power output (W) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| RailCurrentAmps [{ | array (excerpt) | | The output currents (A) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| CrestFactor (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |

| Property | Type | Attributes | Notes |
|-------------------------------------|--------------------|-----------------------------------|---|
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only</i> <i>(null)</i> | The total harmonic distortion percent (% THD). |
| }] | | | |
| RailPowerWatts [{ | array (excerpt) | | The output power readings (W) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| ApparentVA | number (V.A) | <i>read-only</i> <i>(null)</i> | The product of voltage and current for an AC circuit, in volt-ampere units. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> <i>(null)</i> | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> <i>(null)</i> | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> <i>(null)</i> | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| }] | | | |
| RailVoltage [{ | array (excerpt) | | The output voltages (V) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (v1.1+) | number | <i>read-only</i> <i>(null)</i> | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| THDPercent (v1.1+) | number (%) | <i>read-only</i> <i>(null)</i> | The total harmonic distortion percent (% THD). |
| }] | | | |

| Property | Type | Attributes | Notes |
|-----------------------------|------------------|-----------------------------------|---|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TemperatureCelsius { | object (excerpt) | | The temperature (C) for this power supply. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| } | | | |

6.104.4 Actions

6.104.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI

{Base URI of target resource}/Actions/PowerSupplyMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.104.5 Property details

6.104.5.1 PhysicalContext

The area or device to which this sensor measurement applies.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |

| string | Description |
|---------------------|---|
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |

| string | Description |
|------------------|-----------------------------------|
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.104.5.2 PhysicalSubContext

The usage or location within a device to which this sensor measurement applies.

| string | Description |
|---------------|--------------------|
| Input | The input. |
| Output | The output. |

6.104.6 Example response

```
{
  "@odata.type": "#PowerSupplyMetrics.v1_1_0.PowerSupplyMetrics",
  "Id": "Metrics",
  "Name": "Metrics for Power Supply 1",
  "Status": {
    "State": "Enabled",
    "Health": "Warning"
  },
  "InputVoltage": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputVoltage",
    "Reading": 230.2
  },
  "InputCurrentAmps": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputCurrent",
    "Reading": 5.19
  },
  "InputPowerWatts": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputPower",
    "Reading": 937.4
  },
  "RailVoltage": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3V0output",
      "Reading": 3.31
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5V0output",
      "Reading": 5.03
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12V0output",
      "Reading": 12.06
    }
  ],
  "RailCurrentAmps": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3VCurrent",
      "Reading": 9.84
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5VCurrent",
      "Reading": 1.25
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12VCurrent",
      "Reading": 2.58
    }
  ]
}
```



```

    ],
    "OutputPowerWatts": {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS10OutputPower",
      "Reading": 937.4
    },
    ],
    "RailPowerWatts": [
      {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3VPower",
        "Reading": 79.84
      },
      {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5VPower",
        "Reading": 26.25
      },
      {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12VPower",
        "Reading": 91.58
      }
    ],
    ],
    "EnergykWh": {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Energy",
      "Reading": 325675
    },
    ],
    "FrequencyHz": {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputFrequency",
      "Reading": 60
    },
    ],
    "TemperatureCelsius": {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Temp",
      "Reading": 43.9
    },
    ],
    "FanSpeedPercent": {
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Fan",
      "Reading": 68,
      "SpeedRPM": 3290
    },
    ],
    "Actions": {
      "#PowerSupplyMetrics.ResetMetrics": {
        "target": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics/PowerSupplyMetrics.ResetMet
      }
    },
    ],
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics"
  }
}

```

6.105 PrivilegeRegistry 1.1.4

| Version | v1.1 | v1.0 |
|---------|------|------|
|---------|------|------|

| | | |
|----------------|--------|--------|
| Release | 2017.1 | 2016.3 |
|----------------|--------|--------|

6.105.1 Description

The PrivilegeRegistry schema describes the operation-to-privilege mappings.

6.105.2 Properties

| Property | Type | Attributes | Notes |
|-----------------------|----------------|------------------|---|
| Mappings [{ | array | | The mappings between entities and the relevant privileges that access those entities. |
| Entity | string | <i>read-only</i> | The Resource name, such as <code>Manager</code> . |
| OperationMap { | object | | List mapping between HTTP methods and privilege required for the Resource. |
| DELETE [{ | array | | The privilege required to complete an HTTP DELETE operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| GET [{ | array | | The privilege required to complete an HTTP GET operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| HEAD [{ | array | | The privilege required to complete an HTTP HEAD operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PATCH [{ | array | | The privilege required to complete an HTTP PATCH operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| POST [{ | array | | The privilege required to complete an HTTP POST operation. |

| Property | Type | Attributes | Notes |
|------------------------------|----------------|------------------|---|
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PUT [{ | array | | The privilege required to complete an HTTP PUT operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| } | | | |
| PropertyOverrides [{ | array | | The privilege overrides of properties within a Resource. |
| OperationMap { | object | | The mapping between the HTTP operation and the privilege required to complete the operation. |
| DELETE [{ | array | | The privilege required to complete an HTTP DELETE operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| GET [{ | array | | The privilege required to complete an HTTP GET operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| HEAD [{ | array | | The privilege required to complete an HTTP HEAD operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PATCH [{ | array | | The privilege required to complete an HTTP PATCH operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| POST [{ | array | | The privilege required to complete an HTTP POST operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |

| Property | Type | Attributes | Notes |
|---------------------------------|----------------------|------------------|---|
| }] | | | |
| PUT [{ | array | | The privilege required to complete an HTTP PUT operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| } | | | |
| Targets [] | array (string, null) | <i>read-only</i> | The set of URIs, Resource types, or properties. |
| }] | | | |
| ResourceURIOverrides [{ | array | | The privilege overrides of Resource URIs. |
| OperationMap { | object | | The mapping between the HTTP operation and the privilege required to complete the operation. |
| DELETE [{ | array | | The privilege required to complete an HTTP DELETE operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| GET [{ | array | | The privilege required to complete an HTTP GET operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| HEAD [{ | array | | The privilege required to complete an HTTP HEAD operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PATCH [{ | array | | The privilege required to complete an HTTP PATCH operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| POST [{ | array | | The privilege required to complete an HTTP POST operation. |

| Property | Type | Attributes | Notes |
|---------------------------------|----------------------|------------------|---|
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PUT [{ | array | | The privilege required to complete an HTTP PUT operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| } | | | |
| Targets [] | array (string, null) | <i>read-only</i> | The set of URIs, Resource types, or properties. |
| }] | | | |
| SubordinateOverrides [{ | array | | The privilege overrides of the subordinate Resource. |
| OperationMap { | object | | The mapping between the HTTP operation and the privilege required to complete the operation. |
| DELETE [{ | array | | The privilege required to complete an HTTP DELETE operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| GET [{ | array | | The privilege required to complete an HTTP GET operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| HEAD [{ | array | | The privilege required to complete an HTTP HEAD operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PATCH [{ | array | | The privilege required to complete an HTTP PATCH operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |

| Property | Type | Attributes | Notes |
|------------------------------|-----------------------|------------------|---|
| }] | | | |
| POST [{ | array | | The privilege required to complete an HTTP POST operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| PUT [{ | array | | The privilege required to complete an HTTP PUT operation. |
| Privilege [] | array (string) | <i>read-only</i> | An array of privileges that are required to complete a specific HTTP operation on a Resource. |
| }] | | | |
| } | | | |
| Targets [] | array (string, null) | <i>read-only</i> | The set of URIs, Resource types, or properties. |
| }] | | | |
| }] | | | |
| OEMPrivilegesUsed [] | array (string) | <i>read-only</i> | The set of OEM privileges used in this mapping. |
| PrivilegesUsed [] | array (string (enum)) | <i>read-only</i> | The set of Redfish standard privileges used in this mapping. <i>For the possible property values, see PrivilegesUsed in Property details.</i> |

6.105.3 Property details

6.105.3.1 PrivilegesUsed

The set of Redfish standard privileges used in this mapping.

| string | Description |
|---------------------|--|
| AdministrateStorage | Administrator for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| AdministrateSystems | Administrator for systems found in the systems collection. Able to manage boot configuration, keys, and certificates for systems. |

| string | Description |
|------------------------------------|---|
| ConfigureComponents | Can configure components that this service manages. |
| ConfigureCompositionInfrastructure | Can view and configure composition service resources. |
| ConfigureManager | Can configure managers. |
| ConfigureSelf | Can change the password for the current user account, log out of their own sessions, and perform operations on resources they created. Services will need to be aware of resource ownership to map this privilege to an operation from a particular user. |
| ConfigureUsers | Can configure users and their accounts. |
| Login | Can log in to the service and read resources. |
| NoAuth | Authentication is not required. |
| OperateStorageBackup | Operator for storage backup functionality for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| OperateSystems | Operator for systems found in the systems collection. Able to perform resets and configure interfaces. |

6.105.4 Example response

```
{
  "@odata.type": "#PrivilegeRegistry.v1_1_4.PrivilegeRegistry",
  "Id": "Contoso_1.0.1_PrivilegeRegistry",
  "Name": "Privilege Map",
  "PrivilegesUsed": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureComponents",
    "ConfigureSelf"
  ],
  "OEMPrivilegesUsed": [],
  "Mappings": [
    {
      "Entity": "Manager",
      "OperationMap": {
        "GET": [
          {
            "Privilege": [
              "Login"
            ]
          }
        ]
      }
    }
  ],
}
```

```

    "HEAD": [
      {
        "Privilege": [
          "Login"
        ]
      }
    ],
    "PATCH": [
      {
        "Privilege": [
          "ConfigureManager"
        ]
      }
    ],
    "POST": [
      {
        "Privilege": [
          "ConfigureManager"
        ]
      }
    ],
    "PUT": [
      {
        "Privilege": [
          "ConfigureManager"
        ]
      }
    ],
    "DELETE": [
      {
        "Privilege": [
          "ConfigureManager"
        ]
      }
    ]
  }
},
"@odata.id": "/redfish/v1/JobService"
}

```

6.106 Processor 1.18.0

| Version | v1.18 | v1.17 | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.1 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2020.3 | 2020.2 | 2020.1 | ... |

6.106.1 Description

The Processor schema describes the information about a single processor that a system contains. A processor includes both performance characteristics, clock speed, architecture, core count, and so on, and compatibility, such as the CPU ID instruction results. It also describes the location, such as a slot, socket, or bay, where a unit can be installed, by populating a resource instance with an absent state if a unit is not present.

6.106.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}
/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/
SubProcessors/{ProcessorId2}
/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/
SubProcessors/{ProcessorId2}/SubProcessors/{ProcessorId3}
/redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}
/redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}
/redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/
SubProcessors/{ProcessorId3}
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}
/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/
SubProcessors/{ProcessorId3}
    
```

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.106.3 Properties

| Property | Type | Attributes | Notes |
|--|--------|---------------------|---|
| AccelerationFunctions (v1.4+) { | object | | The link to the collection of acceleration functions associated with this processor. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>AccelerationFunction</i> . See the <i>AccelerationFunction</i> schema for details. |
| } | | | |
| AdditionalFirmwareVersions (v1.15+) { | object | | The additional firmware versions of the processor. |
| Bootloader (v1.7+) | string | read-only (null) | The bootloader version contained in this software, such as U-Boot or UEFI. |

| Property | Type | Attributes | Notes |
|---|------------------|----------------------------|---|
| Kernel (v1.7+) | string | <i>read-only</i> (null) | The kernel version contained in this software. |
| Microcode (v1.7+) | string | <i>read-only</i> (null) | The microcode version contained in this software, such as processor microcode. |
| Oem (v1.7+) {} | object | | See the Oem object definition in the Common properties section. |
| OSDistribution (v1.8+) | string | <i>read-only</i> (null) | The operating system name of this software. |
| } | | | |
| AppliedOperatingConfig (v1.9+) { | object | | The link to the operating configuration that is applied to this processor. See the <i>OperatingConfig</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a OperatingConfig resource. See the Links section and the <i>OperatingConfig</i> schema for details. |
| } | | | |
| Assembly (v1.2+) { | object | | The link to an assembly associated with this processor. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| BaseSpeedMHz (v1.10+) | integer (MHz) | <i>read-only</i> (null) | The base (nominal) clock speed of the processor in MHz. |
| BaseSpeedPriorityState (v1.9+) | string (enum) | <i>read-only</i> (null) | The state of the base frequency settings of the operation configuration applied to this processor. <i>For the possible property values, see BaseSpeedPriorityState in Property details.</i> |
| Certificates (v1.11+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| Enabled (v1.12+) | boolean | <i>read-write</i> | An indication of whether this processor is enabled. |

| Property | Type | Attributes | Notes |
|---------------------------------------|------------------|-------------------------|---|
| EnvironmentMetrics (v1.11+) { | object | | The link to the environment metrics for this processor. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| Family (v1.16+) | string | <i>read-only (null)</i> | The processor family. |
| FirmwareVersion (v1.7+) | string | <i>read-only</i> | The firmware version of the processor. |
| FPGA (v1.4+) { | object | | The properties for processors of the FPGA type. |
| ExternalInterfaces (v1.4+) [{ | array | | An array of the FPGA external interfaces. |
| Ethernet (v1.4+) { | object | | The Ethernet-related information for this interface. |
| MaxLanes (v1.4+) | integer | <i>read-only (null)</i> | The number of lanes supported by this interface. |
| MaxSpeedMbps (v1.4+) | integer (Mbit/s) | <i>read-only (null)</i> | The maximum speed supported by this interface. |
| Oem (v1.4+) {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| InterfaceType (v1.4+) | string (enum) | <i>read-only (null)</i> | The interface type. <i>For the possible property values, see InterfaceType in Property details.</i> |
| PCIe (v1.4+) { | object | | The PCIe-related information for this interface. |
| LanesInUse (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes supported by this device. |
| MaxPCIeType (v1.3+) | string (enum) | <i>read-only (null)</i> | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCIeType in Property details.</i> |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |

| Property | Type | Attributes | Notes |
|--|---------------------|-------------------------------------|---|
| PCleType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCIeType in Property details.</i> |
| } | | | |
| }] | | | |
| FirmwareId (v1.4+) | string | <i>read-only</i> | The FPGA firmware identifier. |
| FirmwareManufacturer (v1.4+) | string | <i>read-only</i> | The FPGA firmware manufacturer. |
| FirmwareVersion (v1.4+, deprecated v1.9) | string | <i>read-only</i> | The FPGA firmware version. <i>Deprecated in v1.9 and later. This property has been deprecated in favor of the FirmwareVersion property in the root of this resource.</i> |
| FpgaType (v1.4+) | string (enum) | <i>read-only</i> | The FPGA type. <i>For the possible property values, see FpgaType in Property details.</i> |
| HostInterface (v1.4+, deprecated v1.8 { | object | | The FPGA interface to the host. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of the SystemInterface property in the root of this resource.</i> |
| Ethernet (v1.4+) { | object | | The Ethernet-related information for this interface. |
| MaxLanes (v1.4+) | integer | <i>read-only</i> (<i>null</i>) | The number of lanes supported by this interface. |
| MaxSpeedMbps (v1.4+) | integer (Mbit/s) | <i>read-only</i> (<i>null</i>) | The maximum speed supported by this interface. |
| Oem (v1.4+) {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| InterfaceType (v1.4+) | string (enum) | <i>read-only</i> (<i>null</i>) | The interface type. <i>For the possible property values, see InterfaceType in Property details.</i> |
| PCIe (v1.4+) { | object | | The PCIe-related information for this interface. |
| LanesInUse (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes supported by this device. |
| MaxPCIeType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCIeType in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|-----------------------------|--------------------------------------|---|
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCIeType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCIeType in Property details.</i> |
| } | | | |
| } | | | |
| Model (v1.4+) | string | <i>read-only</i> | The FPGA model. |
| Oem (v1.4+) {} | object | | See the Oem object definition in the Common properties section. |
| PCIeVirtualFunctions (v1.4+) | integer | <i>read-write</i> | The number of the PCIe Virtual Functions. |
| ProgrammableFromHost (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the FPGA firmware can be reprogrammed from the host by using system software. |
| ReconfigurationSlots (v1.4+) [{ | array | | An array of the FPGA reconfiguration slots. An FPGA uses a reconfiguration slot to contain an acceleration function that can change as the FPGA is provisioned. |
| AccelerationFunction (v1.4+) { | object | | The link to the acceleration function that the code programmed into a reconfiguration slot provides. See the <i>AccelerationFunction</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>AccelerationFunction</i> resource. See the Links section and the <i>AccelerationFunction</i> schema for details. |
| } | | | |
| ProgrammableFromHost (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the reconfiguration slot can be reprogrammed from the host by using system software. |
| SlotId (v1.4+) | string | <i>read-only</i> (<i>null</i>) | The FPGA reconfiguration slot identifier. |
| UUID (v1.4+) | string (uuid) | <i>read-only</i> (<i>null</i>) | The UUID for this reconfiguration slot. |
| }] | | | |
| } | | | |
| HighSpeedCoreIDs (v1.9+) [] | array (integer, null) | <i>read-only</i> | The list of core identifiers corresponding to the cores that have been configured with the higher clock speed from the operating configuration applied to this processor. |

| Property | Type | Attributes | Notes |
|--|------------------|-------------------------------------|--|
| InstructionSet | string (enum) | <i>read-only</i> (<i>null</i>) | The instruction set of the processor. <i>For the possible property values, see InstructionSet in Property details.</i> |
| Links (v1.1+) { | object | | The links to other resources that are related to this resource. |
| Chassis (v1.1+) { | object | | The link to the chassis that contains this processor. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| ConnectedProcessors (v1.4+) [{ | array | | An array of links to the processors directly connected to this processor. |
| @odata.id | string | <i>read-only</i> | Link to another Processor resource. |
| }] | | | |
| Endpoints (v1.4+) [{ | array | | An array of links to the endpoints that connect to this processor. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| FabricAdapters (v1.17+) [{ | array | | An array of links to the fabric adapters that present this processor to a fabric. |
| @odata.id | string | <i>read-only</i> | Link to a FabricAdapter resource. See the Links section and the <i>FabricAdapter</i> schema for details. |
| }] | | | |
| GraphicsController (v1.12+) { | object | (<i>null</i>) | A link to the graphics controller associated with this processor. See the <i>GraphicsController</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a GraphicsController resource. See the Links section and the <i>GraphicsController</i> schema for details. |
| } | | | |
| Memory (v1.11+) [{ | array | | An array of links to the memory associated with this processor. |
| @odata.id | string | <i>read-only</i> | Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|-----------------|--------------------------|--|
| }] | | | |
| NetworkDeviceFunctions (v1.13+) [{ | array | | The network device functions to which this processor performs offload computation, such as with a SmartNIC. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCIeDevice (v1.4+) { | object | | The link to the PCIe device associated with this processor. See the <i>PCIeDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCIeDevice</i> schema for details. |
| } | | | |
| PCIeFunctions (v1.4+) [{ | array | | An array of links to the PCIeFunctions associated with this processor. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCIeFunction</i> schema for details. |
| }] | | | |
| } | | | |
| Location (v1.2+) { } | object | | The location of the processor. For property details, see Location. |
| LocationIndicatorActive (v1.10+) | boolean | <i>read-write (null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only (null)</i> | The processor manufacturer. |
| MaxSpeedMHz | integer (MHz) | <i>read-only (null)</i> | The maximum clock speed of the processor. |
| MaxTDPWatts (v1.4+) | integer (Watts) | <i>read-only (null)</i> | The maximum Thermal Design Power (TDP) in watts. |
| Measurements (v1.11+, deprecated v1.14) [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |

| Property | Type | Attributes | Notes |
|------------------------------------|------------------------|--------------------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| MemorySummary (v1.11+) { | object | | The summary of all memory associated with this processor. |
| ECCModeEnabled (v1.13+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether memory ECC mode is enabled for this processor. |
| Metrics (v1.11+) { | object | | The link to the memory metrics associated with all memory of this processor. See the <i>MemoryMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MemoryMetrics resource. See the Links section and the <i>MemoryMetrics</i> schema for details. |
| } | | | |
| TotalCacheSizeMiB (v1.11+) | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | Total size of cache memory of this processor. |
| TotalMemorySizeMiB (v1.11+) | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | Total size of non-cache, volatile or non-volatile memory attached to this processor. Examples include DRAMs and NV-DIMMs that are not configured as block storage. |
| } | | | |
| Metrics (v1.4+) { | object | | The link to the metrics associated with this processor. See the <i>ProcessorMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ProcessorMetrics resource. See the Links section and the <i>ProcessorMetrics</i> schema for details. |
| } | | | |
| MinSpeedMHz (v1.8+) | integer (MHz) | <i>read-only</i> (<i>null</i>) | The minimum clock speed of the processor in MHz. |
| Model | string | <i>read-only</i> (<i>null</i>) | The product model number of this device. |
| OperatingConfigs (v1.9+) { | object | | The link to the collection operating configurations that can be applied to this processor. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>OperatingConfig</i> . See the <i>OperatingConfig</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|----------------------|--------------------------------------|--|
| } | | | |
| OperatingSpeedMHz (v1.8+) | integer (MHz) | <i>read-only</i> (<i>null</i>) | Operating speed of the processor in MHz. |
| OperatingSpeedRangeMHz (v1.13+) { | object (excerpt) | | Range of allowed operating speeds (MHz). This object is an excerpt of the <i>Control</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| AllowableMax | number | <i>read-only</i> (<i>null</i>) | The maximum possible setting for this control. |
| AllowableMin | number | <i>read-only</i> (<i>null</i>) | The minimum possible setting for this control. |
| AllowableNumericValues [] | array (number, null) | <i>read-only</i> | The supported values for the set point. |
| ControlMode | string (enum) | <i>read-write</i> (<i>null</i>) | The current operating mode of the control. <i>For the possible property values, see ControlMode in Property details.</i> |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this control. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The reading of the sensor associated with this control. |
| ReadingUnits | string | <i>read-only</i> (<i>null</i>) | The units of the sensor reading associated with this control. |
| SettingMax | number | <i>read-write</i> (<i>null</i>) | The maximum set point in the allowed range. |
| SettingMin | number | <i>read-write</i> (<i>null</i>) | The minimum set point in the allowed range. |
| } | | | |
| PartNumber (v1.7+) | string | <i>read-only</i> (<i>null</i>) | The part number of the processor. |
| Ports (v1.13+) { | object | | The link to the collection of ports for this processor. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|------------------------|-------------------------------------|---|
| PowerState (v1.17+) | string (enum) | <i>read-only</i> (<i>null</i>) | The current power state of the processor. <i>For the possible property values, see PowerState in Property details.</i> |
| ProcessorArchitecture | string (enum) | <i>read-only</i> (<i>null</i>) | The architecture of the processor. <i>For the possible property values, see ProcessorArchitecture in Property details.</i> |
| ProcessorId { | object | | The identification information for this processor. |
| EffectiveFamily | string | <i>read-only</i> (<i>null</i>) | The effective family for this processor. |
| EffectiveModel | string | <i>read-only</i> (<i>null</i>) | The effective model for this processor. |
| IdentificationRegisters | string | <i>read-only</i> (<i>null</i>) | The raw manufacturer-provided processor identification registers for this processor. |
| MicrocodeInfo | string | <i>read-only</i> (<i>null</i>) | The microcode information for this processor. |
| ProtectedIdentificationNumber (v1.10+) | string | <i>read-only</i> (<i>null</i>) | The Protected Processor Identification Number (PPIN) for this processor. |
| Step | string | <i>read-only</i> (<i>null</i>) | The step value for this processor. |
| VendorId | string | <i>read-only</i> (<i>null</i>) | The vendor identification for this processor. |
| } | | | |
| ProcessorIndex (v1.16+) | integer | <i>read-only</i> (<i>null</i>) | The logical index of this processor within the system. |
| ProcessorMemory (v1.4+) [{ | array | | The memory directly attached or integrated within this processor. Examples include internal cache, dedicated memory for the processor, and system memory. |
| CapacityMiB (v1.4+) | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | The memory capacity in MiB. |
| IntegratedMemory (v1.4+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this memory is integrated within the processor. |
| MemoryType (v1.4+) | string (enum) | <i>read-only</i> (<i>null</i>) | The type of memory used by this processor. <i>For the possible property values, see MemoryType in Property details.</i> |

| Property | Type | Attributes | Notes |
|----------------------------------|---------------------|-----------------------------|---|
| SpeedMHz (v1.4+) | integer | <i>read-only</i> (null) | The operating speed of the memory in MHz. |
| }] | | | |
| ProcessorType | string (enum) | <i>read-only</i> (null) | The type of processor. <i>For the possible property values, see ProcessorType in Property details.</i> |
| Replaceable (v1.16+) | boolean | <i>read-only</i> (null) | An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy. |
| SerialNumber (v1.7+) | string | <i>read-only</i> (null) | The serial number of the processor. |
| Socket | string | <i>read-only</i> (null) | The socket or location of the processor. |
| SparePartNumber (v1.11+) | string | <i>read-only</i> (null) | The spare part number of the processor. |
| SpeedLimitMHz (v1.10+) | integer (MHz) | <i>read-write</i> (null) | The clock limit of the processor in MHz. |
| SpeedLocked (v1.10+) | boolean | <i>read-write</i> (null) | Indicates whether the clock speed of the processor is fixed at the value specified in the SpeedLimitMHz property. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SubProcessors (v1.3+) { | object | | The link to the collection of sub-processors associated with this processor, such as cores or threads, that are part of a processor. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Processor</i> . See the Processor schema for details. |
| } | | | |
| SystemInterface (v1.8+) { | object | | The interface between the system and the processor. |
| Ethernet (v1.4+) { | object | | The Ethernet-related information for this interface. |
| MaxLanes (v1.4+) | integer | <i>read-only</i> (null) | The number of lanes supported by this interface. |
| MaxSpeedMbps (v1.4+) | integer (Mbit/s) | <i>read-only</i> (null) | The maximum speed supported by this interface. |

| Property | Type | Attributes | Notes |
|------------------------------------|-----------------------------|-------------------------------------|---|
| Oem (v1.4+) {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| InterfaceType (v1.4+) | string (enum) | <i>read-only</i> (<i>null</i>) | The interface type. <i>For the possible property values, see InterfaceType in Property details.</i> |
| PCle (v1.4+) { | object | | The PCIe-related information for this interface. |
| LanesInUse (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only</i> (<i>null</i>) | The number of PCIe lanes supported by this device. |
| MaxPCleType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCleType in Property details.</i> |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCleType (v1.3+) | string (enum) | <i>read-only</i> (<i>null</i>) | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCleType in Property details.</i> |
| } | | | |
| } | | | |
| TDPWatts (v1.4+) | integer (Watts) | <i>read-only</i> (<i>null</i>) | The nominal Thermal Design Power (TDP) in watts. |
| ThrottleCauses (v1.16+) [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The causes of the processor being throttled. <i>For the possible property values, see ThrottleCauses in Property details.</i> |
| Throttled (v1.16+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether the processor is throttled. |
| TotalCores | integer | <i>read-only</i> (<i>null</i>) | The total number of cores that this processor contains. |
| TotalEnabledCores (v1.5+) | integer | <i>read-only</i> (<i>null</i>) | The total number of enabled cores that this processor contains. |
| TotalThreads | integer | <i>read-only</i> (<i>null</i>) | The total number of execution threads that this processor supports. |

| Property | Type | Attributes | Notes |
|---------------------------|------------------|-------------------------------------|---|
| TurboState (v1.9+) | string (enum) | <i>read-only</i> (<i>null</i>) | The state of the turbo for this processor. <i>For the possible property values, see TurboState in Property details.</i> |
| UUID (v1.4+) | string (uuid) | <i>read-only</i> (<i>null</i>) | The UUID for this processor. |
| Version (v1.7+) | string | <i>read-only</i> (<i>null</i>) | The hardware version of the processor. |

6.106.4 Actions

6.106.4.1 Reset (v1.6+)

Description

This action resets the processor.

Action URI

{Base URI of target resource}/Actions/Processor.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ForceRestart"
}
```

6.106.4.2 ResetToDefaults (v1.15+)

Description

The action resets the values of writable properties to factory defaults.

Action URI

{Base URI of target resource}/Actions/Processor.ResetToDefaults

Action parameters

This action takes no parameters.

6.106.5 Property details**6.106.5.1 BaseSpeedPriorityState**

The state of the base frequency settings of the operation configuration applied to this processor.

| string | Description |
|----------|----------------------------------|
| Disabled | Base speed priority is disabled. |
| Enabled | Base speed priority is enabled. |

6.106.5.2 ControlMode

The current operating mode of the control.

| string | Description |
|-----------|---|
| Automatic | Automatically adjust control to meet the set point. |
| Disabled | The control has been disabled. |
| Manual | No automatic adjustments are made to the control. |
| Override | User override of the automatic set point value. |

6.106.5.3 FpgaType

The FPGA type.

| string | Description |
|------------|---|
| Discrete | The discrete FPGA device. |
| Integrated | The FPGA device integrated with other processor in the single chip. |

6.106.5.4 InstructionSet

The instruction set of the processor.

| string | Description |
|------------------|-----------------------------|
| ARM-A32 | ARM 32-bit. |
| ARM-A64 | ARM 64-bit. |
| IA-64 | Intel IA-64. |
| MIPS32 | MIPS 32-bit. |
| MIPS64 | MIPS 64-bit. |
| OEM | OEM-defined. |
| PowerISA (v1.4+) | PowerISA-64 or PowerISA-32. |
| x86 | x86 32-bit. |
| x86-64 | x86 64-bit. |

6.106.5.5 InterfaceType

The interface type.

| string | Description |
|--------------|--|
| AMBA (v1.8+) | The Arm Advanced Microcontroller Bus Architecture interface. |
| CCIX (v1.8+) | The Cache Coherent Interconnect for Accelerators interface. |
| CXL (v1.8+) | The Compute Express Link interface. |
| Ethernet | An Ethernet interface. |
| OEM | An OEM-defined interface. |
| PCIe | A PCI Express interface. |
| QPI | The Intel QuickPath Interconnect. |
| UPI | The Intel UltraPath Interconnect. |

6.106.5.6 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.106.5.7 MemoryType

The type of memory used by this processor.

| string | Description |
|----------------|---|
| Cache (v1.17+) | Processor cache, but no level is determined. |
| DDR | Double data rate synchronous dynamic random-access memory. |
| DDR2 | Double data rate type two synchronous dynamic random-access memory. |
| DDR3 | Double data rate type three synchronous dynamic random-access memory. |
| DDR4 | Double data rate type four synchronous dynamic random-access memory. |
| DDR5 | Double data rate type five synchronous dynamic random-access memory. |
| Flash | Flash memory. |
| GDDR | Synchronous graphics random-access memory. |
| GDDR2 | Double data rate type two synchronous graphics random-access memory. |
| GDDR3 | Double data rate type three synchronous graphics random-access memory. |
| GDDR4 | Double data rate type four synchronous graphics random-access memory. |
| GDDR5 | Double data rate type five synchronous graphics random-access memory. |
| GDDR5X | Double data rate type five X synchronous graphics random-access memory. |

| string | Description |
|----------------|---|
| GDDR6 | Double data rate type six synchronous graphics random-access memory. |
| HBM1 | High Bandwidth Memory. |
| HBM2 | The second generation of High Bandwidth Memory. |
| HBM2E (v1.17+) | An updated version of the second generation of High Bandwidth Memory. |
| HBM3 | The third generation of High Bandwidth Memory. |
| L1Cache | L1 cache. |
| L2Cache | L2 cache. |
| L3Cache | L3 cache. |
| L4Cache | L4 cache. |
| L5Cache | L5 cache. |
| L6Cache | L6 cache. |
| L7Cache | L7 cache. |
| OEM | OEM-defined. |
| SDRAM | Synchronous dynamic random-access memory. |
| SGRAM | Synchronous graphics RAM. |
| SRAM | Static random-access memory. |

6.106.5.8 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.106.5.9 PowerState

The current power state of the processor.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.106.5.10 ProcessorArchitecture

The architecture of the processor.

| string | Description |
|---------------|----------------|
| ARM | ARM. |
| IA-64 | Intel Itanium. |
| MIPS | MIPS. |
| OEM | OEM-defined. |
| Power (v1.4+) | Power. |
| x86 | x86 or x86-64. |

6.106.5.11 ProcessorType

The type of processor.

| string | Description |
|-------------|-----------------|
| Accelerator | An accelerator. |

| string | Description |
|----------------|---------------------------------|
| Core (v1.3+) | A core in a processor. |
| CPU | A CPU. |
| DSP | A DSP. |
| FPGA | An FPGA. |
| GPU | A GPU. |
| OEM | An OEM-defined processing unit. |
| Thread (v1.3+) | A thread in a processor. |

6.106.5.12 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.106.5.13 ThrottleCauses

The causes of the processor being throttled.

| string | Description |
|-------------------------|--|
| ClockLimit | The cause of the processor being throttled is a clock limit. |
| ManagementDetectedFault | The cause of the processor being throttled is a fault detected by management hardware or firmware. |
| OEM | The cause of the processor being throttled is OEM-specific. |
| PowerLimit | The cause of the processor being throttled is a power limit. |
| ThermalLimit | The cause of the processor being throttled is a thermal limit. |
| Unknown | The cause of the processor being throttled is not known. |

6.106.5.14 TurboState

The state of the turbo for this processor.

| string | Description |
|----------|--------------------|
| Disabled | Turbo is disabled. |
| Enabled | Turbo is enabled. |

6.106.6 Example response

```
{
  "@odata.type": "#Processor.v1_18_0.Processor",
  "Name": "Processor",
  "Id": "1",
  "Socket": "CPU 1",
  "ProcessorType": "CPU",
  "ProcessorArchitecture": "x86",
  "InstructionSet": "x86-64",
  "Manufacturer": "Intel(R) Corporation",
  "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
  "ProcessorId": {
    "VendorId": "GenuineIntel",
    "IdentificationRegisters": "0x34AC34DC8901274A",
  }
}
```

```

    "EffectiveFamily": "0x42",
    "EffectiveModel": "0x61",
    "Step": "0x1",
    "MicrocodeInfo": "0x429943"
  },
  "MaxSpeedMHz": 3700,
  "TotalCores": 8,
  "TotalThreads": 16,
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "PartLocation": {
      "ServiceLabel": "Processor 1",
      "LocationType": "Socket",
      "LocationOrdinalValue": 0
    }
  },
  "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/1"
}

```

6.107 ProcessorMetrics 1.6.2

| Version | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2022.2 | 2022.1 | 2021.3 | 2021.2 | 2020.4 | 2020.1 | 2018.3 |

6.107.1 Description

The ProcessorMetrics schema contains usage and health statistics for a processor.

6.107.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/ProcessorMetrics

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/ProcessorMetrics

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors/{ProcessorId3}/ProcessorMetrics

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/ProcessorMetrics

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/ProcessorMetrics

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors/{ProcessorId3}/ProcessorMetrics

/redfish/v1/Systems/{ComputerSystemId}/ProcessorSummary/ProcessorMetrics

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.107.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------|-------------------------|--|
| AverageFrequencyMHz (<i>deprecated v1.1</i>) | number (MHz) | <i>read-only (null)</i> | The average frequency of the processor. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of OperatingSpeedMHz property.</i> |
| BandwidthPercent | number (%) | <i>read-only (null)</i> | The bandwidth usage of this processor as a percentage. |
| Cache [{ | array | | The processor cache metrics. |
| CacheMiss | number | <i>read-only (null)</i> | The number of cache line misses in millions. |
| CacheMissesPerInstruction | number | <i>read-only (null)</i> | The number of cache misses per instruction. |
| HitRatio | number | <i>read-only (null)</i> | The cache line hit ratio. |
| Level | string | <i>read-only (null)</i> | The cache level. |
| OccupancyBytes | integer (bytes) | <i>read-only (null)</i> | The total cache level occupancy in bytes. |
| OccupancyPercent | number (%) | <i>read-only (null)</i> | The total cache occupancy percentage. |
| }] | | | |
| CacheMetricsTotal (<i>v1.2+</i>) { | object | | The total cache metrics for this processor. |
| CurrentPeriod (<i>v1.2+</i>) { | object | | The cache metrics since the last reset or ClearCurrentPeriod action for this processor. |
| CorrectableECCErrorCount (<i>v1.2+</i>) | integer | <i>read-only (null)</i> | The number of the correctable errors of cache memory since reset or ClearCurrentPeriod action for this processor. |
| UncorrectableECCErrorCount (<i>v1.2+</i>) | integer | <i>read-only (null)</i> | The number of the uncorrectable errors of cache memory since reset or ClearCurrentPeriod action for this processor. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|--------------------|----------------------------|---|
| LifeTime (v1.2+) { | object | | The cache metrics for the lifetime of this processor. |
| CorrectableECCErrorsCount (v1.2+) | integer | <i>read-only</i> (null) | The number of the correctable errors for the lifetime of the cache memory. |
| UncorrectableECCErrorsCount (v1.2+) | integer | <i>read-only</i> (null) | The number of the uncorrectable errors for the lifetime of the cache memory. |
| } | | | |
| } | | | |
| ConsumedPowerWatt (deprecated v1.2) | number (Watts) | <i>read-only</i> (null) | The power, in watts, that the processor has consumed. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the properties in EnvironmentMetrics.</i> |
| CoreMetrics [{ | array | | The processor core metrics. |
| CoreCache [{ | array | | The cache metrics of this core in the processor. |
| CacheMiss | number | <i>read-only</i> (null) | The number of cache line misses in millions. |
| CacheMissesPerInstruction | number | <i>read-only</i> (null) | The number of cache misses per instruction. |
| HitRatio | number | <i>read-only</i> (null) | The cache line hit ratio. |
| Level | string | <i>read-only</i> (null) | The cache level. |
| OccupancyBytes | integer (bytes) | <i>read-only</i> (null) | The total cache level occupancy in bytes. |
| OccupancyPercent | number (%) | <i>read-only</i> (null) | The total cache occupancy percentage. |
| }] | | | |
| CoreId | string | <i>read-only</i> (null) | The processor core identifier. |
| CorrectableCoreErrorCount (v1.5+) | integer | <i>read-only</i> (null) | The number of the correctable core errors. |
| CorrectableOtherErrorCount (v1.5+) | integer | <i>read-only</i> (null) | The number of the correctable errors of all other components. |
| CStateResidency [{ | array | | The C-state residency of this core in the processor. |

| Property | Type | Attributes | Notes |
|---|---------------------|-------------------------------------|--|
| Level | string | <i>read-only</i> (<i>null</i>) | The C-state level, such as C0, C1, or C2. |
| ResidencyPercent | number (%) | <i>read-only</i> (<i>null</i>) | The percentage of time that the processor or core has spent in this particular level of C-state. |
| }] | | | |
| InstructionsPerCycle | number | <i>read-only</i> (<i>null</i>) | The number of instructions per clock cycle of this core. |
| IOStallCount | number | <i>read-only</i> (<i>null</i>) | The number of stalled cycles due to I/O operations. |
| MemoryStallCount | number | <i>read-only</i> (<i>null</i>) | The number of stalled cycles due to memory operations. |
| UncorrectableCoreErrorCount (<i>v1.5+</i>) | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable core errors. |
| UncorrectableOtherErrorCount (<i>v1.5+</i>) | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable errors of all other components. |
| UnhaltedCycles | number | <i>read-only</i> (<i>null</i>) | The unhalted cycles count of this core. |
| }] | | | |
| CoreVoltage (<i>v1.3+</i>) { | object (excerpt) | | The core voltage (V) of this processor. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| CrestFactor (<i>v1.1+</i>) | number | <i>read-only</i> (<i>null</i>) | The crest factor for this sensor. |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| THDPercent (<i>v1.1+</i>) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| } | | | |
| CorrectableCoreErrorCount (<i>v1.5+</i>) | integer | <i>read-only</i> (<i>null</i>) | The number of the correctable core errors. |
| CorrectableOtherErrorCount (<i>v1.5+</i>) | integer | <i>read-only</i> (<i>null</i>) | The number of the correctable errors of all other components. |

| Property | Type | Attributes | Notes |
|--|----------------------|-------------------------------------|--|
| FrequencyRatio | number | <i>read-only</i> (<i>null</i>) | The frequency relative to the nominal processor frequency ratio. |
| KernelPercent | number (%) | <i>read-only</i> (<i>null</i>) | The percentage of time spent in kernel mode. |
| LocalMemoryBandwidthBytes | integer (bytes) | <i>read-only</i> (<i>null</i>) | The local memory bandwidth usage in bytes. |
| OperatingSpeedMHz (<i>v1.1+</i>) | integer (MHz) | <i>read-only</i> (<i>null</i>) | Operating speed of the processor in MHz. |
| PCIEErrors (<i>v1.4+</i>) { | object | | The PCIe errors associated with this processor. |
| CorrectableErrorCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of the PCIe correctable errors for this device. |
| FatalErrorCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of the PCIe fatal errors for this device. |
| L0ToRecoveryCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of times the PCIe link states transitioned from L0 to the recovery state for this device. |
| NAKReceivedCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of NAKs issued on the PCIe link by the receiver. |
| NAKSentCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of NAKs issued on the PCIe link by this device. |
| NonFatalErrorCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of the PCIe non-fatal errors for this device. |
| ReplayCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of the PCIe replays issued by this device. |
| ReplayRolloverCount (<i>v1.8+</i>) | integer | <i>read-only</i> (<i>null</i>) | The total number of the PCIe replay rollovers issued by this device. |
| } | | | |
| PowerLimitThrottleDuration (<i>v1.6+</i>) | string (duration) | <i>read-only</i> (<i>null</i>) | The total duration of throttling caused by a power limit of the processor since reset. |
| RemoteMemoryBandwidthBytes | integer (bytes) | <i>read-only</i> (<i>null</i>) | The remote memory bandwidth usage in bytes. |
| TemperatureCelsius (<i>deprecated v1.2</i>) | number (Celsius) | <i>read-only</i> (<i>null</i>) | The temperature of the processor. <i>Deprecated in v1.2 and later. This property has been deprecated in favor of the properties in EnvironmentMetrics.</i> |

| Property | Type | Attributes | Notes |
|--|----------------------|-------------------------------------|--|
| ThermalLimitThrottleDuration (v1.6+) | string (duration) | <i>read-only</i> (<i>null</i>) | The total duration of throttling caused by a thermal limit of the processor since reset. |
| ThrottlingCelsius | number (Celsius) | <i>read-only</i> (<i>null</i>) | The CPU margin to throttle (temperature offset in degree Celsius). |
| UncorrectableCoreErrorCount (v1.5+) | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable core errors. |
| UncorrectableOtherErrorCount (v1.5+) | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable errors of all other components. |
| UserPercent | number (%) | <i>read-only</i> (<i>null</i>) | The percentage of time spent in user mode. |

6.107.4 Actions

6.107.4.1 ClearCurrentPeriod (v1.2+)

Description

This action sets the CurrentPeriod property's values to 0.

Action URI

{Base URI of target resource}/Actions/ProcessorMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.107.5 Example response

```
{
  "@odata.type": "#ProcessorMetrics.v1_6_2.ProcessorMetrics",
  "Id": "Metrics",
  "Name": "Processor Metrics",
  "BandwidthPercent": 62,
  "OperatingSpeedMHz": 2400,
  "ThrottlingCelsius": 65,
  "FrequencyRatio": 0.00432,
  "Cache": [
    {
```

```
    "Level": "3",
    "CacheMiss": 0.12,
    "HitRatio": 0.719,
    "CacheMissesPerInstruction": 0.00088,
    "OccupancyBytes": 3030144,
    "OccupancyPercent": 90.1
  }
],
"LocalMemoryBandwidthBytes": 18253611008,
"RemoteMemoryBandwidthBytes": 81788928,
"KernelPercent": 2.3,
"UserPercent": 34.7,
"CoreMetrics": [
  {
    "CoreId": "core0",
    "InstructionsPerCycle": 1.16,
    "UnhaltedCycles": 6254383746,
    "MemoryStallCount": 58372,
    "IOStallCount": 2634872,
    "CoreCache": [
      {
        "Level": "2",
        "CacheMiss": 0.472,
        "HitRatio": 0.57,
        "CacheMissesPerInstruction": 0.00346,
        "OccupancyBytes": 198231,
        "OccupancyPercent": 77.4
      }
    ],
    "CStateResidency": [
      {
        "Level": "C0",
        "Residency": 1.13
      },
      {
        "Level": "C1",
        "Residency": 26
      },
      {
        "Level": "C3",
        "Residency": 0.00878
      },
      {
        "Level": "C6",
        "Residency": 0.361
      },
      {
        "Level": "C7",
        "Residency": 72.5
      }
    ]
  }
]
```

```

    ],
    "@odata.id": "/redfish/v1/Systems/1/Processors/FPGA1/ProcessorMetrics"
  }
]

```

6.108 Pump 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.108.1 Description

The Pump schema describes a pump unit for a cooling system or similar device.

6.108.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Pumps/{PumpId}
/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps/{PumpId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps/{PumpId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps/{PumpId}

```

6.108.3 Properties

| Property | Type | Attributes | Notes |
|-------------------|--------|--------------------------|--|
| Assembly { | object | | The link to the assembly associated with this pump. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag for this equipment. |
| Filters { | object | | A link to a collection of filters. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Filter</i> . See the <i>Filter</i> schema for details. |

| Property | Type | Attributes | Notes |
|--------------------------------|-----------------------|------------------------------------|---|
| } | | | |
| FirmwareVersion | string | <i>read-only</i> | The firmware version of this equipment. |
| Location {} | object | | The location of the pump. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only</i> <i>(null)</i> | The manufacturer of this pump. |
| Model | string | <i>read-only</i> <i>(null)</i> | The model number for this pump. |
| PartNumber | string | <i>read-only</i> <i>(null)</i> | The part number for this pump. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this pump. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| ProductionDate | string (date-time) | <i>read-only</i> <i>(null)</i> | The production or manufacturing date of this equipment. |
| PumpSpeedPercent { | object (excerpt) | | The pump speed (%). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| SpeedRPM (v1.2+) | number ({rev}/min) | <i>read-only</i> <i>(null)</i> | The rotational speed. |
| } | | | |
| PumpType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of pump. <i>For the possible property values, see PumpType in Property details.</i> |
| SerialNumber | string | <i>read-only</i> <i>(null)</i> | The serial number for this pump. |
| ServiceHours | number | <i>read-write</i> <i>(null)</i> | The hours of service this pump has provided. |
| SparePartNumber | string | <i>read-only</i> <i>(null)</i> | The spare part number for this pump. |

| Property | Type | Attributes | Notes |
|------------------|--------|-------------------------|---|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UserLabel | string | <i>read-write</i> | A user-assigned label. |
| Version | string | <i>read-only (null)</i> | The hardware version of this equipment. |

6.108.4 Property details

6.108.4.1 PhysicalContext

The area or device associated with this pump.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |

| string | Description |
|------------------|---|
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |

| string | Description |
|------------------|-----------------------------------|
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.108.4.2 PumpType

The type of pump.

| string | Description |
|------------|-------------------------|
| Compressor | A compressor. |
| Liquid | A water or liquid pump. |

6.108.5 Example response

```
{
  "@odata.type": "#Pump.v1_0_0.Pump",
  "Id": "1",
  "PumpType": "Liquid",
  "Name": "Immersion Unit Pump",
  "Version": "1.03b",
  "ProductionDate": "2021-06-24T08:00:00Z",
  "Manufacturer": "Contoso",
  "Model": "UP-JAM",
  "SerialNumber": "29347ZT599",
  "PartNumber": "MAARS",
  "AssetTag": "PDX5-92399",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PumpSpeedPercent": {
    "Reading": 62,
    "SpeedRPM": 1800
  },
  "@odata.id": "/redfish/v1/ThermalEquipment/ImmersionUnits/1/Pumps/1"
}
```


6.109 RegisteredClient 1.1.0

| | | |
|----------------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2023.1 | 2021.4 |

6.109.1 Description

The RegisteredClient schema defines the record format for a registered client. It is designed to allow well behaved clients to register with a Redfish service such that other clients are aware the service might be configured or monitored by the client.

6.109.2 URIs

/redfish/v1/RegisteredClients/{RegisteredClientId}

6.109.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------|-----------------------|------------------------|--|
| ClientType | string (enum) | read-write required | The type of registered client. <i>For the possible property values, see ClientType in Property details.</i> |
| ClientURI | string | read-write | The URI of the registered client. |
| Context (v1.1+) | string | read-write | A client-supplied data for providing context for its own use. |
| CreatedDate | string (date-time) | read-only | The date and time when the client entry was created. |
| ExpirationDate | string (date-time) | read-write | The date and time when the client entry will expire. |
| ManagedResources [{ | array | | An array of resources that the registered client monitors or configures. |
| IncludesSubordinates | boolean | read-write (null) | Indicates whether the subordinate resources of the managed resource are also managed by the registered client. |
| ManagedResourceURI | string (URI) | read-write (null) | The URI of the resource or resource collection managed by the registered client. |

| Property | Type | Attributes | Notes |
|------------------------------------|---------|--------------------------|---|
| PreferExclusive | boolean | <i>read-write (null)</i> | Indicates whether the registered client expects to have exclusive access to the managed resource. |
| }] | | | |
| SubContext (<i>v1.1+</i>) | string | <i>read-write</i> | Additional client-supplied data for providing contextual information for its own use. |

6.109.4 Property details

6.109.4.1 ClientType

The type of registered client.

| string | Description |
|-----------|--|
| Configure | The registered client performs update, create, and delete operations on the resources listed in the ManagedResources property as well as read operations on the service. |
| Monitor | The registered client only performs read operations on this service. |

6.109.5 Example response

```
{
  "@odata.type": "#RegisteredClient.v1_1_0.RegisteredClient",
  "Id": "2",
  "Name": "ContosoConfigure",
  "ClientType": "Configure",
  "CreatedDate": "2021-09-25T20:12:24Z",
  "Description": "Contoso manager access",
  "ExpirationDate": "2022-10-03T20:00:00Z",
  "ManagedResources": [
    {
      "ManagedResourceURI": "/redfish/v1/Systems",
      "PreferExclusive": true,
      "IncludesSubordinates": true
    },
    {
      "ManagedResourceURI": "/redfish/v1/Chassis",
      "PreferExclusive": true,
      "IncludesSubordinates": true
    }
  ],
}
```

```

"ClientURI": "https://4.5.6.2/ContosoManager",
"@odata.id": "/redfish/v1/RegisteredClients/2"
}

```

6.110 Reservoir 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.110.1 Description

The Reservoir schema describes a reservoir unit for a cooling system or similar device.

6.110.2 URIs

```

/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs/{ReservoirId}
/redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs/{ReservoirId}
/redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs/{ReservoirId}

```

6.110.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|--------|-----------------------------------|---|
| Assembly { | object | | The link to the assembly associated with this reservoir. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| CapacityLiters | number | <i>read-only</i> <i>(null)</i> | The capacity of the reservoir (l). |
| Coolant { | object | | Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Coolant resource. See the Links section and the <i>CoolingLoop</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--------------------------------|---------------------|------------------------------------|---|
| Filters { | object | | A link to a collection of filters. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Filter</i> . See the Filter schema for details. |
| } | | | |
| FluidLevelPercent { | object (excerpt) | | The fluid capacity filled (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| } | | | |
| FluidLevelStatus | string (enum) | <i>read-only</i> <i>(null)</i> | The status of the fluid level in this reservoir. <i>For the possible property values, see FluidLevelStatus in Property details.</i> |
| InternalPressurekPa { | object (excerpt) | | The internal pressure (kPa) reading. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> <i>(null)</i> | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> <i>(null)</i> | The sensor value. |
| } | | | |
| Location {} | object | | The location of the reservoir. For property details, see Location. |
| LocationIndicatorActive | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |
| Manufacturer | string | <i>read-only</i> <i>(null)</i> | The manufacturer of this reservoir. |
| Model | string | <i>read-only</i> <i>(null)</i> | The model number for this reservoir. |
| PartNumber | string | <i>read-only</i> <i>(null)</i> | The part number for this reservoir. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this reservoir. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| ReservoirType | string (enum) | <i>read-only</i> <i>(null)</i> | The type of reservoir. <i>For the possible property values, see ReservoirType in Property details.</i> |

| Property | Type | Attributes | Notes |
|------------------------|--------|-------------------------|---|
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this reservoir. |
| SparePartNumber | string | <i>read-only (null)</i> | The spare part number for this reservoir. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UserLabel | string | <i>read-write</i> | A user-assigned label. |

6.110.4 Property details

6.110.4.1 FluidLevelStatus

The status of the fluid level in this reservoir.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.110.4.2 PhysicalContext

The area or device associated with this reservoir.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |

| string | Description |
|------------------|---|
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |

| string | Description |
|------------------|-----------------------------------|
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.110.4.3 ReservoirType

The type of reservoir.

| string | Description |
|-----------|---|
| Immersion | An immersion cooling tank. |
| Inline | An inline or integrated reservoir. |
| Overflow | An overflow reservoir for excess fluid. |
| Reserve | A reservoir providing reserve fluid capacity. |

6.110.5 Example response

```
{
```

```

"@odata.type": "#Reservoir.v1_0_0.Reservoir",
"Id": "1",
"ReservoirType": "Reserve",
"Name": "Cooling Loop Reservoir",
"Manufacturer": "Contoso",
"Model": "Tarantino",
"CapacityLiters": 10,
"PartNumber": "Pink",
"Status": {
  "State": "Enabled",
  "Health": "OK"
},
"Location": {
  "Placement": {
    "Row": "North 1"
  }
},
"FluidLevelPercent": {
  "Reading": 64.8
},
"InternalPressurekPa": {
  "Reading": 138.7
},
"@odata.id": "/redfish/v1/ThermalEquipment/CDUs/1/Reservoirs/1"
}

```

6.111 ResourceBlock 1.4.1

| Version | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|
| Release | 2020.4 | 2018.3 | 2018.2 | 2018.1 | 2017.1 |

6.111.1 Description

The ResourceBlock schema contains definitions resource blocks, its components, and affinity to composed devices.

6.111.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}
/redfish/v1/ResourceBlocks/{ResourceBlockId}

6.111.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|--|--|
| Client (v1.4+) | string | <i>read-write</i> (<i>null</i>) | The client to which this resource block is assigned. |
| CompositionStatus { | object | <i>required</i> | The composition status details for this resource block. |
| CompositionState | string (enum) | <i>read-only</i> <i>required</i> (<i>null</i>) | The current state of the resource block from a composition perspective. <i>For the possible property values, see CompositionState in Property details.</i> |
| MaxCompositions (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The maximum number of compositions in which this resource block can participate simultaneously. |
| NumberOfCompositions (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The number of compositions in which this resource block is currently participating. |
| Reserved | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether any client has reserved the resource block. |
| SharingCapable (v1.1+) | boolean | <i>read-only</i> (<i>null</i>) | An indication of whether this resource block can participate in multiple compositions simultaneously. |
| SharingEnabled (v1.1+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether this resource block is allowed to participate in multiple compositions simultaneously. |
| } | | | |
| ComputerSystems [{ | array | | An array of links to the computer systems available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |
| Drives (v1.3+) [{ | array | | An array of links to the drives available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| EthernetInterfaces [{ | array | | An array of links to the Ethernet interfaces available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details. |

| Property | Type | Attributes | Notes |
|---|--------|------------------|--|
| }] | | | |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis [{ | array | | An array of links to the chassis in which this resource block is contained. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| ComputerSystems [{ | array | | An array of links to the computer systems that are composed from this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |
| ConsumingResourceBlocks (v1.4+) [{ | array | | An array of links to resource blocks that depend on this resource block. |
| @odata.id | string | <i>read-only</i> | Link to another ResourceBlock resource. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| SupplyingResourceBlocks (v1.4+) [{ | array | | An array of links to resource blocks that this resource block depends on. |
| @odata.id | string | <i>read-only</i> | Link to another ResourceBlock resource. |
| }] | | | |
| Zones [{ | array | | An array of links to the zones in which this resource block is bound. |
| @odata.id | string | <i>read-only</i> | Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details. |
| }] | | | |
| } | | | |
| Memory [{ | array | | An array of links to the memory available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details. |

| Property | Type | Attributes | Notes |
|------------------------------|-----------------------|---------------------------|--|
| }] | | | |
| NetworkInterfaces [{ | array | | An array of links to the Network Interfaces available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkInterface resource. See the Links section and the <i>NetworkInterface</i> schema for details. |
| }] | | | |
| Pool (v1.4+) | string (enum) | <i>read-write (null)</i> | The pool to which this resource block belongs. <i>For the possible property values, see Pool in Property details.</i> |
| Processors [{ | array | | An array of links to the processors available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| ResourceBlockType [] | array (string (enum)) | <i>read-only required</i> | The types of resources available on this resource block. <i>For the possible property values, see ResourceBlockType in Property details.</i> |
| SimpleStorage [{ | array | | An array of links to the simple storage available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a SimpleStorage resource. See the Links section and the <i>SimpleStorage</i> schema for details. |
| }] | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Storage [{ | array | | An array of links to the storage available in this resource block. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| }] | | | |

6.111.4 Property details

6.111.4.1 CompositionState

The current state of the resource block from a composition perspective.

| string | Description |
|------------------------------|--|
| Composed | Final successful state of a resource block that has participated in composition. |
| ComposedAndAvailable (v1.1+) | The resource block is currently participating in one or more compositions, and is available to use in more compositions. |
| Composing | Intermediate state indicating composition is in progress. |
| Failed | The final composition resulted in failure and manual intervention might be required to fix it. |
| Unavailable (v1.2+) | The resource block has been made unavailable by the service, such as due to maintenance being performed on the resource block. |
| Unused | The resource block is free and can participate in composition. |

6.111.4.2 Pool

The pool to which this resource block belongs.

| string | Description |
|------------|---|
| Active | This resource block is in the active pool and is contributing to at least one composed resource as a result of a composition request. |
| Free | This resource block is in the free pool and is not contributing to any composed resources. |
| Unassigned | This resource block is not assigned to any pools. |

6.111.4.3 ResourceBlockType

The types of resources available on this resource block.

| string | Description |
|---------------------|--|
| Compute | This resource block contains resources of type <code>Processor</code> and <code>Memory</code> in a manner that creates a compute complex. |
| ComputerSystem | This resource block contains resources of type <code>ComputerSystem</code> . |
| Expansion | This resource block is capable of changing over time based on its configuration. Different types of devices within this resource block can be added and removed over time. |
| IndependentResource | This resource block is capable of being consumed as a standalone component. This resource block can represent things such as a software platform on one or more computer systems or an appliance that provides composable resources and other services, and can be managed independently of the Redfish service. |

| string | Description |
|-----------|---|
| Memory | This resource block contains resources of type <code>Memory</code> . |
| Network | This resource block contains network resources, such as resource of type <code>EthernetInterface</code> and <code>NetworkInterface</code> . |
| Processor | This resource block contains resources of type <code>Processor</code> . |
| Storage | This resource block contains storage resources, such as resources of type <code>Storage</code> and <code>SimpleStorage</code> . |

6.111.5 Example response

```
{
  "@odata.type": "#ResourceBlock.v1_4_1.ResourceBlock",
  "Id": "ComputeBlock1",
  "Name": "Compute Block 1",
  "ResourceBlockType": [
    "Compute",
    "Network"
  ],
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "CompositionStatus": {
    "Reserved": false,
    "CompositionState": "Composed",
    "SharingCapable": false,
    "MaxCompositions": 1,
    "NumberOfCompositions": 1
  },
  "Processors": [
    {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Processors/Block1CPU0"
    },
    {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Processors/Block1CPU1"
    }
  ],
  "Memory": [
    {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM0"
    },
    {
      "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM1"
    }
  ]
}
```

```

        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM2"
    },
    {
        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM3"
    }
],
"EthernetInterfaces": [
    {
        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/EthernetInterfaces/Block10nb
    }
],
"ComputerSystems": [],
"Links": {
    "ComputerSystems": [
        {
            "@odata.id": "/redfish/v1/Systems/ComposedSystem"
        }
    ],
    "Chassis": [
        {
            "@odata.id": "/redfish/v1/Chassis/ComposableModule1"
        }
    ],
    "Zones": [
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceZones/1"
        }
    ]
},
"@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1"
}

```

6.112 Role 1.3.1

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|------|
| Release | 2020.4 | 2017.2 | 2017.1 | 1.0 |

6.112.1 Description

The Role schema contains a Redfish role to use in conjunction with a manager account.

6.112.2 URIs

/redfish/v1/AccountService/Roles/{RoleId}

/redfish/v1/Managers/{ManagerId}/RemoteAccountService/Roles/{RoleId}

6.112.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------------------|-----------------------------|------------------------------------|--|
| AlternateRoleId (v1.3+) | string | read-only | An equivalent role to use when this role is restricted. |
| AssignedPrivileges [] | array (string (enum)) | read-write | The Redfish privileges for this role. <i>For the possible property values, see AssignedPrivileges in Property details.</i> |
| IsPredefined | boolean | read-only | An indication of whether the role is predefined by Redfish or an OEM rather than a client-defined role. |
| OemPrivileges [] | array (string) | read-write | The OEM privileges for this role. |
| Restricted (v1.3+) | boolean | read-only | An indication of whether use of the role is restricted. |
| RoleId (v1.2+) | string | read-only required on create | The name of the role. |

6.112.4 Property details

6.112.4.1 AssignedPrivileges

The Redfish privileges for this role.

| string | Description |
|------------------------------------|--|
| AdministrateStorage | Administrator for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| AdministrateSystems | Administrator for systems found in the systems collection. Able to manage boot configuration, keys, and certificates for systems. |
| ConfigureComponents | Can configure components that this service manages. |
| ConfigureCompositionInfrastructure | Can view and configure composition service resources. |

| string | Description |
|----------------------|---|
| ConfigureManager | Can configure managers. |
| ConfigureSelf | Can change the password for the current user account, log out of their own sessions, and perform operations on resources they created. Services will need to be aware of resource ownership to map this privilege to an operation from a particular user. |
| ConfigureUsers | Can configure users and their accounts. |
| Login | Can log in to the service and read resources. |
| NoAuth | Authentication is not required. |
| OperateStorageBackup | Operator for storage backup functionality for storage subsystems and storage systems found in the storage collection and storage system collection respectively. |
| OperateSystems | Operator for systems found in the systems collection. Able to perform resets and configure interfaces. |

6.112.5 Example response

```
{
  "@odata.type": "#Role.v1_3_1.Role",
  "Id": "Administrator",
  "Name": "User Role",
  "Description": "Admin User Role",
  "IsPredefined": true,
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "OemPrivileges": [
    "OemClearLog",
    "OemPowerControl"
  ],
  "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
}
```

6.113 RouteEntry 1.0.1

| | |
|---------|------|
| Version | v1.0 |
|---------|------|

| | |
|----------------|--------|
| Release | 2019.4 |
|----------------|--------|

6.113.1 Description

The RouteEntry schema describes the content of route entry rows. Each route entry contains route sets that list the possible routes for the route entry.

6.113.2 URIs

/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT/{MSDTId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT/{SSDTId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId} (deprecated)
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/LPRT/{LPRTId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/MPRT/{MPRTId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/{LPRTId}
 (deprecated)
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/{MPRTId}
 (deprecated)
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId} (deprecated)
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/LPRT/{LPRTId}
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/MPRT/{MPRTId}
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/LPRT/{LPRTId} (deprecated)
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/MPRT/{MPRTId} (deprecated)
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/MSDT/{MSDTId}
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/GenZ/SSDT/{SSDTId}
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId}
 (deprecated)
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/
 LPRT/{LPRTId}
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/
 MPRT/{MPRTId}
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/
 {LPRTId} (deprecated)
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/
 {MPRTId} (deprecated)
 /redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId}
 (deprecated)

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.113.3 Properties

| Property | Type | Attributes | Notes |
|------------------------|---------|-------------------|--|
| MinimumHopCount | integer | <i>read-write</i> | The minimum number of hops. |
| RawEntryHex | string | <i>read-write</i> | The raw data of route entry rows. |
| RouteSet { | object | | The link to the collection of route set entries associated with this route. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RouteSetEntry</i> . See the <i>RouteSetEntry</i> schema for details. |
| } | | | |

6.113.4 Example response

```
{
  "@odata.type": "#RouteEntry.v1_0_1.RouteEntry",
  "Id": "0",
  "Name": "LPRT0",
  "Description": "Gen-Z Port 1 LPRT Entry 0",
  "RawEntryHex": "0x34EF124500000000",
  "RouteSet": {
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0/RouteSet"
  },
  "MinimumHopCount": 1,
  "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0"
}
```

6.114 RouteSetEntry 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2019.4 |

6.114.1 Description

The *RouteSetEntry* schema contains the information about a route. It is part of a larger set that contains possible routes for a particular route entry.

6.114.2 URIs

```

/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId}/RouteSet/
{RouteId}
/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/{LPRTId}/
RouteSet/{RouteId}
/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/{MPRTId}/
RouteSet/{RouteId}
/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId}/RouteSet/{RouteId}
/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/LPRT/{LPRTId}/RouteSet/{RouteId}
/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/MPRT/{MPRTId}/RouteSet/{RouteId}
/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/MSDT/{MSDTId}/
RouteSet/{RouteId}
/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/LPRT/
{LPRTId}/RouteSet/{RouteId}
/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/MPRT/
{MPRTId}/RouteSet/{RouteId}
/redfish/v1/Systems/{ComputerSystemId}/FabricAdapters/{FabricAdapterId}/SSDT/{SSDTId}/RouteSet/
{RouteId}

```

6.114.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------|---------|-------------------|--|
| EgressIdentifier | integer | <i>read-write</i> | The egress interface identifier. |
| HopCount | integer | <i>read-write</i> | The number of hops. |
| Valid | boolean | <i>read-write</i> | An indication of whether the entry is valid. |
| VCAction | integer | <i>read-write</i> | The Virtual Channel Action index. |

6.114.4 Example response

```

{
  "@odata.type": "#RouteSetEntry.v1_0_1.RouteSetEntry",
  "Id": "0",
  "Name": "RouteSet0",
  "Description": "Gen-Z Port 1 LPRT Entry 0 Route 0",
  "Valid": false,
  "VCAction": 1,
  "HopCount": 2,

```

```

    "EgressIdentifier": 0,
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0/RouteSet/0"
  }

```

6.115 SecureBoot 1.1.0

| | | |
|---------|--------|--------|
| Version | v1.1 | v1.0 |
| Release | 2020.1 | 2016.1 |

6.115.1 Description

The SecureBoot schema contains UEFI Secure Boot information and represents properties for managing the UEFI Secure Boot functionality of a system.

6.115.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/SecureBoot

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.115.3 Properties

| Property | Type | Attributes | Notes |
|---|------------------|--------------------------------------|---|
| SecureBootCurrentBoot | string (enum) | <i>read-only</i> (<i>null</i>) | The UEFI Secure Boot state during the current boot cycle. <i>For the possible property values, see SecureBootCurrentBoot in Property details.</i> |
| SecureBootDatabases (v1.1+) { | object | | A link to the collection of UEFI Secure Boot databases. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>SecureBootDatabase</i> . See the SecureBootDatabase schema for details. |
| } | | | |
| SecureBootEnable | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether UEFI Secure Boot is enabled. |
| SecureBootMode | string (enum) | <i>read-only</i> (<i>null</i>) | The current UEFI Secure Boot Mode. <i>For the possible property values, see SecureBootMode in Property details.</i> |

6.115.4 Actions

6.115.4.1 ResetKeys

Description

This action resets the UEFI Secure Boot keys.

Action URI

{Base URI of target resource}/Actions/SecureBoot.ResetKeys

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|------------------|-----------------|--|
| ResetKeyType | string (enum) | <i>required</i> | The type of reset or delete to perform on the UEFI Secure Boot databases. For the possible property values, see <i>ResetKeyType</i> in Property details. |

Request Example

```
{
  "ResetKeyType": "DeleteAllKeys"
}
```

6.115.5 Property details

6.115.5.1 ResetKeyType

The type of reset or delete to perform on the UEFI Secure Boot databases.

| string | Description |
|-----------------------|---|
| DeleteAllKeys | Delete the contents of all UEFI Secure Boot key databases, including the PK key database. This puts the system in Setup Mode. |
| DeletePK | Delete the contents of the PK UEFI Secure Boot database. This puts the system in Setup Mode. |
| ResetAllKeysToDefault | Reset the contents of all UEFI Secure Boot key databases, including the PK key database, to the default values. |

6.115.5.2 SecureBootCurrentBoot

The UEFI Secure Boot state during the current boot cycle.

| string | Description |
|----------|---|
| Disabled | UEFI Secure Boot is currently disabled. |
| Enabled | UEFI Secure Boot is currently enabled. |

6.115.5.3 SecureBootMode

The current UEFI Secure Boot Mode.

| string | Description |
|--------------|---|
| AuditMode | UEFI Secure Boot is currently in Audit Mode. |
| DeployedMode | UEFI Secure Boot is currently in Deployed Mode. |
| SetupMode | UEFI Secure Boot is currently in Setup Mode. |
| UserMode | UEFI Secure Boot is currently in User Mode. |

6.115.6 Example response

```
{
  "@odata.type": "#SecureBoot.v1_1_0.SecureBoot",
  "Id": "SecureBoot",
  "Name": "UEFI Secure Boot",
  "Actions": {
    "#SecureBoot.ResetKeys": {
      "target": "/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys",
      "ResetKeyType@Redfish.AllowableValues": [
        "ResetAllKeysToDefault",
        "DeleteAllKeys",
        "DeletePK"
      ]
    }
  },
  "SecureBootEnable": false,
  "SecureBootCurrentBoot": "Disabled",
  "SecureBootMode": "UserMode",
  "SecureBootDatabases": {
```

```

        "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases"
    },
    "@odata.id": "/redfish/v1/Systems/1/SecureBoot"
}
    
```

6.116 SecureBootDatabase 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2020.1 |

6.116.1 Description

The SecureBootDatabase schema describes a UEFI Secure Boot database used to store certificates or hashes.

6.116.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.116.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|--------|------------|--|
| Certificates { | object | | A link to the collection of certificates contained in this UEFI Secure Boot database. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| DatabaseId | string | read-only | This property contains the name of the UEFI Secure Boot database. |
| Signatures { | object | | A link to the collection of signatures contained in this UEFI Secure Boot database. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Signature</i> . See the Signature schema for details. |
| } | | | |

6.116.4 Actions

6.116.4.1 ResetKeys

Description

This action is used to reset the UEFI Secure Boot keys of this database.

Action URI

{Base URI of target resource}/Actions/SecureBootDatabase.ResetKeys

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|------------------|-----------------|---|
| ResetKeyType | string (enum) | <i>required</i> | The type of reset or delete to perform on this UEFI Secure Boot database. <i>For the possible property values, see ResetKeyType in Property details.</i> |

Request Example

```
{
  "ResetKeyType": "ResetAllKeysToDefault"
}
```

6.116.5 Property details

6.116.5.1 ResetKeyType

The type of reset or delete to perform on this UEFI Secure Boot database.

| string | Description |
|-----------------------|--|
| DeleteAllKeys | Delete the content of this UEFI Secure Boot key database. |
| ResetAllKeysToDefault | Reset the content of this UEFI Secure Boot key database to the default values. |

6.116.6 Example response

```
{
  "@odata.type": "#SecureBootDatabase.v1_0_1.SecureBootDatabase",
  "Id": "PK",
  "Name": "PK - Platform Key",
  "Description": "UEFI PK Secure Boot Database",
  "DatabaseId": "PK",
  "Certificates": {
    "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK/Certificates/"
  },
  "Actions": {
    "#SecureBootDatabase.ResetKeys": {
      "target": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK/Actions/SecureBootDatabase.ResetKeys",
      "ResetKeyType@Redfish.AllowableValues": [
        "ResetAllKeysToDefault",
        "DeleteAllKeys"
      ]
    }
  },
  "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK"
}
```

6.117 SecurityPolicy 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2022.2 |

6.117.1 Description

The SecurityPolicy resource provides a central point to configure the security policy of a manager.

6.117.2 URIs

/redfish/v1/Managers/{ManagerId}/SecurityPolicy

6.117.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|----------------------------|------------------------------------|--|
| OverrideParentManager | boolean | <i>read-write</i> | Override the security policy of the parent manager. |
| SPDM { | object | | The SPDM policy. |
| Allowed { | object | <i>(null)</i> | The SPDM policy settings that are allowed, such as the allowable SPDM versions and algorithms. |
| Algorithms { | object | <i>(null)</i> | The SPDM algorithms. |
| AEAD [] | array (string, null) | <i>read-write</i> | The AEAD algorithms. |
| BaseAsym [] | array (string, null) | <i>read-write</i> | The asymmetric signature algorithms. |
| BaseHash [] | array (string, null) | <i>read-write</i> | The hash algorithms. |
| } | | | |
| Versions [] | array (string, null) | <i>read-write</i> | The SPDM versions. |
| } | | | |
| AllowExtendedAlgorithms | boolean | <i>read-write</i> <i>(null)</i> | An indication of whether SPDM extended algorithms are allowed. |
| Denied { | object | <i>(null)</i> | The SPDM policy settings that are prohibited, such as the prohibited SPDM versions and algorithms. |
| Algorithms { | object | <i>(null)</i> | The SPDM algorithms. |
| AEAD [] | array (string, null) | <i>read-write</i> | The AEAD algorithms. |
| BaseAsym [] | array (string, null) | <i>read-write</i> | The asymmetric signature algorithms. |

| Property | Type | Attributes | Notes |
|------------------------------|----------------------------|------------------------------|---|
| BaseHash [] | array (string, null) | <i>read-write</i> | The hash algorithms. |
| } | | | |
| Versions [] | array (string, null) | <i>read-write</i> | The SPDM versions. |
| } | | | |
| Enabled | boolean | <i>read-write (null)</i> | An indication of whether SPDM communication with devices is enabled. |
| RevokedCertificates { | object | <i>(null)</i> | The revoked SPDM device certificates. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| SecureSessionEnabled | boolean | <i>read-write (null)</i> | An indication of whether SPDM secure sessions with devices is enabled. |
| TrustedCertificates { | object | <i>(null)</i> | The trusted SPDM device certificates. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| VerifyCertificate | boolean | <i>read-write (null)</i> | An indication of whether the manager will verify the certificate of the SPDM endpoint. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TLS { | object | | The TLS policy. |
| Client { | object | | The TLS policy. |
| Allowed {} | object | <i>(null)</i> | The TLS policy settings that are allowed, such as the allowable TLS versions and algorithms. For more information about this property, see TLSParameterSet in Property Details. |

| Property | Type | Attributes | Notes |
|------------------------------|---------|----------------------|---|
| Denied {} | object | (null) | The TLS policy settings that are prohibited, such as the prohibited TLS versions and algorithms. For more information about this property, see TLSParameterSet in Property Details. |
| RevokedCertificates { | object | (null) | The revoked TLS server certificates. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| TrustedCertificates { | object | (null) | The trusted TLS server certificates. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| VerifyCertificate | boolean | read-write (null) | An indication of whether the manager will verify the certificate of the remote TLS endpoint. |
| } | | | |
| Server { | object | | The TLS policy. |
| Allowed {} | object | (null) | The TLS policy settings that are allowed, such as the allowable TLS versions and algorithms. For more information about this property, see TLSParameterSet in Property Details. |
| Denied {} | object | (null) | The TLS policy settings that are prohibited, such as the prohibited TLS versions and algorithms. For more information about this property, see TLSParameterSet in Property Details. |
| RevokedCertificates { | object | (null) | The revoked TLS server certificates. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| TrustedCertificates { | object | (null) | The trusted TLS server certificates. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--------------------------|---------|--------------------------------------|--|
| VerifyCertificate | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the manager will verify the certificate of the remote TLS endpoint. |
| } | | | |
| } | | | |

6.117.4 Property details

6.117.4.1 TLSPParameterSet

The TLS policy settings.

| | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|----------------------------|-------------------|-------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Algorithms { | object | (<i>null</i>) | The TLS algorithms. | | | | | | | | | | | | | | | | | |
| CipherSuites [] | array (string, null) | <i>read-write</i> | The TLS cipher suites. | | | | | | | | | | | | | | | | | |
| SignatureAlgorithms [] | array (string, null) | <i>read-write</i> | The TLS signature algorithms. | | | | | | | | | | | | | | | | | |
| } | | | | | | | | | | | | | | | | | | | | |
| Versions [] | array (string, null) | <i>read-write</i> | The TLS versions. | | | | | | | | | | | | | | | | | |

6.117.5 Example response

```
{
  "@odata.type": "#SecurityPolicy.v1_0_0.SecurityPolicy",
  "Id": "ManagerGlobalSecurityPolicy",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "OverrideParentManager": true,
  "SPDM": {
    "Enabled": true,
    "SecureSessionEnabled": true,
  }
}
```

```

    "VerifyCertificate": true,
    "TrustedCertificates": {
      "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/SPDM/TrustedCertificates"
    },
  },
  "RevokedCertificates": {
    "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/SPDM/RevokedCertificates"
  },
  "Allowed": {
    "Versions": [
      "ALL"
    ],
    "Algorithms": {
      "AEAD": [
        "AES-GCM-256",
        "AES-GCM-128"
      ],
      "BaseAsym": [
        "TPM_ALG_RSASSA_2048",
        "TPM_ALG_ECDSA_ECC_NIST_P384",
        "TPM_ALG_SM2_ECC_SM2_P256"
      ],
      "BaseHash": [
        "TPM_ALG_SHA_512",
        "TPM_ALG_SHA3_512"
      ]
    }
  },
  "Denied": {
    "Versions": [
      "NONE"
    ],
    "Algorithms": {
      "AEAD": [],
      "BaseAsym": [
        "EdDSA ed25519"
      ],
      "BaseHash": [
        "TPM_ALG_SHA_256"
      ]
    }
  },
  "AllowExtendedAlgorithms": false
},
"TLS": {
  "Client": {
    "VerifyCertificate": true,
    "TrustedCertificates": {
      "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/TLS/Server/TrustedCertificates"
    },
    "RevokedCertificates": {

```

```

        "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/TLS/Server/RevokedCertificates"
    },
    "Allowed": {
        "Versions": [
            "1.2",
            "1.3"
        ],
        "Algorithms": {
            "CipherSuites": [
                "TLS_AES_128_GCM_SHA256",
                "TLS_AES_128_GCM_SHA384"
            ],
            "SignatureAlgorithms": []
        }
    },
    "Denied": {
        "Versions": [
            "1.1"
        ],
        "Algorithms": {
            "CipherSuites": [],
            "SignatureAlgorithms": [
                "rsa_pkcs1_sha1",
                "ecdsa_sha1"
            ]
        }
    }
},
"Server": {
    "VerifyCertificate": false,
    "TrustedCertificates": {
        "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/TLS/Client/TrustedCertificates"
    },
    "RevokedCertificates": {
        "@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy/TLS/Client/RevokedCertificates"
    },
    "Allowed": {
        "Versions": [
            "1.3"
        ],
        "Algorithms": {
            "CipherSuites": [
                "TLS_AES_128_GCM_SHA256",
                "TLS_AES_128_GCM_SHA384"
            ],
            "SignatureAlgorithms": []
        }
    },
    "Denied": {
        "Versions": [

```

```

        "1.1",
        "1.2"
    ],
    "Algorithms": {
        "CipherSuites": [],
        "SignatureAlgorithms": [
            "rsa_pkcs1_sha1",
            "ecdsa_sha1"
        ]
    }
}
},
"@odata.id": "/redfish/v1/Managers/BMC/SecurityPolicy"
}

```

6.118 Sensor 1.8.0

| Version | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.2 | 2021.4 | 2021.2 | 2021.1 | 2020.4 | 2019.4 | 2018.3 |

6.118.1 Description

The Sensor schema describes a sensor and its properties.

6.118.2 URIs

/redfish/v1/Chassis/{ChassisId}/Sensors/{SensorId}

/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Sensors/{SensorId} (deprecated)

/redfish/v1/PowerEquipment/PowerShelves/{PowerDistributionId}/Sensors/{SensorId} (deprecated)

/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Sensors/{SensorId} (deprecated)

/redfish/v1/PowerEquipment/Switchgear/{PowerDistributionId}/Sensors/{SensorId} (deprecated)

/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Sensors/{SensorId} (deprecated)

6.118.3 Properties

| Property | Type | Attributes | Notes |
|---|-----------------------|------------------------------|---|
| Accuracy (<i>deprecated v1.8</i>) | number (%) | <i>read-only (null)</i> | The estimated percent error of measured versus actual values. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of ReadingAccuracy.</i> |
| AdjustedMaxAllowableOperatingValue | number | <i>read-only (null)</i> | The adjusted maximum allowable operating value for this equipment based on the environmental conditions. |
| AdjustedMinAllowableOperatingValue | number | <i>read-only (null)</i> | The adjusted minimum allowable operating value for this equipment based on the environmental conditions. |
| ApparentkVAh (<i>v1.5+</i>) | number (kV.A.h) | <i>read-only (null)</i> | Apparent energy (kVAh). |
| ApparentVA | number (V.A) | <i>read-only (null)</i> | The product of voltage and current for an AC circuit, in volt-ampere units. |
| AverageReading (<i>v1.4+</i>) | number | <i>read-only (null)</i> | The average sensor value. |
| AveragingInterval (<i>v1.4+</i>) | string (duration) | <i>read-write (null)</i> | The interval over which the average sensor value is calculated. |
| AveragingIntervalAchieved (<i>v1.4+</i>) | boolean | <i>read-only (null)</i> | Indicates that enough readings were collected to calculate the average sensor reading over the averaging interval time. |
| Calibration (<i>v1.4+</i>) | number | <i>read-write (null)</i> | The calibration offset applied to the Reading. |
| CalibrationTime (<i>v1.4+</i>) | string (date-time) | <i>read-write (null)</i> | The date and time that the sensor was last calibrated. |
| CrestFactor (<i>v1.1+</i>) | number | <i>read-only (null)</i> | The crest factor for this sensor. |
| ElectricalContext | string (enum) | <i>read-only (null)</i> | The combination of current-carrying conductors. <i>For the possible property values, see ElectricalContext in Property details.</i> |
| Implementation (<i>v1.1+</i>) | string (enum) | <i>read-only (null)</i> | The implementation of the sensor. <i>For the possible property values, see Implementation in Property details.</i> |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|----------------------------|--|
| LifetimeReading (v1.1+) | number | <i>read-only</i> (null) | The total accumulation value for this sensor. |
| Links (v1.3+) { | object | | The links to other resources that are related to this resource. |
| AssociatedControls (v1.4+) [{ | array | | An array of links to the controls that can affect this sensor. |
| @odata.id | string | <i>read-only</i> | Link to a Control resource. See the Links section and the <i>Control</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| LoadPercent (deprecated v1.1) | number (%) | <i>read-only</i> (null) | The power load utilization for this sensor. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of using a sensor instance with a ReadingType of Percent to show utilization values when needed.</i> |
| Location {} | object | | The location information for this sensor. For property details, see Location. |
| LowestReading (v1.4+) | number | <i>read-only</i> (null) | The lowest sensor value. |
| LowestReadingTime (v1.4+) | string (date-time) | <i>read-only</i> (null) | The time when the lowest sensor value occurred. |
| MaxAllowableOperatingValue | number | <i>read-only</i> (null) | The maximum allowable operating value for this equipment. |
| MinAllowableOperatingValue | number | <i>read-only</i> (null) | The minimum allowable operating value for this equipment. |
| PeakReading | number | <i>read-only</i> (null) | The peak sensor value. |
| PeakReadingTime | string (date-time) | <i>read-only</i> (null) | The time when the peak sensor value occurred. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (null) | The phase angle (degrees) between the current and voltage waveforms. |

| Property | Type | Attributes | Notes |
|--------------------------------|-----------------------|----------------------------|--|
| PhysicalContext | string (enum) | <i>read-only</i> (null) | The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (null) | The usage or location within a device to which this sensor measurement applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| PowerFactor | number | <i>read-only</i> (null) | The power factor for this sensor. |
| Precision | number | <i>read-only</i> (null) | The number of significant digits in the reading. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (null) | Reactive energy (kVARh). |
| ReactiveVAR | number (V.A) | <i>read-only</i> (null) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (null) | The sensor value. |
| ReadingAccuracy (v1.8+) | number | <i>read-only</i> (null) | Accuracy (+/-) of the reading. |
| ReadingBasis (v1.7+) | string (enum) | <i>read-only</i> (null) | The basis for the reading of this sensor. <i>For the possible property values, see ReadingBasis in Property details.</i> |
| ReadingRangeMax | number | <i>read-only</i> (null) | The maximum possible value for this sensor. |
| ReadingRangeMin | number | <i>read-only</i> (null) | The minimum possible value for this sensor. |
| ReadingTime (v1.1+) | string (date-time) | <i>read-only</i> (null) | The date and time that the reading was acquired from the sensor. |
| ReadingType | string (enum) | <i>read-only</i> (null) | The type of sensor. <i>For the possible property values, see ReadingType in Property details.</i> |
| ReadingUnits | string | <i>read-only</i> (null) | The units of the reading and thresholds. |
| RelatedItem (v1.2+) [{ | array | | An array of links to resources or objects that this sensor services. |

| Property | Type | Attributes | Notes |
|--|-----------------------|-------------------------------------|---|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| SensingFrequency (<i>deprecated v1.1</i>) | number | <i>read-only</i> (<i>null</i>) | The time interval between readings of the physical sensor. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of the SensingInterval property, which uses the duration time format for interoperability.</i> |
| SensingInterval (<i>v1.1+</i>) | string (duration) | <i>read-only</i> (<i>null</i>) | The time interval between readings of the sensor. |
| SensorGroup (<i>v1.4+</i>) {} | object | | The group of sensors that provide readings for this sensor. For property details, see RedundantGroup. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |
| SpeedRPM (<i>v1.2+</i>) | number ({rev}/min) | <i>read-only</i> (<i>null</i>) | The rotational speed. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| THDPercent (<i>v1.1+</i>) | number (%) | <i>read-only</i> (<i>null</i>) | The total harmonic distortion percent (% THD). |
| Thresholds { | object | | The set of thresholds defined for this sensor. |
| LowerCaution {} | object | | The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details. |
| LowerCautionUser (<i>v1.2+</i>) {} | object | | A user-defined value at which the reading is considered below normal range. For more information about this property, see Threshold in Property Details. |
| LowerCritical {} | object | | The value at which the reading is below normal range but not yet fatal. For more information about this property, see Threshold in Property Details. |
| LowerCriticalUser (<i>v1.2+</i>) {} | object | | A user-defined value at which the reading is considered below normal range but not yet fatal. For more information about this property, see Threshold in Property Details. |

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|-------------------------------------|--|
| LowerFatal {} | object | | The value at which the reading is below normal range and fatal. For more information about this property, see Threshold in Property Details. |
| UpperCaution {} | object | | The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details. |
| UpperCautionUser (v1.2+) {} | object | | A user-defined value at which the reading is considered above normal range. For more information about this property, see Threshold in Property Details. |
| UpperCritical {} | object | | The value at which the reading is above normal range but not yet fatal. For more information about this property, see Threshold in Property Details. |
| UpperCriticalUser (v1.2+) {} | object | | A user-defined value at which the reading is considered above normal range but not yet fatal. For more information about this property, see Threshold in Property Details. |
| UpperFatal {} | object | | The value at which the reading is above normal range and fatal. For more information about this property, see Threshold in Property Details. |
| } | | | |
| VoltageType | string (enum) | <i>read-only</i> (<i>null</i>) | The voltage type for this sensor. <i>For the possible property values, see VoltageType in Property details.</i> |

6.118.4 Actions

6.118.4.1 ResetMetrics

Description

Resets metrics related to this sensor.

Action URI

{Base URI of target resource}/Actions/Sensor.ResetMetrics

Action parameters

This action takes no parameters.

6.118.4.2 ResetToDefaults (v1.6+)

Description

The action resets the values of writable properties to factory defaults.

Action URI

{Base URI of target resource}/Actions/Sensor.ResetToDefaults

Action parameters

This action takes no parameters.

6.118.5 Property details

6.118.5.1 Activation

The direction of crossing that activates this threshold.

| string | Description |
|------------------|--|
| Decreasing | Value decreases below the threshold. |
| Disabled (v1.7+) | The threshold is disabled. |
| Either | Value crosses the threshold in either direction. |
| Increasing | Value increases above the threshold. |

6.118.5.2 ElectricalContext

The combination of current-carrying conductors.

| string | Description |
|-----------------------|--|
| Line1 | The circuits that share the L1 current-carrying conductor. |
| Line1ToLine2 | The circuit formed by L1 and L2 current-carrying conductors. |
| Line1ToNeutral | The circuit formed by L1 and neutral current-carrying conductors. |
| Line1ToNeutralAndL1L2 | The circuit formed by L1, L2, and neutral current-carrying conductors. |

| string | Description |
|-----------------------|--|
| Line2 | The circuits that share the L2 current-carrying conductor. |
| Line2ToLine3 | The circuit formed by L2 and L3 current-carrying conductors. |
| Line2ToNeutral | The circuit formed by L2 and neutral current-carrying conductors. |
| Line2ToNeutralAndL1L2 | The circuit formed by L1, L2, and Neutral current-carrying conductors. |
| Line2ToNeutralAndL2L3 | The circuits formed by L2, L3, and neutral current-carrying conductors. |
| Line3 | The circuits that share the L3 current-carrying conductor. |
| Line3ToLine1 | The circuit formed by L3 and L1 current-carrying conductors. |
| Line3ToNeutral | The circuit formed by L3 and neutral current-carrying conductors. |
| Line3ToNeutralAndL3L1 | The circuit formed by L3, L1, and neutral current-carrying conductors. |
| LineToLine | The circuit formed by two current-carrying conductors. |
| LineToNeutral | The circuit formed by a line and neutral current-carrying conductor. |
| Neutral | The grounded current-carrying return circuit of current-carrying conductors. |
| Total | The circuit formed by all current-carrying conductors. |

6.118.5.3 Implementation

The implementation of the sensor.

| string | Description |
|----------------|---|
| PhysicalSensor | The reading is acquired from a physical sensor. |
| Reported | The reading is obtained from software or a device. |
| Synthesized | The reading is obtained by applying a calculation on one or more properties or multiple sensors. The calculation is not provided. |

6.118.5.4 PhysicalContext

The area or device to which this sensor measurement applies.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |

| string | Description |
|------------------|---|
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.118.5.5 PhysicalSubContext

The usage or location within a device to which this sensor measurement applies.

| string | Description |
|--------|-------------|
| Input | The input. |

| string | Description |
|--------|-------------|
| Output | The output. |

6.118.5.6 ReadingBasis

The basis for the reading of this sensor.

| string | Description |
|----------|--|
| Delta | A reading that reports the difference between two measurements. |
| Headroom | A reading that decreases as it approaches a defined reference point. |
| Zero | A zero-based reading. |

6.118.5.7 ReadingType

The type of sensor.

| string | Description |
|---------------------------|--|
| AbsoluteHumidity (v1.5+) | Absolute humidity (g/cu m). |
| AirFlow (deprecated v1.7) | Air flow (cu ft/min). <i>Deprecated in v1.7 and later. This value has been deprecated in favor of AirFlowCMM for consistent use of SI units.</i> |
| AirFlowCMM (v1.7+) | Air flow (m ³ /min). |
| Altitude | Altitude (m). |
| Barometric | Barometric pressure (mm). |
| ChargeAh (v1.4+) | Charge (Ah). |
| Current | Current (A). |
| EnergyJoules | Energy (J). |
| EnergykWh | Energy (kWh). |
| EnergyWh (v1.4+) | Energy (Wh). |
| Frequency | Frequency (Hz). |
| Heat (v1.7+) | Heat (kW). |

| string | Description |
|------------------------------|--|
| Humidity | Relative humidity (percent). |
| LiquidFlow (deprecated v1.7) | Liquid flow (L/s). <i>Deprecated in v1.7 and later. This value has been deprecated in favor of <code>LiquidFlowLPM</code> for consistency of units typically expected or reported by Sensor and Control resources.</i> |
| LiquidFlowLPM (v1.7+) | Liquid flow (L/min). |
| LiquidLevel | Liquid level (cm). |
| Percent (v1.1+) | Percent (%). |
| Power | Power (W). |
| Pressure (deprecated v1.7) | Pressure (Pa). <i>Deprecated in v1.7 and later. This value has been deprecated in favor of <code>PressurePa</code> or <code>PressurekPa</code> for consistency of units between Sensor and Control resources.</i> |
| PressurekPa (v1.5+) | Pressure (kPa). |
| PressurePa (v1.7+) | Pressure (Pa). |
| Rotational | Rotational (RPM). |
| Temperature | Temperature (C). |
| Voltage | Voltage (VAC or VDC). |

6.118.5.8 Threshold

The threshold definition for a sensor.

| | | | |
|-----------------------------------|-------------------|-------------------|---|
| Activation | string (enum) | read-write (null) | The direction of crossing that activates this threshold. <i>For the possible property values, see Activation in Property details.</i> |
| DwellTime | string (duration) | read-write (null) | The duration the sensor value must violate the threshold before the threshold is activated. |
| HysteresisDuration (v1.7+) | string (duration) | read-write (null) | The duration the sensor value must not violate the threshold before the threshold is deactivated. |
| HysteresisReading (v1.7+) | number | read-write (null) | The reading offset from the threshold value required to clear the threshold. |

| | | | |
|----------------|--------|-----------------------------|----------------------|
| Reading | number | <i>read-write</i> (null) | The threshold value. |
|----------------|--------|-----------------------------|----------------------|

6.118.5.9 VoltageType

The voltage type for this sensor.

| string | Description |
|--------|----------------------|
| AC | Alternating current. |
| DC | Direct current. |

6.118.6 Example response

```
{
  "@odata.type": "#Sensor.v1_8_0.Sensor",
  "Id": "CabinetTemp",
  "Name": "Rack Temperature",
  "ReadingType": "Temperature",
  "ReadingTime": "2019-12-25T04:14:33+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Reading": 31.6,
  "ReadingUnits": "C",
  "ReadingRangeMin": 0,
  "ReadingRangeMax": 70,
  "Accuracy": 0.25,
  "Precision": 1,
  "SensingInterval": "PT3S",
  "PhysicalContext": "Chassis",
  "Thresholds": {
    "UpperCritical": {
      "Reading": 40,
      "Activation": "Increasing"
    },
    "UpperCaution": {
      "Reading": 35,
      "Activation": "Increasing"
    },
    "LowerCaution": {
      "Reading": 10,

```

```

        "Activation": "Increasing"
    },
    "@odata.id": "/redfish/v1/Chassis/1/Sensors/CabinetTemp"
}

```

6.119 SerialInterface 1.2.0

| Version | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|------|
| Release | 2023.2 | 2017.1 | 1.0 |

6.119.1 Description

The SerialInterface schema describes an asynchronous serial interface, such as an RS-232 interface, available to a system or device.

6.119.2 URIs

/redfish/v1/Managers/{ManagerId}/SerialInterfaces/{SerialInterfaceId}

6.119.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------|------------------|------------------------------|---|
| BitRate | string (enum) | <i>read-write</i> | The receive and transmit rate of data flow, typically in bits per second (bit/s), over the serial connection. <i>For the possible property values, see BitRate in Property details.</i> |
| ConnectorType | string (enum) | <i>read-only</i> | The type of connector used for this interface. <i>For the possible property values, see ConnectorType in Property details.</i> |
| DataBits | string (enum) | <i>read-write</i> | The number of data bits that follow the start bit over the serial connection. <i>For the possible property values, see DataBits in Property details.</i> |
| FlowControl | string (enum) | <i>read-write</i> | The type of flow control, if any, that is imposed on the serial connection. <i>For the possible property values, see FlowControl in Property details.</i> |
| InterfaceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this interface is enabled. |
| Links (v1.2+) { | object | | The links to other resources that are related to this resource. |

| Property | Type | Attributes | Notes |
|-------------------|------------------|-----------------------------|--|
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Parity | string (enum) | <i>read-write</i> | The type of parity used by the sender and receiver to detect errors over the serial connection. <i>For the possible property values, see Parity in Property details.</i> |
| PinOut | string (enum) | <i>read-only (null)</i> | The physical pinout configuration for a serial connector. <i>For the possible property values, see PinOut in Property details.</i> |
| SignalType | string (enum) | <i>read-only</i> | The type of signal used for the communication connection. <i>For the possible property values, see SignalType in Property details.</i> |
| StopBits | string (enum) | <i>read-write</i> | The period of time before the next start bit is transmitted. <i>For the possible property values, see StopBits in Property details.</i> |

6.119.4 Property details

6.119.4.1 BitRate

The receive and transmit rate of data flow, typically in bits per second (bit/s), over the serial connection.

| string | Description |
|--------|-----------------------------|
| 115200 | A bit rate of 115200 bit/s. |
| 1200 | A bit rate of 1200 bit/s. |
| 19200 | A bit rate of 19200 bit/s. |
| 230400 | A bit rate of 230400 bit/s. |
| 2400 | A bit rate of 2400 bit/s. |
| 38400 | A bit rate of 38400 bit/s. |
| 4800 | A bit rate of 4800 bit/s. |
| 57600 | A bit rate of 57600 bit/s. |
| 9600 | A bit rate of 9600 bit/s. |

6.119.4.2 ConnectorType

The type of connector used for this interface.

| string | Description |
|-------------|--------------------------|
| DB25 Female | A DB25 Female connector. |
| DB25 Male | A DB25 Male connector. |
| DB9 Female | A DB9 Female connector. |
| DB9 Male | A DB9 Male connector. |
| mUSB | A mUSB connector. |
| RJ11 | An RJ11 connector. |
| RJ45 | An RJ45 connector. |
| USB | A USB connector. |
| uUSB | A uUSB connector. |

6.119.4.3 DataBits

The number of data bits that follow the start bit over the serial connection.

| string | Description |
|--------|---|
| 5 | Five bits of data following the start bit. |
| 6 | Six bits of data following the start bit. |
| 7 | Seven bits of data following the start bit. |
| 8 | Eight bits of data following the start bit. |

6.119.4.4 FlowControl

The type of flow control, if any, that is imposed on the serial connection.

| string | Description |
|----------|-----------------------------------|
| Hardware | Out-of-band flow control imposed. |

| string | Description |
|----------|--|
| None | No flow control imposed. |
| Software | XON/XOFF in-band flow control imposed. |

6.119.4.5 Parity

The type of parity used by the sender and receiver to detect errors over the serial connection.

| string | Description |
|--------|---------------------|
| Even | An even parity bit. |
| Mark | A mark parity bit. |
| None | No parity bit. |
| Odd | An odd parity bit. |
| Space | A space parity bit. |

6.119.4.6 PinOut

The physical pinout configuration for a serial connector.

| string | Description |
|----------|------------------------------------|
| Cisco | The Cisco pinout configuration. |
| Cyclades | The Cyclades pinout configuration. |
| Digi | The Digi pinout configuration. |

6.119.4.7 SignalType

The type of signal used for the communication connection.

| string | Description |
|--------|-------------------------------------|
| Rs232 | The serial interface follows RS232. |
| Rs485 | The serial interface follows RS485. |

6.119.4.8 StopBits

The period of time before the next start bit is transmitted.

| string | Description |
|--------|--|
| 1 | One stop bit following the data bits. |
| 2 | Two stop bits following the data bits. |

6.119.5 Example response

```
{
  "@odata.type": "#SerialInterface.v1_2_0.SerialInterface",
  "Id": "TTY0",
  "Name": "Manager Serial Interface 1",
  "Description": "Management for Serial Interface",
  "InterfaceEnabled": true,
  "SignalType": "Rs232",
  "BitRate": "115200",
  "Parity": "None",
  "DataBits": "8",
  "StopBits": "1",
  "FlowControl": "None",
  "ConnectorType": "RJ45",
  "PinOut": "Cyclades",
  "@odata.id": "/redfish/v1/Managers/BMC/SerialInterfaces/TTY0"
}
```

6.120 ServiceConditions 1.0.0

| | |
|---------|--------|
| Version | v1.0 |
| Release | 2021.4 |

6.120.1 Description

The ServiceConditions schema contains definitions for reporting the conditions present in the service that require attention.

6.120.2 URIs

/redfish/v1/ServiceConditions

6.120.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------|----------------|------------|--|
| Conditions [{ }] | array (object) | (null) | Conditions reported by this service that require attention. For property details, see Condition. |
| HealthRollup | string (enum) | read-only | The health roll-up for all resources. <i>For the possible property values, see HealthRollup in Property details.</i> |

6.120.4 Property details

6.120.4.1 HealthRollup

The health roll-up for all resources.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.120.5 Example response

```
{
  "@odata.type": "#ServiceConditions.v1_0_0.ServiceConditions",
  "Name": "Redfish Service Conditions",
  "HealthRollup": "Warning",
  "Conditions": [
    {
      "MessageId": "ThermalEvents.1.0.OverTemperature",
      "Timestamp": "2020-11-08T12:25:00-05:00 ",
      "Message": "Temperature exceeds rated limit in power supply `A`.",
      "Severity": "Warning",
      "MessageArgs": [
        "A"
      ]
    }
  ]
}
```

```

    ],
    "OriginOfCondition": {
      "@odata.id": "/redfish/v1/Chassis/1/Power"
    },
  },
  "LogEntry": {
    "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1/Entries/1"
  }
},
{
  "MessageId": "Base.1.9.ConditionInRelatedResource",
  "Message": "One or more conditions exist in a related resource. See the OriginOfCondition property.",
  "Severity": "Warning",
  "OriginOfCondition": {
    "@odata.id": "/redfish/v1/Systems/cpu-memory-example"
  }
}
],
"@odata.id": "/redfish/v1/ServiceConditions"
}

```

6.121 ServiceRoot 1.16.0

| Version | v1.16 | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.1 | 2022.3 | 2022.1 | 2021.4 | 2021.3 | 2021.2 | 2021.1 | 2020.3 | 2020.2 | 2020.1 | 2019.4 | ... |

6.121.1 Description

The ServiceRoot schema describes the root of the Redfish service, located at the '/redfish/v1' URI. All other resources accessible through the Redfish interface on this device are linked directly or indirectly from the service root.

6.121.2 URIs

/redfish/v1
 /redfish/v1/

6.121.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|--------|------------------|---|
| AccountService { | object | | The link to the account service. See the <i>AccountService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>AccountService</i> resource. See the Links section and the <i>AccountService</i> schema for details. |
| } | | | |
| AggregationService (v1.8+) { | object | | The link to the aggregation service. See the <i>AggregationService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>AggregationService</i> resource. See the Links section and the <i>AggregationService</i> schema for details. |
| } | | | |
| Cables (v1.11+) { | object | | The link to a collection of cables. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Cable</i> . See the <i>Cable</i> schema for details. |
| } | | | |
| CertificateService (v1.5+) { | object | | The link to the certificate service. See the <i>CertificateService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>CertificateService</i> resource. See the Links section and the <i>CertificateService</i> schema for details. |
| } | | | |
| Chassis { | object | | The link to a collection of chassis. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Chassis</i> . See the <i>Chassis</i> schema for details. |
| } | | | |
| ComponentIntegrity (v1.13+) { | object | | The link to a collection of component integrity information. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ComponentIntegrity</i> . See the <i>ComponentIntegrity</i> schema for details. |
| } | | | |
| CompositionService (v1.2+) { | object | | The link to the composition service. See the <i>CompositionService</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|----------------------------------|--------|------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a CompositionService resource. See the Links section and the <i>CompositionService</i> schema for details. |
| } | | | |
| EventService { | object | | The link to the event service. See the <i>EventService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EventService resource. See the Links section and the <i>EventService</i> schema for details. |
| } | | | |
| Fabrics (v1.1+) { | object | | The link to a collection of fabrics. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Fabric</i> . See the Fabric schema for details. |
| } | | | |
| Facilities (v1.6+) { | object | | The link to a collection of facilities. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Facility</i> . See the Facility schema for details. |
| } | | | |
| JobService (v1.4+) { | object | | The link to the job service. See the <i>JobService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a JobService resource. See the Links section and the <i>JobService</i> schema for details. |
| } | | | |
| JsonSchemas { | object | | The link to a collection of JSON Schema files. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>JsonSchemaFile</i> . See the <i>JsonSchemaFile</i> schema for details. |
| } | | | |
| KeyService (v1.11+) { | object | | The link to the key service. See the <i>KeyService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a KeyService resource. See the Links section and the <i>KeyService</i> schema for details. |
| } | | | |
| LicenseService (v1.12+) { | object | | The link to the license service. See the <i>LicenseService</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|--------|-------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a LicenseService resource. See the Links section and the <i>LicenseService</i> schema for details. |
| } | | | |
| Links { | object | <i>required</i> | The links to other resources that are related to this resource. |
| ManagerProvidingService (v1.15+) { | object | | The link to the manager that is providing this Redfish service. See the <i>Manager</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| } | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| Sessions { | object | <i>required</i> | The link to a collection of sessions. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Session</i> . See the Session schema for details. |
| } | | | |
| } | | | |
| Managers { | object | | The link to a collection of managers. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Manager</i> . See the Manager schema for details. |
| } | | | |
| NVMeDomains (v1.10+) {} | object | | The link to a collection of NVMe domains. |
| PowerEquipment (v1.6+) { | object | | The link to a set of power equipment. See the <i>PowerEquipment</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PowerEquipment resource. See the Links section and the <i>PowerEquipment</i> schema for details. |
| } | | | |
| Product (v1.3+) | string | <i>read-only</i> (<i>null</i>) | The product associated with this Redfish service. |
| ProtocolFeaturesSupported (v1.3+) { | object | | The information about protocol features that the service supports. |
| DeepOperations (v1.7+) { | object | | The information about deep operations that the service supports. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------|------------------|--|
| DeepPATCH (v1.7+) | boolean | <i>read-only</i> | An indication of whether the service supports the deep PATCH operation. |
| DeepPOST (v1.7+) | boolean | <i>read-only</i> | An indication of whether the service supports the deep POST operation. |
| MaxLevels (v1.7+) | integer | <i>read-only</i> | The maximum levels of resources allowed in deep operations. |
| } | | | |
| ExcerptQuery (v1.4+) | boolean | <i>read-only</i> | An indication of whether the service supports the excerpt query parameter. |
| ExpandQuery (v1.3+) { | object | | The information about the use of \$expand in the service. |
| ExpandAll (v1.3+) | boolean | <i>read-only</i> | An indication of whether the service supports the asterisk (*) option of the \$expand query parameter. |
| Levels (v1.3+) | boolean | <i>read-only</i> | An indication of whether the service supports the \$levels option of the \$expand query parameter. |
| Links (v1.3+) | boolean | <i>read-only</i> | An indication of whether this service supports the tilde (~) option of the \$expand query parameter. |
| MaxLevels (v1.3+) | integer | <i>read-only</i> | The maximum \$levels option value in the \$expand query parameter. |
| NoLinks (v1.3+) | boolean | <i>read-only</i> | An indication of whether the service supports the period (.) option of the \$expand query parameter. |
| } | | | |
| FilterQuery (v1.3+) | boolean | <i>read-only</i> | An indication of whether the service supports the \$filter query parameter. |
| MultipleHTTPRequests (v1.14+) | boolean | <i>read-only</i> | An indication of whether the service supports multiple outstanding HTTP requests. |
| OnlyMemberQuery (v1.4+) | boolean | <i>read-only</i> | An indication of whether the service supports the only query parameter. |
| SelectQuery (v1.3+) | boolean | <i>read-only</i> | An indication of whether the service supports the \$select query parameter. |
| } | | | |
| RedfishVersion | string | <i>read-only</i> | The version of the Redfish service. |
| RegisteredClients (v1.13+) { | object | | The link to a collection of registered clients. Contains a link to a resource. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------|------------------|---|
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>RegisteredClient</i> . See the <i>RegisteredClient</i> schema for details. |
| } | | | |
| Registries { | object | | The link to a collection of registries. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MessageRegistryFile</i> . See the <i>MessageRegistryFile</i> schema for details. |
| } | | | |
| ResourceBlocks (v1.5+) { | object | | The link to a collection of resource blocks. This collection is intended for implementations that do not contain a composition service but that expose resources to an orchestrator that implements a composition service. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ResourceBlock</i> . See the <i>ResourceBlock</i> schema for details. |
| } | | | |
| ServiceConditions (v1.13+) { | object | | The link to the service conditions. See the <i>ServiceConditions</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>ServiceConditions</i> resource. See the Links section and the <i>ServiceConditions</i> schema for details. |
| } | | | |
| ServiceIdentification (v1.14+) | string | <i>read-only</i> | The vendor or user-provided product and service identifier. |
| SessionService { | object | | The link to the sessions service. See the <i>SessionService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>SessionService</i> resource. See the Links section and the <i>SessionService</i> schema for details. |
| } | | | |
| Storage (v1.9+) { | object | | The link to a collection of storage subsystems. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Storage</i> . See the <i>Storage</i> schema for details. |
| } | | | |
| StorageServices (v1.1+) {} | object | | The link to a collection of storage services. |

| Property | Type | Attributes | Notes |
|------------------------------------|---------------|-------------------------|--|
| StorageSystems (v1.1+) {} | object | | The link to a collection of storage systems. |
| Systems { | object | | The link to a collection of systems. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>ComputerSystem</i> . See the <i>ComputerSystem</i> schema for details. |
| } | | | |
| Tasks { | object | | The link to the task service. See the <i>TaskService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>TaskService</i> resource. See the Links section and the <i>TaskService</i> schema for details. |
| } | | | |
| TelemetryService (v1.4+) { | object | | The link to the telemetry service. See the <i>TelemetryService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>TelemetryService</i> resource. See the Links section and the <i>TelemetryService</i> schema for details. |
| } | | | |
| ThermalEquipment (v1.16+) { | object | | The link to a set of cooling equipment. See the <i>ThermalEquipment</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>ThermalEquipment</i> resource. See the Links section and the <i>ThermalEquipment</i> schema for details. |
| } | | | |
| UpdateService (v1.1+) { | object | | The link to the update service. See the <i>UpdateService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>UpdateService</i> resource. See the Links section and the <i>UpdateService</i> schema for details. |
| } | | | |
| UUID | string (uuid) | <i>read-only (null)</i> | Unique identifier for a service instance. When SSDP is used, this value contains the same UUID returned in an HTTP 200 OK response from an SSDP M-SEARCH request during discovery. |
| Vendor (v1.5+) | string | <i>read-only (null)</i> | The vendor or manufacturer associated with this Redfish service. |

6.121.4 Property details

6.121.4.1 idRef

| | | | |
|------------------|-----------------|-----------------------|---------------------------------------|
| @odata.id | string (URI) | <i>read- only</i> | The unique identifier for a resource. |
|------------------|-----------------|-----------------------|---------------------------------------|

6.121.5 Example response

```
{
  "@odata.type": "#ServiceRoot.v1_16_0.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "RedfishVersion": "1.15.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Product": "UR99 1U Server",
  "ProtocolFeaturesSupported": {
    "ExpandQuery": {
      "ExpandAll": true,
      "Levels": true,
      "MaxLevels": 6,
      "Links": true,
      "NoLinks": true
    },
    "SelectQuery": false,
    "FilterQuery": false,
    "OnlyMemberQuery": true,
    "ExcerptQuery": true,
    "MultipleHTTPRequests": true
  },
  "ServiceConditions": {
    "@odata.id": "/redfish/v1/ServiceConditions"
  },
  "Systems": {
    "@odata.id": "/redfish/v1/Systems"
  },
  "Chassis": {
    "@odata.id": "/redfish/v1/Chassis"
  },
  "Managers": {
    "@odata.id": "/redfish/v1/Managers"
  },
  "UpdateService": {
    "@odata.id": "/redfish/v1/UpdateService"
  },
  "CompositionService": {
```

```

      "@odata.id": "/redfish/v1/CompositionService"
    },
    "Tasks": {
      "@odata.id": "/redfish/v1/TaskService"
    },
    "SessionService": {
      "@odata.id": "/redfish/v1/SessionService"
    },
    "AccountService": {
      "@odata.id": "/redfish/v1/AccountService"
    },
    "EventService": {
      "@odata.id": "/redfish/v1/EventService"
    },
    "Links": {
      "Sessions": {
        "@odata.id": "/redfish/v1/SessionService/Sessions"
      }
    },
    "@odata.id": "/redfish/v1/"
  }
}

```

6.122 Session 1.7.0

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|------|
| Release | 2023.2 | 2022.3 | 2022.2 | 2022.1 | 2020.3 | 2019.1 | 2017.1 | 1.0 |

6.122.1 Description

The Session resource describes a single connection (session) between a client and a Redfish service instance.

6.122.2 URIs

/redfish/v1/SessionService/Sessions/{SessionId}

6.122.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------------------|--|--|
| ClientOriginIPAddress (v1.3+) | string | <i>read-only</i> (<i>null</i>) | The IP address of the client that created the session. |
| Context (v1.5+) | string | <i>read-only</i> (<i>null</i>) | A client-supplied string that is stored with the session. |
| CreatedTime (v1.4+) | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the session was created. |
| Links (v1.7+) { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| OutboundConnection (v1.7+) { | object | (<i>null</i>) | The outbound connection associated with this session. See the <i>OutboundConnection</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a OutboundConnection resource. See the Links section and the <i>OutboundConnection</i> schema for details. |
| } | | | |
| } | | | |
| OemSessionType (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The active OEM-defined session type. |
| Password | string | <i>read-only</i> <i>required</i> <i>on create</i> (<i>null</i>) | The password for this session. The value is <code>null</code> in responses. |
| Roles (v1.7+) [] | array (string, null) | <i>read-only</i> | The Redfish roles that contain the privileges of this session. |
| SessionType (v1.2+) | string (enum) | <i>read-only</i> (<i>null</i>) | The active session type. <i>For the possible property values, see SessionType in Property details.</i> |
| Token (v1.6+) | string | <i>read-only</i> (<i>null</i>) | The multi-factor authentication token for this session. The value is <code>null</code> in responses. |
| UserName | string | <i>read-only</i> <i>required</i> <i>on create</i> (<i>null</i>) | The username for the account for this session. |

6.122.4 Property details

6.122.4.1 SessionType

The active session type.

| string | Description |
|----------------------------|--|
| HostConsole | The host's console, which could be connected through Telnet, SSH, or other protocol. |
| IPMI | Intelligent Platform Management Interface. |
| KVMIP | A Keyboard-Video-Mouse over IP session. |
| ManagerConsole | The manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol. |
| OEM | OEM type. For OEM session types, see the OemSessionType property. |
| OutboundConnection (v1.7+) | A Redfish Specification-defined outbound connection. See the 'Outbound connections' clause of the Redfish Specification. |
| Redfish | A Redfish session. |
| VirtualMedia | Virtual media. |
| WebUI | A non-Redfish web user interface session, such as a graphical interface or another web-based protocol. |

6.122.5 Example response

```
{
  "@odata.type": "#Session.v1_7_0.Session",
  "Id": "1234567890ABCDEF",
  "Name": "User Session",
  "Description": "Manager User Session",
  "UserName": "Administrator",
  "@odata.id": "/redfish/v1/SessionService/Sessions/1234567890ABCDEF"
}
```

6.123 SessionService 1.1.8

| | | |
|---------|------|------|
| Version | v1.1 | v1.0 |
|---------|------|------|

| | | |
|----------------|--------|-----|
| Release | 2016.2 | 1.0 |
|----------------|--------|-----|

6.123.1 Description

The SessionService schema describes the session service and its properties, with links to the actual list of sessions.

6.123.2 URIs

/redfish/v1/SessionService

6.123.3 Properties

| Property | Type | Attributes | Notes |
|-----------------------|-------------------|--------------------------|--|
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this service is enabled. If <code>true</code> , this service is enabled. If <code>false</code> , it is disabled, and new sessions cannot be created, old sessions cannot be deleted, and established sessions can continue operating. |
| Sessions { | object | | The link to a collection of sessions. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Session</i> . See the Session schema for details. |
| } | | | |
| SessionTimeout | integer (seconds) | <i>read-write</i> | The number of seconds of inactivity that a session can have before the session service closes the session due to inactivity. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.123.4 Example response

```
{
  "@odata.type": "#SessionService.v1_1_8.SessionService",
  "Id": "SessionService",
  "Name": "Session Service",
  "Description": "Session Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
}
```

```

    "ServiceEnabled": true,
    "SessionTimeout": 30,
    "Sessions": {
      "@odata.id": "/redfish/v1/SessionService/Sessions"
    },
    "@odata.id": "/redfish/v1/SessionService"
  }

```

6.124 Signature 1.0.2

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2020.1 |

6.124.1 Description

The Signature schema describes a signature or a hash.

6.124.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/SecureBoot/SecureBootDatabases/{DatabaseId}/Signatures/{SignatureId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.124.3 Properties

| Property | Type | Attributes | Notes |
|------------------------|--------|--|-------------------------------|
| SignatureString | string | <i>read-only required on create (null)</i> | The string for the signature. |
| SignatureType | string | <i>read-only required on create (null)</i> | The format of the signature. |

| Property | Type | Attributes | Notes |
|------------------------------|------------------|--|--|
| SignatureTypeRegistry | string (enum) | <i>read-only required on create (null)</i> | The type of the signature. <i>For the possible property values, see SignatureTypeRegistry in Property details.</i> |
| UefiSignatureOwner | string (uuid) | <i>read-only (null)</i> | The UEFI signature owner for this signature. |

6.124.4 Property details

6.124.4.1 SignatureTypeRegistry

The type of the signature.

| string | Description |
|--------|--|
| UEFI | A signature defined in the UEFI Specification. |

6.124.5 Example response

```
{
  "@odata.type": "#Signature.v1_0_2.Signature",
  "Id": "1",
  "Name": "SHA256 Signature",
  "SignatureString": "80B4D96931BF0D02FD91A61E19D14F1DA452E66DB2408CA8604D411F92659F0A",
  "SignatureTypeRegistry": "UEFI",
  "SignatureType": "EFI_CERT_SHA256_GUID",
  "UefiSignatureOwner": "28d5e212-165b-4ca0-909b-c86b9cee0112",
  "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/db/Signatures/1"
}
```

6.125 SimpleStorage 1.3.1

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|------|
| Release | 2020.3 | 2017.1 | 2016.1 | 1.0 |

6.125.1 Description

The SimpleStorage schema represents the properties of a storage controller and its directly-attached devices.

6.125.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/SimpleStorage/{SimpleStorageId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.125.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------|--------------------|-------------------------------------|--|
| Devices [{ | array | | The storage devices. |
| CapacityBytes (v1.1+) | integer (bytes) | <i>read-only</i> (<i>null</i>) | The size, in bytes, of the storage device. |
| Manufacturer | string | <i>read-only</i> (<i>null</i>) | The name of the manufacturer of this device. |
| Model | string | <i>read-only</i> (<i>null</i>) | The product model number of this device. |
| Name | string | <i>read-only</i> <i>required</i> | The name of the Resource or array member. |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| Status { } | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| }] | | | |
| Links (v1.2+) { | object | | The links to other Resources that are related to this Resource. |
| Chassis (v1.2+) { | object | | The link to the chassis that contains this simple storage. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |

| Property | Type | Attributes | Notes |
|-----------------------------|--------|-------------------------------------|---|
| Storage (v1.3+) { | object | | The link to the storage instance that corresponds to this simple storage. See the <i>Storage</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| } | | | |
| } | | | |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| UefiDevicePath | string | <i>read-only</i> (<i>null</i>) | The UEFI device path to access this storage controller. |

6.125.4 Example response

```
{
  "@odata.type": "#SimpleStorage.v1_3_1.SimpleStorage",
  "Id": "1",
  "Name": "Simple Storage Controller",
  "Description": "System SATA",
  "UefiDevicePath": "Acpi(PNP0A03,0)/Pci(1F|1)/Ata(Primary,Master)/HD(Part3, Sig00110011)",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "Warning"
  },
  "Devices": [
    {
      "Name": "SATA Bay 1",
      "Manufacturer": "Contoso",
      "Model": "3000GT8",
      "CapacityBytes": 800000000000,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      }
    },
    {
      "Name": "SATA Bay 2",
      "Manufacturer": "Contoso",
      "Model": "3000GT7",
      "CapacityBytes": 400000000000,
      "Status": {
        "State": "Enabled",

```

```

        "Health": "Warning"
    },
    {
        "Name": "SATA Bay 3",
        "Status": {
            "State": "Absent"
        }
    },
    {
        "Name": "SATA Bay 4",
        "Status": {
            "State": "Absent"
        }
    }
],
"@odata.id": "/redfish/v1/Systems/437XR1138R2/SimpleStorage/1"
}

```

6.126 SoftwareInventory 1.10.0

| Version | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.2 | 2022.3 | 2022.2 | 2022.1 | 2021.4 | 2021.2 | 2020.4 | 2020.1 | 2018.1 | 2016.3 | 2016.2 |

6.126.1 Description

The SoftwareInventory schema contains an inventory of software components. This can include software components such as BIOS, BMC firmware, firmware for other devices, system drivers, or provider software.

6.126.2 URIs

/redfish/v1/UpdateService/FirmwareInventory/{SoftwareInventoryId}
 /redfish/v1/UpdateService/SoftwareInventory/{SoftwareInventoryId}

6.126.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|--------|------------|---|
| AdditionalVersions (v1.7+) { | object | | The additional versions of this software. |

| Property | Type | Attributes | Notes |
|---|------------------|----------------------------|--|
| Bootloader (v1.7+) | string | <i>read-only</i> (null) | The bootloader version contained in this software, such as U-Boot or UEFI. |
| Kernel (v1.7+) | string | <i>read-only</i> (null) | The kernel version contained in this software. |
| Microcode (v1.7+) | string | <i>read-only</i> (null) | The microcode version contained in this software, such as processor microcode. |
| Oem (v1.7+) {} | object | | See the Oem object definition in the Common properties section. |
| OSDistribution (v1.8+) | string | <i>read-only</i> (null) | The operating system name of this software. |
| } | | | |
| AssociatedPhysicalContext (v1.10+) | string (enum) | <i>read-only</i> | The area or device to which the software applies. Used to distinguish when different parts of a device have different software components. <i>For the possible property values, see AssociatedPhysicalContext in Property details.</i> |
| LowestSupportedVersion (v1.1+) | string | <i>read-only</i> (null) | The lowest supported version of this software. |
| Manufacturer (v1.2+) | string | <i>read-only</i> (null) | The manufacturer or producer of this software. |
| Measurement (v1.4+, deprecated v1.6 { | object | | A DSP0274-defined measurement block. <i>Deprecated in v1.6 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| Measurement (v1.4+) | string | <i>read-only</i> (null) | The hexadecimal string representation of the numeric value of the DSP0274-defined Measurement field of the measurement block. |
| MeasurementIndex (v1.5+) | integer | <i>read-only</i> (null) | The DSP0274-defined Index field of the measurement block. |
| MeasurementSize (v1.4+) | integer | <i>read-only</i> (null) | The DSP0274-defined MeasurementSize field of the measurement block. |
| MeasurementSpecification (v1.4+) | integer | <i>read-only</i> (null) | The DSP0274-defined MeasurementSpecification field of the measurement block. |
| } | | | |
| RelatedItem (v1.1+) [{ | array | | The IDs of the Resources associated with this software inventory item. |

| Property | Type | Attributes | Notes |
|------------------------------------|----------------------|--------------------------|---|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| ReleaseDate (v1.2+) | string (date-time) | <i>read-only (null)</i> | The release date of this software. |
| ReleaseType (v1.10+) | string (enum) | <i>read-only (null)</i> | The type of release. <i>For the possible property values, see ReleaseType in Property details.</i> |
| SoftwareId (v1.1+) | string | <i>read-only</i> | The implementation-specific label that identifies this software. |
| Status {} | object | | The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status. |
| UefiDevicePaths (v1.1+) [] | array (string, null) | <i>read-only</i> | The list of UEFI device paths of the components associated with this software inventory item. |
| Updateable | boolean | <i>read-only (null)</i> | An indication of whether the Update Service can update this software. |
| Version | string | <i>read-only (null)</i> | The version of this software. |
| VersionScheme (v1.9+) | string (enum) | <i>read-only (null)</i> | The format of the version. <i>For the possible property values, see VersionScheme in Property details.</i> |
| WriteProtected (v1.3+) | boolean | <i>read-write (null)</i> | Indicates if the software is write-protected. |

6.126.4 Property details

6.126.4.1 AssociatedPhysicalContext

The area or device to which the software applies. Used to distinguish when different parts of a device have different software components.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |

| string | Description |
|---------------------|---|
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |

| string | Description |
|------------------|-----------------------------------|
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.126.4.2 ReleaseType

The type of release.

| string | Description |
|------------|---|
| Other | The Redfish service does not have enough data to make a determination about this release. |
| Production | This release is ready for use in production environments. |
| Prototype | This release is intended for development or internal use. |

6.126.4.3 VersionScheme

The format of the version.

| string | Description |
|--------------------|--|
| DotIntegerNotation | Version formatted as dot-separated integers. |
| OEM | Version follows OEM-defined format. |
| SemVer | Version follows Semantic Versioning 2.0 rules. |

6.126.5 Example response

```
{
  "@odata.type": "#SoftwareInventory.v1_10_0.SoftwareInventory",
  "Id": "BMC",
  "Name": "Contoso BMC Firmware",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Updateable": true,
  "Manufacturer": "Contoso",
  "ReleaseDate": "2017-08-22T12:00:00",
  "Version": "1.45.455b66-rev4",
  "SoftwareId": "1624A9DF-5E13-47FC-874A-DF3AFF143089",
  "LowestSupportedVersion": "1.30.367a12-rev1",
  "UefiDevicePaths": [
    "BMC(0x1,0x0ABCDEF)"
  ],
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Managers/1"
    }
  ],
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC"
}
```

6.127 Storage 1.15.0

| Version | v1.15 | v1.14 | v1.13 | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | ... |
|---------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-----|
|---------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-----|

| Release | 2023.1 | 2022.3 | 2022.1 | 2021.4 | 2021.2 | 2020.4 | 2020.3 | 2019.3 | 2019.1 | 2018.3 | 2018.2 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|

6.127.1 Description

The Storage schema defines a storage subsystem and its respective properties. A storage subsystem represents a set of physical or virtual storage controllers and the resources, such as volumes, that can be accessed from that subsystem.

6.127.2 URIs

/redfish/v1/Storage/{StorageId}

/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.127.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|--------------------------------------|---|
| AutoVolumeCreate (v1.15+) | string (enum) | <i>read-write</i> (<i>null</i>) | Indicates if this storage subsystem automatically create new volumes for unassigned drives. <i>For the possible property values, see AutoVolumeCreate in Property details.</i> |
| Connections (v1.15+) { | object | | The collection of links to the connections that this storage subsystem contains. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Connection</i> . See the Connection schema for details. |
| } | | | |
| ConsistencyGroups (v1.8+) {} | object | | The consistency groups, each of which contains a set of volumes that are treated by an application or set of applications as a single resource, that are managed by this storage subsystem. |
| Controllers (v1.9+) { | object | | The set of controllers instantiated by this storage subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>StorageController</i> . See the StorageController schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|-------------------|--------------------------------------|--|
| Drives [{ | array | | The set of drives attached to the storage controllers that this resource represents. |
| @odata.id | string | <i>read-only</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| EncryptionMode (v1.14+) | string (enum) | <i>read-write</i> (<i>null</i>) | The encryption mode of this storage subsystem. <i>For the possible property values, see EncryptionMode in Property details.</i> |
| EndpointGroups (v1.8+) { | object | | All of the endpoint groups, each of which contains a set of endpoints that are used for a common purpose such as an ACL or logical identification, that belong to this storage subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>EndpointGroup</i> . See the <i>EndpointGroup</i> schema for details. |
| } | | | |
| FileSystems (v1.8+) { } | object | | All file systems that are allocated by this storage subsystem. |
| HotspareActivationPolicy (v1.14+) | string (enum) | <i>read-write</i> (<i>null</i>) | The policy under which hot spare drives in this storage domain will activate. <i>For the possible property values, see HotspareActivationPolicy in Property details.</i> |
| Identifiers (v1.9+) [{ }] | array (object) | | The durable names for the storage subsystem. For property details, see <i>Identifier</i> . |
| Links { | object | | The links to other resources that are related to this resource. |
| Enclosures [{ | array | | An array of links to the chassis to which this storage subsystem is attached. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| }] | | | |
| HostingStorageSystems (v1.11+) | array | | The storage systems that host this storage subsystem. |
| @odata.id | string | <i>read-only</i> | Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details. |
| }] | | | |

| Property | Type | Attributes | Notes |
|--|----------------|---------------------------|--|
| NVMeoFDiscoverySubsystems (v1.15+) [{ | array | | An array of links to the discovery subsystems that discovered this subsystem in an NVMe-oF environment. |
| @odata.id | string | <i>read-only</i> | Link to another Storage resource. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| SimpleStorage (v1.9+) { | object | | The link to the simple storage instance that corresponds to this storage. See the <i>SimpleStorage</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SimpleStorage resource. See the Links section and the <i>SimpleStorage</i> schema for details. |
| } | | | |
| StorageServices (v1.9+) [{ | array | | An array of links to the storage services that connect to this storage subsystem. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| LocalEncryptionKeyIdentifier (v1.14+) | string | <i>read-only (null)</i> | The local encryption key identifier used by the storage subsystem. |
| Redundancy [{ }] | array (object) | | Redundancy information for the storage subsystem. For property details, see Redundancy. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| StorageControllers (deprecated v1.13) [{ | array | | The set of storage controllers that this resource represents. <i>Deprecated in v1.13 and later. This property has been deprecated in favor of Controllers to allow for storage controllers to be represented as their own resources.</i> |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions (v1.2+) {} | object | | The available actions for this resource. |

| Property | Type | Attributes | Notes |
|--|---------------------|----------------------------------|--|
| Assembly (v1.4+) { | object | | The link to the assembly associated with this storage controller. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| AssetTag | string | <i>read-write (null)</i> | The user-assigned asset tag for this storage controller. |
| CacheSummary (v1.5+) { | object | | The cache memory of the storage controller in general detail. |
| PersistentCacheSizeMiB (v1.5+) | integer (mebibytes) | <i>read-only (null)</i> | The portion of the cache memory that is persistent, measured in MiB. |
| Status (v1.5+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| TotalCacheSizeMiB (v1.5+) | integer (mebibytes) | <i>read-only required (null)</i> | The total configured cache memory, measured in MiB. |
| } | | | |
| Certificates (v1.10+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the <i>Certificate</i> schema for details. |
| } | | | |
| ControllerRates (v1.7+) { | object | | This property describes the various controller rates used for processes such as volume rebuild or consistency checks. |
| ConsistencyCheckRatePercent (v1.7+) | integer | <i>read-write (null)</i> | The percentage of controller resources used for performing a data consistency check on volumes. |
| RebuildRatePercent (v1.7+) | integer | <i>read-write (null)</i> | The percentage of controller resources used for rebuilding/repairing volumes. |
| TransformationRatePercent (v1.7+) | integer | <i>read-write (null)</i> | The percentage of controller resources used for transforming volumes from one configuration to another. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|----------------|-------------------------|--|
| FirmwareVersion | string | <i>read-only (null)</i> | The firmware version of this storage controller. |
| Identifiers [{ }] | array (object) | | The durable names for the storage controller. For property details, see Identifier. |
| Links (v1.1+) { | object | | The links to other resources that are related to this resource. |
| Endpoints (v1.1+) [{ | array | | An array of links to the endpoints that connect to this controller. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions (v1.7+) [{ | array | | An array of links to the PCIe functions that the storage controller produces. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| StorageServices (v1.4+, deprecated v1.9) [{ | array | | An array of links to the storage services that connect to this controller. <i>Deprecated in v1.9 and later. This property has been deprecated in favor of StorageServices within the Links property at the root level.</i> |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| Location (v1.4+) { } | object | | The location of the storage controller. For property details, see Location. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this storage controller. |
| Measurements (v1.10+, deprecated v1.12) [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.12 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |

| Property | Type | Attributes | Notes |
|--------------------------------|------------------|-------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| MemberId | string | <i>read-only required</i> | The unique identifier for the member within an array. |
| Model | string | <i>read-only (null)</i> | The model number for the storage controller. |
| Name (v1.3+) | string | <i>read-only (null)</i> | The name of the storage controller. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this storage controller. |
| PCIeInterface (v1.5+) { | object | | The PCIe interface details for this controller. |
| LanesInUse (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes supported by this device. |
| MaxPCIeType (v1.3+) | string (enum) | <i>read-only (null)</i> | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCIeType in Property details.</i> |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCIeType (v1.3+) | string (enum) | <i>read-only (null)</i> | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCIeType in Property details.</i> |
| } | | | |
| Ports (v1.7+) { | object | | The link to the collection of ports that exist on the storage controller. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this storage controller. |

| Property | Type | Attributes | Notes |
|---|-----------------------|-------------------------|---|
| SKU | string | <i>read-only (null)</i> | The SKU for this storage controller. |
| SpeedGbps | number (Gbit/s) | <i>read-only (null)</i> | The maximum speed of the storage controller's device interface. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedControllerProtocols [] | array (string (enum)) | <i>read-only</i> | The supported set of protocols for communicating to this storage controller. <i>For the possible property values, see SupportedControllerProtocols in Property details.</i> |
| SupportedDeviceProtocols [] | array (string (enum)) | <i>read-only</i> | The protocols that the storage controller can use to communicate with attached devices. <i>For the possible property values, see SupportedDeviceProtocols in Property details.</i> |
| SupportedRAIDTypes (v1.6+) [] | array (string (enum)) | <i>read-only (null)</i> | The set of RAID types supported by the storage controller. <i>For the possible property values, see SupportedRAIDTypes in Property details.</i> |
| }] | | | |
| StorageGroups (v1.8+, deprecated v1.15 {}) | object | | All of the storage groups, each of which contains a set of volumes and endpoints that are managed as a group for mapping and masking, that belong to this storage subsystem. <i>Deprecated in v1.15 and later. This property was deprecated in favor of the Connections property.</i> |
| StoragePools (v1.8+) {} | object | | The set of all storage pools that are allocated by this storage subsystem. A storage pool is the set of storage capacity that can be used to produce volumes or other storage pools. |
| Volumes {} | object | | The set of volumes that the storage controllers produce. |

6.127.4 Actions

6.127.4.1 ResetToDefaults (v1.11+)

Description

The reset action resets the storage device to factory defaults. This can cause the loss of data.

Action URI

{Base URI of target resource}/Actions/Storage.ResetToDefaults

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>required</i> | The type of reset to defaults. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ResetAll"
}
```

6.127.4.2 SetEncryptionKey**Description**

This action sets the local encryption key for the storage subsystem.

Action URI

{Base URI of target resource}/Actions/Storage.SetEncryptionKey

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--|--------|-----------------|--|
| CurrentEncryptionKey (v1.14+) | string | <i>optional</i> | The current local encryption key on the storage subsystem. |
| EncryptionKey | string | <i>required</i> | The local encryption key to set on the storage subsystem. |
| EncryptionKeyIdentifier (v1.14+) | string | <i>optional</i> | The local encryption key identifier used by the storage subsystem. |

Request Example


```
{
  "EncryptionKey": "566b523d3f955a7fba38a28ec708ca10"
}
```

6.127.5 Property details

6.127.5.1 AutoVolumeCreate

Indicates if this storage subsystem automatically create new volumes for unassigned drives.

| string | Description |
|----------|--|
| Disabled | Do not automatically create volumes. |
| NonRAID | Automatically create non-RAID volumes. |
| RAID0 | Automatically create RAID0 volumes. |
| RAID1 | Automatically create RAID1 volumes. |

6.127.5.2 EncryptionMode

The encryption mode of this storage subsystem.

| string | Description |
|----------------|--|
| Disabled | Encryption is disabled on the storage subsystem. |
| UseExternalKey | The storage subsystem uses one or more external keys for encryption. |
| UseLocalKey | The storage subsystem uses a local key for encryption. |

6.127.5.3 HotspareActivationPolicy

The policy under which hot spare drives in this storage domain will activate.

| string | Description |
|--------|--|
| OEM | The hot spare drive will take over for the original drive in an algorithm custom to the OEM. |

| string | Description |
|-------------------------|---|
| OnDriveFailure | The hot spare drive will take over for the original drive when the original drive has been marked as failed by the storage domain. |
| OnDrivePredictedFailure | The hot spare drive will take over for the original drive when the original drive has been predicted to fail in the future by the storage domain. |

6.127.5.4 idRef

| | | | |
|-----------|-----------------|------------------|---------------------------------------|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
|-----------|-----------------|------------------|---------------------------------------|

6.127.5.5 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.127.5.6 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.127.5.7 ResetType

The type of reset to defaults.

| string | Description |
|-----------------|--|
| PreserveVolumes | Reset all settings to factory defaults but preserve the configured volumes on the controllers. |
| ResetAll | Reset all settings to factory defaults and remove all volumes. |

6.127.5.8 SupportedControllerProtocols

The supported set of protocols for communicating to this storage controller.

| string | Description |
|-------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |

| string | Description |
|-----------------|---|
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.127.5.9 SupportedDeviceProtocols

The protocols that the storage controller can use to communicate with attached devices.

| string | Description |
|-----------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |

| string | Description |
|--------|---|
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.127.5.10 SupportedRAIDTypes

The set of RAID types supported by the storage controller.

| string | Description |
|--------|--|
| None | A placement policy with no redundancy at the device level. |
| RAID0 | A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy. |
| RAID00 | A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets. |
| RAID01 | A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0). |
| RAID1 | A placement policy where each logical block of data is stored on more than one independent storage device. |

| string | Description |
|--------------|--|
| RAID10 | A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1). |
| RAID10E | A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets. |
| RAID10Triple | A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple). |
| RAID1E | A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices. |
| RAID1Triple | A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices. |
| RAID3 | A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |
| RAID4 | A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |
| RAID5 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID50 | A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices. |
| RAID6 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID60 | A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices. |
| RAID6TP | A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices. |

6.127.6 Example response

```
{
  "@odata.type": "#Storage.v1_15_0.Storage",
  "Id": "1",
  "Name": "Local Storage Controller",
```

```
"Description": "Integrated RAID Controller",
"Status": {
  "State": "Enabled",
  "Health": "OK",
  "HealthRollup": "OK"
},
"StorageControllers": [
  {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1#/StorageControllers/0",
    "MemberId": "0",
    "Name": "Contoso Integrated RAID",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "Identifiers": [
      {
        "DurableNameFormat": "NAA",
        "DurableName": "345C59DBD970859C"
      }
    ],
    "Manufacturer": "Contoso",
    "Model": "12Gbs Integrated RAID",
    "SerialNumber": "2M220100SL",
    "PartNumber": "CT18754",
    "SpeedGbps": 12,
    "FirmwareVersion": "1.0.0.7",
    "SupportedControllerProtocols": [
      "PCIe"
    ],
    "SupportedDeviceProtocols": [
      "SAS",
      "SATA"
    ]
  }
],
"Drives": [
  {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/35D38F11ACEF7BD3"
  },
  {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3F5A8C54207B7233"
  },
  {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/32ADF365C6C1B7BD"
  },
  {
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
  }
],
```



```

    "Volumes": {
      "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes"
    },
    "Actions": {
      "#Storage.SetEncryptionKey": {
        "target": "/redfish/v1/Systems/437XR1138R2/Storage/1/Actions/Storage.SetEncryptionKey"
      }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1"
  }

```

6.128 StorageController 1.7.1

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2023.1 | 2022.1 | 2021.4 | 2021.3 | 2021.2 | 2021.1 | 2020.4 | 2020.3 |

6.128.1 Description

The StorageController schema describes a storage controller and its properties. A storage controller represents a physical or virtual storage device that produces volumes.

6.128.2 URIs

/redfish/v1/Storage/{StorageId}/Controllers/{ControllerId}

/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{ControllerId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.128.3 Properties

| Property | Type | Attributes | Notes |
|-------------------|--------|------------------|--|
| Assembly { | object | | The link to the assembly associated with this storage controller. See the <i>Assembly</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |

| Property | Type | Attributes | Notes |
|--|------------------------|--|---|
| } | | | |
| AssetTag | string | <i>read-write</i> (<i>null</i>) | The user-assigned asset tag for this storage controller. |
| CacheSummary { | object | | The cache memory of the storage controller in general detail. |
| PersistentCacheSizeMiB | integer (mebibytes) | <i>read-only</i> (<i>null</i>) | The portion of the cache memory that is persistent, measured in MiB. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TotalCacheSizeMiB | integer (mebibytes) | <i>read-only</i> <i>required</i> (<i>null</i>) | The total configured cache memory, measured in MiB. |
| } | | | |
| Certificates (<i>v1.1+</i>) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ControllerRates { | object | | This property describes the various controller rates used for processes such as volume rebuild or consistency checks. |
| ConsistencyCheckRatePercent | integer (%) | <i>read-write</i> (<i>null</i>) | The percentage of controller resources used for performing a data consistency check on volumes. |
| RebuildRatePercent | integer (%) | <i>read-write</i> (<i>null</i>) | The percentage of controller resources used for rebuilding/repairing volumes. |

| Property | Type | Attributes | Notes |
|-------------------------------------|----------------|--------------------------|---|
| TransformationRatePercent | integer (%) | <i>read-write (null)</i> | The percentage of controller resources used for transforming volumes from one configuration to another. |
| } | | | |
| EnvironmentMetrics (v1.2+) { | object | | The link to the environment metrics for this storage controller. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FirmwareVersion | string | <i>read-only (null)</i> | The firmware version of this storage controller. |
| Identifiers [{ }] | array (object) | | The durable names for the storage controller. For property details, see Identifier. |
| Links { | object | | The links to other resources that are related to this resource. |
| AttachedVolumes [{ | array | | An array of links to volumes that are attached to this controller instance. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Batteries (v1.6+) [{ | array | | The batteries that provide power to this storage controller during a power loss event. |
| @odata.id | string | <i>read-only</i> | Link to a Battery resource. See the Links section and the <i>Battery</i> schema for details. |
| }] | | | |
| Endpoints [{ | array | | An array of links to the endpoints that connect to this controller. |

| Property | Type | Attributes | Notes |
|---|--------|-------------------------|--|
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| NetworkDeviceFunctions (v1.3+) [{ | array | | The network device functions that provide connectivity to this controller. |
| @odata.id | string | <i>read-only</i> | Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details. |
| }] | | | |
| NVMeDiscoveredSubsystems (v1.7+) [{ | array | | The NVMe subsystems discovered by this discovery controller. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleFunctions [{ | array | | An array of links to the PCIe functions that the storage controller produces. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details. |
| }] | | | |
| } | | | |
| Location {} | object | | The location of the storage controller. For property details, see Location. |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this storage controller. |

| Property | Type | Attributes | Notes |
|---|---------------|------------------|---|
| Measurements (v1.1+, deprecated v1.5 [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.5 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | read-only | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| Metrics (v1.7+) { | object | (null) | The link to the metrics associated with this storage controller. See the <i>StorageControllerMetrics</i> schema for details on this property. |
| @odata.id | string | read-only | Link to a StorageControllerMetrics resource. See the Links section and the <i>StorageControllerMetrics</i> schema for details. |
| } | | | |
| Model | string | read-only (null) | The model number for the storage controller. |
| NVMeControllerProperties { | object | | The NVMe related properties for this storage controller. |
| AllocatedCompletionQueues (v1.4+) | integer | read-only (null) | The number of I/O completion queues allocated to this NVMe I/O controller. |
| AllocatedSubmissionQueues (v1.4+) | integer | read-only (null) | The number of I/O submission queues allocated to this NVMe I/O controller. |
| ANACharacteristics [{ | array | | The ANA characteristics and volume information. |
| AccessState | string (enum) | read-only (null) | Reported ANA access state. <i>For the possible property values, see AccessState in Property details.</i> |
| Volume { | object | | The specified volume. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|--|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| }] | | | |
| ControllerType | string (enum) | <i>read-only (null)</i> | The type of NVMe controller. <i>For the possible property values, see ControllerType in Property details.</i> |
| MaxQueueSize | integer | <i>read-only (null)</i> | The maximum individual queue size that an NVMe IO controller supports. |
| NVMeControllerAttributes { | object | <i>(null)</i> | The NVMe controller attributes. |
| ReportsNamespaceGranularity | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports reporting of Namespace Granularity. |
| ReportsUUIDList | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports reporting of a UUID list. |
| Supports128BitHostId | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports a 128-bit Host Identifier. |
| SupportsEnduranceGroups | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports Endurance Groups. |
| SupportsExceedingPowerOfNonOperationalState | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports exceeding Power of Non-Operational State in order to execute controller initiated background operations in a non-operational power state. |
| SupportsNVMSets | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports NVM Sets. |
| SupportsPredictableLatencyMode | boolean | <i>read-only (null)</i> | Indicates whether or not the controller supports Predictable Latency Mode. |

| Property | Type | Attributes | Notes |
|--------------------------------------|---------|-------------------------------------|--|
| SupportsReadRecoveryLevels | boolean | <i>read-only</i> (<i>null</i>) | Indicates whether or not the controller supports Read Recovery Levels. |
| SupportsReservations (v1.2+) | boolean | <i>read-only</i> (<i>null</i>) | Indicates if the controller supports reservations. |
| SupportsSQAssociations | boolean | <i>read-only</i> (<i>null</i>) | Indicates whether or not the controller supports SQ Associations. |
| SupportsTrafficBasedKeepAlive | boolean | <i>read-only</i> (<i>null</i>) | Indicates whether or not the controller supports restarting Keep Alive Timer if traffic is processed from an admin command or IO during a Keep Alive Timeout interval. |
| } | | | |
| NVMeSMARTCriticalWarnings { | object | (<i>null</i>) | The NVMe SMART Critical Warnings for this storage controller. This property contains possible triggers for the predictive drive failure warning for the corresponding drive. |
| MediaInReadOnly | boolean | <i>read-only</i> (<i>null</i>) | Indicates the media has been placed in read only mode. |
| OverallSubsystemDegraded | boolean | <i>read-only</i> (<i>null</i>) | Indicates that the NVM subsystem reliability has been compromised. |
| PMRUnreliable | boolean | <i>read-only</i> (<i>null</i>) | The Persistent Memory Region has become unreliable. |
| PowerBackupFailed | boolean | <i>read-only</i> (<i>null</i>) | Indicates that the volatile memory backup device has failed. |
| SpareCapacityWornOut | boolean | <i>read-only</i> (<i>null</i>) | Indicates that the available spare capacity has fallen below the threshold. |
| } | | | |
| NVMeVersion | string | <i>read-only</i> (<i>null</i>) | The version of the NVMe Base Specification supported. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------|-----------------|-------------------------|---|
| PartNumber | string | <i>read-only (null)</i> | The part number for this storage controller. |
| PCIeInterface { | object | | The PCIe interface details for this controller. |
| LanesInUse (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes in use by this device. |
| MaxLanes (v1.3+) | integer | <i>read-only (null)</i> | The number of PCIe lanes supported by this device. |
| MaxPCleType (v1.3+) | string (enum) | <i>read-only (null)</i> | The highest version of the PCIe specification supported by this device. <i>For the possible property values, see MaxPCleType in Property details.</i> |
| Oem (v1.3+) {} | object | | See the Oem object definition in the Common properties section. |
| PCleType (v1.3+) | string (enum) | <i>read-only (null)</i> | The version of the PCIe specification in use by this device. <i>For the possible property values, see PCleType in Property details.</i> |
| } | | | |
| Ports { | object | | The link to the collection of ports that exist on the storage controller. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this storage controller. |
| SKU | string | <i>read-only (null)</i> | The SKU for this storage controller. |
| SpeedGbps | number (Gbit/s) | <i>read-only (null)</i> | The maximum speed of the storage controller's device interface. |

| Property | Type | Attributes | Notes |
|---|-----------------------|------------------|--|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedControllerProtocols [] | array (string (enum)) | read-only | The supported set of protocols for communicating to this storage controller. <i>For the possible property values, see SupportedControllerProtocols in Property details.</i> |
| SupportedDeviceProtocols [] | array (string (enum)) | read-only | The protocols that the storage controller can use to communicate with attached devices. <i>For the possible property values, see SupportedDeviceProtocols in Property details.</i> |
| SupportedRAIDTypes [] | array (string (enum)) | read-only (null) | The set of RAID types supported by the storage controller. <i>For the possible property values, see SupportedRAIDTypes in Property details.</i> |

6.128.4 Actions

6.128.4.1 AttachNamespaces (v1.7+)

Description

This action attaches referenced namespaces to the storage controller. Attached namespaces are added to the AttachedVolumes property in Links.

Action URI

{Base URI of target resource}/Actions/StorageController.AttachNamespaces

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|-----------------|------------------|---|
| Namespaces [{ | array | <i>required</i> | The namespaces to attach to the storage controller. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

Response Payload

| | | | |
|---------------------------------------|-----------------|------------------|---|
| { | | | |
| AttachedVolumes (v1.7+) [{ | array | <i>required</i> | An array of links to volumes that are attached to this controller instance. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |

Request Example

```
{
  "Namespaces": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/namespace5"
    }
  ]
}
```

Response Example

```
{
  "Volumes": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/namespace1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/namespace2"
    },
  ]
}
```

```

    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/namespace5"
    }
  ]
}

```

6.128.4.2 DetachNamespaces (v1.7+)

Description

This action detaches referenced namespaces from the storage controller. Detached namespaces are removed from the AttachedVolumes property in Links.

Action URI

{Base URI of target resource}/Actions/StorageController.DetachNamespaces

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|--------------|------------------|---|
| Namespaces [{ | array | <i>required</i> | The namespaces to detach from the storage controller. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |

Response Payload

| | | | |
|---------------------------------------|--------------|------------------|---|
| { | | | |
| AttachedVolumes (v1.7+) [{ | array | <i>required</i> | An array of links to volumes that are attached to this controller instance. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |

Request Example

```
{
  "Namespaces": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/Namespaces5"
    }
  ]
}
```

Response Example

```
{
  "Volumes": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/Namespaces1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/NVMe/Volumes/Namespaces2"
    }
  ]
}
```

6.128.4.3 SecurityReceive (v1.7+)**Description**

This action transfers security protocol data from the controller. The data transferred from the controller contains the status and data result of one or more SecuritySend action requests that were previously submitted to the controller.

Action URI

{Base URI of target resource}/Actions/StorageController.SecurityReceive

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------------------|---------|-----------------|---|
| AllocationLength | integer | <i>required</i> | Allocated size for received data. |
| SecurityProtocol | integer | <i>required</i> | The security protocol number. |
| SecurityProtocolSpecific | integer | <i>required</i> | The security protocol-specific parameter. |

Response Payload

| | | | |
|------------------------|--------|-----------|--|
| { | | | |
| Data (v1.7+) | string | read-only | The Base64-encoded security protocol data. |
| } | | | |

Request Example

```
{
  "SecurityProtocol": 2,
  "SecurityProtocolSpecific": 4100,
  "AllocationLength": 48
}
```

Response Example

```
{
  "Data": "EAQAAAAAAAAEAAAAiAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
}
```

6.128.4.4 SecuritySend (v1.7+)

Description

This action transfers security protocol data to the controller. The data transferred to the controller contains security protocol-specific commands to be performed by the controller.

Action URI

{Base URI of target resource}/Actions/StorageController.SecuritySend

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------|---------|------------|-------------------------------|
| Data | string | required | The data to transfer. |
| SecurityProtocol | integer | required | The security protocol number. |

| Parameter Name | Type | Attributes | Notes |
|---------------------------------|---------|-----------------|---|
| SecurityProtocolSpecific | integer | <i>required</i> | The security protocol-specific parameter. |

Request Example

```
{
  "SecurityProtocol": 2,
  "SecurityProtocolSpecific": 4100,
  "Data": "EAQAAAAAAE="
}
```

6.128.5 Property details

6.128.5.1 AccessState

Reported ANA access state.

| string | Description |
|----------------|---|
| Inaccessible | Namespaces in this group are inaccessible. Commands are not able to access user data of namespaces in the ANA Group. |
| NonOptimized | Commands processed by a controller that reports this state for an ANA Group provide non-optimized access characteristics, such as lower performance or non-optimal use of subsystem resources, to any namespace in the ANA Group. |
| Optimized | Commands processed by a controller provide optimized access to any namespace in the ANA group. |
| PersistentLoss | The group is persistently inaccessible. Commands are persistently not able to access user data of namespaces in the ANA Group. |

6.128.5.2 ControllerType

The type of NVMe controller.

| string | Description |
|-----------|--|
| Admin | The NVMe controller is an admin controller. |
| Discovery | The NVMe controller is a discovery controller. |

| string | Description |
|--------|--|
| IO | The NVMe controller is an IO controller. |

6.128.5.3 MaxPCIeType

The highest version of the PCIe specification supported by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.128.5.4 PCIeType

The version of the PCIe specification in use by this device.

| string | Description |
|--------|-------------------|
| Gen1 | A PCIe v1.0 slot. |
| Gen2 | A PCIe v2.0 slot. |
| Gen3 | A PCIe v3.0 slot. |
| Gen4 | A PCIe v4.0 slot. |
| Gen5 | A PCIe v5.0 slot. |

6.128.5.5 SupportedControllerProtocols

The supported set of protocols for communicating to this storage controller.

| string | Description |
|--------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |

| string | Description |
|-----------------|---|
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |

| string | Description |
|--------|---|
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.128.5.6 SupportedDeviceProtocols

The protocols that the storage controller can use to communicate with attached devices.

| string | Description |
|-------------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |

| string | Description |
|-----------------|---|
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |

| string | Description |
|--------|---|
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.128.5.7 SupportedRAIDTypes

The set of RAID types supported by the storage controller.

| string | Description |
|--------------|---|
| None | A placement policy with no redundancy at the device level. |
| RAID0 | A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy. |
| RAID00 | A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets. |
| RAID01 | A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0). |
| RAID1 | A placement policy where each logical block of data is stored on more than one independent storage device. |
| RAID10 | A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1). |
| RAID10E | A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets. |
| RAID10Triple | A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple). |
| RAID1E | A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices. |
| RAID1Triple | A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices. |
| RAID3 | A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |

| string | Description |
|---------|--|
| RAID4 | A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |
| RAID5 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID50 | A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices. |
| RAID6 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID60 | A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices. |
| RAID6TP | A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices. |

6.128.6 Example response

```
{
  "@odata.type": "#StorageController.v1_7_1.StorageController",
  "Id": "1",
  "Name": "NVMe IO Controller",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "SupportedControllerProtocols": [
    "NVMeOverFabrics"
  ],
  "NVMeControllerProperties": {
    "NVMeVersion": "1.4",
    "ControllerType": "IO",
    "NVMeControllerAttributes": {
      "ReportsUUIDList": false,
      "SupportsSQAssociations": false,
      "ReportsNamespaceGranularity": false,
      "SupportsTrafficBasedKeepAlive": false,
      "SupportsPredictableLatencyMode": false,
      "SupportsEnduranceGroups": false,
      "SupportsReadRecoveryLevels": false,
      "SupportsNVMSets": false,
    }
  }
}
```

```

        "SupportsExceedingPowerOfNonOperationalState": false,
        "Supports128BitHostId": false
    },
    "NVMeSMARTCriticalWarnings": {
        "PMRUNreliable": false,
        "PowerBackupFailed": false,
        "MediaInReadOnly": false,
        "OverallSubsystemDegraded": false,
        "SpareCapacityWornOut": false
    }
},
"Links": {
    "Endpoints": [
        {
            "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
        },
        {
            "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Target1"
        }
    ],
    "AttachedVolumes": [
        {
            "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/1"
        },
        {
            "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/3"
        },
        {
            "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/4"
        }
    ]
},
"@odata.id": "/redfish/v1/Storage/NVMeoF/Controllers/1"
}

```

6.129 StorageControllerMetrics 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2023.1 |

6.129.1 Description

The usage and health statistics for a storage controller.

6.129.2 URIs

/redfish/v1/Storage/{StorageId}/Controllers/{ControllerId}/Metrics

/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Controllers/{ControllerId}/Metrics

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.129.3 Properties

| Property | Type | Attributes | Notes |
|---|------------------|----------------------------|--|
| CorrectableECCErrorCount | integer | <i>read-only</i> (null) | The number of the correctable errors for the lifetime of the memory of the storage controller. |
| CorrectableParityErrorCount | integer | <i>read-only</i> (null) | The number of the correctable parity errors for the lifetime of the memory of the storage controller. |
| NVMeSMART { | object | | The NVMe SMART metrics for this storage controller. |
| AvailableSparePercent | number (%) | <i>read-only</i> (null) | The normalized percentage of the remaining spare capacity available. |
| AvailableSpareThresholdPercent | number (%) | <i>read-only</i> (null) | The available spare threshold as a normalized percentage. |
| CompositeTemperatureCelsius | number (Celsius) | <i>read-only</i> (null) | The composite temperature in degrees Celsius for this storage controller. |
| ControllerBusyTimeMinutes | integer | <i>read-only</i> (null) | The total time the controller is busy with I/O commands in minutes. |
| CriticalCompositeTempTimeMinutes | integer | <i>read-only</i> (null) | The amount of time in minutes that the controller is operational and the composite temperature is greater than or equal to the critical composite temperature threshold. |
| CriticalWarnings { | object | | The NVMe SMART critical warnings. See the <i>StorageController</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a NVMeSMARTCriticalWarnings resource. See the Links section and the <i>StorageController</i> schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|---|------------|----------------------------|---|
| DataUnitsRead | integer | <i>read-only</i> (null) | The number of 512 byte data units the host has read from the controller as part of processing a SMART Data Units Read Command in units of one thousand. |
| DataUnitsWritten | integer | <i>read-only</i> (null) | The number of 512 byte data units the host has written to the controller as part of processing a User Data Out Command in units of one thousand. |
| EGCriticalWarningSummary { | object | | The Endurance Group critical warnings summary. |
| NamespacesInReadOnlyMode | boolean | <i>read-only</i> (null) | An indication of whether namespaces in one or more Endurance Groups are in read-only mode not as a result of a change in the write protection state of a namespace. |
| ReliabilityDegraded | boolean | <i>read-only</i> (null) | An indication of whether the reliability of one or more Endurance Groups is degraded due to significant media related errors or any internal error that degrades the NVM subsystem reliability. |
| SpareCapacityUnderThreshold | boolean | <i>read-only</i> (null) | An indication of whether the available spare capacity of one or more Endurance Groups is below the threshold. |
| } | | | |
| HostReadCommands | integer | <i>read-only</i> (null) | The number of SMART Host Read Commands completed by the controller. |
| HostWriteCommands | integer | <i>read-only</i> (null) | The number of User Data Out Commands completed by the controller. |
| MediaAndDataIntegrityErrors | integer | <i>read-only</i> (null) | The number of occurrences where the controller detected an unrecovered data integrity error. |
| NumberOfErrorInformationLogEntries | integer | <i>read-only</i> (null) | The number of error information log entries over the life of the controller. |
| PercentageUsed | number (%) | <i>read-only</i> (null) | The percentage of the NVM subsystem life used. |
| PowerCycles | integer | <i>read-only</i> (null) | The number of power cycles. |
| PowerOnHours | number | <i>read-only</i> (null) | The number of power-on hours. |

| Property | Type | Attributes | Notes |
|---|---|-------------------------------------|---|
| TemperatureSensorsCelsius [] | array (Celsius) (number, null) | <i>read-only</i> | The temperature sensor readings in degrees Celsius for this storage controller. |
| ThermalMgmtTemp1TotalTimeSeconds | integer | <i>read-only</i> (<i>null</i>) | The number of seconds the controller transitioned to lower power states or performed vendor-specific thermal management actions while minimizing the impact on performance in order to attempt to reduce the composite temperature. |
| ThermalMgmtTemp1TransitionCount | integer | <i>read-only</i> (<i>null</i>) | The number of times the controller transitioned to lower power states or performed vendor-specific thermal management actions while minimizing the impact on performance in order to attempt to reduce the composite temperature. |
| ThermalMgmtTemp2TotalTimeSeconds | integer | <i>read-only</i> (<i>null</i>) | The number of seconds the controller transitioned to lower power states or performed vendor-specific thermal management actions regardless of the impact on performance in order to attempt to reduce the composite temperature. |
| ThermalMgmtTemp2TransitionCount | integer | <i>read-only</i> (<i>null</i>) | The number of times the controller transitioned to lower power states or performed vendor-specific thermal management actions regardless of the impact on performance in order to attempt to reduce the composite temperature. |
| UnsafeShutdowns | integer | <i>read-only</i> (<i>null</i>) | The number of unsafe shutdowns. |
| WarningCompositeTempTimeMinutes | integer | <i>read-only</i> (<i>null</i>) | The amount of time in minutes that the controller is operational and the composite temperature is greater than or equal to the warning composite temperature threshold. |
| } | | | |
| StateChangeCount | integer | <i>read-only</i> (<i>null</i>) | The number of state changes for this storage controller. |
| UncorrectableECCErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable errors for the lifetime of the memory of the storage controller. |
| UncorrectableParityErrorCount | integer | <i>read-only</i> (<i>null</i>) | The number of the uncorrectable parity errors for the lifetime of the memory of the storage controller. |

6.129.4 Example response

```
{
  "@odata.type": "#StorageControllerMetrics.v1_0_1.StorageControllerMetrics",
  "Id": "Metrics",
  "Name": "Storage Controller Metrics for NVMe IO Controller",
  "NVMeSMART": {
    "CriticalWarnings": {
      "PMRUnreliable": false,
      "PowerBackupFailed": false,
      "MediaInReadOnly": false,
      "OverallSubsystemDegraded": false,
      "SpareCapacityWornOut": false
    },
    "CompositeTemperatureCelsius": 34,
    "AvailableSparePercent": 50,
    "AvailableSpareThresholdPercent": 30,
    "PercentageUsed": 50,
    "EGCriticalWarningSummary": {
      "NamespacesInReadOnlyMode": false,
      "ReliabilityDegraded": false,
      "SpareCapacityUnderThreshold": false
    },
    "DataUnitsRead": 0,
    "DataUnitsWritten": 0,
    "HostReadCommands": 0,
    "HostWriteCommands": 0,
    "ControllerBusyTimeMinutes": 20,
    "PowerCycles": 49,
    "PowerOnHours": 3,
    "UnsafeShutdowns": 4,
    "MediaAndDataIntegrityErrors": 0,
    "NumberOfErrorInformationLogEntries": 100,
    "WarningCompositeTempTimeMinutes": 0,
    "CriticalCompositeTempTimeMinutes": 0,
    "TemperatureSensorsCelsius": [
      34,
      34,
      34,
      26,
      31,
      35,
      33,
      32
    ],
    "ThermalMgmtTemp1TransitionCount": 10,
    "ThermalMgmtTemp2TransitionCount": 2,
    "ThermalMgmtTemp1TotalTimeSeconds": 20,
    "ThermalMgmtTemp2TotalTimeSeconds": 42
  }
}
```

```

    },
    "@odata.id": "/redfish/v1/Systems/Sys-1/Storage/SimplestNVMeSSD/Controllers/NVMeIOController/Metrics"
  }

```

6.130 Switch 1.9.1

| Version | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2022.3 | 2021.4 | 2021.3 | 2021.1 | 2020.4 | 2020.3 | 2019.4 | 2019.2 | 2017.3 | 2016.2 |

6.130.1 Description

The Switch schema contains properties that describe a fabric switch.

6.130.2 URIs

/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}

6.130.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|--------------------|------------------------------------|--|
| AssetTag | string | <i>read-write</i> <i>(null)</i> | The user-assigned asset tag for this switch. |
| Certificates (v1.5+) { | object | | The link to a collection of certificates for device identity and attestation. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| CurrentBandwidthGbps (v1.4+) | number (Gbit/s) | <i>read-only</i> <i>(null)</i> | The current internal bandwidth of this switch. |
| CXL (v1.9+) { | object | | CXL properties for this switch. |
| MaxVCSsSupported (v1.9+) | integer | <i>read-only</i> | The maximum number of Virtual CXL Switches (VCSs) supported in this switch. |
| TotalNumbervPPBs (v1.9+) | integer | <i>read-only</i> | The total number of virtual PCI-to-PCI bridges (vPPBs) supported in this switch. |

| Property | Type | Attributes | Notes |
|--|------------------|-----------------------------|---|
| VCS (v1.9+) { | object | | Virtual CXL Switch (VCS) properties for this switch. |
| HDMDecoders (v1.9+) | integer | <i>read-only</i> | The number of Host Device Memory (HDM) Decoders supported by this switch. |
| } | | | |
| } | | | |
| DomainID | integer | <i>read-only</i> (null) | The domain ID for this switch. |
| Enabled (v1.6+) | boolean | <i>read-write</i> | An indication of whether this switch is enabled. |
| EnvironmentMetrics (v1.6+) { | object | | The link to the environment metrics for this switch. See the <i>EnvironmentMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details. |
| } | | | |
| FirmwareVersion (v1.2+) | string | <i>read-only</i> (null) | The firmware version of this switch. |
| IndicatorLED (deprecated v1.4) | string (enum) | <i>read-write</i> (null) | The state of the indicator LED, which identifies the switch. <i>For the possible property values, see IndicatorLED in Property details. Deprecated in v1.4 and later. This property has been deprecated in favor of the LocationIndicatorActive property.</i> |
| IsManaged | boolean | <i>read-write</i> (null) | An indication of whether the switch is in a managed or unmanaged state. |
| Links { | object | | The links to other resources that are related to this resource. |
| Chassis { | object | | The link to the chassis that contains this switch. See the <i>Chassis</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details. |
| } | | | |
| Endpoints (v1.3+) [{ | array | | An array of links to the endpoints that connect to this switch. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| ManagedBy [{ | array | | An array of links to the managers that manage this switch. |

| Property | Type | Attributes | Notes |
|---|--------------------|------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleDevice (v1.4+) { | object | <i>(null)</i> | The link to the PCIe device providing this switch. See the <i>PCleDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PCleDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| } | | | |
| } | | | |
| Location (v1.1+) {} | object | | The location of the switch. For property details, see Location. |
| LocationIndicatorActive (v1.4+) | boolean | <i>read-write</i> <i>(null)</i> | An indicator allowing an operator to physically locate this resource. |
| LogServices { | object | | The link to the collection of log services associated with this switch. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>LogService</i> . See the <i>LogService</i> schema for details. |
| } | | | |
| Manufacturer | string | <i>read-only</i> <i>(null)</i> | The manufacturer of this switch. |
| MaxBandwidthGbps (v1.4+) | number (Gbit/s) | <i>read-only</i> <i>(null)</i> | The maximum internal bandwidth of this switch as currently configured. |
| Measurements (v1.5+, deprecated v1.8 [{ | array | | An array of DSP0274-defined measurement blocks. <i>Deprecated in v1.8 and later. This property has been deprecated in favor of the ComponentIntegrity resource.</i> |
| @odata.id | string | <i>read-only</i> | Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| Metrics (v1.7+) { | object | | The link to the metrics associated with this switch. See the <i>SwitchMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a SwitchMetrics resource. See the Links section and the <i>SwitchMetrics</i> schema for details. |

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------|-------------------------|--|
| } | | | |
| Model | string | <i>read-only (null)</i> | The product model number of this switch. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this switch. |
| Ports { | object | | The link to the collection ports for this switch. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| PowerState | string (enum) | <i>read-only (null)</i> | The current power state of the switch. <i>For the possible property values, see PowerState in Property details.</i> |
| Redundancy [{ }] | array (object) | | Redundancy information for the switches. For property details, see Redundancy. |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this switch. |
| SKU | string | <i>read-only (null)</i> | The SKU for this switch. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedProtocols (v1.3+) [] | array (string (enum)) | <i>read-only</i> | The protocols this switch supports. <i>For the possible property values, see SupportedProtocols in Property details.</i> |
| SwitchType | string (enum) | <i>read-only (null)</i> | The protocol being sent over this switch. <i>For the possible property values, see SwitchType in Property details.</i> |
| TotalSwitchWidth | integer | <i>read-only (null)</i> | The total number of lanes, phys, or other physical transport links that this switch contains. |
| UUID (v1.3+) | string (uuid) | <i>read-only (null)</i> | The UUID for this switch. |

6.130.4 Actions

6.130.4.1 Reset

Description

This action resets this switch.

Action URI

{Base URI of target resource}/Actions/Switch.Reset

Action parameters

| Parameter Name | Type | Attributes | Notes |
|------------------|------------------|-----------------|--|
| ResetType | string (enum) | <i>optional</i> | The type of reset. <i>For the possible property values, see ResetType in Property details.</i> |

Request Example

```
{
  "ResetType": "ForceRestart"
}
```

6.130.5 Property details

6.130.5.1 IndicatorLED

The state of the indicator LED, which identifies the switch.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |

6.130.5.2 PowerState

The current power state of the switch.

| string | Description |
|-------------|---|
| Off | The resource is powered off. The components within the resource might continue to have AUX power. |
| On | The resource is powered on. |
| Paused | The resource is paused. |
| PoweringOff | A temporary state between on and off. The components within the resource can take time to process the power off action. |
| PoweringOn | A temporary state between off and on. The components within the resource can take time to process the power on action. |

6.130.5.3 ResetType

The type of reset.

| string | Description |
|------------------|---|
| ForceOff | Turn off the unit immediately (non-graceful shutdown). |
| ForceOn | Turn on the unit immediately. |
| ForceRestart | Shut down immediately and non-gracefully and restart the system. |
| GracefulRestart | Shut down gracefully and restart the system. |
| GracefulShutdown | Shut down gracefully and power off. |
| Nmi | Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system. |
| On | Turn on the unit. |
| Pause | Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors. |
| PowerCycle | Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource. |
| PushPowerButton | Simulate the pressing of the physical power button on this unit. |
| Resume | Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors. |
| Suspend | Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on. |

6.130.5.4 SupportedProtocols

The protocols this switch supports.

| string | Description |
|---------------|---|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |

| string | Description |
|-----------------|---|
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.130.5.5 SwitchType

The protocol being sent over this switch.

| string | Description |
|-------------|--|
| AHCI | Advanced Host Controller Interface (AHCI). |
| CXL | Compute Express Link. |
| DisplayPort | DisplayPort. |
| DVI | DVI. |
| Ethernet | Ethernet. |

| string | Description |
|-----------------|--|
| FC | Fibre Channel. |
| FCoE | Fibre Channel over Ethernet (FCoE). |
| FCP | Fibre Channel Protocol for SCSI. |
| FICON | Fibre CONnection (FICON). |
| FTP | File Transfer Protocol (FTP). |
| GenZ | GenZ. |
| HDMI | HDMI. |
| HTTP | Hypertext Transport Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| I2C | Inter-Integrated Circuit Bus. |
| InfiniBand | InfiniBand. |
| iSCSI | Internet SCSI. |
| iWARP | Internet Wide Area RDMA Protocol (iWARP). |
| MultiProtocol | Multiple Protocols. |
| NFSv3 | Network File System (NFS) version 3. |
| NFSv4 | Network File System (NFS) version 4. |
| NVLink | NVLink. |
| NVMe | Non-Volatile Memory Express (NVMe). |
| NVMeOverFabrics | NVMe over Fabrics. |
| OEM | OEM-specific. |
| PCIe | PCI Express. |
| QPI | Intel QuickPath Interconnect (QPI). |
| RoCE | RDMA over Converged Ethernet Protocol. |
| RoCEv2 | RDMA over Converged Ethernet Protocol Version 2. |
| SAS | Serial Attached SCSI. |
| SATA | Serial AT Attachment. |

| string | Description |
|--------|---|
| SFTP | SSH File Transfer Protocol (SFTP). |
| SMB | Server Message Block (SMB). Also known as the Common Internet File System (CIFS). |
| TCP | Transmission Control Protocol (TCP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |
| UDP | User Datagram Protocol (UDP). |
| UHCI | Universal Host Controller Interface (UHCI). |
| UPI | Intel UltraPath Interconnect (UPI). |
| USB | Universal Serial Bus (USB). |
| VGA | VGA. |

6.130.6 Example response

```
{
  "@odata.type": "#Switch.v1_9_1.Switch",
  "Id": "Switch1",
  "Name": "SAS Switch",
  "SwitchType": "SAS",
  "Manufacturer": "Contoso",
  "Model": "SAS1000",
  "SKU": "67B",
  "SerialNumber": "2M220100SL",
  "PartNumber": "76-88883",
  "Ports": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports"
  },
  "Redundancy": [
    {
      "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1#/Redundancy/0",
      "MemberId": "Redundancy",
      "Mode": "Sharing",
      "MaxNumSupported": 2,
      "MinNumNeeded": 1,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      }
    },
    "RedundancySet": [
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1"
      }
    ]
  ]
}
```

```

        },
        {
            "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch2"
        }
    ]
},
"Links": {
    "Chassis": {
        "@odata.id": "/redfish/v1/Chassis/Switch1"
    },
    "ManagedBy": [
        {
            "@odata.id": "/redfish/v1/Managers/Switch1"
        },
        {
            "@odata.id": "/redfish/v1/Managers/Switch2"
        }
    ]
},
"Actions": {
    "#Switch.Reset": {
        "target": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Actions/Switch.Reset",
        "ResetType@Redfish.AllowableValues": [
            "ForceRestart",
            "GracefulRestart"
        ]
    }
}
},
"@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1"
}

```

6.131 SwitchMetrics 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.3 |

6.131.1 Description

The SwitchMetrics schema contains usage and health statistics for a switch device.

6.131.2 URIs

/redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/SwitchMetrics

6.131.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------------|---------|-----------------------------------|--|
| InternalMemoryMetrics { | object | | The memory metrics for a switch. |
| CurrentPeriod { | object | | The memory metrics since the last reset for this switch. |
| CorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the correctable errors of memory since reset. |
| UncorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the uncorrectable errors of memory since reset. |
| } | | | |
| LifeTime { | object | | The memory metrics for the lifetime of this switch. |
| CorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the correctable errors for the lifetime of the memory. |
| UncorrectableECCErrorCount | integer | <i>read-only</i> <i>(null)</i> | The number of the uncorrectable errors for the lifetime of the memory. |
| } | | | |
| } | | | |
| PCIErrors { | object | | The PCIe errors associated with this switch. |
| CorrectableErrorCount (v1.8+) | integer | <i>read-only</i> <i>(null)</i> | The total number of the PCIe correctable errors for this device. |
| FatalErrorCount (v1.8+) | integer | <i>read-only</i> <i>(null)</i> | The total number of the PCIe fatal errors for this device. |
| L0ToRecoveryCount (v1.8+) | integer | <i>read-only</i> <i>(null)</i> | The total number of times the PCIe link states transitioned from L0 to the recovery state for this device. |
| NAKReceivedCount (v1.8+) | integer | <i>read-only</i> <i>(null)</i> | The total number of NAKs issued on the PCIe link by the receiver. |
| NAKSentCount (v1.8+) | integer | <i>read-only</i> <i>(null)</i> | The total number of NAKs issued on the PCIe link by this device. |

| Property | Type | Attributes | Notes |
|------------------------------------|---------|---------------------|--|
| NonFatalErrorCount (v1.8+) | integer | read-only (null) | The total number of the PCIe non-fatal errors for this device. |
| ReplayCount (v1.8+) | integer | read-only (null) | The total number of the PCIe replays issued by this device. |
| ReplayRolloverCount (v1.8+) | integer | read-only (null) | The total number of the PCIe replay rollovers issued by this device. |
| } | | | |

6.131.4 Actions

6.131.4.1 ClearCurrentPeriod

Description

This action sets the CurrentPeriod property's values to 0.

Action URI

{Base URI of target resource}/Actions/SwitchMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.131.5 Example response

```
{
  "@odata.type": "#SwitchMetrics.v1_0_0.SwitchMetrics",
  "Id": "SwitchMetrics",
  "Name": "PCIe Switch Metrics",
  "PCIeErrors": {
    "CorrectableErrorCount": 0,
    "NonFatalErrorCount": 0,
    "FatalErrorCount": 0,
    "L0ToRecoveryCount": 0,
    "ReplayCount": 0,
    "ReplayRolloverCount": 0,
    "NAKSentCount": 0,
    "NAKReceivedCount": 0
  },
}
```

```

    "InternalMemoryMetrics": {
      "CurrentPeriod": {
        "CorrectableECCErrorCount": 0,
        "UncorrectableECCErrorCount": 0
      },
      "LifeTime": {
        "CorrectableECCErrorCount": 0,
        "UncorrectableECCErrorCount": 0
      }
    },
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/SwitchMetrics"
  }

```

6.132 Task 1.7.2

| Version | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|------|
| Release | 2022.3 | 2022.1 | 2020.3 | 2018.3 | 2018.2 | 2018.1 | 2017.1 | 1.0 |

6.132.1 Description

The Task schema contains information about a task that the Redfish task service schedules or executes. Tasks represent operations that take more time than a client typically wants to wait.

6.132.2 URIs

/redfish/v1/TaskService/Tasks/{TaskId}
 /redfish/v1/TaskService/Tasks/{TaskId}/SubTasks/{TaskId2}

6.132.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------|----------------------------|--|
| EndTime | string (date-time) | <i>read-only</i> | The date and time when the task was completed. This property will only appear when the task is complete. |
| EstimatedDuration (v1.6+) | string (duration) | <i>read-only</i> (null) | The estimated total time required to complete the task. |

| Property | Type | Attributes | Notes |
|-------------------------------------|--------------------|-------------------------|--|
| HidePayload (v1.3+) | boolean | <i>read-only</i> | An indication of whether the contents of the payload are hidden from view after the task has been created. If <code>true</code> , responses do not return the payload. If <code>false</code> , responses return the payload. If this property is not present when the task is created, the default is <code>false</code> . |
| Links (v1.7+) { | object | | Contains references to other resources that are related to this resource. |
| CreatedResources (v1.7+) [{ | array | | An array of URIs referencing the resources created as the result of the operation that produced this task. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| Messages [{ }] | array (object) | | An array of messages associated with the task. For property details, see Message. |
| Payload (v1.3+) { | object | | The HTTP and JSON request payload details for this task, unless they are hidden from view by the service. |
| HttpHeaders (v1.3+) [] | array (string) | <i>read-only</i> | An array of HTTP headers that this task includes. |
| HttpOperation (v1.3+) | string | <i>read-only</i> | The HTTP operation to perform to execute this task. |
| JsonBody (v1.3+) | string | <i>read-only</i> | The JSON payload to use in the execution of this task. |
| TargetUri (v1.3+) | string (URI) | <i>read-only</i> | The URI of the target for this task. |
| } | | | |
| PercentComplete (v1.4+) | integer (%) | <i>read-only</i> (null) | The completion percentage of this task. |
| StartTime | string (date-time) | <i>read-only</i> | The date and time when the task was started. |
| SubTasks (v1.5+) { | object | | The link to a collection of sub-tasks for this task. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Task</i> . See the Task schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|----------------------------|---------------|------------|---|
| TaskMonitor (v1.2+) | string (URI) | read-only | The URI of the Task Monitor for this task. |
| TaskState | string (enum) | read-only | The state of the task. <i>For the possible property values, see TaskState in Property details.</i> |
| TaskStatus | string (enum) | read-only | The completion status of the task. <i>For the possible property values, see TaskStatus in Property details.</i> |

6.132.4 Property details

6.132.4.1 TaskState

The state of the task.

| string | Description |
|--------------------------|---|
| Cancelled (v1.2+) | Task has been cancelled by an operator or internal process. |
| Cancelling (v1.2+) | Task is in the process of being cancelled. |
| Completed | Task was completed. |
| Exception | Task has stopped due to an exception condition. |
| Interrupted | Task has been interrupted. |
| Killed (deprecated v1.2) | Task was terminated. <i>Deprecated in v1.2 and later. This value has been deprecated and is being replaced by the <code>Cancelled</code> value, which has more determinate semantics.</i> |
| New | A new task. |
| Pending | Task is pending and has not started. |
| Running | Task is running normally. |
| Service | Task is running as a service. |
| Starting | Task is starting. |
| Stopping | Task is in the process of stopping. |
| Suspended | Task has been suspended. |

6.132.4.2 TaskStatus

The completion status of the task.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.132.5 Example response

```
{
  "@odata.type": "#Task.v1_7_2.Task",
  "Id": "545",
  "Name": "Task 545",
  "TaskMonitor": "/taskmon/545",
  "TaskState": "Completed",
  "StartTime": "2012-03-07T14:44+06:00",
  "EndTime": "2012-03-07T14:45+06:00",
  "TaskStatus": "OK",
  "Messages": [
    {
      "MessageId": "Base.1.0.PropertyNotWritable",
      "RelatedProperties": [
        "SKU"
      ],
      "Message": "The property SKU is a read only property and cannot be assigned a value",
      "MessageArgs": [
        "SKU"
      ],
      "Severity": "Warning"
    }
  ],
  "@odata.id": "/redfish/v1/TaskService/Tasks/545"
}
```

6.133 TaskService 1.2.0

| Version | v1.2 | v1.1 | v1.0 |
|---------|------|------|------|
| | | | |

| | | | |
|----------------|--------|--------|-----|
| Release | 2021.1 | 2017.1 | 1.0 |
|----------------|--------|--------|-----|

6.133.1 Description

The TaskService schema describes a task service that enables management of long-duration operations, includes the properties for the task service itself, and has links to the resource collection of tasks.

6.133.2 URIs

/redfish/v1/TaskService

6.133.3 Properties

| Property | Type | Attributes | Notes |
|---|--------------------|--------------------------|---|
| CompletedTaskOverWritePolicy | string (enum) | <i>read-only</i> | The overwrite policy for completed tasks. This property indicates if the task service overwrites completed task information. <i>For the possible property values, see CompletedTaskOverWritePolicy in Property details.</i> |
| DateTime | string (date-time) | <i>read-only (null)</i> | The current date and time, with UTC offset, setting that the task service uses. |
| LifeCycleEventOnTaskStateChange | boolean | <i>read-only</i> | An indication of whether a task state change sends an event. |
| ServiceEnabled | boolean | <i>read-write (null)</i> | An indication of whether this service is enabled. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TaskAutoDeleteTimeoutMinutes (v1.2+) | integer | <i>read-write</i> | The number of minutes after which a completed task is deleted by the service. |
| Tasks { | object | | The links to the collection of tasks. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Task</i> . See the Task schema for details. |
| } | | | |

6.133.4 Property details

6.133.4.1 CompletedTaskOverWritePolicy

The overwrite policy for completed tasks. This property indicates if the task service overwrites completed task information.

| string | Description |
|--------|--|
| Manual | Completed tasks are not automatically overwritten. |
| Oldest | Oldest completed tasks are overwritten. |

6.133.5 Example response

```
{
  "@odata.type": "#TaskService.v1_2_0.TaskService",
  "Id": "TaskService",
  "Name": "Tasks Service",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "CompletedTaskOverWritePolicy": "Manual",
  "LifecycleEventOnTaskStateChange": true,
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService/Tasks"
  },
  "@odata.id": "/redfish/v1/TaskService"
}
```

6.134 TelemetryService 1.3.2

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2020.4 | 2019.4 | 2018.3 | 2018.2 |

6.134.1 Description

The TelemetryService schema describes a telemetry service. The telemetry service is used to for collecting and reporting metric data within the Redfish Service.

6.134.2 URIs

/redfish/v1/TelemetryService

6.134.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------------|---------|-----------------------------------|---|
| LogService { | object | | The link to a log service that the telemetry service uses. This service can be a dedicated log service or a pointer a log service under another resource, such as a manager. See the <i>LogService</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details. |
| } | | | |
| MaxReports | integer | <i>read-only</i> <i>(null)</i> | The maximum number of metric reports that this service supports. |
| MetricDefinitions { | object | | The link to the collection of metric definitions. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MetricDefinition</i> . See the MetricDefinition schema for details. |
| } | | | |
| MetricReportDefinitions { | object | | The link to the collection of metric report definitions. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MetricReportDefinition</i> . See the MetricReportDefinition schema for details. |
| } | | | |
| MetricReports { | object | | The link to the collection of metric reports. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>MetricReport</i> . See the MetricReport schema for details. |

| Property | Type | Attributes | Notes |
|--|-----------------------------|--------------------------------------|--|
| } | | | |
| MinCollectionInterval | string (duration) | <i>read-only</i> (<i>null</i>) | The minimum time interval between gathering metric data that this service allows. |
| ServiceEnabled (v1.2+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether this service is enabled. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| SupportedCollectionFunctions [] | array (string (enum)) | <i>read-only</i> (<i>null</i>) | The functions that can be performed over each metric. <i>For the possible property values, see SupportedCollectionFunctions in Property details.</i> |
| Triggers { | object | | The link to the collection of triggers that apply to metrics. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Triggers</i> . See the Triggers schema for details. |
| } | | | |

6.134.4 Actions

6.134.4.1 ClearMetricReports (v1.3+)

Description

The action to clear the metric reports for this telemetry service.

Action URI

{Base URI of target resource}/Actions/TelemetryService.ClearMetricReports

Action parameters

This action takes no parameters.

6.134.4.2 ResetMetricReportDefinitionsToDefaults (v1.3+)

Description

The action to reset the metric report definitions to factory defaults.

Action URI

{Base URI of target resource}/Actions/TelemetryService.ResetMetricReportDefinitionsToDefaults

Action parameters

This action takes no parameters.

6.134.4.3 ResetTriggersToDefaults (v1.3+)

Description

The action to reset the triggers to factory defaults.

Action URI

{Base URI of target resource}/Actions/TelemetryService.ResetTriggersToDefaults

Action parameters

This action takes no parameters.

6.134.4.4 SubmitTestMetricReport

Description

This action generates a metric report.

Action URI

{Base URI of target resource}/Actions/TelemetryService.SubmitTestMetricReport

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--|--------|------------------|---|
| GeneratedMetricReportValues <i>(v1.1+)</i> [{ | array | <i>required</i> | The content of the MetricReportValues in the generated metric report. |
| MetricDefinition <i>(v1.1+)</i> { | object | | The link to the metric definition for this metric. See the <i>MetricDefinition</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a MetricDefinition resource. See the Links section and the <i>MetricDefinition</i> schema for details. |
| } | | | |

| Parameter Name | Type | Attributes | Notes |
|--|-----------------------|----------------------------|---|
| MetricId (v1.1+) | string | <i>read-only</i> (null) | The metric definitions identifier for this metric. |
| MetricProperty (v1.1+) | string (URI) | <i>read-only</i> (null) | The URI for the property from which this metric is derived. |
| MetricValue (v1.1+) | string | <i>read-only</i> (null) | The metric value, as a string. |
| Timestamp (v1.1+) | string (date-time) | <i>read-only</i> (null) | The date and time when the metric is obtained. A management application can establish a time series of metric data by retrieving the instances of metric value and sorting them according to their timestamp. |
| }] | | | |
| MetricReportName | string | <i>required</i> | The name of the metric report in generated metric report. |
| MetricReportValues (deprecated v1.1) | string | <i>optional</i> | The contents of MetricReportValues array in the generated metric report. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of using the property 'GeneratedMetricReportValues'.</i> |

Request Example

```
{
  "MetricReportName": "TestMetricReport",
  "GeneratedMetricReportValues": [
    {
      "MetricId": "AverageReadingCelsius",
      "MetricValue": "50",
      "Timestamp": "2020-12-06T12:00:00Z",
      "MetricProperty": "/redfish/v1/Chassis/Tray_1/Thermal#/Temperatures/0/ReadingCelsius",
      "MetricDefinition": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageReadingCelsius"
      }
    },
    {
      "MetricId": "AverageReadingCelsius",
      "MetricValue": "53",
      "Timestamp": "2020-12-06T12:00:01Z",
      "MetricProperty": "/redfish/v1/Chassis/Tray_1/Thermal#/Temperatures/0/ReadingCelsius",
      "MetricDefinition": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageReadingCelsius"
      }
    }
  ]
}
```



```
}

```

6.134.5 Property details

6.134.5.1 SupportedCollectionFunctions

The functions that can be performed over each metric.

| string | Description |
|-----------|------------------------|
| Average | An averaging function. |
| Maximum | A maximum function. |
| Minimum | A minimum function. |
| Summation | A summation function. |

6.134.6 Example response

```
{
  "@odata.type": "#TelemetryService.v1_3_2.TelemetryService",
  "Id": "TelemetryService",
  "Name": "Telemetry Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "SupportedCollectionFunctions": [
    "Average",
    "Minimum",
    "Maximum"
  ],
  "MetricDefinitions": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions"
  },
  "MetricReportDefinitions": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions"
  },
  "MetricReports": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports"
  },
  "Triggers": {
    "@odata.id": "/redfish/v1/TelemetryService/Triggers"
  }
}
```

```

    },
    "LogService": {
      "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1"
    },
    "@odata.id": "/redfish/v1/TelemetryService"
  }
}

```

6.135 Thermal 1.7.1 (deprecated)

| Version | v1.7 <i>Deprecated</i> | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|---------------------------|--------|--------|--------|--------|--------|--------|------|
| Release | 2020.4 | 2019.4 | 2018.2 | 2017.3 | 2017.1 | 2016.3 | 2016.1 | 1.0 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the ThermalSubsystem schema.

6.135.1 Description

The Thermal schema describes temperature monitoring and thermal management subsystems, such as cooling fans, for a computer system or similar devices contained within a chassis.

6.135.2 URIs

/redfish/v1/Chassis/{ChassisId}/Thermal (deprecated)

6.135.3 Properties

| Property | Type | Attributes | Notes |
|----------------------------|--------------|---------------------------|---|
| Fans [{ | array | | The set of fans for this chassis. |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions (v1.3+) { } | object | | The available actions for this resource. |
| Assembly (v1.4+) { | object | | The link to the assembly associated with this fan. See the <i>Assembly</i> schema for details on this property. |

| Property | Type | Attributes | Notes |
|---|---------------|---------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details. |
| } | | | |
| FanName (<i>deprecated v1.1</i>) | string | <i>read-only (null)</i> | The name of the fan. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of the Name property.</i> |
| HotPluggable (<i>v1.4+</i>) | boolean | <i>read-only (null)</i> | An indication of whether this device can be inserted or removed while the equipment is in operation. |
| IndicatorLED (<i>v1.2+</i>) | string (enum) | <i>read-write (null)</i> | The state of the indicator LED, which identifies this fan. <i>For the possible property values, see IndicatorLED in Property details.</i> |
| Location (<i>v1.4+</i>) {} | object | | The location of the fan. For property details, see Location. |
| LowerThresholdCritical | integer | <i>read-only (null)</i> | The value at which the reading is below normal range but not yet fatal. |
| LowerThresholdFatal | integer | <i>read-only (null)</i> | The value at which the reading is below normal range and fatal. |
| LowerThresholdNonCritical | integer | <i>read-only (null)</i> | The value at which the reading is below normal range. |
| Manufacturer (<i>v1.2+</i>) | string | <i>read-only (null)</i> | The manufacturer of this fan. |
| MaxReadingRange | integer | <i>read-only (null)</i> | Maximum value for this sensor. |
| MemberId | string | <i>read-only required</i> | The identifier for the member within the collection. |
| MinReadingRange | integer | <i>read-only (null)</i> | Minimum value for this sensor. |
| Model (<i>v1.2+</i>) | string | <i>read-only (null)</i> | The model number for this fan. |
| Name (<i>v1.1+</i>) | string | <i>read-only (null)</i> | Name of the fan. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PartNumber (<i>v1.2+</i>) | string | <i>read-only (null)</i> | The part number for this fan. |

| Property | Type | Attributes | Notes |
|----------------------------------|-------------------|----------------------------|--|
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device associated with this fan. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| Reading | integer | <i>read-only</i> (null) | The fan speed. |
| ReadingUnits (v1.0.1+) | string (enum) | <i>read-only</i> (null) | The units in which the fan reading and thresholds are measured. <i>For the possible property values, see ReadingUnits in Property details.</i> |
| Redundancy [{ }] | array (object) | | The set of redundancy groups for this fan. For property details, see Redundancy. |
| RelatedItem [{ | array | | An array of links to resources or objects that this fan services. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| SensorNumber (v1.5+) | integer | <i>read-only</i> (null) | The numerical identifier for this fan speed sensor. |
| SerialNumber (v1.2+) | string | <i>read-only</i> (null) | The serial number for this fan. |
| SparePartNumber (v1.2+) | string | <i>read-only</i> (null) | The spare part number for this fan. |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UpperThresholdCritical | integer | <i>read-only</i> (null) | The value at which the reading is above normal range but not yet fatal. |
| UpperThresholdFatal | integer | <i>read-only</i> (null) | The value at which the reading is above normal range and fatal. |
| UpperThresholdNonCritical | integer | <i>read-only</i> (null) | The value at which the reading is above normal range. |
| }] | | | |
| Redundancy [{ }] | array (object) | | The redundancy information for the set of fans in this chassis. For property details, see Redundancy. |

| Property | Type | Attributes | Notes |
|---|-------------------|---------------------------|--|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| Temperatures [{} | array | | The set of temperature sensors for this chassis. |
| @odata.id | string (URI) | <i>read-only required</i> | The unique identifier for a resource. |
| Actions (v1.3+) {} | object | | The available actions for this resource. |
| AdjustedMaxAllowableOperatingValue (v1.4+) | integer (Celsius) | <i>read-only (null)</i> | Adjusted maximum allowable operating temperature for this equipment based on the current environmental conditions present. |
| AdjustedMinAllowableOperatingValue (v1.4+) | integer (Celsius) | <i>read-only (null)</i> | Adjusted minimum allowable operating temperature for this equipment based on the current environmental conditions present. |
| DeltaPhysicalContext (v1.4+) | string (enum) | <i>read-only</i> | The area or device to which the DeltaReadingCelsius temperature measurement applies, relative to PhysicalContext. <i>For the possible property values, see DeltaPhysicalContext in Property details.</i> |
| DeltaReadingCelsius (v1.4+) | number (Celsius) | <i>read-only (null)</i> | The delta temperature reading. |
| LowerThresholdCritical | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is below normal range but not yet fatal. |
| LowerThresholdFatal | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is below normal range and fatal. |
| LowerThresholdNonCritical | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is below normal range. |
| LowerThresholdUser (v1.6+) | integer (Celsius) | <i>read-write (null)</i> | The value at which the reading is below the user-defined range. |
| MaxAllowableOperatingValue (v1.4+) | integer (Celsius) | <i>read-only (null)</i> | Maximum allowable operating temperature for this equipment. |
| MaxReadingRangeTemp | number (Celsius) | <i>read-only (null)</i> | Maximum value for this sensor. |
| MemberId | string | <i>read-only required</i> | The identifier for the member within the collection. |
| MinAllowableOperatingValue (v1.4+) | integer (Celsius) | <i>read-only (null)</i> | Minimum allowable operating temperature for this equipment. |

| Property | Type | Attributes | Notes |
|-----------------------------------|-------------------|--------------------------|---|
| MinReadingRangeTemp | number (Celsius) | <i>read-only (null)</i> | Minimum value for this sensor. |
| Name | string | <i>read-only (null)</i> | The temperature sensor name. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PhysicalContext | string (enum) | <i>read-only</i> | The area or device to which this temperature measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| ReadingCelsius | number (Celsius) | <i>read-only (null)</i> | The temperature in degrees Celsius. |
| RelatedItem [{ | array | | An array of links to resources or objects that represent areas or devices to which this temperature applies. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| SensorNumber | integer | <i>read-only (null)</i> | The numerical identifier of the temperature sensor. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| UpperThresholdCritical | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is above normal range but not yet fatal. |
| UpperThresholdFatal | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is above normal range and fatal. |
| UpperThresholdNonCritical | number (Celsius) | <i>read-only (null)</i> | The value at which the reading is above normal range. |
| UpperThresholdUser (v1.6+) | integer (Celsius) | <i>read-write (null)</i> | The value at which the reading is above the user-defined range. |
| }] | | | |

6.135.4 Property details

6.135.4.1 DeltaPhysicalContext

The area or device to which the DeltaReadingCelsius temperature measurement applies, relative to PhysicalContext.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |

| string | Description |
|------------------|--|
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.135.4.2 IndicatorLED

The state of the indicator LED, which identifies this fan.

| string | Description |
|----------|--------------------------------|
| Blinking | The indicator LED is blinking. |
| Lit | The indicator LED is lit. |
| Off | The indicator LED is off. |

6.135.4.3 PhysicalContext

The area or device associated with this fan.

| string | Description |
|--------------------------|---|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |

| string | Description |
|------------------|---|
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |

| string | Description |
|------------------|-----------------------------------|
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.135.4.4 ReadingUnits

The units in which the fan reading and thresholds are measured.

| string | Description |
|---------|--|
| Percent | The fan reading and thresholds are measured as a percentage. |
| RPM | The fan reading and thresholds are measured in revolutions per minute. |

6.135.5 Example response

```
{
  "@odata.type": "#Thermal.v1_7_1.Thermal",
  "Id": "Thermal",
  "Name": "Thermal",
  "Temperatures": [
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/0",
      "MemberId": "0",
      "Name": "CPU1 Temp",
      "SensorNumber": 5,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 41,
      "UpperThresholdNonCritical": 42,
      "UpperThresholdCritical": 45,
      "UpperThresholdFatal": 48,
      "MinReadingRangeTemp": 0,
      "MaxReadingRangeTemp": 60,
    }
  ]
}
```

```
    "PhysicalContext": "CPU",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU1"
      }
    ]
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/1",
    "MemberId": "1",
    "Name": "CPU2 Temp",
    "SensorNumber": 6,
    "Status": {
      "State": "Disabled"
    },
    "UpperThresholdNonCritical": 42,
    "UpperThresholdCritical": 45,
    "UpperThresholdFatal": 48,
    "MinReadingRangeTemp": 0,
    "MaxReadingRangeTemp": 60,
    "PhysicalContext": "CPU",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU2"
      }
    ]
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/2",
    "MemberId": "2",
    "Name": "Chassis Intake Temp",
    "SensorNumber": 9,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingCelsius": 25,
    "UpperThresholdUser": 28,
    "UpperThresholdNonCritical": 30,
    "UpperThresholdCritical": 40,
    "UpperThresholdFatal": 50,
    "LowerThresholdUser": 20,
    "LowerThresholdNonCritical": 10,
    "LowerThresholdCritical": 5,
    "LowerThresholdFatal": 0,
    "MinReadingRangeTemp": 0,
    "MaxReadingRangeTemp": 60,
    "PhysicalContext": "Intake",
    "RelatedItem": [
      {
```

```
        "@odata.id": "/redfish/v1/Chassis/1U"
      },
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      }
    ]
  },
  ],
  "Fans": [
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/0",
      "MemberId": "0",
      "Name": "BaseBoard System Fan",
      "PhysicalContext": "Backplane",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Reading": 2100,
      "ReadingUnits": "RPM",
      "LowerThresholdFatal": 0,
      "MinReadingRange": 0,
      "MaxReadingRange": 5000,
      "Redundancy": [
        {
          "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0"
        }
      ],
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Systems/437XR1138R2"
        },
        {
          "@odata.id": "/redfish/v1/Chassis/1U"
        }
      ]
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/1",
      "MemberId": "1",
      "Name": "BaseBoard System Fan Backup",
      "PhysicalContext": "Backplane",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Reading": 2050,
      "ReadingUnits": "RPM",
      "LowerThresholdFatal": 0,
      "MinReadingRange": 0,
```

```

    "MaxReadingRange": 5000,
    "Redundancy": [
      {
        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0"
      }
    ],
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1U"
      }
    ]
  }
],
"Redundancy": [
  {
    "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0",
    "MemberId": "0",
    "Name": "BaseBoard System Fans",
    "RedundancySet": [
      {
        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/0"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/1"
      }
    ],
    "Mode": "N+m",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "MinNumNeeded": 1,
    "MaxNumSupported": 2
  }
],
"@odata.id": "/redfish/v1/Chassis/1U/Thermal"
}

```

6.136 ThermalEquipment 1.1.0

| Version | v1.1 | v1.0 |
|---------|--------|--------|
| Release | 2023.2 | 2023.1 |

6.136.1 Description

This is the schema definition for the set of cooling equipment.

6.136.2 URIs

/redfish/v1/ThermalEquipment

6.136.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------|------------------|---|
| CDUs { | object | | A link to a collection of cooling distribution units. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details. |
| } | | | |
| CoolingLoopRedundancy (v1.1+)[{ }] | array (object) | | The redundancy information for cooling loops attached to this equipment. For property details, see RedundantGroup. |
| CoolingLoops { | object | | A link to a collection of cooling loops. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolingLoop</i> . See the CoolingLoop schema for details. |
| } | | | |
| HeatExchangers { | object | | A link to a collection of heat exchanger units. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details. |
| } | | | |
| ImmersionUnits { | object | | A link to a collection of immersion cooling units. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.136.4 Example response

```
{
  "@odata.type": "#ThermalEquipment.v1_1_0.ThermalEquipment",
  "Id": "ThermalEquipment",
  "Name": "Cooling Equipment",
  "Status": {
    "State": "Enabled",
    "HealthRollup": "OK"
  },
  "CDUs": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CDUs"
  },
  "CoolingLoops": {
    "@odata.id": "/redfish/v1/ThermalEquipment/CoolingLoops"
  },
  "@odata.id": "/redfish/v1/ThermalEquipment"
}
```

6.137 ThermalMetrics 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.3 | 2020.4 |

6.137.1 Description

The ThermalMetrics schema represents the thermal metrics of a chassis.

6.137.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/ThermalMetrics

6.137.3 Properties

| Property | Type | Attributes | Notes |
|---|--------|------------|--|
| AirFlowCubicMetersPerMinute (v1.2+) {} | object | | The air flow through the chassis (m ³ /min). For more information about this property, see SensorExcerpt in Property Details. |

| Property | Type | Attributes | Notes |
|--|-----------------------|-------------------------------------|--|
| DeltaPressurekPa (v1.2+) {} | object | | The differential pressure (kPa). For more information about this property, see SensorExcerpt in Property Details. |
| EnergykWh (v1.3+) { | object (excerpt) | | Energy consumption (kWh) of the thermal management subsystem. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentkVAh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Apparent energy (kVAh). |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| LifetimeReading (v1.1+) | number | <i>read-only</i> (<i>null</i>) | The total accumulation value for this sensor. |
| ReactivekVARh (v1.5+) | number (kV.A.h) | <i>read-only</i> (<i>null</i>) | Reactive energy (kVARh). |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| SensorResetTime | string (date-time) | <i>read-only</i> (<i>null</i>) | The date and time when the time-based properties were last reset. |
| } | | | |
| HeaterSummary (v1.1+) { | object | (<i>null</i>) | The summary of heater metrics for this chassis. |
| TotalPrePowerOnHeatingTimeSeconds (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The total number of seconds all the heaters in the thermal subsystem were active while the respective devices they heat were powered off. |
| TotalRuntimeHeatingTimeSeconds (v1.1+) | integer | <i>read-only</i> (<i>null</i>) | The total number of seconds all the heaters in the thermal subsystem were active while the respective devices they heat were powered on. |
| } | | | |
| PowerWatts (v1.3+) { | object (excerpt) | | Power consumption (W) of the thermal management subsystem. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri. |
| ApparentVA | number (V.A) | <i>read-only</i> (<i>null</i>) | The product of voltage and current for an AC circuit, in volt-ampere units. |

| Property | Type | Attributes | Notes |
|---------------------------------------|--------------------|-------------------------------------|---|
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| PhaseAngleDegrees (v1.5+) | number | <i>read-only</i> (<i>null</i>) | The phase angle (degrees) between the current and voltage waveforms. |
| PowerFactor | number | <i>read-only</i> (<i>null</i>) | The power factor for this sensor. |
| ReactiveVAR | number (V.A) | <i>read-only</i> (<i>null</i>) | The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units. |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| } | | | |
| TemperatureReadingsCelsius [{ | array (excerpt) | | The temperatures (Celsius) from all related sensors for this device. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in <i>DataSourceUri</i> . |
| DataSourceUri | string (URI) | <i>read-only</i> (<i>null</i>) | The link to the resource that provides the data for this sensor. |
| DeviceName (v1.2+) | string | <i>read-only</i> (<i>null</i>) | The name of the device. |
| PhysicalContext | string (enum) | <i>read-only</i> (<i>null</i>) | The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i> |
| PhysicalSubContext | string (enum) | <i>read-only</i> (<i>null</i>) | The usage or location within a device to which this sensor measurement applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i> |
| Reading | number | <i>read-only</i> (<i>null</i>) | The sensor value. |
| }] | | | |
| TemperatureSummaryCelsius { | object | (<i>null</i>) | The summary temperature readings for this chassis. |
| Ambient {} | object | | The ambient temperature (Celsius) of this subsystem. For more information about this property, see <i>SensorExcerpt</i> in Property Details. |

| Property | Type | Attributes | Notes |
|--------------------|--------|------------|--|
| Exhaust {} | object | | The exhaust temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details. |
| Intake {} | object | | The intake temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details. |
| Internal {} | object | | The internal temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details. |
| } | | | |

6.137.4 Actions

6.137.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI

{Base URI of target resource}/Actions/ThermalMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.137.5 Property details

6.137.5.1 PhysicalContext

The area or device to which this sensor measurement applies.

| string | Description |
|--------------------------|---------------------------------|
| Accelerator | An accelerator. |
| ACInput | An AC input. |
| ACMaintenanceBypassInput | An AC maintenance bypass input. |

| string | Description |
|---------------------|---|
| ACOutput | An AC output. |
| ACStaticBypassInput | An AC static bypass input. |
| ACUtilityInput | An AC utility input. |
| ASIC | An ASIC device, such as a networking chip or chipset component. |
| Back | The back of the chassis. |
| Backplane | A backplane within the chassis. |
| Battery | A battery. |
| Board | A circuit board. |
| Chassis | The entire chassis. |
| ComputeBay | Within a compute bay. |
| CoolingSubsystem | The entire cooling, or air and liquid, subsystem. |
| CPU | A processor (CPU). |
| CPUSubsystem | The entire processor (CPU) subsystem. |
| DCBus | A DC bus. |
| Exhaust | The air exhaust point or points or region of the chassis. |
| ExpansionBay | Within an expansion bay. |
| Fan | A fan. |
| FPGA | An FPGA. |
| Front | The front of the chassis. |
| GPU | A graphics processor (GPU). |
| GPUSubsystem | The entire graphics processor (GPU) subsystem. |
| Intake | The air intake point or points or region of the chassis. |
| LiquidInlet | The liquid inlet point of the chassis. |
| LiquidOutlet | The liquid outlet point of the chassis. |
| Lower | The lower portion of the chassis. |
| Memory | A memory device. |

| string | Description |
|------------------|-----------------------------------|
| MemorySubsystem | The entire memory subsystem. |
| Motor | A motor. |
| NetworkBay | Within a networking bay. |
| NetworkingDevice | A networking device. |
| PowerSubsystem | The entire power subsystem. |
| PowerSupply | A power supply. |
| PowerSupplyBay | Within a power supply bay. |
| Pump | A pump. |
| Rectifier | A rectifier device. |
| Room | The room. |
| StorageBay | Within a storage bay. |
| StorageDevice | A storage device. |
| SystemBoard | The system board (PCB). |
| Transceiver | A transceiver. |
| Transformer | A transformer. |
| TrustedModule | A trusted module. |
| Upper | The upper portion of the chassis. |
| VoltageRegulator | A voltage regulator device. |

6.137.5.2 PhysicalSubContext

The usage or location within a device to which this sensor measurement applies.

| string | Description |
|---------------|--------------------|
| Input | The input. |
| Output | The output. |

6.137.5.3 SensorExcerpt

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

| | | | |
|----------------------|--------------|----------------------------|--|
| DataSourceUri | string (URI) | <i>read-only</i> (null) | The link to the resource that provides the data for this sensor. |
| Reading | number | <i>read-only</i> (null) | The sensor value. |

6.137.6 Example response

```
{
  "@odata.type": "#ThermalMetrics.v1_3_0.ThermalMetrics",
  "Id": "ThermalMetrics",
  "Name": "Chassis Thermal Metrics",
  "TemperatureSummaryCelsius": {
    "Internal": {
      "Reading": 39,
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Temp"
    },
    "Intake": {
      "Reading": 24.8,
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/IntakeTemp"
    },
    "Ambient": {
      "Reading": 22.5,
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/AmbientTemp"
    },
    "Exhaust": {
      "Reading": 40.5,
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/ExhaustTemp"
    }
  },
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/FanTotalPower",
    "Reading": 24.72
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/FanTotalEnergy",
    "Reading": 38.84
  },
  "TemperatureReadingsCelsius": [
```

```

    {
      "Reading": 40,
      "DeviceName": "SystemBoard",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/SysBrdTemp"
    },
    {
      "Reading": 24.8,
      "DeviceName": "Intake",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/IntakeTemp"
    },
    {
      "Reading": 39,
      "DeviceName": "CPUSubsystem",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPUTemps"
    },
    {
      "Reading": 42,
      "DeviceName": "MemorySubsystem",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/MemoryTemp"
    },
    {
      "Reading": 33,
      "DeviceName": "PowerSupply",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PSTemp"
    },
    {
      "Reading": 40.5,
      "DeviceName": "Exhaust",
      "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/ExhaustTemp"
    }
  ],
  "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/ThermalMetrics"
}

```

6.138 ThermalSubsystem 1.3.0

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2023.2 | 2023.1 | 2022.3 | 2020.4 |

6.138.1 Description

This ThermalSubsystem schema contains the definition for the thermal subsystem of a chassis.

6.138.2 URIs

/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem

6.138.3 Properties

| Property | Type | Attributes | Notes |
|---|----------------|------------------|--|
| CoolantConnectorRedundancy (v1.3+) [{ }] | array (object) | | The redundancy information for the coolant connectors in this subsystem. For property details, see RedundantGroup. |
| CoolantConnectors (v1.2+) { | object | | A link to the coolant connectors for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>CoolantConnector</i> . See the CoolantConnector schema for details. |
| } | | | |
| FanRedundancy [{ }] | array (object) | | The redundancy information for the groups of fans in this subsystem. For property details, see RedundantGroup. |
| Fans { | object | | The link to the collection of fans within this subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Fan</i> . See the Fan schema for details. |
| } | | | |
| Heaters (v1.1+) { | object | | The link to the collection of heaters within this subsystem. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Heater</i> . See the Heater schema for details. |
| } | | | |
| LeakDetection (v1.3+) { | object | | The link to the leak detection system within this chassis. See the <i>LeakDetection</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a LeakDetection resource. See the Links section and the <i>LeakDetection</i> schema for details. |
| } | | | |
| Pumps (v1.3+) { | object | | A link to the pumps for this equipment. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Pump</i> . See the Pump schema for details. |
| } | | | |

| Property | Type | Attributes | Notes |
|-------------------------|--------|------------------|---|
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| ThermalMetrics { | object | | The link to the summary of thermal metrics for this subsystem. See the <i>ThermalMetrics</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a ThermalMetrics resource. See the Links section and the <i>ThermalMetrics</i> schema for details. |
| } | | | |

6.138.4 Example response

```
{
  "@odata.type": "#ThermalSubsystem.v1_3_0.ThermalSubsystem",
  "Id": "ThermalSubsystem",
  "Name": "Thermal Subsystem for Chassis",
  "FanRedundancy": [
    {
      "RedundancyType": "NPlusM",
      "MaxSupportedInGroup": 2,
      "MinNeededInGroup": 1,
      "RedundancyGroup": [
        {
          "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay1"
        },
        {
          "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay2"
        }
      ],
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      }
    },
    {
      "RedundancyType": "NPlusM",
      "MaxSupportedInGroup": 2,
      "MinNeededInGroup": 1,
      "RedundancyGroup": [
        {
          "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/CPU1"
        },
        {
          "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/CPU2"
        }
      ],
    }
  ],
}
```

```

        "Status": {
            "State": "Disabled"
        }
    },
    "Fans": {
        "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans"
    },
    "ThermalMetrics": {
        "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/ThermalMetrics"
    },
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem"
}

```

6.139 Triggers 1.3.2

| Version | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|
| Release | 2023.1 | 2021.2 | 2019.1 | 2018.2 |

6.139.1 Description

The Triggers schema describes a trigger that applies to metrics.

6.139.2 URIs

/redfish/v1/TelemetryService/Triggers/{TriggersId}

6.139.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------|------------------|-----------------------------------|--|
| DiscreteTriggerCondition | string (enum) | <i>read-only</i> <i>(null)</i> | The conditions when a discrete metric triggers. <i>For the possible property values, see DiscreteTriggerCondition in Property details.</i> |
| DiscreteTriggers [{ | array | | The list of discrete triggers. |

| Property | Type | Attributes | Notes |
|--|-------------------------------------|--------------------------------------|--|
| DwellTime | string (duration) | <i>read-write</i> (<i>null</i>) | The amount of time that a trigger event persists before the metric action is performed. |
| Name | string | <i>read-only</i> (<i>null</i>) | The name of trigger. |
| Severity | string (enum) | <i>read-write</i> (<i>null</i>) | The severity of the event message. <i>For the possible property values, see Severity in Property details.</i> |
| Value | string | <i>read-write</i> (<i>null</i>) | The discrete metric value that constitutes a trigger event. |
| }] | | | |
| EventTriggers (v1.1+) [] | array (string, null) | <i>read-write</i> | The array of MessageIds that specify when a trigger condition is met based on an event. |
| HysteresisDuration (v1.3+) | string (duration) | <i>read-write</i> (<i>null</i>) | The duration the sensor value must not violate the threshold before the threshold is deactivated. |
| HysteresisReading (v1.3+) | number | <i>read-write</i> (<i>null</i>) | The reading offset from the threshold value required to clear the threshold. |
| Links (v1.1+) { | object | | The links to other resources that are related to this resource. |
| MetricReportDefinitions (v1.1+) [{ | array | | The metric report definitions that generate new metric reports when a trigger condition is met and when the TriggerActions property contains RedfishMetricReport . |
| @odata.id | string | <i>read-write</i> | Link to a MetricReportDefinition resource. See the Links section and the <i>MetricReportDefinition</i> schema for details. |
| }] | | | |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| } | | | |
| MetricIds (v1.2+) [] | array (string, null) | <i>read-write</i> | The label for the metric definitions that contain the property identifiers for this trigger. It matches the Id property of the corresponding metric definition. |
| MetricProperties [] | array (URI) (string, null) | <i>read-write</i> | An array of URIs with wildcards and property identifiers for this trigger. Each wildcard is replaced with its corresponding entry in the Wildcard array property. |
| MetricType | string (enum) | <i>read-only</i> (<i>null</i>) | The metric type of the trigger. <i>For the possible property values, see MetricType in Property details.</i> |

| Property | Type | Attributes | Notes |
|----------------------------|-----------------------------|-----------------------------|---|
| NumericThresholds { | object | | The thresholds when a numeric metric triggers. |
| LowerCritical {} | object | | The value at which the reading is below normal range and requires attention. For more information about this property, see Threshold in Property Details. |
| LowerWarning {} | object | | The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details. |
| UpperCritical {} | object | | The value at which the reading is above normal range and requires attention. For more information about this property, see Threshold in Property Details. |
| UpperWarning {} | object | | The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TriggerActions [] | array (string (enum)) | <i>read-only</i> | The actions that the trigger initiates. <i>For the possible property values, see TriggerActions in Property details.</i> |
| Wildcards [{ | array | | The wildcards and their substitution values for the entries in the MetricProperties array property. |
| Name | string | <i>read-only (null)</i> | The wildcard. |
| Values [] | array (string, null) | <i>read-only</i> | An array of values to substitute for the wildcard. |
| }] | | | |

6.139.4 Property details

6.139.4.1 Activation

The direction of crossing that activates this threshold.

| string | Description |
|------------|--------------------------------------|
| Decreasing | Value decreases below the threshold. |

| string | Description |
|------------------|--|
| Disabled (v1.3+) | The threshold is disabled. |
| Either | Value crosses the threshold in either direction. |
| Increasing | Value increases above the threshold. |

6.139.4.2 DiscreteTriggerCondition

The conditions when a discrete metric triggers.

| string | Description |
|-----------|---|
| Changed | A discrete trigger condition is met whenever the metric value changes. |
| Specified | A discrete trigger condition is met when the metric value becomes one of the values that the DiscreteTriggers property lists. |

6.139.4.3 MetricType

The metric type of the trigger.

| string | Description |
|----------|---------------------------------------|
| Discrete | The trigger is for a discrete sensor. |
| Numeric | The trigger is for numeric sensor. |

6.139.4.4 Severity

The severity of the event message.

| string | Description |
|----------|--|
| Critical | A critical condition requires immediate attention. |
| OK | Normal. |
| Warning | A condition requires attention. |

6.139.4.5 Threshold

A threshold definition for a sensor.

| | | | |
|-------------------|----------------------|-----------------------------------|---|
| Activation | string (enum) | <i>read- write (null)</i> | The direction of crossing that activates this threshold. <i>For the possible property values, see Activation in Property details.</i> |
| DwellTime | string (duration) | <i>read- write (null)</i> | The duration the sensor value must violate the threshold before the threshold is activated. |
| Reading | number | <i>read- write (null)</i> | The threshold value. |

6.139.4.6 TriggerActions

The actions that the trigger initiates.

| string | Description |
|---------------------|---|
| LogToLogService | When a trigger condition is met, record in a log. |
| RedfishEvent | When a trigger condition is met, the service sends an event to subscribers. |
| RedfishMetricReport | When a trigger condition is met, force an update of the specified metric reports. |

6.139.5 Example response

```
{
  "@odata.type": "#Triggers.v1_3_2.Triggers",
  "Id": "PlatformPowerCapTriggers",
  "Name": "Triggers for platform power consumed",
  "MetricType": "Numeric",
  "TriggerActions": [
    "RedfishEvent"
  ],
  "NumericThresholds": {
    "UpperCritical": {
      "Reading": 50,
      "Activation": "Increasing",
      "DwellTime": "PT0.001S"
    }
  }
}
```

```

    "UpperWarning": {
      "Reading": 48.1,
      "Activation": "Increasing",
      "DwellTime": "PT0.004S"
    },
    "MetricProperties": [
      "/redfish/v1/Chassis/1/Power#/PowerControl/0/PowerConsumedWatts"
    ],
    "@odata.id": "/redfish/v1/TelemetryService/Triggers/PlatformPowerCapTriggers"
  }

```

6.140 TrustedComponent 1.2.0

| | | | |
|----------------|--------|--------|--------|
| Version | v1.2 | v1.1 | v1.0 |
| Release | 2023.2 | 2023.1 | 2022.2 |

6.140.1 Description

The TrustedComponent resource represents a trusted device, such as a TPM.

6.140.2 URIs

/redfish/v1/Chassis/{ChassisId}/TrustedComponents/{TrustedComponentId}

6.140.3 Properties

| Property | Type | Attributes | Notes |
|------------------------|--------|-------------------------|---|
| Certificates { | object | | The link to a collection of device identity certificates of the trusted component. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| FirmwareVersion | string | <i>read-only (null)</i> | The software version of the active software image on the trusted component. |
| Links { | object | | The links to other resources that are related to this resource. |

| Property | Type | Attributes | Notes |
|--------------------------------|--------------|-------------------|---|
| ActiveSoftwareImage { | object | | The link to the software inventory resource that represents the active firmware image for this trusted component. See the <i>SoftwareInventory</i> schema for details on this property. |
| @odata.id | string | <i>read-write</i> | Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| ComponentIntegrity [{ | array | | An array of links to <i>ComponentIntegrity</i> resources for which the trusted component is responsible. |
| @odata.id | string | <i>read-only</i> | Link to a <i>ComponentIntegrity</i> resource. See the Links section and the <i>ComponentIntegrity</i> schema for details. |
| }] | | | |
| ComponentsProtected [{ | array | | An array of links to resources that the target component protects. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| IntegratedInto { | object | | A link to a resource to which this trusted component is integrated. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| Oem {} | object | | See the <i>Oem</i> object definition in the Common properties section. |
| Owner (v1.2+) { | object | | A link to the resource that owns this trusted component. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| } | | | |
| SoftwareImages [{ | array | | The images that are associated with this trusted component. |
| @odata.id | string | <i>read-only</i> | Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details. |
| }] | | | |
| } | | | |

| Property | Type | Attributes | Notes |
|--|------------------|-------------------------------------|---|
| Manufacturer | string | <i>read-only</i> <i>(null)</i> | The manufacturer of this trusted component. |
| Model | string | <i>read-only</i> <i>(null)</i> | The model number of the trusted component. |
| PartNumber | string | <i>read-only</i> <i>(null)</i> | The part number of the trusted component. |
| SerialNumber | string | <i>read-only</i> <i>(null)</i> | The serial number of the trusted component. |
| SKU | string | <i>read-only</i> <i>(null)</i> | The SKU of the trusted component. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TPM (v1.1+) { | object | | TPM-specific information for this trusted component. |
| CapabilitiesVendorID (v1.1+) | string | <i>read-only</i> <i>(null)</i> | The capabilities vendor ID for this trusted component. |
| HardwareInterfaceVendorID (v1.1+) | string | <i>read-only</i> <i>(null)</i> | The hardware interface vendor ID for this trusted component. |
| } | | | |
| TrustedComponentType | string (enum) | <i>read-only</i> <i>required</i> | The type of trusted component, such as any physical distinction about the trusted component. <i>For the possible property values, see TrustedComponentType in Property details.</i> |
| UUID | string (uuid) | <i>read-only</i> <i>(null)</i> | The UUID for this trusted component. |

6.140.4 Property details

6.140.4.1 TrustedComponentType

The type of trusted component, such as any physical distinction about the trusted component.

| string | Description |
|------------|----------------------------------|
| Discrete | A discrete trusted component. |
| Integrated | An integrated trusted component. |

6.140.5 Example response

```
{
  "@odata.type": "#TrustedComponent.v1_2_0.TrustedComponent",
  "Id": "iRoT0",
  "UUID": "A3981CF9-576A-4335-A19F-B8CD7EC2821E",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "TrustedComponentType": "Integrated",
  "Certificates": {
    "@odata.id": "/redfish/v1/Chassis/1U/TrustedComponents/iRoT0/Certificates"
  },
  "Links": {
    "ComponentsProtected": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU1"
      }
    ],
    "IntegratedInto": {
      "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU1"
    },
    "ComponentIntegrity": [
      {
        "@odata.id": "/redfish/v1/ComponentIntegrity/SS-SPDM-1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Chassis/1U/TrustedComponents/iRoT0"
}
```

6.141 UpdateService 1.12.0

| Version | v1.12 | v1.11 | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | ... |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Release | 2023.2 | 2021.4 | 2021.2 | 2021.1 | 2019.4 | 2019.3 | 2019.2 | 2019.1 | 2018.3 | 2018.2 | 2017.1 | ... |

6.141.1 Description

The UpdateService schema describes the update service and the properties for the service itself with links to collections of firmware and software inventory. The update service also provides methods for updating software and firmware of the resources in a Redfish service.

6.141.2 URIs

/redfish/v1/UpdateService

6.141.3 Properties

| Property | Type | Attributes | Notes |
|---|-------------------|-------------------|---|
| ClientCertificates (v1.10+) { | object | | The link to a collection of client identity certificates provided to the server referenced by the ImageURI property in SimpleUpdate. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| FirmwareInventory { | object | | An inventory of firmware. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>SoftwareInventory</i> . See the SoftwareInventory schema for details. |
| } | | | |
| HttpPushUri (v1.1+) | string (URI) | <i>read-only</i> | The URI used to perform an HTTP or HTTPS push update to the update service. The format of the message is vendor-specific. |
| HttpPushUriOptions (v1.4+) { | object | | The options for HttpPushUri-provided software updates. |
| ForceUpdate (v1.11+) | boolean | <i>read-write</i> | An indication of whether the service should bypass update policies when applying the HttpPushUri-provided image. |
| HttpPushUriApplyTime (v1.4+) { | object | | The settings for when to apply HttpPushUri-provided firmware. |
| ApplyTime (v1.4+) | string (enum) | <i>read-write</i> | The time when to apply the HttpPushUri-provided software update. <i>For the possible property values, see ApplyTime in Property details.</i> |
| MaintenanceWindowDurationInSeconds (v1.4+) | integer (seconds) | <i>read-write</i> | The expiry time, in seconds, of the maintenance window. |

| Property | Type | Attributes | Notes |
|---|-------------------------------------|--------------------------------------|--|
| MaintenanceWindowStartTime (v1.4+) | string (date-time) | <i>read-write</i> | The start time of a maintenance window. |
| } | | | |
| } | | | |
| HttpPushUriOptionsBusy (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether a client has reserved the HttpPushUriOptions properties for software updates. |
| HttpPushUriTargets (v1.2+) [] | array (URI) (string, null) | <i>read-write</i> | An array of URIs that indicate where to apply the update image. |
| HttpPushUriTargetsBusy (v1.2+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether any client has reserved the HttpPushUriTargets property. |
| MaxImageSizeBytes (v1.5+) | integer (bytes) | <i>read-only</i> (<i>null</i>) | The maximum size in bytes of the software update image that this service supports. |
| MultipartHttpPushUri (v1.6+) | string (URI) | <i>read-only</i> | The URI used to perform a Redfish Specification-defined Multipart HTTP or HTTPS push update to the update service. |
| RemoteServerCertificates (v1.9+) { | object | | The link to a collection of server certificates for the server referenced by the ImageURI property in SimpleUpdate. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| RemoteServerSSHKeys (v1.12+) { | object | | The link to a collection of keys that can be used to authenticate the server referenced by the ImageURI property in SimpleUpdate. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Key</i> . See the Key schema for details. |
| } | | | |
| ServiceEnabled | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether this service is enabled. |

| Property | Type | Attributes | Notes |
|--|---------|--------------------------|---|
| SoftwareInventory { | object | | An inventory of software. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>SoftwareInventory</i> . See the <i>SoftwareInventory</i> schema for details. |
| } | | | |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> . |
| VerifyRemoteServerCertificate (v1.9+) | boolean | <i>read-write (null)</i> | An indication of whether the service will verify the certificate of the server referenced by the <i>ImageURI</i> property in <i>SimpleUpdate</i> prior to sending the transfer request. |
| VerifyRemoteServerSSHKey (v1.12+) | boolean | <i>read-write (null)</i> | An indication of whether the service will verify the SSH key of the server referenced by the <i>ImageURI</i> property in <i>SimpleUpdate</i> prior to sending the transfer request. |

6.141.4 Actions

6.141.4.1 SimpleUpdate

Description

This action updates software components.

Action URI

{Base URI of target resource}/Actions/UpdateService.SimpleUpdate

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------------|---------|-----------------|--|
| ForceUpdate (v1.11+) | boolean | <i>optional</i> | An indication of whether the service should bypass update policies when applying the provided image. The default is <code>false</code> . |
| ImageURI | string | <i>required</i> | The URI of the software image to install. |
| Password (v1.4+) | string | <i>optional</i> | The password to access the URI specified by the <i>ImageURI</i> parameter. |

| Parameter Name | Type | Attributes | Notes |
|-------------------------------|----------------------------|-----------------|--|
| Targets (v1.2+) [] | array (URI) (string) | <i>optional</i> | An array of URIs that indicate where to apply the update image. |
| TransferProtocol | string (enum) | <i>optional</i> | The network protocol that the update service uses to retrieve the software image file located at the URI provided in ImageURI. This parameter is ignored if the URI provided in ImageURI contains a scheme. <i>For the possible property values, see TransferProtocol in Property details.</i> |
| Username (v1.4+) | string | <i>optional</i> | The user name to access the URI specified by the ImageURI parameter. |

Request Example

```
{
  "ImageURI": "https://images.contoso.org/bmc_0260_2021.bin"
}
```

6.141.4.2 StartUpdate (v1.7+)

Description

This action starts updating all images that have been previously invoked using an OperationApplyTime value of `OnStartUpdateRequest`.

Action URI

{Base URI of target resource}/Actions/UpdateService.StartUpdate

Action parameters

This action takes no parameters.

6.141.5 Property details

6.141.5.1 ApplyTime

The time when to apply the HttpPushUri-provided software update.

| string | Description |
|----------------------------------|---|
| AtMaintenanceWindowStart | Apply during an administrator-specified maintenance window. |
| Immediate | Apply immediately. |
| InMaintenanceWindowOnReset | Apply after a reset but within an administrator-specified maintenance window. |
| OnReset | Apply on a reset. |
| OnStartUpdateRequest (v1.11+) | Apply when the StartUpdate action of the update service is invoked. |

6.141.5.2 TransferProtocol

The network protocol that the update service uses to retrieve the software image file located at the URI provided in ImageURI. This parameter is ignored if the URI provided in ImageURI contains a scheme.

| string | Description |
|-----------------------|---|
| CIFS | Common Internet File System (CIFS). |
| FTP | File Transfer Protocol (FTP). |
| HTTP | Hypertext Transfer Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| NFS (v1.3+) | Network File System (NFS). |
| NSF (deprecated v1.3) | Network File System (NFS). <i>Deprecated in v1.3 and later. This value has been deprecated in favor of NFS.</i> |
| OEM | A manufacturer-defined protocol. |
| SCP | Secure Copy Protocol (SCP). |
| SFTP (v1.1+) | Secure File Transfer Protocol (SFTP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |

6.141.6 Example response

```
{
  "@odata.type": "#UpdateService.v1_12_0.UpdateService",
}
```

```

    "Id": "UpdateService",
    "Name": "Update service",
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    },
    "ServiceEnabled": true,
    "HttpPushUri": "/FWUpdate",
    "FirmwareInventory": {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory"
    },
    "SoftwareInventory": {
      "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory"
    },
    "Actions": {
      "#UpdateService.SimpleUpdate": {
        "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
        "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
      }
    },
    "@odata.id": "/redfish/v1/UpdateService"
  }
}

```

6.142 USBController 1.0.0

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2021.1 |

6.142.1 Description

The USBController schema defines a Universal Serial Bus controller.

6.142.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/USBControllers/{ControllerId}

6.142.3 Properties

| Property | Type | Attributes | Notes |
|------------------------|--------|-------------------------|---|
| Links { | object | | The links to other resources that are related to this resource. |
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| PCleDevice { | object | <i>(null)</i> | A link to the PCIe device that represents this USB controller. See the <i>PCleDevice</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details. |
| } | | | |
| Processors [{ | array | | An array of links to the processors that can utilize this USB controller. |
| @odata.id | string | <i>read-only</i> | Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details. |
| }] | | | |
| } | | | |
| Manufacturer | string | <i>read-only (null)</i> | The manufacturer of this USB controller. |
| Model | string | <i>read-only (null)</i> | The product model number of this USB controller. |
| PartNumber | string | <i>read-only (null)</i> | The part number for this USB controller. |
| Ports { | object | | The ports of the USB controller. Contains a link to a resource. |
| @odata.id | string | <i>read-only</i> | Link to Collection of <i>Port</i> . See the Port schema for details. |
| } | | | |
| SerialNumber | string | <i>read-only (null)</i> | The serial number for this USB controller. |
| SKU | string | <i>read-only (null)</i> | The SKU for this USB controller. |
| SparePartNumber | string | <i>read-only (null)</i> | The spare part number of the USB controller. |
| Status {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |

6.142.4 Example response

```
{
  "@odata.type": "#USBController.v1_0_0.USBController",
  "Id": "USB1",
  "Name": "Contoso USB Controller 1",
  "Manufacturer": "Contoso",
  "Model": "USBv3",
  "SKU": "80937",
  "SerialNumber": "2M220100SL",
  "PartNumber": "G37891",
  "SparePartNumber": "G37890",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Ports": {
    "@odata.id": "/redfish/v1/Systems/1/USBControllers/USB1/Ports"
  },
  "Links": {
    "Processors": [
      {
        "@odata.id": "/redfish/v1/Systems/1/Processors/1"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/Processors/2"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Systems/1/USBControllers/USB1"
}
```

6.143 VCATEntry 1.0.1

| | |
|----------------|--------|
| Version | v1.0 |
| Release | 2019.4 |

6.143.1 Description

The VCATEntry schema defines an entry in a Virtual Channel Action Table. A Virtual Channel is a mechanism used to create multiple, logical communication streams across a physical link.

6.143.2 URIs

/redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT/{VCATEntryId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT/{VCATEntryId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT/{VCATEntryId}
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/NCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Chassis/{ChassisId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/GenZ/NCAT/{VCATEntryId}
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/NCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/REQ-VCAT/{VCATEntryId}
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/GenZ/RSP-VCAT/{VCATEntryId}
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/GenZ/VCAT/{VCATEntryId}
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/Ports/{PortId}/NCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/REQ-VCAT/{VCATEntryId} (deprecated)
 /redfish/v1/Systems/{SystemId}/FabricAdapters/{FabricAdapterId}/RSP-VCAT/{VCATEntryId} (deprecated)

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.143.3 Properties

| Property | Type | Attributes | Notes |
|----------------------|--------|-----------------------------|--|
| RawEntryHex | string | <i>read-write</i> (null) | The hexadecimal value of the Virtual Channel Action Table entries. |
| VCEntries [{ | array | | An array of entries of the Virtual Channel Action Table. |
| Threshold | string | <i>read-write</i> (null) | The configured threshold. |
| VCMask | string | <i>read-write</i> (null) | The bits corresponding to the supported Virtual Channel. |
| }] | | | |

6.143.4 Example response

```
{
  "@odata.type": "#VCATEntry.v1_0_1.VCATEntry",
  "Id": "0",
  "Name": "VCAT Entry 0",
  "Description": "Gen-Z Port 1 Virtual Channel Action Table Entry 0",
  "RawEntryHex": "0x123456",
  "VCEntries": [
    {
      "VCMask": "0x00000034",
      "Threshold": "0x12"
    },
    {
      "VCMask": "0x00000034",
      "Threshold": "0x12"
    },
    {
      "VCMask": "0x00000034",
      "Threshold": "0x12"
    },
    {
      "VCMask": "0x00000034",
      "Threshold": "0x12"
    }
  ],
  "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/VCAT/0"
}
```

6.144 VirtualMedia 1.6.2

| Version | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|------|
| Release | 2022.3 | 2021.2 | 2021.1 | 2018.3 | 2017.3 | 2017.1 | 1.0 |

6.144.1 Description

The VirtualMedia schema contains properties related to the monitor and control of an instance of virtual media, such as a remote CD, DVD, or USB device. A manager for a system or device provides virtual media functionality.

6.144.2 URIs

/redfish/v1/Managers/{ManagerId}/VirtualMedia/{VirtualMediaId} (deprecated)

/redfish/v1/Systems/{ComputerSystemId}/VirtualMedia/{VirtualMediaId}

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.144.3 Properties

| Property | Type | Attributes | Notes |
|-------------------------------------|-----------------------------|----------------------|--|
| Certificates (v1.4+) { | object | | The link to a collection of server certificates for the server referenced by the Image property. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ClientCertificates (v1.5+) { | object | | The link to a collection of client identity certificates provided to the server referenced by the Image property. Contains a link to a resource. |
| @odata.id | string | read-only | Link to Collection of <i>Certificate</i> . See the Certificate schema for details. |
| } | | | |
| ConnectedVia | string (enum) | read-only (null) | The current virtual media connection method. <i>For the possible property values, see ConnectedVia in Property details.</i> |
| EjectPolicy (v1.6+) | string (enum) | read-write (null) | The ejection policy for the virtual media. <i>For the possible property values, see EjectPolicy in Property details.</i> |
| EjectTimeout (v1.6+) | string (duration) | read-write (null) | Timeout value before the virtual media is automatically ejected. |
| Image | string (URI) | read-write (null) | The URI of the location of the selected image. |
| ImageName | string | read-only (null) | The current image name. |
| Inserted | boolean | read-write (null) | An indication of whether virtual media is inserted into the virtual device. |
| MediaTypes [] | array (string (enum)) | read-only | The media types supported as virtual media. <i>For the possible property values, see MediaTypes in Property details.</i> |
| Password (v1.3+) | string | read-write (null) | The password to access the Image parameter-specified URI. This property is null in responses. |

| Property | Type | Attributes | Notes |
|-------------------------------------|------------------|--------------------------------------|--|
| Status (v1.4+) {} | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| TransferMethod (v1.3+) | string (enum) | <i>read-write</i> (<i>null</i>) | The transfer method to use with the Image. <i>For the possible property values, see TransferMethod in Property details.</i> |
| TransferProtocolType (v1.3+) | string (enum) | <i>read-write</i> (<i>null</i>) | The network protocol to use with the image. <i>For the possible property values, see TransferProtocolType in Property details.</i> |
| UserName (v1.3+) | string | <i>read-write</i> (<i>null</i>) | The user name to access the Image parameter-specified URI. |
| VerifyCertificate (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the service will verify the certificate of the server referenced by the Image property prior to completing the remote media connection. |
| WriteProtected | boolean | <i>read-write</i> (<i>null</i>) | An indication of whether the media is write-protected. |

6.144.4 Actions

6.144.4.1 EjectMedia (v1.2+)

Description

This action detaches remote media from virtual media.

Action URI

{Base URI of target resource}/Actions/VirtualMedia.EjectMedia

Action parameters

This action takes no parameters.

6.144.4.2 InsertMedia (v1.2+)

Description

This action attaches remote media to virtual media.

Action URI

{Base URI of target resource}/Actions/VirtualMedia.InsertMedia

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------------------|---------------|-----------------|--|
| Image | string | <i>required</i> | The URI of the media to attach to the virtual media. |
| Inserted | boolean | <i>optional</i> | An indication of whether the image is treated as inserted upon completion of the action. The default is <code>true</code> . |
| Password (v1.3+) | string | <i>optional</i> | The password to access the URI specified by the Image parameter. |
| TransferMethod (v1.3+) | string (enum) | <i>optional</i> | The transfer method to use with the image. <i>For the possible property values, see TransferMethod in Property details.</i> |
| TransferProtocolType (v1.3+) | string (enum) | <i>optional</i> | The network protocol to use with the image. <i>For the possible property values, see TransferProtocolType in Property details.</i> |
| UserName (v1.3+) | string | <i>optional</i> | The username to access the URI specified by the Image parameter. |
| WriteProtected | boolean | <i>optional</i> | An indication of whether the remote media is treated as write-protected. The default is <code>true</code> . |

Request Example

```
{
  "Image": "https://192.168.1.225/boot_image.iso",
  "Inserted": true,
  "WriteProtected": true
}
```

6.144.5 Property details

6.144.5.1 ConnectedVia

The current virtual media connection method.

| string | Description |
|--------------|--|
| Applet | Connected to a client application. |
| NotConnected | No current connection. |
| Oem | Connected through an OEM-defined method. |
| URI | Connected to a URI location. |

6.144.5.2 EjectPolicy

The ejection policy for the virtual media.

| string | Description |
|------------|---|
| AfterUse | The virtual media ejection occurs after the media is used. |
| OnPowerOff | The virtual media ejection occurs during a system power or reset event. |
| Persistent | The virtual media mount information persists indefinitely. |
| Session | The virtual media ejection occurs when a session is terminated. The session might be outside the Redfish service. |
| Timed | The virtual media ejection occurs when a timer configured by the EjectTimeout property expires. |

6.144.5.3 MediaTypes

The media types supported as virtual media.

| string | Description |
|----------|---------------------------------------|
| CD | A CD-ROM format (ISO) image. |
| DVD | A DVD-ROM format image. |
| Floppy | A floppy disk image. |
| USBStick | An emulation of a USB storage device. |

6.144.5.4 TransferMethod

The transfer method to use with the image.

| string | Description |
|--------|--|
| Stream | Stream image file data from the source URI. |
| Upload | Upload the entire image file from the source URI to the service. |

6.144.5.5 TransferProtocolType

The network protocol to use with the image.

| string | Description |
|--------|---|
| CIFS | Common Internet File System (CIFS). |
| FTP | File Transfer Protocol (FTP). |
| HTTP | Hypertext Transfer Protocol (HTTP). |
| HTTPS | Hypertext Transfer Protocol Secure (HTTPS). |
| NFS | Network File System (NFS). |
| OEM | A manufacturer-defined protocol. |
| SCP | Secure Copy Protocol (SCP). |
| SFTP | Secure File Transfer Protocol (SFTP). |
| TFTP | Trivial File Transfer Protocol (TFTP). |

6.144.6 Example response

```
{
  "@odata.type": "#VirtualMedia.v1_6_2.VirtualMedia",
  "Id": "CD1",
  "Name": "Virtual CD",
  "MediaTypes": [
    "CD",
    "DVD"
  ],
  "Image": "redfish.dmtf.org/freeImages/freeOS.1.1.iso",
  "ImageName": "mymedia-read-only",
  "ConnectedVia": "Applet",
  "Inserted": true,
  "WriteProtected": false,
  "@odata.id": "/redfish/v1/Managers/BMC/VirtualMedia/CD1"
}
```

6.145 VlanNetworkInterface 1.3.0 (deprecated)

| | | | | |
|----------------|------------------------|-------------|-------------|-------------|
| Version | <i>v1.3 Deprecated</i> | <i>v1.2</i> | <i>v1.1</i> | <i>v1.0</i> |
| Release | 2021.2 | 2020.4 | 2017.1 | 1.0 |

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of using individual EthernetInterface resources to show VLAN information.

6.145.1 Description

The VlanNetworkInterface schema describes a VLAN network instance that is available on a manager, system, or other device.

6.145.2 URIs

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/Ethernet/VLANs/{VlanNetworkInterfaceId} (deprecated)
/redfish/v1/Managers/{ManagerId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs/{VlanNetworkInterfaceId} (deprecated)
/redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs/{VlanNetworkInterfaceId} (deprecated)

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.145.3 Properties

| Property | Type | Attributes | Notes |
|--------------------------------|---------|---|---|
| VLANEnable | boolean | <i>read-write required on create (null)</i> | An indication of whether this VLAN is enabled for this interface. |
| VLANId | integer | <i>read-write required on create (null)</i> | The ID for this VLAN. |
| VLANPriority (v1.2+) | integer | <i>read-write (null)</i> | The priority for this VLAN. |

6.145.4 Example response

```
{
  "@odata.type": "#VlanNetworkInterface.v1_3_0.VlanNetworkInterface",
  "Id": "1",
  "Name": "VLAN Network Interface",
  "Description": "System NIC 1 VLAN",
  "VLANEnable": true,
  "VLANId": 101,
  "@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces/12446A3B0411/VLANs/1"
}
```

6.146 Volume 1.10.0

| Version | v1.10 | v1.9 | v1.8 | v1.7 | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 |
|---------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| Release | 1.2.6 | 1.2.5 | 1.2.4 | 1.2.3 | 1.2.1 | 1.2.0 | 1.1.0 | 1.0.6a | 1.0.5 |

6.146.1 Description

Volume contains properties used to describe a volume, virtual disk, LUN, or other logical storage entity for any system.

6.146.2 URIs

```
/redfish/v1/Storage/{StorageId}/ConsistencyGroups/{ConsistencyGroupId}/Volumes/{VolumeId}
/redfish/v1/Storage/{StorageId}/FileSystems/{FileSystemId}/CapacitySources/{CapacitySourceId}/
ProvidingVolumes/{VolumeId}
/redfish/v1/Storage/{StorageId}/StoragePools/{StoragePoolId}/AllocatedVolumes/{VolumeId}
/redfish/v1/Storage/{StorageId}/StoragePools/{StoragePoolId}/CapacitySources/{CapacitySourceId}/
ProvidingVolumes/{VolumeId}
/redfish/v1/Storage/{StorageId}/Volumes/{VolumeId}
/redfish/v1/StorageServices/{StorageServiceId}/ConsistencyGroups/{ConsistencyGroupId}/Volumes/
{VolumeId}
/redfish/v1/StorageServices/{StorageServiceId}/FileSystems/{FileSystemId}/CapacitySources/
{CapacitySourceId}/ProvidingVolumes/{VolumeId}
/redfish/v1/StorageServices/{StorageServiceId}/StoragePools/{StoragePoolId}/AllocatedVolumes/
{VolumeId}
/redfish/v1/StorageServices/{StorageServiceId}/StoragePools/{StoragePoolId}/CapacitySources/
{CapacitySourceId}/ProvidingVolumes/{VolumeId}
```

```

/redfish/v1/StorageServices/{StorageServiceId}/Volumes/{VolumeId}
/redfish/v1/StorageServices/{StorageServiceId}/Volumes/{VolumeId}/CapacitySources/
{CapacitySourceId}/ProvidingVolumes/{ProvidingVolumeId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/ConsistencyGroups/
{ConsistencyGroupId}/Volumes/{VolumeId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/FileSystems/{FileSystemId}/
CapacitySources/{CapacitySourceId}/ProvidingVolumes/{VolumeId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StoragePools/{StoragePoolId}/
AllocatedVolumes/{VolumeId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/StoragePools/{StoragePoolId}/
CapacitySources/{CapacitySourceId}/ProvidingVolumes/{VolumeId}
/redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/Volumes/{VolumeId}

```

* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.146.3 Properties

| Property | Type | Attributes | Notes |
|---------------------------------------|-----------------------------|------------------------------|--|
| AccessCapabilities (v1.1+) [] | array (string (enum)) | <i>read-write (null)</i> | Supported IO access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i> |
| AllocatedPools (v1.1+) { } | object | | An array of references to StoragePools allocated from this Volume. |
| BlockSizeBytes | integer (bytes) | <i>read-only (null)</i> | The size of the smallest addressable unit (Block) of this volume in bytes. |
| Capacity (v1.1+) { } | object | | Capacity utilization. For property details, see Capacity v1.0.0). |
| CapacityBytes | integer (bytes) | <i>read-write (null)</i> | The size in bytes of this Volume. |
| CapacitySources (v1.1+) [{ | array | | An array of space allocations to this volume. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Compressed (v1.4+) | boolean | <i>read-write (null)</i> | Indicator of whether or not the Volume has compression enabled. |
| Connections (v1.9+) [{ | array | | An array of references to Connections that includes this volume. |

| Property | Type | Attributes | Notes |
|--------------------------------------|-----------------------|--------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a Connection resource. See the Links section and the <i>Connection</i> schema for details. |
| }] | | | |
| Deduplicated (v1.4+) | boolean | <i>read-write (null)</i> | Indicator of whether or not the Volume has deduplication enabled. |
| DisplayName (v1.4+) | string | <i>read-write (null)</i> | A user-configurable string to name the volume. |
| Encrypted | boolean | <i>read-write (null)</i> | Is this Volume encrypted. |
| EncryptionTypes [] | array (string (enum)) | <i>read-write</i> | The types of encryption used by this Volume. <i>For the possible property values, see EncryptionTypes in Property details.</i> |
| Identifiers [{ }] | array (object) | | The Durable names for the volume. For property details, see Identifier. |
| InitializeMethod (v1.6+) | string (enum) | <i>read-only (null)</i> | Indicates the Initialization Method used for this volume. If InitializeMethod is not specified, the InitializeMethod should be Foreground. <i>For the possible property values, see InitializeMethod in Property details.</i> |
| IOPerfModeEnabled (v1.5+) | boolean | <i>read-write (null)</i> | Indicates the IO performance mode setting for the volume. |
| IOStatistics (v1.2+) { } | object | | Statistics for this volume. For property details, see IOStatistics v1.0.1). |
| IsBootCapable (v1.7+) | boolean | <i>read-write (null)</i> | This property indicates whether or not the Volume contains a boot image and is capable of booting. |
| Links { | object | | Contains references to other resources that are related to this resource. |
| CacheDataVolumes (v1.6+) [{ | array | | A pointer to the data volumes this volume serves as a cache volume. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| CacheVolumeSource (v1.6+) { } | object | <i>(null)</i> | A pointer to the cache volume source for this volume. |

| Property | Type | Attributes | Notes |
|---|--------------|-------------------|---|
| ClassOfService (v1.1+) {} | object | | The ClassOfService that this storage volume conforms to. |
| ClientEndpoints (v1.4+) [{ | array | | An array of references to the client Endpoints associated with this volume. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| ConsistencyGroups (v1.4+) [{ | array | | An array of references to the ConsistencyGroups associated with this volume. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| Controllers (v1.9+) [{ | array | | An array of the Controllers associated with this volume. |
| @odata.id | string | <i>read-only</i> | Link to a StorageController resource. See the Links section and the <i>StorageController</i> schema for details. |
| }] | | | |
| DedicatedSpareDrives (v1.2+) [{ | array | | An array of references to the drives which are dedicated spares for this volume. |
| @odata.id | string | <i>read-write</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| Drives [{ | array | | An array of references to the drives which contain this volume. This will reference Drives that either wholly or only partly contain this volume. |
| @odata.id | string | <i>read-only</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| JournalingMedia (v1.5+) {} | object | (null) | A pointer to the Resource that serves as a journaling media for this volume. |

| Property | Type | Attributes | Notes |
|---|---------------------------|-------------------------|--|
| Oem {} | object | | See the Oem object definition in the Common properties section. |
| OwningStorageResource (v1.5+) { | object | | A pointer to the Storage resource that owns or contains this volume. See the <i>Storage</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details. |
| } | | | |
| OwningStorageService (v1.4+) {} | object | | A pointer to the StorageService that owns or contains this volume. |
| ServerEndpoints (v1.4+) [{ | array | | An array of references to the server Endpoints associated with this volume. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| SpareResourceSets (v1.3+) [{ | array | | An array of references to SpareResourceSets. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| StorageGroups (v1.4+) [{ | array | | An array of references to the StorageGroups associated with this volume. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| } | | | |
| LogicalUnitNumber (v1.4+) | integer | <i>read-only (null)</i> | Indicates the host-visible LogicalUnitNumber assigned to this Volume. |
| LowSpaceWarningThresholdPercents (v1.1+) [] | array (%) (integer, null) | <i>read-write</i> | Low space warning. |
| Manufacturer (v1.1+) | string | <i>read-only (null)</i> | The manufacturer or OEM of this storage volume. |

| Property | Type | Attributes | Notes |
|--|-----------------|-----------------------------|--|
| MaxBlockSizeBytes (v1.1+) | integer (bytes) | <i>read-only</i> (null) | Max Block size in bytes. |
| MediaSpanCount (v1.4+) | integer | <i>read-only</i> (null) | Indicates the number of media elements used per span in the secondary RAID for a hierarchical RAID type. |
| Metrics (v1.9+) {} | object | | The link to the metrics for this volume. |
| Model (v1.1+) | string | <i>read-only</i> (null) | The model number for this storage volume. |
| NVMeNamespaceProperties (v1.5+) { | object | (null) | This property contains properties to use when Volume is used to describe an NVMe Namespace. |
| FormattedLBASize (v1.5+) | string | <i>read-only</i> (null) | The LBA data size and metadata size combination that the namespace has been formatted with. |
| IsShareable (v1.5+) | boolean | <i>read-write</i> (null) | Indicates the namespace is shareable. |
| LBAFormat (v1.9+) { | object | (null) | Describes the current LBA format ID and detailed properties. |
| LBADataSizeBytes (v1.9+) | integer | <i>read-only</i> (null) | The LBA data size in bytes. |
| LBAFormatType (v1.9+) | string (enum) | <i>read-only</i> (null) | The LBA format type. <i>For the possible property values, see LBAFormatType in Property details.</i> |
| LBAMetadataSizeBytes (v1.9+) | integer | <i>read-only</i> (null) | The LBA metadata size in bytes. |
| RelativePerformance (v1.9+) | string (enum) | <i>read-only</i> (null) | The LBA Relative Performance type. <i>For the possible property values, see RelativePerformance in Property details.</i> |
| } | | | |
| LBAFormats (v1.9+) [{ | array | | Describes the LBA format IDs and detailed properties. |
| LBADataSizeBytes (v1.9+) | integer | <i>read-only</i> (null) | The LBA data size in bytes. |
| LBAFormatType (v1.9+) | string (enum) | <i>read-only</i> (null) | The LBA format type. <i>For the possible property values, see LBAFormatType in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|-----------------------------|----------------------------|---|
| LBA Metadata Size Bytes (v1.9+) | integer | <i>read-only</i> (null) | The LBA metadata size in bytes. |
| Relative Performance (v1.9+) | string (enum) | <i>read-only</i> (null) | The LBA Relative Performance type. <i>For the possible property values, see RelativePerformance in Property details.</i> |
| }] | | | |
| LBA Formats Supported (v1.8+) [] | array (string (enum)) | <i>read-only</i> (null) | A list of the LBA format types supported for the namespace, or potential namespaces. <i>For the possible property values, see LBAFormatsSupported in Property details.</i> |
| Metadata Transferred At End Of Data LBA (v1.5+) | boolean | <i>read-only</i> (null) | This property indicates whether or not the metadata is transferred at the end of the LBA creating an extended data LBA. |
| Namespace Features (v1.5+) { | object | (null) | This property contains a set of Namespace Features. |
| Supports Atomic Transaction Size (v1.5+) | boolean | <i>read-only</i> (null) | Indicates that the NVM fields for Namespace preferred write granularity (NPWG), write alignment (NPWA), deallocate granularity (NPDG), deallocate alignment (NPDA) and optimal write size (NOWS) are defined for this namespace and should be used by the host for I/O optimization. |
| Supports Deallocated Or Unwritten LBA Error (v1.5+) | boolean | <i>read-only</i> (null) | This property indicates that the controller supports deallocated or unwritten logical block error for this namespace. |
| Supports I/O Performance Hints (v1.5+) | boolean | <i>read-only</i> (null) | Indicates that the Namespace Atomic Write Unit Normal (NAWUN), Namespace Atomic Write Unit Power Fail (NAWUPF), and Namespace Atomic Compare and Write Unit (NACWU) fields are defined for this namespace and should be used by the host for this namespace instead of the controller-level properties AWUN, AWUPF, and ACWU. |
| Supports NGUID Reuse (v1.5+) | boolean | <i>read-only</i> (null) | This property indicates that the namespace supports the use of an NGUID (namespace globally unique identifier) value. |
| Supports Thin Provisioning (v1.5+) | boolean | <i>read-only</i> (null) | This property indicates whether or not the NVMe Namespace supports thin provisioning. |
| } | | | |

| Property | Type | Attributes | Notes |
|--|--------------------|-----------------------------|---|
| NamespaceId (v1.5+) | string | <i>read-only</i> (null) | The NVMe Namespace Identifier for this namespace. |
| NamespaceType (v1.9+) | string (enum) | <i>read-only</i> (null) | Identifies the type of namespace. <i>For the possible property values, see NamespaceType in Property details.</i> |
| NumberLBAFormats (v1.5+) | integer (bytes) | <i>read-only</i> (null) | The number of LBA data size and metadata size combinations supported by this namespace. The value of this property is between 0 and 16. |
| NVMeVersion (v1.5+) | string | <i>read-only</i> (null) | The version of the NVMe Base Specification supported. |
| Type (v1.8+) | string (enum) | <i>read-only</i> (null) | Identifies the type of namespace. <i>For the possible property values, see Type in Property details.</i> |
| } | | | |
| Operations [{ | array | | The operations currently running on the Volume. |
| AssociatedFeaturesRegistry {} | object | | A reference to the task associated with the operation if any. |
| Operation (v1.9+) | string (enum) | <i>read-only</i> (null) | The type of the operation. <i>For the possible property values, see Operation in Property details.</i> |
| OperationName (deprecated v1.9) | string | <i>read-only</i> (null) | The name of the operation. <i>Deprecated in v1.9 and later. This property is deprecated in favor of the Operation property using the Operation enum.</i> |
| PercentageComplete | integer | <i>read-only</i> (null) | The percentage of the operation that has been completed. |
| }] | | | |
| OptimumIOSizeBytes | integer (bytes) | <i>read-only</i> (null) | The size in bytes of this Volume's optimum IO size. |
| ProvisioningPolicy (v1.4+) | string (enum) | <i>read-write</i> (null) | This property specifies the volume's storage allocation, or provisioning policy. <i>For the possible property values, see ProvisioningPolicy in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|----------------------------|-----------------------------|--|
| RAIDType (v1.3.1+) | string (enum) | <i>read-only</i> (null) | The RAID type of this volume. <i>For the possible property values, see RAIDType in Property details.</i> |
| ReadCachePolicy (v1.4+) | string (enum) | <i>read-write</i> (null) | Indicates the read cache policy setting for the Volume. <i>For the possible property values, see ReadCachePolicy in Property details.</i> |
| RecoverableCapacitySourceCount (v1.3+) | integer | <i>read-write</i> (null) | Current number of capacity source resources that are available as replacements. |
| RemainingCapacityPercent (v1.2+) | integer | <i>read-only</i> (null) | The percentage of the capacity remaining in the Volume. |
| RemoteReplicaTargets (v1.8+) [] | array (string, null) | <i>read-only</i> | URIs to the resources that are remote target replicas of this source. |
| ReplicaInfo (v1.1+) { } | object | | Describes this storage volume in its role as a target replica. For property details, see ReplicaInfo v1.4.0). |
| ReplicaTargets (v1.3+) [{ } | array | | The resources that are target replicas of this source. |
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
| }] | | | |
| ReplicationEnabled (v1.9+) | boolean | <i>read-write</i> (null) | Indicates whether or not replication is enabled on the volume. |
| Status { } | object | | The property contains the status of the Volume. For property details, see Status. |
| StorageGroups (v1.1+, deprecated v1.9 { } | object | | An array of references to Storage Groups that includes this volume. <i>Deprecated in v1.9 and later. This property is deprecated in favor of the Connections property.</i> |
| StripSizeBytes (v1.4+) | integer (bytes) | <i>read-write</i> (null) | The number of blocks (bytes) in a strip in a disk array that uses striped data mapping. |
| VolumeType | string (enum) | <i>read-only</i> (null) | The type of this volume. <i>For the possible property values, see VolumeType in Property details.</i> |
| VolumeUsage (v1.4+) | string (enum) | <i>read-only</i> (null) | Indicates the Volume usage type setting for the Volume. <i>For the possible property values, see VolumeUsage in Property details.</i> |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------------------|---|
| WriteCachePolicy (v1.4+) | string (enum) | <i>read-write</i> (<i>null</i>) | Indicates the write cache policy setting for the Volume. <i>For the possible property values, see WriteCachePolicy in Property details.</i> |
| WriteCacheState (v1.4+) | string (enum) | <i>read-only</i> (<i>null</i>) | Indicates the WriteCacheState policy setting for the Volume. <i>For the possible property values, see WriteCacheState in Property details.</i> |
| WriteHoleProtectionPolicy (v1.4+) | string (enum) | <i>read-write</i> | The policy that the RAID volume is using to address the write hole issue. <i>For the possible property values, see WriteHoleProtectionPolicy in Property details.</i> |

6.146.4 Actions

6.146.4.1 AssignReplicaTarget (v1.4+)

Description

This action is used to establish a replication relationship by assigning an existing volume to serve as a target replica for an existing source volume.

Action URI

{Base URI of target resource}/Actions/Volume.AssignReplicaTarget

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------------|------------------|-----------------|--|
| ReplicaType | string (enum) | <i>required</i> | The type of replica relationship to be created. <i>For the possible property values, see ReplicaType in Property details.</i> |
| ReplicaUpdateMode | string (enum) | <i>required</i> | The replica update mode (synchronous vs asynchronous). <i>For the possible property values, see ReplicaUpdateMode in Property details.</i> |
| TargetVolume | string | <i>required</i> | The Uri to the existing target volume. |

Request Example

```
{
```

```

    "ReplicaUpdateMode": "Synchronous",
    "TargetVolume": "/redfish/v1/Storage/1/ConsistencyGroup/CG_DB2",
    "ReplicaType": "Mirror"
  }

```

6.146.4.2 ChangeRAIDLAYOUT (v1.5+)

Description

Request system change the RAID layout of the volume.

Action URI

{Base URI of target resource}/Actions/Volume.ChangeRAIDLAYOUT

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-----------------------|------------------|------------------|--|
| Drives [{ | array | <i>optional</i> | An array of the drives to be used by the volume. |
| @odata.id | string | <i>read-only</i> | Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details. |
| }] | | | |
| MediaSpanCount | integer | <i>optional</i> | The requested number of media elements used per span in the secondary RAID for a hierarchical RAID type. |
| RAIDType | string (enum) | <i>optional</i> | The requested RAID type for the volume. <i>For the possible property values, see RAIDType in Property details.</i> |
| StripSizeBytes | integer | <i>optional</i> | The number of blocks (bytes) requested for new strip size. |

Request Example

```

{
  "Drives": [
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Drives/Bay1A"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Drives/Bay2A"
    }
  ]
}

```

```

    {
      "@odata.id": "/redfish/v1/Chassis/1U/Drives/Bay3B"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1U/Drives/Bay4B"
    }
  ],
  "RAIDType": "RAID6"
}

```

6.146.4.3 CheckConsistency

Description

This action is used to force a check of the Volume's parity or redundant data to ensure it matches calculated values.

Action URI

{Base URI of target resource}/Actions/Volume.CheckConsistency

Action parameters

This action takes no parameters.

6.146.4.4 CreateReplicaTarget (v1.4+)

Description

This action is used to create a new volume resource to provide expanded data protection through a replica relationship with the specified source volume.

Action URI

{Base URI of target resource}/Actions/Volume.CreateReplicaTarget

Action parameters

| Parameter Name | Type | Attributes | Notes |
|--------------------|------------------|-----------------|---|
| ReplicaType | string (enum) | <i>required</i> | The type of replica relationship to be created. <i>For the possible property values, see ReplicaType in Property details.</i> |

| Parameter Name | Type | Attributes | Notes |
|--------------------------|------------------|-----------------|--|
| ReplicaUpdateMode | string (enum) | <i>required</i> | The replica update mode (synchronous vs asynchronous). <i>For the possible property values, see ReplicaUpdateMode in Property details.</i> |
| TargetStoragePool | string | <i>required</i> | The Uri to the existing target Storage Pool. |
| VolumeName | string | <i>optional</i> | The Name for the new target volume. |

Request Example

```
{
  "VolumeName": "Mirror of Volume 65",
  "ReplicaUpdateMode": "Synchronous",
  "TargetStoragePool": "/redfish/v1/Storage/1/StoragePools/PrimaryPool",
  "ReplicaType": "Mirror"
}
```

6.146.4.5 ForceEnable (v1.5+)

Description

Request system force the volume to an enabled state regardless of data loss.

Action URI

{Base URI of target resource}/Actions/Volume.ForceEnable

Action parameters

This action takes no parameters.

6.146.4.6 Initialize (v1.5+)

Description

This action is used to prepare the contents of the volume for use by the system. If InitializeMethod is not specified in the request body, but the property InitializeMethod is specified, the property InitializeMethod value should be used. If neither is specified, the InitializeMethod should be Foreground.

Action URI

{Base URI of target resource}/Actions/Volume.Initialize

Action parameters

| Parameter Name | Type | Attributes | Notes |
|-------------------------|------------------|-----------------|--|
| InitializeMethod | string (enum) | <i>optional</i> | The type of initialization to be performed. <i>For the possible property values, see InitializeMethod in Property details.</i> |
| InitializeType | string (enum) | <i>optional</i> | The type of initialization to be performed. <i>For the possible property values, see InitializeType in Property details.</i> |

Request Example

```
{
  "InitializeMethod": "Background",
  "InitializeType": "Fast"
}
```

6.146.4.7 RemoveReplicaRelationship (v1.4+)**Description**

This action is used to disable data synchronization between a source and target volume, remove the replication relationship, and optionally delete the target volume.

Action URI

{Base URI of target resource}/Actions/Volume.RemoveReplicaRelationship

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------------|---------|-----------------|---|
| DeleteTargetVolume | boolean | <i>optional</i> | Indicate whether or not to delete the target volume as part of the operation. |
| TargetVolume | string | <i>required</i> | The Uri to the existing target volume. |

Request Example

```
{
  "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245",
  "DeleteTargetVolume": "false"
}
```



```
}

```

6.146.4.8 ResumeReplication (v1.4+)

Description

This action is used to resume the active data synchronization between a source and target volume, without otherwise altering the replication relationship.

Action URI

{Base URI of target resource}/Actions/Volume.ResumeReplication

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|-----------------|--|
| TargetVolume | string | <i>required</i> | The Uri to the existing target volume. |

Request Example

```
{
  "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.146.4.9 ReverseReplicationRelationship (v1.4+)

Description

This action is used to reverse the replication relationship between a source and target volume.

Action URI

{Base URI of target resource}/Actions/Volume.ReverseReplicationRelationship

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|-----------------|--|
| TargetVolume | string | <i>required</i> | The Uri to the existing target volume. |

Request Example

```
{
  "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.146.4.10 SplitReplication (v1.4+)

Description

This action is used to split the replication relationship and suspend data synchronization between a source and target volume.

Action URI

{Base URI of target resource}/Actions/Volume.SplitReplication

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|-----------------|--|
| TargetVolume | string | <i>required</i> | The Uri to the existing target volume. |

Request Example

```
{
  "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.146.4.11 SuspendReplication (v1.4+)

Description

This action is used to suspend active data synchronization between a source and target volume, without otherwise altering the replication relationship.

Action URI

{Base URI of target resource}/Actions/Volume.SuspendReplication

Action parameters

| Parameter Name | Type | Attributes | Notes |
|----------------|--------|------------|--|
| TargetVolume | string | required | The Uri to the existing target volume. |

Request Example

```
{
  "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.146.5 Property details

6.146.5.1 AccessCapabilities

Supported IO access capabilities.

| string | Description |
|-----------|--|
| Append | AppendOnly. |
| Execute | Execute access is allowed by the file share. |
| Read | Read. |
| Streaming | Streaming. |
| Write | Write Many. |
| WriteOnce | WriteOnce. |

6.146.5.2 EncryptionTypes

The types of encryption used by this Volume.

| string | Description |
|-----------------------|--|
| ControllerAssisted | The volume is being encrypted by the storage controller entity. |
| NativeDriveEncryption | The volume is utilizing the native drive encryption capabilities of the drive hardware. |
| SoftwareAssisted | The volume is being encrypted by software running on the system or the operating system. |

6.146.5.3 idRef

| | | | |
|-----------|-----------------|------------------|---------------------------------------|
| @odata.id | string (URI) | <i>read-only</i> | The unique identifier for a resource. |
|-----------|-----------------|------------------|---------------------------------------|

6.146.5.4 InitializeMethod

The type of initialization to be performed.

| string | Description |
|------------|--|
| Background | The volume will be available for use immediately, with data erasure and preparation to happen as background tasks. |
| Foreground | Data erasure and preparation tasks will complete before the volume is presented as available for use. |
| Skip | The volume will be available for use immediately, with no preparation. |

6.146.5.5 InitializeType

The type of initialization to be performed.

| string | Description |
|--------|---|
| Fast | The volume is prepared for use quickly, typically by erasing just the beginning and end of the space so that partitioning can be performed. |
| Slow | The volume is prepared for use slowly, typically by completely erasing the volume. |

6.146.5.6 LBAFormatsSupported

A list of the LBA format types supported for the namespace, or potential namespaces.

| string | Description |
|-------------|---|
| LBAFormat0 | LBAFormat0 is a required type. Indicates the LBA data size supported. |
| LBAFormat1 | Indicates the LBA data size if supported. |
| LBAFormat10 | Indicates the LBA data size supported if supported. |
| LBAFormat11 | Indicates the LBA data size supported if supported. |
| LBAFormat12 | Indicates the LBA data size supported if supported. |
| LBAFormat13 | Indicates the LBA data size supported if supported. |
| LBAFormat14 | Indicates the LBA data size supported if supported. |
| LBAFormat15 | Indicates the LBA data size supported if supported. |
| LBAFormat2 | Indicates the LBA data size supported if supported. |
| LBAFormat3 | Indicates the LBA data size supported if supported. |
| LBAFormat4 | Indicates the LBA data size supported if supported. |
| LBAFormat5 | Indicates the LBA data size supported if supported. |
| LBAFormat6 | Indicates the LBA data size supported if supported. |
| LBAFormat7 | Indicates the LBA data size supported if supported. |
| LBAFormat8 | Indicates the LBA data size supported if supported. |
| LBAFormat9 | Indicates the LBA data size supported if supported. |

6.146.5.7 LBAFormatType

The LBA format type.

| string | Description |
|-------------|---|
| LBAFormat0 | LBAFormat0 is a required type. Indicates the LBA data size supported. |
| LBAFormat1 | Indicates the LBA data size if supported. |
| LBAFormat10 | Indicates the LBA data size supported if supported. |
| LBAFormat11 | Indicates the LBA data size supported if supported. |
| LBAFormat12 | Indicates the LBA data size supported if supported. |
| LBAFormat13 | Indicates the LBA data size supported if supported. |

| string | Description |
|-------------|---|
| LBAFormat14 | Indicates the LBA data size supported if supported. |
| LBAFormat15 | Indicates the LBA data size supported if supported. |
| LBAFormat2 | Indicates the LBA data size supported if supported. |
| LBAFormat3 | Indicates the LBA data size supported if supported. |
| LBAFormat4 | Indicates the LBA data size supported if supported. |
| LBAFormat5 | Indicates the LBA data size supported if supported. |
| LBAFormat6 | Indicates the LBA data size supported if supported. |
| LBAFormat7 | Indicates the LBA data size supported if supported. |
| LBAFormat8 | Indicates the LBA data size supported if supported. |
| LBAFormat9 | Indicates the LBA data size supported if supported. |

6.146.5.8 NamespaceType

Identifies the type of namespace.

| string | Description |
|---------------|---|
| Block | The namespace is configured for use with a block storage interface. |
| Computational | The namespace is configured for use with a computational storage interface. |
| KeyValue | The namespace is configured for use with a KeyValue interface. |
| ZNS | The namespace is configured for use with a zoned storage interface. |

6.146.5.9 Operation

The type of the operation.

| string | Description |
|------------------|--|
| ChangeRAIDType | A ChangeRAIDType operation is being performed. |
| ChangeStripSize | A ChangeStripSize operation is being performed. |
| CheckConsistency | A CheckConsistency operation is being performed. |

| string | Description |
|-------------|---|
| Compress | A Compress operation is being performed. |
| Decrypt | A Decrypt operation is being performed. |
| Deduplicate | A Deduplicate operation is being performed. |
| Delete | A Delete operation is being performed. |
| Encrypt | An Encrypt operation is being performed. |
| Format | A Format operation is being performed. |
| Initialize | An Initialize operation is being performed. |
| Rebuild | A Rebuild operation is being performed. |
| Replicate | A Replicate operation is being performed. |
| Resize | A Resize operation is being performed. |
| Sanitize | A Sanitize operation is being performed. |

6.146.5.10 ProvisioningPolicy

This property specifies the volume's storage allocation, or provisioning policy.

| string | Description |
|--------|--------------------------------|
| Fixed | Storage is fully allocated. |
| Thin | Storage may be over allocated. |

6.146.5.11 RAIDType

The requested RAID type for the volume.

| string | Description |
|--------|--|
| None | A placement policy with no redundancy at the device level. |
| RAID0 | A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy. |
| RAID00 | A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets. |

| string | Description |
|--------------|--|
| RAID01 | A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0). |
| RAID1 | A placement policy where each logical block of data is stored on more than one independent storage device. |
| RAID10 | A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1). |
| RAID10E | A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets. |
| RAID10Triple | A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple). |
| RAID1E | A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices. |
| RAID1Triple | A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices. |
| RAID3 | A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |
| RAID4 | A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device. |
| RAID5 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID50 | A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices. |
| RAID6 | A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices. |
| RAID60 | A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices. |
| RAID6TP | A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices. |

6.146.5.12 ReadCachePolicy

Indicates the read cache policy setting for the Volume.

| string | Description |
|-------------------|--|
| AdaptiveReadAhead | A caching technique in which the controller dynamically determines whether to pre-fetch data anticipating future read requests, based on previous cache hit ratio. |
| Off | The read cache is disabled. |
| ReadAhead | A caching technique in which the controller pre-fetches data anticipating future read requests. |

6.146.5.13 RelativePerformance

The LBA Relative Performance type.

| string | Description |
|----------|-----------------------|
| Best | Best performance. |
| Better | Better performance. |
| Degraded | Degraded performance. |
| Good | Good performance. |

6.146.5.14 ReplicaType

The type of replica relationship to be created.

| string | Description |
|----------------|---|
| Clone | Create a point in time, full copy the source. |
| Mirror | Create and maintain a copy of the source. |
| Snapshot | Create a point in time, virtual copy of the source. |
| TokenizedClone | Create a token based clone. |

6.146.5.15 ReplicaUpdateMode

The replica update mode (synchronous vs asynchronous).

| string | Description |
|--------------|---|
| Active | Active-Active (i.e. bidirectional) synchronous updates. |
| Adaptive | Allows implementation to switch between synchronous and asynchronous modes. |
| Asynchronous | Asynchronous updates. |
| Synchronous | Synchronous updates. |

6.146.5.16 Type

Identifies the type of namespace.

| string | Description |
|---------------|---|
| Block | The namespace is configured for use with a block storage interface. |
| Computational | The namespace is configured for use with a computational storage interface. |
| KeyValue | The namespace is configured for use with a KeyValue interface. |
| ZNS | The namespace is configured for use with a zoned storage interface. |

6.146.5.17 VolumeType

The type of this volume.

| string | Description |
|--------------------------|---|
| Mirrored | The volume is a mirrored device. |
| NonRedundant | The volume is a non-redundant storage device. |
| RawDevice | The volume is a raw physical device without any RAID or other virtualization applied. |
| SpannedMirrors | The volume is a spanned set of mirrored devices. |
| SpannedStripesWithParity | The volume is a spanned set of devices which uses parity to retain redundant information. |
| StripedWithParity | The volume is a device which uses parity to retain redundant information. |

6.146.5.18 VolumeUsage

Indicates the Volume usage type setting for the Volume.

| string | Description |
|--------------------|--|
| CacheOnly | The volume is allocated for use as a non-consumable cache only volume. |
| Data | The volume is allocated for use as a consumable data volume. |
| ReplicationReserve | The volume is allocated for use as a non-consumable reserved volume for replication use. |
| SystemData | The volume is allocated for use as a consumable data volume reserved for system use. |
| SystemReserve | The volume is allocated for use as a non-consumable system reserved volume. |

6.146.5.19 WriteCachePolicy

Indicates the write cache policy setting for the Volume.

| string | Description |
|----------------------|--|
| Off | The write cache is disabled. |
| ProtectedWriteBack | A caching technique in which the completion of a write request is signaled as soon as the data is in cache, and actual writing to non-volatile media is guaranteed to occur at a later time. |
| UnprotectedWriteBack | A caching technique in which the completion of a write request is signaled as soon as the data is in cache; actual writing to non-volatile media is not guaranteed to occur at a later time. |
| WriteThrough | A caching technique in which the completion of a write request is not signaled until data is safely stored on non-volatile media. |

6.146.5.20 WriteCacheState

Indicates the WriteCacheState policy setting for the Volume.

| string | Description |
|-------------|---|
| Degraded | Indicates an issue with the cache state in which the cache space is diminished or disabled due to a failure or an outside influence such as a discharged battery. |
| Protected | Indicates that the cache state type in use generally protects write requests on non-volatile media. |
| Unprotected | Indicates that the cache state type in use generally does not protect write requests on non-volatile media. |

6.146.5.21 WriteHoleProtectionPolicy

The policy that the RAID volume is using to address the write hole issue.

| string | Description |
|----------------|---|
| DistributedLog | The policy that distributes additional log among the volume's capacity sources to address write hole issue. |
| Journaling | The policy that uses separate block device for write-ahead logging to address write hole issue. |
| Oem | The policy that is Oem specific. |
| Off | The volume is not using any policy to address the write hole issue. |

6.146.6 Example response

```
{
  "@odata.type": "#Volume.v1_10_0.Volume",
  "Id": "2",
  "Name": "Virtual Disk 2",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Encrypted": false,
  "RAIDType": "RAID0",
  "CapacityBytes": 107374182400,
  "Identifiers": [
    {
      "DurableNameFormat": "UUID",
      "DurableName": "0324c96c-8031-4f5e-886c-50cd90aca854"
    }
  ],
  "Links": {
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
      }
    ]
  },
  "Actions": {
    "#Volume.Initialize": {
      "target": "/redfish/v1/Systems/3/Storage/RAIDIntegrated/Volumes/1/Actions/Volume.Initialize",
      "InitializeType@Redfish.AllowableValues": [
        "Fast",

```

```

        "Slow"
      ]
    }
  },
  "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/2"
}

```

6.147 Zone 1.6.2

| Version | v1.6 | v1.5 | v1.4 | v1.3 | v1.2 | v1.1 | v1.0 |
|---------|--------|--------|--------|--------|--------|--------|--------|
| Release | 2020.4 | 2020.3 | 2019.4 | 2019.1 | 2017.3 | 2017.1 | 2016.2 |

6.147.1 Description

The Zone schema describes a simple fabric zone for a Redfish implementation.

6.147.2 URIs

`/redfish/v1/CompositionService/ResourceZones/{ZoneId}`

`/redfish/v1/Fabrics/{FabricId}/Zones/{ZoneId}`

6.147.3 Properties

| Property | Type | Attributes | Notes |
|---|-------------------|--------------------------------------|--|
| DefaultRoutingEnabled (v1.4+) | boolean | <i>read-write</i> (<i>null</i>) | This property indicates whether routing within this zone is enabled. |
| ExternalAccessibility (v1.3+) | string (enum) | <i>read-write</i> (<i>null</i>) | Indicates accessibility of endpoints in this zone to endpoints outside of this zone. <i>For the possible property values, see ExternalAccessibility in Property details.</i> |
| Identifiers (v1.2+) [{ }] | array (object) | | The durable names for the zone. For property details, see Identifier. |
| Links { | object | | The links to other resources that are related to this resource. |
| AddressPools (v1.4+) [{ | array | | An array of links to the address pools associated with this zone. |

| Property | Type | Attributes | Notes |
|--|------------------|--------------------------------------|---|
| @odata.id | string | <i>read-only</i> | Link to a AddressPool resource. See the Links section and the <i>AddressPool</i> schema for details. |
| }] | | | |
| ContainedByZones (v1.4+) [{ | array | | An array of links to the zone that contain this zone. |
| @odata.id | string | <i>read-only</i> | Link to another Zone resource. |
| }] | | | |
| ContainsZones (v1.4+) [{ | array | | An array of links to the zones that are contained by this zone. |
| @odata.id | string | <i>read-write</i> | Link to another Zone resource. |
| }] | | | |
| Endpoints [{ | array | | The links to the endpoints that this zone contains. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| }] | | | |
| InvolvedSwitches [{ | array | | The links to the collection of switches in this zone. |
| @odata.id | string | <i>read-only</i> | Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details. |
| }] | | | |
| Oem { } | object | | See the Oem object definition in the Common properties section. |
| ResourceBlocks (v1.1+) [{ | array | | The links to the resource blocks with which this zone is associated. |
| @odata.id | string | <i>read-only</i> | Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details. |
| }] | | | |
| } | | | |
| Status { } | object | | The status and health of the resource and its subordinate or dependent resources. For property details, see Status. |
| ZoneType (v1.4+) | string (enum) | <i>read-write</i> (<i>null</i>) | The type of zone. <i>For the possible property values, see ZoneType in Property details.</i> |

6.147.4 Actions

6.147.4.1 AddEndpoint (v1.5+)

Description

This action adds an endpoint to a zone.

Action URI

{Base URI of target resource}/Actions/Zone.AddEndpoint

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|------------------|--|
| Endpoint { | object | <i>required</i> | The endpoint to add to the zone. See the <i>Endpoint</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| } | | | |
| EndpointETag | string | <i>optional</i> | The current ETag of the endpoint to add to the zone. |
| ZoneETag | string | <i>optional</i> | The current ETag of the zone. |

Request Example

```
{
  "Endpoint": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
  },
  "EndpointETag": "w/\"19472363938\"",
  "ZoneETag": "w/\"99374369273\""
}
```

6.147.4.2 RemoveEndpoint (v1.5+)

Description

This action removes an endpoint from a zone.

Action URI

{Base URI of target resource}/Actions/Zone.RemoveEndpoint

Action parameters

| Parameter Name | Type | Attributes | Notes |
|---------------------|--------|------------------|--|
| Endpoint { | object | <i>required</i> | The endpoint to remove from the zone. See the <i>Endpoint</i> schema for details on this property. |
| @odata.id | string | <i>read-only</i> | Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details. |
| } | | | |
| EndpointETag | string | <i>optional</i> | The current ETag of the endpoint to remove from the system. |
| ZoneETag | string | <i>optional</i> | The current ETag of the zone. |

Request Example

```
{
  "Endpoint": {
    "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
  },
  "EndpointETag": "W/\"19472363938\"",
  "ZoneETag": "W/\"99374369273\""
}
```

6.147.5 Property details**6.147.5.1 ExternalAccessibility**

Indicates accessibility of endpoints in this zone to endpoints outside of this zone.

| string | Description |
|--------------------|--|
| GloballyAccessible | Any external entity with the correct access details, which might include authorization information, can access the endpoints that this zone lists. |
| NoInternalRouting | Routing is not enabled within this zone. |
| NonZonedAccessible | Any external entity that another zone does not explicitly list can access the endpoints that this zone lists. |

| string | Description |
|----------|---|
| ZoneOnly | Only accessible by endpoints that this zone explicitly lists. |

6.147.5.2 ZoneType

The type of zone.

| string | Description |
|---------------------------------|---|
| Default | The zone in which all endpoints are added by default when instantiated. |
| ZoneOfEndpoints | A zone that contains endpoints. |
| ZoneOfResourceBlocks (v1.6+) | A zone that contains resource blocks. |
| ZoneOfZones | A zone that contains zones. |

6.147.6 Example response

```
{
  "@odata.type": "#Zone.v1_6_2.Zone",
  "Id": "1",
  "Name": "SAS Zone 1",
  "Description": "SAS Zone 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator2"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive3"
      }
    ]
  },
}
```

```
"@odata.id": "/redfish/v1/Fabrics/SAS/Zones/1"  
}
```

7 Redfish documentation generator

This document was created using the Redfish Documentation Generator utility, which uses the contents of the Redfish schema files (in JSON schema format) to automatically generate the bulk of the text. The source code for the utility is available for download at DMTF's GitHub repository located at <https://www.github.com/DMTF/Redfish-Tools>.

8 ANNEX A (informative) Change log

| Version | Date | Description |
|---------|------------|--|
| 2023.2 | 2023-08-11 | Release built from Redfish schemas released in DSP8010 version 2023.2. |
| | | Removed ResourceBlock-related URIs from listings for brevity. |
| 2023.1 | 2023-04-06 | Release built from Redfish schemas released in DSP8010 version 2023.1. |
| 2022.3 | 2022-12-08 | Release built from Redfish schemas released in DSP8010 version 2022.3. |
| | | Added <code>uuid</code> and <code>duration</code> as known string formats. |
| | | Corrected missing <code>required</code> notations on array properties. |
| | | Added supplemental details for <code>HealthRollup</code> . |
| 2022.2 | 2022-08-04 | Release built from Redfish schemas released in DSP8010 version 2022.2. |
| 2022.1 | 2022-04-15 | Release built from Redfish schemas released in DSP8010 version 2022.1. |
| 2021.4 | 2021-12-02 | Release built from Redfish schemas released in DSP8010 version 2021.4. |
| | | Added Collection Capabilities section under Resource Collections. |
| 2021.3 | 2021-10-15 | Release built from Redfish schemas released in DSP8010 version 2021.3. |
| 2021.2 | 2021-08-13 | Release built from Redfish schemas released in DSP8010 version 2021.2. |
| | | Corrected format of UUID from RFC4122. |
| 2021.1 | 2021-04-16 | Release built from Redfish schemas released in DSP8010 version 2021.1. |
| | | Document formatting updated for Documentation Generator v3. |
| 2020.4 | 2020-12-01 | Release built from Redfish schemas released in DSP8010 version 2020.4. |
| 2020.3 | 2020-08-14 | Release built from Redfish schemas released in DSP8010 version 2020.3. |
| | | Corrected issue that caused read-write links to be listed as read-only. |
| 2020.2 | 2020-05-08 | Release built from Redfish schemas released in DSP8010 version 2020.2. |
| 2020.1 | 2020-03-27 | Release built from Redfish schemas released in DSP8010 version 2020.1. |
| 2019.4 | 2019-12-06 | Release built from Redfish schemas released in DSP8010 version 2019.4. |
| 2019.3 | 2019-10-11 | Release built from Redfish schemas released in DSP8010 version 2019.3. |
| 2019.2 | 2019-09-13 | Release built from Redfish schemas released in DSP8010 version 2019.2. |
| 2019.1 | 2019-05-03 | Release built from Redfish schemas released in DSP8010 version 2019.1. |

| Version | Date | Description |
|---------|------------|---|
| | | Added release version history to match each schema to the DSP8010 version that included it. |
| | | Added action URIs to the Action Details section, and removed the Action object from the property table for clarity. |
| 2018.3 | 2018-12-15 | Release built from Redfish schemas released in DSP8010 version 2018.3. |
| 2018.2 | 2018-08-10 | Release built from Redfish schemas released in DSP8010 version 2018.2. |
| | | Expanded introduction section with additional information. |
| | | Expanded Common Objects section to include previously excluded objects. |
| | | Added URI listings for all Resources for use with Redfish Specification v1.6.0. |
| | | Added Resource Collection table showing schema names and URIs. |
| | | Restructured common objects section utilizing new Documentation Generator functions. |
| 2018.1 | 2018-05-01 | Initial release. Built from Redfish schemas released in DSP8010 version 2018.1. |
| 2017.0a | 2017-05-19 | Work in progress release to gather feedback on content and format. |