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# **Redfish Resource and Schema Guide**

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# 1 Overview

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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?

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This document is useful to people who 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?

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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:** <https://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?

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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

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The following documents are part of the Redfish development effort. They can be accessed or downloaded from DMTF's Redfish Standards web site: <https://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 `GET` responses 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 three 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"><li>• The <code>string (enum)</code> tag identifies enumerated strings.</li><li>• String types with a <code>(URI)</code> tag will contain a URI.</li><li>• Number types may specify the units, which are usually included as part of the property name.</li><li>• Number types specifying "%" units or including "Percent" in the property name will have values typically in the range of 0 - 100</li><li>• Boolean types will have a value of <code>true</code> or <code>false</code>.</li></ul>

Column	Purpose
Attributes	Designates whether: <ul style="list-style-type: none"><li>The property is read-only or read-write, if supported by the implementation.</li><li>The property is required to be returned in the resource payload or is required when creating a resource of that type.</li><li>The service might return a <code>null</code> value if the property value is temporarily unavailable.</li></ul>
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 <code>oem</code> 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
<b>Actions</b> {}	object		The Redfish actions available for this Resource.
<b>Links</b> {}	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.
<b>RelatedItem</b> [ {	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.
<b>@odata.id</b>	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
<b>@Message.ExtendedInfo</b> {}	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> .
<b>@odata.count</b>	integer	<i>read-only</i>	The number of items in a collection.
<b>@Redfish.AllowableValues</b> [ ]	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
<b>@Redfish.ActionInfo</b>	string (URI)	<i>read-only</i>	The URI to an ActionInfo Resource, which describes the parameters that this Action instance supports.
<b>@Redfish.CollectionCapabilities</b> {}	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
<b>@Redfish.MaintenanceWindow</b> {}	object		The maintenance window configuration that defines when to apply settings or operations to a Resource. For property details, see MaintenanceWindow.
<b>@Redfish.OperationApplyTime</b>	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>
<b>@Redfish.OperationApplyTimeSupport</b> {}	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.
<b>@Redfish.Settings</b> {}	object		The reference to the Resource that represents the settings to apply to this object. For property details, see Settings.
<b>@Redfish.SettingsApplyTime</b> {}	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 actions for a resource.

#### 4.1.1 Properties

Property	Type	Attributes	Notes
<b>#<code>{action name}</code></b> {	object		A single Redfish action.
<b>@Redfish.ActionInfo</b>	string	<i>read-only</i>	The URI for an ActionInfo Resource that describes this action.
<b>target</b>	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
<b>Data</b> {	object		The capacity information relating to the user data.
<b>AllocatedBytes</b>	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
<b>ConsumedBytes</b>	integer (bytes)	<i>read-only (null)</i>	The number of bytes consumed in this data store for this data type.
<b>GuaranteedBytes</b>	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.
<b>ProvisionedBytes</b>	integer (bytes)	<i>read-write (null)</i>	The maximum number of bytes that can be allocated in this data store for this data type.
}			
<b>IsThinProvisioned</b>	boolean	<i>read-only (null)</i>	Marks that the capacity is not necessarily fully allocated.
<b>Metadata {</b>	object		The capacity information relating to metadata.
<b>AllocatedBytes</b>	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.
<b>ConsumedBytes</b>	integer (bytes)	<i>read-only (null)</i>	The number of bytes consumed in this data store for this data type.
<b>GuaranteedBytes</b>	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.
<b>ProvisionedBytes</b>	integer (bytes)	<i>read-write (null)</i>	The maximum number of bytes that can be allocated in this data store for this data type.
}			
<b>Snapshot {</b>	object		The capacity information relating to snapshot or backup data.
<b>AllocatedBytes</b>	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.
<b>ConsumedBytes</b>	integer (bytes)	<i>read-only (null)</i>	The number of bytes consumed in this data store for this data type.
<b>GuaranteedBytes</b>	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.
<b>ProvisionedBytes</b>	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
<b>LogEntry</b> {	object		The link to the log entry created for this condition. See the <i>LogEntry</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LogEntry resource. See the Links section and the <i>LogEntry</i> schema for details.
}			
<b>Message</b>	string	<i>read-only</i>	The human-readable message for this condition.
<b>MessageArgs</b> [ ]	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.
<b>MessageId</b>	string	<i>read-only</i> <i>required</i>	The identifier for the message.
<b>OriginOfCondition</b> {	object		A link to the resource or object that originated the condition.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>Resolution</b> (v1.14+)	string	<i>read-only</i>	Suggestions on how to resolve the condition.
<b>ResolutionSteps</b> (v1.18+) [ { } ]	array (object)		The list of recommended steps to resolve the condition. For property details, see ResolutionStep.
<b>Severity</b>	string (enum)	<i>read-only</i>	The severity of the condition. <i>For the possible property values, see Severity in Property details.</i>
<b>Timestamp</b>	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
<b>DurableName</b> (v1.1+)	string	<i>read-only</i> ( <i>null</i> )	The world-wide, persistent name of the resource.
<b>DurableNameFormat</b> (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 <code>NGUID</code> 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
@odata.id	string	read-only	Link to another IOStatistics resource.

## 4.6 IPv4Address

### 4.6.1 Description

This type describes an IPv4 address.

## 4.6.2 Properties

Property	Type	Attributes	Notes
<b>Address</b>	string	<i>read-write (null)</i>	The IPv4 address.
<b>AddressOrigin</b>	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>
<b>Gateway</b>	string	<i>read-write (null)</i>	The IPv4 gateway for this address.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SubnetMask</b>	string	<i>read-write (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
<b>Address</b>	string	<i>read-write (null)</i>	The IPv6 address.
<b>AddressOrigin</b>	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>
<b>AddressState</b>	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>
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PrefixLength</b>	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.



string	Description
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
<b>Address</b> (v1.1+)	string	<i>read-write required (null)</i>	A valid IPv6 address.
<b>Oem</b> (v1.1+) { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PrefixLength</b> (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
<b>Address</b>	string	<i>read-write required (null)</i>	A valid IPv6 address.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PrefixLength</b>	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
<b>AltitudeMeters</b> (v1.6+)	number (meters)	<i>read-write (null)</i>	The altitude of the resource in meters.
<b>Contacts</b> (v1.7+) [ {	array		An array of contact information.
<b>ContactName</b> (v1.7+)	string	<i>read-write (null)</i>	Name of this contact.
<b>EmailAddress</b> (v1.7+)	string	<i>read-write (null)</i>	Email address for this contact.
<b>PhoneNumber</b> (v1.7+)	string	<i>read-write (null)</i>	Phone number for this contact.
} ]			
<b>Info</b> (v1.1+, deprecated v1.5)	string	<i>read-only (null)</i>	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>

Property	Type	Attributes	Notes
<b>InfoFormat</b> (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>
<b>Latitude</b> (v1.6+)	number (deg)	read-write (null)	The latitude of the resource.
<b>Longitude</b> (v1.6+)	number (deg)	read-write (null)	The longitude of the resource in degree units.
<b>Oem</b> (v1.1+) {	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>(pattern)</b> {}	object		Property names follow regular expression pattern "[A-Za-z0-9_]+\$"
}			
<b>PartLocation</b> (v1.5+) {	object		The part location for a resource within an enclosure.
<b>LocationOrdinalValue</b> (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> .
<b>LocationType</b> (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>
<b>Orientation</b> (v1.5+)	string (enum)	read-only (null)	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>
<b>Reference</b> (v1.5+)	string (enum)	read-only (null)	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>
<b>ServiceLabel</b> (v1.5+)	string	read-only (null)	The label of the part location, such as a silk-screened name or a printed label.
}			
<b>PartLocationContext</b> (v1.16+)	string	read-only (null)	Human-readable string to enable differentiation between PartLocation values for parts in the same enclosure, which might include hierarchical information of containing PartLocation values for the part.
<b>PhysicalAddress</b> (v1.17+) {	object		The physical address for a resource.
<b>City</b> (v1.17+)	string	read-write (null)	City, township, or shi (JP).
<b>Country</b> (v1.17+)	string	read-write (null)	The country.

Property	Type	Attributes	Notes
<b>ISOCountryCode</b> (v1.17+)	string	<i>read-write</i> (null)	The ISO 3166-1 country code.
<b>ISOSubdivisionCode</b> (v1.17+)	string	<i>read-write</i> (null)	ISO 3166-2 subdivision code.
<b>PostalCode</b> (v1.17+)	string	<i>read-write</i> (null)	The postal code.
<b>StateOrProvince</b> (v1.17+)	string	<i>read-write</i> (null)	State or province.
<b>StreetAddress</b> (v1.17+)	string	<i>read-write</i> (null)	The street-level address, including building, room, or other identifiers.
}			
<b>Placement</b> (v1.3+) {	object		A place within the addressed location.
<b>AdditionalInfo</b> (v1.7+)	string	<i>read-write</i> (null)	Area designation or other additional info.
<b>Rack</b> (v1.3+)	string	<i>read-write</i> (null)	The name of a rack location within a row.
<b>RackOffset</b> (v1.3+)	integer	<i>read-write</i> (null)	The vertical location of the item, in terms of RackOffsetUnits.
<b>RackOffsetUnits</b> (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>
<b>Row</b> (v1.3+)	string	<i>read-write</i> (null)	The name of the row.
}			
<b>PostalAddress</b> (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>
<b>AdditionalCode</b> (v1.3+)	string	<i>read-write</i> (null)	The additional code.
<b>AdditionalInfo</b> (v1.7+)	string	<i>read-write</i> (null)	The room designation or other additional information.
<b>Building</b> (v1.3+)	string	<i>read-write</i> (null)	The name of the building.
<b>City</b> (v1.3+)	string	<i>read-write</i> (null)	City, township, or shi (JP).

Property	Type	Attributes	Notes
<b>Community</b> (v1.3+)	string	<i>read-write (null)</i>	The postal community name.
<b>Country</b> (v1.3+)	string	<i>read-write (null)</i>	The country.
<b>District</b> (v1.3+)	string	<i>read-write (null)</i>	A county, parish, gun (JP), or district (IN).
<b>Division</b> (v1.3+)	string	<i>read-write (null)</i>	City division, borough, city district, ward, or chou (JP).
<b>Floor</b> (v1.3+)	string	<i>read-write (null)</i>	The floor.
<b>GPSCoords</b> (v1.3+, deprecated v1.6)	string	<i>read-write (null)</i>	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>
<b>HouseNumber</b> (v1.3+)	integer	<i>read-write (null)</i>	The numeric portion of house number.
<b>HouseNumberSuffix</b> (v1.3+)	string	<i>read-write (null)</i>	The house number suffix.
<b>Landmark</b> (v1.3+)	string	<i>read-write (null)</i>	The landmark.
<b>LeadingStreetDirection</b> (v1.3+)	string	<i>read-write (null)</i>	A leading street direction.
<b>Location</b> (v1.3+, deprecated v1.7)	string	<i>read-write (null)</i>	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>
<b>Name</b> (v1.3+)	string	<i>read-write (null)</i>	The name.
<b>Neighborhood</b> (v1.3+)	string	<i>read-write (null)</i>	Neighborhood or block.
<b>PlaceType</b> (v1.3+)	string	<i>read-write (null)</i>	The description of the type of place that is addressed.
<b>POBox</b> (v1.3+)	string	<i>read-write (null)</i>	The post office box (PO box).
<b>PostalCode</b> (v1.3+)	string	<i>read-write (null)</i>	The postal code or zip code.

Property	Type	Attributes	Notes
<b>Road</b> (v1.3+)	string	<i>read-write</i> (null)	The primary road or street.
<b>RoadBranch</b> (v1.3+)	string	<i>read-write</i> (null)	The road branch.
<b>RoadPostModifier</b> (v1.3+)	string	<i>read-write</i> (null)	The road post-modifier.
<b>RoadPreModifier</b> (v1.3+)	string	<i>read-write</i> (null)	The road pre-modifier.
<b>RoadSection</b> (v1.3+)	string	<i>read-write</i> (null)	The road section.
<b>RoadSubBranch</b> (v1.3+)	string	<i>read-write</i> (null)	The road sub branch.
<b>Room</b> (v1.3+)	string	<i>read-write</i> (null)	The name or number of the room.
<b>Seat</b> (v1.3+)	string	<i>read-write</i> (null)	The seat, such as the desk, cubicle, or workstation.
<b>Street</b> (v1.3+)	string	<i>read-write</i> (null)	Street name.
<b>StreetSuffix</b> (v1.3+)	string	<i>read-write</i> (null)	Avenue, Platz, Street, Circle.
<b>Territory</b> (v1.3+)	string	<i>read-write</i> (null)	A top-level subdivision within a country.
<b>TrailingStreetSuffix</b> (v1.3+)	string	<i>read-write</i> (null)	A trailing street suffix.
<b>Unit</b> (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.
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 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
<b>Message</b>	string	<i>read-only</i>	The human-readable message.
<b>MessageArgs</b> [ ]	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.
<b>MessageId</b>	string	<i>read-only required</i>	The identifier for the message.
<b>MessageSeverity</b> (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>
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>RelatedProperties</b> [ ]	array (string)	<i>read-only</i>	A set of properties described by the message.
<b>Resolution</b>	string	<i>read-only</i>	Used to provide suggestions on how to resolve the situation that caused the message.
<b>ResolutionSteps</b> (v1.2+) [ { } ]	array (object)		The list of recommended steps to resolve the situation that caused the message. For property details, see ResolutionStep.



Property	Type	Attributes	Notes
<b>Severity</b> (deprecated v1.1)	string	read-only	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.
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
<b>@odata.id</b>	string (URI)	read-only required	The unique identifier for a resource.
<b>Actions</b> (v1.2+) {}	object		The available actions for this resource.
<b>MaxNumSupported</b>	integer	read-only (null)	The maximum number of members allowable for this particular redundancy group.
<b>MemberId</b>	string	read-only required	The unique identifier for the member within an array.

Property	Type	Attributes	Notes
<b>MinNumNeeded</b>	integer	<i>read-only required (null)</i>	The minimum number of members needed for this group to be redundant.
<b>Mode</b>	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>
<b>Name</b>	string	<i>read-only required</i>	The name of the resource or array member.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>RedundancyEnabled</b> (v1.1+)	boolean	<i>read-write (null)</i>	An indication of whether redundancy is enabled.
<b>RedundancySet [ {}</b>	array	<i>required</i>	The links to components of this redundancy set.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
<b>}]</b>			
<b>Status {}</b>	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.

string	Description
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
<b>MaxSupportedInGroup</b> (v1.4+)	integer	<i>read-only</i> (null)	The maximum number of devices supported in this redundancy group.
<b>MinNeededInGroup</b> (v1.4+)	integer	<i>read-only</i> <i>required</i> (null)	The minimum number of devices needed for this group to be redundant.
<b>RedundancyGroup</b> (v1.4+) [ {	array	<i>required</i>	The links to the devices included in this redundancy group.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>RedundancyType</b> (v1.4+)	string (enum)	<i>read-write</i> <i>required</i> (null)	The redundancy mode of the group. <i>For the possible property values, see RedundancyType in Property details.</i>
<b>Status</b> (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
<b>ConsistencyEnabled</b>	boolean	<i>read-only (null)</i>	True if consistency is enabled.
<b>ConsistencyState</b>	string (enum)	<i>read-only (null)</i>	The current state of consistency. <i>For the possible property values, see ConsistencyState in Property details.</i>
<b>ConsistencyStatus</b>	string (enum)	<i>read-only (null)</i>	The current status of consistency. <i>For the possible property values, see ConsistencyStatus in Property details.</i>
<b>ConsistencyType</b>	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>
<b>DataProtectionLineOfService</b> (v1.1+) {	object		A pointer to the DataProtection line of service element that describes this replica.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			

Property	Type	Attributes	Notes
<b>FailedCopyStopsHostIO</b>	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.
<b>PercentSynced</b>	integer (%)	<i>read-only (null)</i>	Specifies the percent of the work completed to reach synchronization.
<b>RemoteSourceReplica</b> (v1.4+)	string	<i>read-only (null)</i>	ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship.
<b>Replica {</b>	object		Deprecated - Use Source Replica. The resource that is the source of this replica.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
<b>}</b>			
<b>ReplicaFaultDomain</b> (v1.3+)	string (enum)	<i>read-only (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>
<b>ReplicaPriority</b>	string (enum)	<i>read-only (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>
<b>ReplicaProgressStatus</b>	string (enum)	<i>read-only (null)</i>	The status of the session with respect to Replication activity. <i>For the possible property values, see ReplicaProgressStatus in Property details.</i>
<b>ReplicaReadOnlyAccess</b>	string (enum)	<i>read-only (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>
<b>ReplicaRecoveryMode</b>	string (enum)	<i>read-only (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>
<b>ReplicaRole</b>	string (enum)	<i>read-only (null)</i>	The source or target role of this replica. <i>For the possible property values, see ReplicaRole in Property details.</i>
<b>ReplicaSkewBytes</b>	integer (bytes)	<i>read-only (null)</i>	Applies to Adaptive mode and it describes maximum number of bytes the SyncedElement (target) can be out of sync.
<b>ReplicaState</b>	string (enum)	<i>read-only (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>
<b>ReplicaType</b>	string (enum)	<i>read-only (null)</i>	ReplicaType describes the intended outcome of the replication. <i>For the possible property values, see ReplicaType in Property details.</i>

Property	Type	Attributes	Notes
<b>ReplicaUpdateMode</b>	string (enum)	<i>read-only (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>
<b>RequestedReplicaState</b>	string (enum)	<i>read-only (null)</i>	The last requested or desired state for the relationship. <i>For the possible property values, see RequestedReplicaState in Property details.</i>
<b>SourceReplica</b> (v1.2+) {	object		The URI to the source replica when located on a different Swordfish service instance.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>SyncMaintained</b>	boolean	<i>read-only (null)</i>	Synchronization is maintained.
<b>UndiscoveredElement</b>	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>
<b>WhenActivated</b>	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.
<b>WhenDeactivated</b>	string (%)	<i>read-only (null)</i>	Specifies when the replication relationship is deactivated.
<b>WhenEstablished</b>	string (%)	<i>read-only (null)</i>	Specifies when the replication relationship is established.
<b>WhenSuspended</b>	string (%)	<i>read-only (null)</i>	Specifies when the replication relationship is suspended.
<b>WhenSynced</b>	string	<i>read-only (null)</i>	The point in time that the Elements were synchronized.
<b>WhenSynchronized</b>	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.



string	Description
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.
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.

string	Description
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.

string	Description
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.

#### 4.14.3.14 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.

string	Description
SourceElement	The source element is undiscovered.

## 4.15 ResolutionStep

### 4.15.1 Description

This type describes a recommended step of the service-defined resolution.

### 4.15.2 Properties

Property	Type	Attributes	Notes
<b>ActionParameters</b> [ {	array		The parameters of the action URI for a resolution step.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Parameters resource. See the Links section and the <i>ActionInfo</i> schema for details.
} ]			
<b>ActionURI</b>	string (URI)	<i>read-only</i>	The action URI for a resolution step.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Priority</b>	integer	<i>read-only (null)</i>	The priority in the set of resolution steps.
<b>ResolutionType</b>	string (enum)	<i>read-only required (null)</i>	The type of the resolution step. <i>For the possible property values, see ResolutionType in Property details.</i>
<b>RetryCount</b>	integer	<i>read-only (null)</i>	The number of retries for a resolution step.
<b>RetryIntervalSeconds</b>	integer (seconds)	<i>read-only (null)</i>	The interval between retries for a resolution step.
<b>TargetComponentURI</b>	string (URI)	<i>read-only (null)</i>	The target URI of the component for a resolution step.

### 4.15.3 Property details

#### 4.15.3.1 ResolutionType

The type of the resolution step.


string	Description
CollectDiagnosticData	Collect diagnostic data.
ContactVendor	Contact vendor for service.
FirmwareUpdate	Perform a firmware update operation.
OEM	Perform an OEM-defined resolution step.
PowerCycle	Perform a power cycle operation.
ReplaceComponent	Replace a component.
Reset	Perform a reset operation.
ResetToDefaults	Reset the settings to factory defaults.

## 4.16 Schedule

### 4.16.1 Description

Schedule a series of occurrences.

### 4.16.2 Properties

Property	Type	Attributes	Notes
<b>EnabledDaysOfMonth</b> [ ]	array (integer, null)	<i>read-write</i>	Days of the month when scheduled occurrences are enabled.  indicates that every day of the month is enabled.
<b>EnabledDaysOfWeek</b> [ ]	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>

Property	Type	Attributes	Notes
<b>EnabledIntervals</b> (v1.1+) [ ]	array (string, null)	<i>read-write</i>	Intervals when scheduled occurrences are enabled.
<b>EnabledMonthsOfYear</b> [ ]	array (string (enum))	<i>read-write (null)</i>	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>
<b>InitialStartTime</b>	string (date-time)	<i>read-write (null)</i>	The date and time when the initial occurrence is scheduled to occur.
<b>Lifetime</b>	string (duration)	<i>read-write (null)</i>	The time after provisioning when the schedule as a whole expires.
<b>MaxOccurrences</b>	integer	<i>read-write (null)</i>	The maximum number of scheduled occurrences.
<b>Name</b>	string	<i>read-write (null)</i>	The schedule name.
<b>RecurrenceInterval</b>	string (duration)	<i>read-write (null)</i>	The duration between consecutive occurrences.

## 4.16.3 Property details

### 4.16.3.1 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.

#### 4.16.3.2 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.
March	March.
May	May.
November	November.
October	October.
September	September.

## 4.17 Status

### 4.17.1 Description

The status and health of a resource and its children.

### 4.17.2 Properties

Property	Type	Attributes	Notes
<b>Conditions</b> (v1.11+) [ {	array		Conditions in this resource that require attention.



Property	Type	Attributes	Notes
<b>LogEntry {</b>	object		The link to the log entry created for this condition. See the <i>LogEntry</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LogEntry resource. See the Links section and the <i>LogEntry</i> schema for details.
<b>}</b>			
<b>Message</b>	string	<i>read-only</i>	The human-readable message for this condition.
<b>MessageArgs [ ]</b>	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.
<b>MessageId</b>	string	<i>read-only required</i>	The identifier for the message.
<b>OriginOfCondition {</b>	object		A link to the resource or object that originated the condition.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
<b>}</b>			
<b>Resolution (v1.14+)</b>	string	<i>read-only</i>	Suggestions on how to resolve the condition.
<b>ResolutionSteps (v1.18+) [ { } ]</b>	array (object)		The list of recommended steps to resolve the condition. For property details, see ResolutionStep.
<b>Severity</b>	string (enum)	<i>read-only</i>	The severity of the condition. <i>For the possible property values, see Severity in Property details.</i>
<b>Timestamp</b>	string (date-time)	<i>read-only</i>	The time the condition occurred.
<b>] }</b>			
<b>Health</b>	string (enum)	<i>read-only (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>
<b>HealthRollup</b>	string (enum)	<i>read-only (null)</i>	The overall health state from the view of this resource. <i>For the possible property values, see HealthRollup in Property details.</i>
<b>Oem {</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>(pattern) { }</b>	object		Property names follow regular expression pattern "[A-Za-z0-9_]+ \$"
<b>}</b>			

Property	Type	Attributes	Notes
<b>State</b>	string (enum)	<i>read-only</i> ( <i>null</i> )	The known state of the resource, such as if it is enabled. <i>For the possible property values, see State in Property details.</i>

### 4.17.3 Property details

#### 4.17.3.1 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.

#### 4.17.3.2 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.

#### 4.17.3.3 Severity

The severity of the condition.

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

#### 4.17.3.4 State

The known state of the resource, such as if it is 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.
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
<b>@odata.context</b>	string (URI)	<i>read-only</i>	The OData description of a payload.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>@odata.type</b>	string	<i>read-only required</i>	The type of a resource.
<b>Description</b>	string	<i>read-only (null)</i>	The description of this resource. Used for commonality in the schema definitions.
<b>Members</b> [ {	array	<i>required</i>	The members of this collection.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The link to a Resource instance, which is a member of this collection.
} ]			
<b>Members@odata.count</b>	integer	<i>read-only</i>	The number of items in a collection.
<b>Members@odata.nextLink</b>	string (URI)	<i>read-only</i>	The URI to the resource containing the next set of partial members.
<b>Name</b>	string	<i>read-only required</i>	The name of the resource or array member.
<b>Oem</b> {}	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
<b>Capabilities</b> [ {	array		The list of capabilities supported by this resource.
<b>CapabilitiesObject</b> {	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.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			

Property	Type	Attributes	Notes
<b>Links</b> {	object	<i>required</i>	The links to other resources that are related to this resource.
<b>Oem</b> {}	object		The OEM extension property. For property details, see Oem.
<b>RelatedItem</b> [ {	array		An array of links to resources associated with this capability.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>RelatedItem@odata.count</b>	integer	<i>read-only</i>	The number of items in a collection.
<b>TargetCollection</b> {	object	<i>required</i>	The link to the collection that this capabilities structure is describing.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
}			
<b>UseCase</b>	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>
} ]			
<b>MaxMembers</b> (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	<code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/AccelerationFunctions</code> <code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/AccelerationFunctions</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions</code> <code>/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/AccelerationFunctions</code>
AddressPoolCollection	<code>/redfish/v1/Fabrics/{FabricId}/AddressPools</code>
AggregateCollection	<code>/redfish/v1/AggregationService/Aggregates</code>
AggregationSourceCollection	<code>/redfish/v1/AggregationService/AggregationSources</code>
AllowDenyCollection	<code>/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code> <code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code> <code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code> <code>/redfish/v1/Systems/{ComputerSystemId}/NetworkInterfaces/{NetworkInterfaceId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}/AllowDeny</code>
ApplicationCollection	<code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Applications</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/OperatingSystem/Applications</code> <code>/redfish/v1/Systems/{ComputerSystemId}/OperatingSystem/Applications</code>
BatteryCollection	<code>/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries</code>
BootOptionCollection	<code>/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/BootOptions</code> <code>/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/BootOptions</code> <code>/redfish/v1/Systems/{ComputerSystemId}/BootOptions</code>



Collection Type	URIs
CableCollection	/redfish/v1/Cables

Collection Type	URIs
CertificateCollection	<pre> /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 </pre>

Collection Type	URIs
	<pre> /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/ </pre>

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

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	/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
EndpointCollection	/redfish/v1/Fabrics/{FabricId}/Endpoints /redfish/v1/Storage/{StorageId}/Endpoints /redfish/v1/StorageServices/{StorageServiceId}/Endpoints
EndpointGroupCollection	/redfish/v1/Fabrics/{FabricId}/EndpointGroups /redfish/v1/Storage/{StorageId}/EndpointGroups /redfish/v1/StorageServices/{StorageServiceId}/EndpointGroups /redfish/v1/Systems/{ComputerSystemId}/Storage/{StorageId}/EndpointGroups
EthernetInterfaceCollection	/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
EventDestinationCollection	/redfish/v1/EventService/Subscriptions

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

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	/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/ {ProcessorId}/SubProcessors /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/Processors/ {ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors /redfish/v1/Chassis/{ChassisId}/Processors /redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors /redfish/v1/Chassis/{ChassisId}/Processors/{ProcessorId}/SubProcessors/ {ProcessorId2}/SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/ {ProcessorId}/SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Processors/ {ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/Processors /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/Processors/{ProcessorId}/SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/ {ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/ SubProcessors /redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/ SubProcessors /redfish/v1/ResourceBlocks/{ResourceBlockId}/Processors/{ProcessorId}/ SubProcessors/{ProcessorId2}/SubProcessors /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Processors /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Processors/{ProcessorId}/SubProcessors /redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/ Processors/{ProcessorId}/SubProcessors/{ProcessorId2}/SubProcessors /redfish/v1/Systems/{ComputerSystemId}/Processors /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/ {ProcessorId2}/SubProcessors
PumpCollection	/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Pumps /redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Pumps /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Pumps /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Pumps
RegisteredClientCollection	/redfish/v1/RegisteredClients
ReservoirCollection	/redfish/v1/ThermalEquipment/CDUs/{CoolingUnitId}/Reservoirs /redfish/v1/ThermalEquipment/HeatExchangers/{CoolingUnitId}/Reservoirs /redfish/v1/ThermalEquipment/ImmersionUnits/{CoolingUnitId}/Reservoirs

Collection Type	URIs
ResourceBlockCollection	<a href="#">/redfish/v1/CompositionService/ActivePool</a> <a href="#">/redfish/v1/CompositionService/FreePool</a> <a href="#">/redfish/v1/CompositionService/ResourceBlocks</a> <a href="#">/redfish/v1/ResourceBlocks</a>
RoleCollection	<a href="#">/redfish/v1/AccountService/Roles</a> <a href="#">/redfish/v1/Managers/{ManagerId}/RemoteAccountService/Roles</a>

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



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



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

Collection Type	URIs
TaskCollection	/redfish/v1/TaskService/Tasks /redfish/v1/TaskService/Tasks/{TaskId}/SubTasks
TriggersCollection	/redfish/v1/TelemetryService/Triggers
TrustedComponentCollection	/redfish/v1/Chassis/{ChassisId}/TrustedComponents
USBControllerCollection	/redfish/v1/Systems/{ComputerSystemId}/USBControllers

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

Collection Type	URIs
VirtualMediaCollection	/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
VlanNetworkInterfaceCollection	/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)

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

## 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 1.0.4

<b>Version</b>	<i>v1.0</i>
<b>Release</b>	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
<b>AccelerationFunctionType</b>	string (enum)	<i>read-only (null)</i>	The acceleration function type. <i>For the possible property values, see AccelerationFunctionType in Property details.</i>
<b>FpgaReconfigurationSlots</b> [ ]	array (string)	<i>read-only</i>	An array of the reconfiguration slot identifiers of the FPGA that this acceleration function occupies.
<b>Links</b> {	object		The links to other Resources that are related to this Resource.
<b>Endpoints</b> [ {	array		An array of links to the endpoints that connect to this acceleration function.
<b>@odata.id</b>	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
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> [ {	array		An array of links to the PCleFunctions associated with this acceleration function.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCleFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
}			
<b>Manufacturer</b>	string	<i>read-only</i>	The acceleration function code manufacturer.
<b>PowerWatts</b>	integer (Watts)	<i>read-only</i>	The acceleration function power consumption, in watt units.
<b>Status</b> {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
<b>UUID</b>	string (uuid)	<i>read-only (null)</i>	The UUID for this acceleration function.
<b>Version</b>	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_4.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 1.15.0

Version	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	...
Release	2023.3	2023.2	2023.1	2022.3	2022.1	2021.2	2021.1	2020.4	2019.4	2019.2	2019.1	...

### 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
<b>AccountLockoutCounterResetAfter</b>	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.
<b>AccountLockoutCounterResetEnabled</b> (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.
<b>AccountLockoutDuration</b>	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.
<b>AccountLockoutThreshold</b>	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.
<b>Accounts {</b>	object		The collection of manager accounts. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of ManagerAccount. See the ManagerAccount schema for details.
<b>}</b>			

Property	Type	Attributes	Notes
<b>ActiveDirectory</b> (v1.3+) {}	object		The first Active Directory external account provider that this account service supports. For more information about this property, see <a href="#">ExternalAccountProvider</a> in Property Details.
<b>AdditionalExternalAccountProviders</b> (v1.3+) {	object		The additional external account providers that this account service uses. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ExternalAccountProvider</i> . See the <i>ExternalAccountProvider</i> schema for details.
}			
<b>AuthFailureLoggingThreshold</b>	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.
<b>HTTPBasicAuth</b> (v1.15+)	string (enum)	<i>read-write</i> (null)	Indicates if HTTP Basic authentication is enabled for this service. <i>For the possible property values, see HTTPBasicAuth in Property details.</i>
<b>LDAP</b> (v1.3+) {}	object		The first LDAP external account provider that this account service supports. For more information about this property, see <a href="#">ExternalAccountProvider</a> in Property Details.
<b>LocalAccountAuth</b> (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>
<b>MaxPasswordLength</b>	integer	<i>read-write</i>	The maximum password length for this account service.
<b>MinPasswordLength</b>	integer	<i>read-write</i>	The minimum password length for this account service.
<b>MultiFactorAuth</b> (v1.12+) {	object	(null)	The multi-factor authentication settings that this account service supports.
<b>ClientCertificate</b> (v1.12+) {	object	(null)	The settings related to client certificate authentication schemes such as mTLS or CAC/PIV.
<b>CertificateMappingAttribute</b> (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>
<b>Certificates</b> (v1.12+) {	object		The link to a collection of CA certificates used to validate client certificates. Contains a link to a resource.

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

Property	Type	Attributes	Notes
<b>Certificates</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>ClientId</b> (v1.12+)	string	<i>read-write (null)</i>	The client ID to use when communicating with the RSA SecurID server.
<b>ClientSecret</b> (v1.12+)	string	<i>read-write (null)</i>	The client secret to use when communicating with the RSA SecurID server. This property is <i>null</i> in responses.
<b>ClientSecretSet</b> (v1.12+)	boolean	<i>read-only</i>	Indicates if the ClientSecret property is set.
<b>Enabled</b> (v1.12+)	boolean	<i>read-write (null)</i>	An indication of whether multi-factor authentication with RSA SecurID is enabled.
<b>ServerURI</b> (v1.12+)	string (URI)	<i>read-write (null)</i>	The URI of the RSA SecurID server.
}			
}			
<b>OAuth2</b> (v1.10+) {}	object	( <i>null</i> )	The first OAuth 2.0 external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details.
<b>OutboundConnections</b> (v1.14+) {	object	( <i>null</i> )	The collection of outbound connection configurations. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>OutboundConnection</i> . See the OutboundConnection schema for details.
}			
<b>PasswordExpirationDays</b> (v1.9+)	integer	<i>read-write (null)</i>	The number of days before account passwords in this account service will expire.
<b>PrivilegeMap</b> (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
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PrivilegeRegistry resource. See the Links section and the <i>PrivilegeRegistry</i> schema for details.
}			
<b>RequireChangePasswordAction</b> (v1.14+)	boolean	<i>read-write (null)</i>	An indication of whether clients are required to invoke the ChangePassword action to modify account passwords.
<b>RestrictedOemPrivileges</b> (v1.8+) [ ]	array (string)	<i>read-only</i>	The set of restricted OEM privileges.
<b>RestrictedPrivileges</b> (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>
<b>Roles</b> {	object		The collection of Redfish roles. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Role</i> . See the Role schema for details.
}			
<b>ServiceEnabled</b>	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.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedAccountTypes</b> (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>
<b>SupportedOEMAccountTypes</b> (v1.8+) [ ]	array (string)	<i>read-only</i>	The OEM account types supported by the service.
<b>TACACSplus</b> (v1.8+) {}	object	(null)	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.
TACACSPplus (v1.8+)	An external TACACS+ service.

### 6.2.4.2 Authentication

The information required to authenticate to the external service.

<b>AuthenticationType</b> (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 <i>Property details</i> .
<b>EncryptionKey</b> (v1.8+)	string	read-write (null)	Specifies the encryption key.
<b>EncryptionKeySet</b> (v1.8+)	boolean	read-only (null)	Indicates if the EncryptionKey property is set.
<b>KerberosKeytab</b> (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.
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Password</b> (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.

<b>Token</b> (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.
<b>Username</b> (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.

<b>AccountProviderType</b> (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>
<b>Authentication</b> (v1.3+) {}	object		The authentication information for the external account provider. For more information about this property, see Authentication in Property Details.
<b>Certificates</b> (v1.4+) {}	object		The link to a collection of certificates that the external account provider uses. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>LDAPService</b> (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.
<b>OAuth2Service</b> (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.
<b>PasswordSet</b> (v1.7+)	boolean	read-only	Indicates if the Password property is set.
<b>Priority</b> (v1.8+)	integer	read-write (null)	The authentication priority for the external account provider.
<b>RemoteRoleMapping</b> (v1.3+) [ {}	array		The mapping rules to convert the external account providers account information to the local Redfish role.
<b>LocalRole</b> (v1.3+)	string	read-write (null)	The name of the local Redfish role to which to map the remote user or group.



<b>MFABypass</b> (v1.12+) {	object	(null)	The multi-factor authentication bypass settings.
<b>BypassTypes</b> (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>
}			
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>RemoteGroup</b> (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.
<b>RemoteUser</b> (v1.3+)	string	read- write (null)	The name of the remote user that maps to the local Redfish role to which this entity links.
} ]			
<b>Retries</b> (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.
<b>ServiceAddresses</b> (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.
<b>ServiceEnabled</b> (v1.3+)	boolean	read- write (null)	An indication of whether this service is enabled.
<b>TACACSplusService</b> (v1.8+) {}	object	(null)	The additional information needed to parse a TACACS+ services. For more information about this property, see TACACSplusService in Property Details.
<b>TimeoutSeconds</b> (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 HTTPBasicAuth

Indicates if HTTP Basic authentication is enabled for this service.

string	Description
Disabled	HTTP Basic authentication is disabled.
Enabled	HTTP Basic authentication is enabled.

string	Description
Unadvertised	HTTP Basic authentication is enabled, but is not advertised with the <code>WWW-Authenticate</code> response header.

#### 6.2.4.8 LDAPService

The settings required to parse a generic LDAP service.

<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SearchSettings</b> (v1.3+) {	object		The required settings to search an external LDAP service.
<b>BaseDistinguishedNames</b> (v1.3+) [ ]	array (string, null)	read-write	The base distinguished names to use to search an external LDAP service.
<b>EmailAttribute</b> (v1.14+)	string	read-write (null)	The attribute name that contains the LDAP user's email address.
<b>GroupNameAttribute</b> (v1.3+)	string	read-write (null)	The attribute name that contains the LDAP group name entry.
<b>GroupsAttribute</b> (v1.3+)	string	read-write (null)	The attribute name that contains the groups for a user on the LDAP user entry.
<b>SSHKeyAttribute</b> (v1.11+)	string	read-write (null)	The attribute name that contains the LDAP user's SSH public key entry.
<b>UsernameAttribute</b> (v1.3+)	string	read-write (null)	The attribute name that contains the LDAP user name entry.
}			

#### 6.2.4.9 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.

#### 6.2.4.10 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.

#### 6.2.4.11 OAuth2Service

Various settings to parse an OAuth 2.0 service.

<b>Audience</b> (v1.10+) [ ]	array (string)	read-only	The allowable audience strings of the Redfish service.
<b>Issuer</b> (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> .
<b>Mode</b> (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>
<b>OAuthServiceSigningKeys</b> (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> .
<b>Oem</b> (v1.13+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

#### 6.2.4.12 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.

#### 6.2.4.13 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.

string	Description
OperateSystems	Operator for systems found in the systems collection. Able to perform resets and configure interfaces.

#### 6.2.4.14 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 another 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 another 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.

#### 6.2.4.15 TACACSplusService

Various settings to parse a TACACS+ service.

<b>AuthorizationService</b> (v1.13+)	string	read-write	The TACACS+ service authorization argument.
<b>Oem</b> (v1.13+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PasswordExchangeProtocols</b> (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>

<b>PrivilegeLevelArgument</b> (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_15_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 1.4.1

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
<b>Parameters</b> [ {	array		The list of parameters included in the specified Redfish action.
<b>AllowableNumbers</b> (v1.3+) [ ]	array (string, null)	<i>read-only</i>	The allowable numeric values or duration values, inclusive ranges of values, and incremental step values for this parameter as applied to this action target.
<b>AllowablePattern</b> (v1.3+)	string	<i>read-only (null)</i>	The allowable pattern for this parameter as applied to this action target.
<b>AllowableValueDescriptions</b> (v1.4+) [ ]	array (string, null)	<i>read-only</i>	Descriptions of allowable values for this parameter.
<b>AllowableValues</b> [ ]	array (string, null)	<i>read-only</i>	The allowable values for this parameter as applied to this action target.



Property	Type	Attributes	Notes
<b>ArraySizeMaximum</b> (v1.2+)	integer	<i>read-only (null)</i>	The maximum number of array elements allowed for this parameter.
<b>ArraySizeMinimum</b> (v1.2+)	integer	<i>read-only (null)</i>	The minimum number of array elements required for this parameter.
<b>DataType</b>	string (enum)	<i>read-only (null)</i>	The JSON property type for this parameter. <i>For the possible property values, see DataType in Property details.</i>
<b>MaximumValue</b> (v1.1+)	number	<i>read-only (null)</i>	The maximum supported value for this parameter.
<b>MinimumValue</b> (v1.1+)	number	<i>read-only (null)</i>	The minimum supported value for this parameter.
<b>Name</b>	string	<i>read-only required</i>	The name of the parameter for this action.
<b>ObjectDataType</b>	string	<i>read-only (null)</i>	The data type of an object-based parameter.
<b>Required</b>	boolean	<i>read-only</i>	An indication of whether the parameter is required to complete this action.
} 1			

### 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_1.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 1.2.4

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
<b>Ethernet</b> (v1.1+) {	object		The Ethernet-related properties for this address pool.
<b>BFDSingleHopOnly</b> (v1.1+) {	object	(null)	Bidirectional Forwarding Detection (BFD) related properties for this Ethernet fabric.
<b>DemandModeEnabled</b> (v1.1+)	boolean	read-write (null)	Bidirectional Forwarding Detection (BFD) Demand Mode status.
<b>DesiredMinTxIntervalMilliseconds</b> (v1.1+)	integer	read-write (null)	Desired Bidirectional Forwarding Detection (BFD) minimal transmit interval.
<b>KeyChain</b> (v1.1+)	string	read-write (null)	Bidirectional Forwarding Detection (BFD) Key Chain name.
<b>LocalMultiplier</b> (v1.1+)	integer	read-write (null)	Bidirectional Forwarding Detection (BFD) multiplier value.
<b>MeticulousModeEnabled</b> (v1.1+)	boolean	read-write (null)	Meticulous MD5 authentication of the Bidirectional Forwarding Detection (BFD) session.
<b>RequiredMinRxIntervalMilliseconds</b> (v1.1+)	integer	read-write (null)	Bidirectional Forwarding Detection (BFD) receive value.
<b>SourcePort</b> (v1.1+)	integer	read-write (null)	Bidirectional Forwarding Detection (BFD) source port.
}			
<b>BGPEvpn</b> (v1.1+) {	object	(null)	BGP Ethernet Virtual Private Network (EVPN) related properties for this Ethernet fabric.
<b>AnycastGatewayIPAddress</b> (v1.1+)	string	read-write (null)	The anycast gateway IPv4 address.
<b>AnycastGatewayMACAddress</b> (v1.1+)	string	read-write (null)	The anycast gateway MAC address.
<b>ARPProxyEnabled</b> (v1.1+)	boolean	read-write (null)	Address Resolution Protocol (ARP) proxy status.
<b>ARPSuppressionEnabled</b> (v1.1+)	boolean	read-write (null)	Address Resolution Protocol (ARP) suppression status.

Property	Type	Attributes	Notes
<b>ESINumberRange</b> (v1.1+) {	object	(null)	The Ethernet Segment Identifier (ESI) number range for the fabric.
<b>Lower</b> (v1.1+)	integer	read-write	Lower Ethernet Segment Identifier (ESI) number.
<b>Upper</b> (v1.1+)	integer	read-write	Upper Ethernet Segment Identifier (ESI) number.
}			
<b>EVINumberRange</b> (v1.1+) {	object	(null)	The Ethernet Virtual Private Network (EVPN) Instance number (EVI) number range for the fabric.
<b>Lower</b> (v1.1+)	integer	read-write	Lower Ethernet Virtual Private Network (EVPN) Instance (EVI) number.
<b>Upper</b> (v1.1+)	integer	read-write	Upper Ethernet Virtual Private Network (EVPN) Instance (EVI) number.
}			
<b>GatewayIPAddress</b> (v1.1+)	string	read-write (null)	The gateway IPv4 address.
<b>GatewayIPAddressRange</b> (v1.2+) {	object	(null)	The IPv4 address range for gateways.
<b>Lower</b> (v1.2+)	string	read-write (null)	The lower IPv4 address.
<b>Upper</b> (v1.2+)	string	read-write (null)	The upper IPv4 address.
}			
<b>NDPProxyEnabled</b> (v1.1+)	boolean	read-write (null)	Network Discovery Protocol (NDP) proxy status.
<b>NDPSuppressionEnabled</b> (v1.1+)	boolean	read-write (null)	Network Discovery Protocol (NDP) suppression status.
<b>RouteDistinguisherAdministratorSubfield</b> (v1.2+)	string	read-write (null)	The Route Distinguisher (RD) Administrator subfield.
<b>RouteDistinguisherRange</b> (v1.1+) {	object	(null)	The Route Distinguisher (RD) number range for the fabric.
<b>Lower</b> (v1.1+)	integer	read-write	Lower Route Distinguisher (RD) number.

Property	Type	Attributes	Notes
<b>Upper</b> (v1.1+)	integer	<i>read-write</i>	Upper Route Distinguisher (RD) number.
}			
<b>RouteTargetAdministratorSubfield</b> (v1.2+)	string	<i>read-write</i> (null)	The Route Target (RT) Administrator Subfield.
<b>RouteTargetRange</b> (v1.1+) {	object	(null)	The Route Target (RT) number range for the fabric.
<b>Lower</b> (v1.1+)	integer	<i>read-write</i> (null)	Lower Route Target (RT) number.
<b>Upper</b> (v1.1+)	integer	<i>read-write</i> (null)	Upper Route Target (RT) number.
}			
<b>UnderlayMulticastEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Underlay multicast status.
<b>UnknownUnicastSuppressionEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Suppression of unknown unicast packets.
<b>VLANIdentifierAddressRange</b> (v1.1+) {	object	(null)	Virtual LAN (VLAN) tag related address range applicable to this Ethernet fabric or for end-host subnets.
<b>Lower</b> (v1.1+)	integer	<i>read-write</i> (null)	Virtual LAN (VLAN) tag lower value.
<b>Upper</b> (v1.1+)	integer	<i>read-write</i> (null)	Virtual LAN (VLAN) tag upper value.
}			
}			
<b>EBGP</b> (v1.1+) {	object	(null)	External BGP (eBGP) related properties for this Ethernet fabric.
<b>AllowDuplicateASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Allow duplicate Autonomous System (AS) path.
<b>AllowOverrideASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Option to override an Autonomous System (AS) number with the AS number of the sending peer.
<b>AlwaysCompareMEDEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Compare Multi Exit Discriminator (MED) status.

Property	Type	Attributes	Notes
<b>ASNumberRange</b> (v1.1+) {	object	(null)	Autonomous System (AS) number range.
<b>Lower</b> (v1.1+)	integer	read-write	Lower Autonomous System (AS) number.
<b>Upper</b> (v1.1+)	integer	read-write	Upper Autonomous System (AS) number.
}			
<b>BGPLocalPreference</b> (v1.1+)	integer	read-write (null)	Local preference value.
<b>BGPNeighbor</b> (v1.1+) {	object	(null)	Border Gateway Protocol (BGP) neighbor related properties.
<b>Address</b> (v1.1+)	string	read-write (null)	Border Gateway Protocol (BGP) neighbor address.
<b>AllowOwnASEnabled</b> (v1.1+)	boolean	read-write (null)	Allow own Autonomous System (AS) status.
<b>CIDR</b> (v1.2+)	integer	read-write	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.
<b>ConnectRetrySeconds</b> (v1.1+)	integer	read-write (null)	Border Gateway Protocol (BGP) retry timer in seconds.
<b>Enabled</b> (v1.2+)	boolean	read-write	An indication of whether BGP neighbor communication is enabled.
<b>HoldTimeSeconds</b> (v1.1+)	integer	read-write (null)	Border Gateway Protocol (BGP) hold timer in seconds.
<b>KeepaliveIntervalSeconds</b> (v1.1+)	integer	read-write (null)	Border Gateway Protocol (BGP) Keepalive timer in seconds.
<b>LocalAS</b> (v1.1+)	integer	read-write (null)	Local Autonomous System (AS) number.
<b>LogStateChangesEnabled</b> (v1.1+)	boolean	read-write (null)	Border Gateway Protocol (BGP) neighbor log state change status.
<b>MaxPrefix</b> (v1.1+) {	object	(null)	Border Gateway Protocol (BGP) max prefix properties.
<b>MaxPrefixNumber</b> (v1.1+)	integer	read-write (null)	Maximum prefix number.

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

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



Property	Type	Attributes	Notes
}			
<b>IPv4</b> (v1.1+) {	object	(null)	IPv4 and Virtual LAN (VLAN) related addressing for this Ethernet fabric.
<b>AnycastGatewayIPAddress</b> (v1.1+)	string	read-write (null)	The anycast gateway IPv4 address.
<b>AnycastGatewayMACAddress</b> (v1.1+)	string	read-write (null)	The anycast gateway MAC address.
<b>DHCP</b> (v1.1+) {	object	(null)	The Dynamic Host Configuration Protocol (DHCP) related addressing for this Ethernet fabric.
<b>DHCPInterfaceMTUBytes</b> (v1.1+)	integer	read-write (null)	Dynamic Host Configuration Protocol (DHCP) interface Maximum Transmission Unit (MTU).
<b>DHCPRelayEnabled</b> (v1.1+)	boolean	read-write (null)	Dynamic Host Configuration Protocol (DHCP) relay status.
<b>DHCPServer</b> (v1.1+) [ ]	array (string, null)	read-write	The Dynamic Host Configuration Protocol (DHCP) IPv4 addresses for this Ethernet fabric.
}			
<b>DistributeIntoUnderlayEnabled</b> (v1.1+)	boolean	read-write (null)	Indicates if host subnets should be distributed into the fabric underlay.
<b>DNSDomainName</b> (v1.1+)	string	read-write (null)	The Domain Name Service (DNS) domain name for this Ethernet fabric.
<b>DNSServer</b> (v1.1+) [ ]	array (string, null)	read-write	The Domain Name Service (DNS) servers for this Ethernet fabric.
<b>EBGPAddressRange</b> (v1.1+) {}	object	(null)	External BGP (eBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
<b>FabricLinkAddressRange</b> (v1.1+) {}	object	(null)	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.

Property	Type	Attributes	Notes
<b>GatewayIPAddress</b> (v1.1+)	string	<i>read-write</i> (null)	The gateway IPv4 address.
<b>HostAddressRange</b> (v1.1+) {}	object	(null)	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.
<b>IBGPAddressRange</b> (v1.1+) {}	object	(null)	Internal BGP (iBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
<b>LoopbackAddressRange</b> (v1.1+) {}	object	(null)	Loopback-related IPv4 addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
<b>ManagementAddressRange</b> (v1.1+) {}	object	(null)	Management-related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
<b>NativeVLAN</b> (v1.1+)	integer	<i>read-write</i> (null)	The untagged Virtual LAN (VLAN) ID value.
<b>NTPOffsetHoursMinutes</b> (v1.1+)	integer	<i>read-write</i> (null)	The Network Time Protocol (NTP) offset configuration.
<b>NTPServer</b> (v1.1+) [ ]	array (string, null)	<i>read-write</i>	The Network Time Protocol (NTP) servers for this Ethernet fabric.
<b>NTPTimezone</b> (v1.1+)	string	<i>read-write</i> (null)	The Network Time Protocol (NTP) time zone for this Ethernet fabric.
<b>SystemMACRange</b> (v1.2+) {	object	(null)	The MAC address range for systems in this subnet.
<b>Lower</b> (v1.2+)	string	<i>read-write</i> (null)	The lower system MAC address.
<b>Upper</b> (v1.2+)	string	<i>read-write</i> (null)	The upper system MAC address.
}			
<b>VLANIdentifierAddressRange</b> (v1.1+) {	object	(null)	Virtual LAN (VLAN) tag related addressing for this Ethernet fabric or for end-host networks.

Property	Type	Attributes	Notes
<b>Lower</b> (v1.1+)	integer	<i>read-write</i> (null)	Virtual LAN (VLAN) tag lower value.
<b>Upper</b> (v1.1+)	integer	<i>read-write</i> (null)	Virtual LAN (VLAN) tag upper value.
}			
}			
<b>MultiProtocolEBGP</b> (v1.1+) {	object	(null)	Multi Protocol eBGP (MP eBGP) related properties for this Ethernet fabric.
<b>AllowDuplicateASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Allow duplicate Autonomous System (AS) path.
<b>AllowOverrideASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Option to override an Autonomous System (AS) number with the AS number of the sending peer.
<b>AlwaysCompareMEDEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Compare Multi Exit Discriminator (MED) status.
<b>ASNumberRange</b> (v1.1+) {	object	(null)	Autonomous System (AS) number range.
<b>Lower</b> (v1.1+)	integer	<i>read-write</i>	Lower Autonomous System (AS) number.
<b>Upper</b> (v1.1+)	integer	<i>read-write</i>	Upper Autonomous System (AS) number.
}			
<b>BGPLocalPreference</b> (v1.1+)	integer	<i>read-write</i> (null)	Local preference value.
<b>BGPNeighbor</b> (v1.1+) {	object	(null)	Border Gateway Protocol (BGP) neighbor related properties.
<b>Address</b> (v1.1+)	string	<i>read-write</i> (null)	Border Gateway Protocol (BGP) neighbor address.
<b>AllowOwnASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Allow own Autonomous System (AS) status.
<b>CIDR</b> (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.
<b>ConnectRetrySeconds</b> (v1.1+)	integer	<i>read-write</i> (null)	Border Gateway Protocol (BGP) retry timer in seconds.

Property	Type	Attributes	Notes
<b>Enabled</b> (v1.2+)	boolean	<i>read-write</i>	An indication of whether BGP neighbor communication is enabled.
<b>HoldTimeSeconds</b> (v1.1+)	integer	<i>read-write (null)</i>	Border Gateway Protocol (BGP) hold timer in seconds.
<b>KeepaliveIntervalSeconds</b> (v1.1+)	integer	<i>read-write (null)</i>	Border Gateway Protocol (BGP) Keepalive timer in seconds.
<b>LocalAS</b> (v1.1+)	integer	<i>read-write (null)</i>	Local Autonomous System (AS) number.
<b>LogStateChangesEnabled</b> (v1.1+)	boolean	<i>read-write (null)</i>	Border Gateway Protocol (BGP) neighbor log state change status.
<b>MaxPrefix</b> (v1.1+) {	object	<i>(null)</i>	Border Gateway Protocol (BGP) max prefix properties.
<b>MaxPrefixNumber</b> (v1.1+)	integer	<i>read-write (null)</i>	Maximum prefix number.
<b>RestartTimerSeconds</b> (v1.1+)	integer	<i>read-write (null)</i>	Border Gateway Protocol (BGP) restart timer in seconds.
(v1.1+) <b>ShutdownThresholdPercentage</b>	number (%)	<i>read-write (null)</i>	Shutdown threshold status.
(v1.1+) <b>ThresholdWarningOnlyEnabled</b>	boolean	<i>read-write (null)</i>	Threshold warning only status.
}			
(v1.1+) <b>MinimumAdvertisementIntervalSeconds</b>	integer	<i>read-write (null)</i>	Minimum Border Gateway Protocol (BGP) advertisement interval in seconds.
<b>PassiveModeEnabled</b> (v1.1+)	boolean	<i>read-write (null)</i>	Border Gateway Protocol (BGP) passive mode status.
<b>PathMTUDiscoveryEnabled</b> (v1.1+)	boolean	<i>read-write (null)</i>	Path MTU discovery status.
<b>PeerAS</b> (v1.1+)	integer	<i>read-write (null)</i>	Peer Autonomous System (AS) number.
<b>ReplacePeerASEnabled</b> (v1.1+)	boolean	<i>read-write (null)</i>	Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status.
<b>TCPMaxSegmentSizeBytes</b> (v1.1+)	integer	<i>read-write (null)</i>	TCP max segment size in bytes.

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

Property	Type	Attributes	Notes
<b>MED</b> (v1.1+)	integer	<i>read-write</i> (null)	BGP Multi Exit Discriminator (MED) value.
<b>MultihopEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	External BGP (eBGP) multihop status.
<b>MultihopTTL</b> (v1.1+)	integer	<i>read-write</i> (null)	External BGP (eBGP) multihop Time to Live (TTL) value.
<b>MultiplePaths</b> (v1.1+) {	object	(null)	Multiple path related properties.
<b>MaximumPaths</b> (v1.1+)	integer	<i>read-write</i> (null)	Maximum paths number.
<b>UseMultiplePathsEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Border Gateway Protocol (BGP) multiple paths status.
}			
<b>SendCommunityEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Indicates whether community attributes are sent.
}			
<b>MultiProtocolIBGP</b> (v1.1+) {	object	(null)	Multi Protocol iBGP (MP iBGP) related properties for this Ethernet fabric.
<b>ASNumberRange</b> (v1.1+) {	object	(null)	Autonomous System (AS) number range.
<b>Lower</b> (v1.1+)	integer	<i>read-write</i>	Lower Autonomous System (AS) number.
<b>Upper</b> (v1.1+)	integer	<i>read-write</i>	Upper Autonomous System (AS) number.
}			
<b>BGPNeighbor</b> (v1.1+) {	object	(null)	Border Gateway Protocol (BGP) neighbor related properties.
<b>Address</b> (v1.1+)	string	<i>read-write</i> (null)	Border Gateway Protocol (BGP) neighbor address.
<b>AllowOwnASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Allow own Autonomous System (AS) status.
<b>CIDR</b> (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.

Property	Type	Attributes	Notes
<b>ConnectRetrySeconds</b> (v1.1+)	integer	<i>read-write</i> (null)	Border Gateway Protocol (BGP) retry timer in seconds.
<b>Enabled</b> (v1.2+)	boolean	<i>read-write</i>	An indication of whether BGP neighbor communication is enabled.
<b>HoldTimeSeconds</b> (v1.1+)	integer	<i>read-write</i> (null)	Border Gateway Protocol (BGP) hold timer in seconds.
<b>KeepaliveIntervalSeconds</b> (v1.1+)	integer	<i>read-write</i> (null)	Border Gateway Protocol (BGP) Keepalive timer in seconds.
<b>LocalAS</b> (v1.1+)	integer	<i>read-write</i> (null)	Local Autonomous System (AS) number.
<b>LogStateChangesEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Border Gateway Protocol (BGP) neighbor log state change status.
<b>MaxPrefix</b> (v1.1+) {	object	(null)	Border Gateway Protocol (BGP) max prefix properties.
<b>MaxPrefixNumber</b> (v1.1+)	integer	<i>read-write</i> (null)	Maximum prefix number.
<b>RestartTimerSeconds</b> (v1.1+)	integer	<i>read-write</i> (null)	Border Gateway Protocol (BGP) restart timer in seconds.
(v1.1+) <b>ShutdownThresholdPercentage</b>	number (%)	<i>read-write</i> (null)	Shutdown threshold status.
(v1.1+) <b>ThresholdWarningOnlyEnabled</b>	boolean	<i>read-write</i> (null)	Threshold warning only status.
}			
(v1.1+) <b>MinimumAdvertisementIntervalSeconds</b>	integer	<i>read-write</i> (null)	Minimum Border Gateway Protocol (BGP) advertisement interval in seconds.
<b>PassiveModeEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Border Gateway Protocol (BGP) passive mode status.
<b>PathMTUDiscoveryEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Path MTU discovery status.
<b>PeerAS</b> (v1.1+)	integer	<i>read-write</i> (null)	Peer Autonomous System (AS) number.
<b>ReplacePeerASEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status.

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



Property	Type	Attributes	Notes
<b>MultiplePaths</b> (v1.1+) {	object	(null)	Multiple path related properties.
<b>MaximumPaths</b> (v1.1+)	integer	read-write (null)	Maximum paths number.
<b>UseMultiplePathsEnabled</b> (v1.1+)	boolean	read-write (null)	Border Gateway Protocol (BGP) multiple paths status.
}			
<b>SendCommunityEnabled</b> (v1.1+)	boolean	read-write (null)	Indicates whether community attributes are sent.
}			
}			
<b>GenZ</b> {	object		The Gen-Z related properties for this address pool.
<b>AccessKey</b>	string	read-write (null)	The Access Key required for this address pool.
<b>MaxCID</b>	integer	read-write (null)	The maximum value for the Component Identifier (CID).
<b>MaxSID</b>	integer	read-write (null)	The maximum value for the Subnet Identifier (SID).
<b>MinCID</b>	integer	read-write (null)	The minimum value for the Component Identifier (CID).
<b>MinSID</b>	integer	read-write (null)	The minimum value for the Subnet Identifier (SID).
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Endpoints</b> [ {	array		An array of links to the endpoints that this address pool contains.
<b>@odata.id</b>	string	read-write	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			

Property	Type	Attributes	Notes
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Zones</b> [ {	array		An array of links to the zones that this address pool contains.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details.
}]			
}			
<b>Status</b> {}	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.

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

## 6.4.5 Example response

```
{
  "@odata.type": "#AddressPool.v1_2_4.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 1.0.2

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	required	The elements of this aggregate.
@odata.id	string (URI)	read-only	The unique identifier for a resource.
} ]			
ElementsCount	integer	read-only (null)	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
<b>Elements</b> [ {	array	<i>required</i>	An array of resource links to add to the Elements array.
<b>@odata.id</b>	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
<b>Elements</b> [ {	array	<i>required</i>	An array of resource links to remove from the Elements array.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			

**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
<b>BatchSize</b>	integer	<i>optional</i>	The number of elements in each batch being reset.

Parameter Name	Type	Attributes	Notes
<b>DelayBetweenBatchesInSeconds</b>	integer (seconds)	<i>optional</i>	The delay of the batches of elements being reset in seconds.
<b>ResetType</b>	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",
  "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.

string	Description
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

### 6.5.6 Example response

```
{
  "@odata.type": "#Aggregate.v1_0_2.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
<b>Aggregates</b> {	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.
}			
<b>AggregationSources</b> {	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.
}			
<b>ConnectionMethods</b> {	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.
}			
<b>ServiceEnabled</b>	boolean	read-write (null)	An indication of whether the aggregation service is enabled.
<b>Status</b> {}	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
<b>BatchSize</b>	integer	<i>optional</i>	The number of elements in each batch being reset.
<b>DelayBetweenBatchesInSeconds</b>	integer (seconds)	<i>optional</i>	The delay of the batches of elements being reset in seconds.
<b>ResetType</b>	string (enum)	<i>optional</i>	The type of reset. <i>For the possible property values, see ResetType in Property details.</i>
<b>TargetURIs</b> [ {	array	<i>required</i>	An array of links to the resources being reset.
<b>@odata.id</b>	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
<b>Systems</b> [ {	array	<i>required</i>	The computer systems to restore.
<b>@odata.id</b>	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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

### 6.6.6 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 1.4.0

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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)	read-write	The type of aggregation used towards the aggregation source. <i>For the possible property values, see AggregationType in Property details.</i>
HostName	string (URI)	read-write (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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ConnectionMethod</i> resource. See the <i>Links</i> section and the <i>ConnectionMethod</i> schema for details.
}			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>ResourcesAccessed [ {</b>	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.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
}			
<b>Password</b>	string	<i>read-write (null)</i>	The password for accessing the aggregation source. The value is <code>null</code> in responses.
<b>SNMP (v1.1+) {</b>	object	<i>(null)</i>	SNMP settings of the aggregation source.
<b>AuthenticationKey (v1.1+)</b>	string	<i>read-write (null)</i>	The secret authentication key for SNMPv3.
<b>AuthenticationKeySet (v1.1+)</b>	boolean	<i>read-only</i>	Indicates if the AuthenticationKey property is set.
<b>AuthenticationProtocol (v1.1+)</b>	string (enum)	<i>read-write (null)</i>	The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i>
<b>EncryptionKey (v1.1+)</b>	string	<i>read-write (null)</i>	The secret authentication key for SNMPv3.
<b>EncryptionKeySet (v1.1+)</b>	boolean	<i>read-only</i>	Indicates if the EncryptionKey property is set.
<b>EncryptionProtocol (v1.1+)</b>	string (enum)	<i>read-write (null)</i>	The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i>
<b>TrapCommunity (v1.2+)</b>	string	<i>read-write (null)</i>	The SNMP trap community string.
}			

Property	Type	Attributes	Notes
<b>SSHSettings</b> (v1.3+) {	object	(null)	Settings for an aggregation source using SSH as part of the associated connection method.
<b>PresentedPublicKey</b> (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.
<b>@odata.id</b>	string	read-only	Link to a Key resource. See the Links section and the Key schema for details.
}			
<b>PresentedPublicKeyTimestamp</b> (v1.3+)	string (date-time)	read-only (null)	The date and time when the key referenced by the PresentedPublicKey property was last updated.
<b>PublicIdentityKey</b> (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 GenerateSSHIdentityKeyPair and RemoveSSHIdentityKeyPair are used to update the key for this aggregation source. See the Key schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a Key resource. See the Links section and the Key schema for details.
}			
<b>TrustedPublicHostKeys</b> (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.
<b>@odata.id</b>	string	read-only	Link to Collection of Key. See the Key schema for details.
}			
<b>UserAuthenticationMethod</b> (v1.3+)	string (enum)	read-write (null)	The client user authentication method. <i>For the possible property values, see UserAuthenticationMethod in Property details.</i>

Property	Type	Attributes	Notes
}			
<b>Status</b> (v1.3+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UserName</b>	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
<b>Curve</b>	string (enum)	<i>optional</i>	The curve to use with the SSH key if the KeyType parameter contains <code>ECDSA</code> . For the possible property values, see <i>Curve in Property details</i> .
<b>KeyLength</b>	integer	<i>optional</i>	The length of the SSH key, in bits, if the KeyType parameter contains <code>RSA</code> .
<b>KeyType</b>	string (enum)	<i>required</i>	The type of SSH key. For the possible property values, see <i>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.

string	Description
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.
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.
CFB128_AES192 (v1.4+)	CFB128-AES-192 encryption.

string	Description
CFB128_AES256 (v1.4+)	CFB128-AES-256 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_4_0.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 1.0.2

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 application, inclusive.
DestinationPortUpper	integer	read-write (null)	The TCP, UDP, or other destination port to which this rule ends application, inclusive.

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

## 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_2.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
---------	------

<b>Release</b>	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
<b>DestinationURIs</b> [ ]	array (URI) (string, null)	<i>read-only</i>	The URIs to which this application pushes data.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SoftwareImage</b> {	object		The link to the software image for this application. See the <i>SoftwareInventory</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
}			
<b>MetricsURIs</b> [ ]	array (URI) (string, null)	<i>read-only</i>	The URIs that provide access to data or other information in this application.
<b>StartTime</b>	string (date-time)	<i>read-only (null)</i>	The date and time when the application started running.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Vendor</b>	string	<i>read-only (null)</i>	The vendor of this application.

Property	Type	Attributes	Notes
<b>Version</b>	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
<b>ResetType</b>	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).



string	Description
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2022.3	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
<b>Assemblies</b> [ {	array		The assembly records.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> { }	object		The available actions for this Resource.
<b>BinaryDataURI</b>	string (URI)	<i>read-only (null)</i>	The URI at which to access an image of the assembly information.
<b>Description</b>	string	<i>read-only (null)</i>	The description of the assembly.
<b>EngineeringChangeLevel</b>	string	<i>read-only (null)</i>	The engineering change level of the assembly.
<b>ISOCountryCodeOfOrigin</b> (v1.5+)	string	<i>read-only (null)</i>	The manufacturing country of origin, using the ISO 3166-1 country code.
<b>Location</b> (v1.3+) { }	object		The location of the assembly. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.3+)	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>Model</b>	string	<i>read-only (null)</i>	The model number of the assembly.
<b>Name</b>	string	<i>read-only (null)</i>	The name of the assembly.
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number of the assembly.
<b>PhysicalContext</b> (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>
<b>Producer</b>	string	<i>read-only (null)</i>	The producer or manufacturer of the assembly.
<b>ProductionDate</b>	string (date-time)	<i>read-only (null)</i>	The production date of the assembly.

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

string	Description
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.
PowerSubsystem	The entire power subsystem.

string	Description
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_5_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 1.3.8

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

Property	Type	Attributes	Notes
<b>LowerBound</b>	integer	<i>read-only (null)</i>	The lower limit for an integer attribute.
<b>MaxLength</b>	integer	<i>read-only (null)</i>	The maximum character length of a string attribute.
<b>MenuPath</b>	string	<i>read-only (null)</i>	The path that describes the menu hierarchy of this attribute.
<b>MinLength</b>	integer	<i>read-only (null)</i>	The minimum character length of the string attribute.
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>ReadOnly</b>	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.
<b>ResetRequired</b> (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.
<b>ScalarIncrement</b>	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.
<b>Type</b>	string (enum)	<i>read-only</i>	The attribute type. <i>For the possible property values, see Type in Property details.</i>
<b>UefiDevicePath</b> (v1.2+)	string	<i>read-only (null)</i>	The UEFI device path that qualifies this attribute.
<b>UefiKeywordName</b> (v1.2+)	string	<i>read-only</i>	The UEFI keyword string for this attribute.
<b>UefiNamespaceId</b> (v1.2+)	string	<i>read-only</i>	The UEFI namespace ID for the attribute.
<b>UpperBound</b>	integer	<i>read-only (null)</i>	The upper limit for an integer attribute.
<b>Value</b> [ {	array		An array of the possible values for enumerated attribute values.
<b>ValueDisplayName</b>	string	<i>read-only (null)</i>	A user-readable display string of the value for the attribute in the defined language.
<b>ValueName</b>	string	<i>read-only required</i>	The unique value name for the attribute.
} ]			

Property	Type	Attributes	Notes
<b>ValueExpression</b>	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.
<b>WarningText</b>	string	<i>read-only</i> (null)	The warning text for the attribute.
<b>WriteOnly</b>	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.
} ]			
<b>Dependencies</b> [ {	array		An array of dependencies of attributes on this component.
<b>Dependency</b> {	object		The dependency expression for one or more attributes in this attribute registry.
<b>MapFrom</b> [ {	array		An array of the map-from conditions for a mapping dependency.
<b>MapFromAttribute</b>	string	<i>read-only</i>	The attribute to use to evaluate this dependency expression.
<b>MapFromCondition</b>	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>
<b>MapFromProperty</b>	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>
<b>MapFromValue</b>	string, boolean, number	<i>read-only</i> (null)	The value to use to evaluate this dependency expression.
<b>MapTerms</b>	string (enum)	<i>read-only</i>	The logical term that combines two or more map-from conditions in this dependency expression. For example, <b>AND</b> for logical AND, or <b>OR</b> for logical OR. <i>For the possible property values, see MapTerms in Property details.</i>
} ]			
<b>MapToAttribute</b>	string	<i>read-only</i>	The AttributeName of the attribute that is affected by this dependency expression.
<b>MapToProperty</b>	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>

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

Property	Type	Attributes	Notes
<b>FirmwareVersion</b> (v1.1+)	string	<i>read-only</i> (null)	Firmware version.
<b>ProductName</b>	string	<i>read-only</i> (null)	The product name of the computer system to which this attribute registry applies.
<b>SystemId</b>	string	<i>read-only</i> (null)	The ID of the systems to which this attribute registry applies.
} 1			

### 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.

string	Description
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.
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.

string	Description
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 <code>null</code> 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_8.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. You may need to configure the NIC firmware for the boot option to be active.",
        "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 option does not appear in the UEFI Boot Order or Legacy IPL lists until the next system reboot."
      }
    ]
  }
}
```



```

    },
    {
      "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 Legacy BIOS Mode."
    }
  ],
  "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 1.2.2

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.
@odata.id	string	read-only	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.

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

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

Property	Type	Attributes	Notes
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Version</b>	string	<i>read-only (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
<b>ResetType</b>	string (enum)	<i>optional</i>	The type of reset. For the possible property values, see ResetType in Property details.

#### 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).
ForceOn	Turn on the unit immediately.

string	Description
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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_2.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 1.0.3

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
<b>CellVoltages</b> [ {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	The total harmonic distortion percent (% THD).
} ]			
<b>ChargePercent</b> { }	object		The amount of charge available (percent) in this battery. For more information about this property, see SensorExcerpt in Property Details.
<b>DischargeCycles</b>	number	<i>read-only</i> (null)	The number of discharges this battery has sustained.
<b>InputCurrentAmps</b> {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	The total harmonic distortion percent (% THD).
}			
<b>InputVoltage</b> {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.

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

Property	Type	Attributes	Notes
<b>StoredEnergyWattHours</b> {}	object		The energy (Wh) stored in this battery. For more information about this property, see SensorExcerpt in Property Details.
<b>TemperatureCelsius</b> {}	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.

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

## 6.13.5 Example response

```
{
  "@odata.type": "#BatteryMetrics.v1_0_3.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/Battery1OutputCurrent",
    "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 1.2.2

<b>Version</b>	v1.2	v1.1	v1.0
<b>Release</b>	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
<b>AttributeRegistry</b>	string	<i>read-only</i> (null)	The resource ID of the attribute registry that has the system-specific information about a BIOS resource.
<b>Attributes</b> {	object		The list of BIOS attributes specific to the manufacturer or provider.
<b>(pattern)</b>	string, boolean, number	<i>read-write</i> (null)	Property names follow regular expression pattern " <code>^[A-Za-z][A-Za-z0-9_]+\$</code> "
}			
<b>Links</b> (v1.1+) {	object		The links to other resources that are related to this resource.
<b>ActiveSoftwareImage</b> (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.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.

Property	Type	Attributes	Notes
}			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SoftwareImages</b> (v1.1+) [ {	array		The images that are associated with this BIOS.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
}			
<b>ResetBiosToDefaultsPending</b> (v1.2+)	boolean	<i>read-only (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
<b>NewPassword</b>	string	<i>required</i>	The new BIOS password.
<b>OldPassword</b>	string	<i>required</i>	The existing BIOS password.
<b>PasswordName</b>	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_2.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
<b>BootOptionEnabled</b>	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.
<b>BootOptionReference</b>	string	<i>read-only required (null)</i>	The unique boot option.
<b>DisplayName</b>	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.
<b>RelatedItem</b> [ {	array		An array of links to resources or objects associated with this boot option.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>UefiDevicePath</b>	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 Environment (PXE).
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-A1C4-17915C29E5E5,0x9680000000000000)/Lun(0)",
  "Alias": "Hdd",
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Systems/1/SimpleStorage/1"
    }
  ],
  "@odata.id": "/redfish/v1/Systems/1/BootOptions/1"
}
```

## 6.16 Cable 1.2.2

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

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

Property	Type	Attributes	Notes
<b>Model</b>	string	<i>read-write (null)</i>	The model number of the cable.
<b>PartNumber</b>	string	<i>read-write (null)</i>	The part number for this cable.
<b>SerialNumber</b>	string	<i>read-write (null)</i>	The serial number for this cable.
<b>SKU</b>	string	<i>read-write (null)</i>	The SKU for this cable.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UpstreamConnectorTypes [ ]</b>	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>
<b>UpstreamName</b>	string	<i>read-write (null)</i>	The identifier for the downstream resource.
<b>UserDescription</b>	string	<i>read-write (null)</i>	The description of this cable.
<b>UserLabel (v1.1+)</b>	string	<i>read-write</i>	A user-assigned label.
<b>Vendor</b>	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 an 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 an 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 an SFP connector.
SFPPlus	This cable connects to an 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 an 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 an 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 an SFP connector.
SFPPlus	This cable connects to an 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_2.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 1.8.1

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 identity 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
<b>CertificateString</b>	string	<i>read-only required on create (null)</i>	The string for the certificate.
<b>CertificateType</b>	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>
<b>CertificateUsageTypes</b> (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>
<b>Fingerprint</b> (v1.3+)	string	<i>read-only</i>	The fingerprint of the certificate.
<b>FingerprintHashAlgorithm</b> (v1.3+)	string	<i>read-only</i>	The hash algorithm for the fingerprint of the certificate.
<b>Issuer</b> {	object		The issuer of the certificate.
<b>AdditionalCommonNames</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	Additional common names of the entity.
<b>AdditionalOrganizationalUnits</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	Additional organizational units of the entity.
<b>AlternativeNames</b> (v1.7+) [ ]	array (string, null)	<i>read-only</i>	The additional host names of the entity.
<b>City</b>	string	<i>read-only</i>	The city or locality of the organization of the entity.
<b>CommonName</b>	string	<i>read-only</i>	The common name of the entity.
<b>Country</b>	string	<i>read-only</i>	The country of the organization of the entity.
<b>DisplayString</b> (v1.6+)	string	<i>read-only (null)</i>	A human-readable string for this identifier.
<b>DomainComponents</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	The domain components of the entity.
<b>Email</b>	string	<i>read-only (null)</i>	The email address of the contact within the organization of the entity.

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

Property	Type	Attributes	Notes
<b>AdditionalCommonNames</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	Additional common names of the entity.
<b>AdditionalOrganizationalUnits</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	Additional organizational units of the entity.
<b>AlternativeNames</b> (v1.7+) [ ]	array (string, null)	<i>read-only</i>	The additional host names of the entity.
<b>City</b>	string	<i>read-only</i>	The city or locality of the organization of the entity.
<b>CommonName</b>	string	<i>read-only</i>	The common name of the entity.
<b>Country</b>	string	<i>read-only</i>	The country of the organization of the entity.
<b>DisplayString</b> (v1.6+)	string	<i>read-only</i> (null)	A human-readable string for this identifier.
<b>DomainComponents</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	The domain components of the entity.
<b>Email</b>	string	<i>read-only</i> (null)	The email address of the contact within the organization of the entity.
<b>Organization</b>	string	<i>read-only</i>	The name of the organization of the entity.
<b>OrganizationalUnit</b>	string	<i>read-only</i>	The name of the unit or division of the organization of the entity.
<b>State</b>	string	<i>read-only</i>	The state, province, or region of the organization of the entity.
}			
<b>UeffSignatureOwner</b> (v1.2+)	string (uuid)	<i>read-only</i> (null)	The UEFI signature owner for this certificate.
<b>ValidNotAfter</b>	string (date- time)	<i>read-only</i>	The date when the certificate is no longer valid.
<b>ValidNotBefore</b>	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
<b>ChallengePassword</b>	string	<i>optional</i>	The challenge password to apply to the certificate for revocation requests.
<b>KeyBitLength</b>	integer	<i>optional</i>	The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value.
<b>KeyCurveId</b>	string	<i>optional</i>	The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value.
<b>KeyPairAlgorithm</b>	string	<i>optional</i>	The type of key-pair for use with signing algorithms.

#### Response Payload

{			
<b>Certificate</b> (v1.1+) {	object	<i>required</i>	The link to the certificate being rekeyed.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Certificate resource.
}			
<b>CSRString</b> (v1.1+)	string	<i>read-only 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
<b>ChallengePassword</b>	string	<i>optional</i>	The challenge password to apply to the certificate for revocation requests.

##### Response Payload

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

<b>@odata.id</b>	string	<i>read-only</i>	Link to another Certificate resource.
}			
<b>CSRString</b> (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_1.Certificate",
  "Id": "1",
  "Name": "HTTPS Certificate",
  "CertificateString": "-----BEGIN CERTIFICATE-----\nMIIFStCC [*truncated*] GXG5zljlu\n-----\nEND 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 1.0.3

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	read-only	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 <a href="#">Common properties</a> section.
}			

### 6.18.4 Example response

```
{
  "@odata.type": "#CertificateLocations.v1_0_3.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
<b>CertificateLocations</b> {	object		The information about the location of certificates. See the <i>CertificateLocations</i> schema for details on this property.
<b>@odata.id</b>	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
<b>AlternativeNames</b> [ ]	array (string)	<i>optional</i>	The additional host names of the component to secure.
<b>CertificateCollection</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>ChallengePassword</b>	string	<i>optional</i>	The challenge password to apply to the certificate for revocation requests.
<b>City</b>	string	<i>required</i>	The city or locality of the organization making the request.
<b>CommonName</b>	string	<i>required</i>	The fully qualified domain name of the component to secure.
<b>ContactPerson</b>	string	<i>optional</i>	The name of the user making the request.
<b>Country</b>	string	<i>required</i>	The two-letter country code of the organization making the request.
<b>Email</b>	string	<i>optional</i>	The email address of the contact within the organization making the request.
<b>GivenName</b>	string	<i>optional</i>	The given name of the user making the request.
<b>Initials</b>	string	<i>optional</i>	The initials of the user making the request.

Parameter Name	Type	Attributes	Notes
<b>KeyBitLength</b>	integer	<i>optional</i>	The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value.
<b>KeyCurveId</b>	string	<i>optional</i>	The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value.
<b>KeyPairAlgorithm</b>	string	<i>optional</i>	The type of key-pair for use with signing algorithms.
<b>KeyUsage [ ]</b>	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>
<b>Organization</b>	string	<i>required</i>	The name of the organization making the request.
<b>OrganizationalUnit</b>	string	<i>required</i>	The name of the unit or division of the organization making the request.
<b>State</b>	string	<i>required</i>	The state, province, or region of the organization making the request.
<b>Surname</b>	string	<i>optional</i>	The surname of the user making the request.
<b>UnstructuredName</b>	string	<i>optional</i>	The unstructured name of the subject.

### Response Payload

{			
<b>CertificateCollection</b>	object	<i>required</i>	The link to the certificate collection where the certificate is installed. Contains a link to a resource.
{			
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>CSRString</b>	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
<b>CertificateString</b>	string	<i>required</i>	The string for the certificate.
<b>CertificateType</b>	string (enum)	<i>required</i>	The format of the certificate. <i>For the possible property values, see CertificateType in Property details.</i>
<b>CertificateUri {</b>	object	<i>required</i>	The link to the certificate that is being replaced. See the <i>Certificate</i> schema for details on this property.
<b>@odata.id</b>	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 1.25.0

Version	v1.25	v1.24	v1.23	v1.22	v1.21	v1.20	v1.19	v1.18	v1.17	v1.16	v1.15	...
Release	2023.3	2023.2	2023.1	2022.3	2022.2	2022.1	2021.4	2021.3	2021.2	2021.1	2020.4	...

### 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
<b>Assembly</b> (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	read-only	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	read-write (null)	The user-assigned asset tag of this chassis.

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

Property	Type	Attributes	Notes
}			
<b>Drives</b> (v1.14+) {	object		The link to the collection of drives within this chassis. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Drive</i> . See the Drive schema for details.
}			
<b>ElectricalSourceManagerURIs</b> (v1.18+) [ ]	array (URI) (string, null)	<i>read-write</i>	The URIs of the management interfaces for the external electrical source connections for this chassis.
<b>ElectricalSourceNames</b> (v1.18+) [ ]	array (string, null)	<i>read-write</i>	The names of the external electrical sources, such as circuits or outlets, connected to this chassis.
<b>EnvironmentalClass</b> (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>
<b>EnvironmentMetrics</b> (v1.15+) {	object		The link to the environment metrics for this chassis. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>FabricAdapters</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>FabricAdapter</i> . See the FabricAdapter schema for details.
}			
<b>HeatingCoolingEquipmentNames</b> (v1.25+) [ ]	array (string, null)	<i>read-write</i>	The names of the external heating or cooling equipment, such as coolant distribution units, connected to this chassis.
<b>HeatingCoolingManagerURIs</b> (v1.25+) [ ]	array (URI) (string, null)	<i>read-write</i>	The URIs of the management interfaces for the external heating or cooling equipment for this chassis.
<b>HeightMm</b> (v1.4+)	number (mm)	<i>read-only (null)</i>	The height of the chassis.

Property	Type	Attributes	Notes
<b>HotPluggable</b> (v1.21+)	boolean	<i>read-only</i> (null)	An indication of whether this component can be inserted or removed while the equipment is in operation.
<b>IndicatorLED</b> (deprecated v1.14)	string (enum)	<i>read-write</i> (null)	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>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Cables</b> (v1.17+) [ {	array		An array of links to the cables connected to this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Cable resource. See the Links section and the <i>Cable</i> schema for details.
} ]			
<b>ComputerSystems</b> [ {	array		An array of links to the computer systems that this chassis directly and wholly contains.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
} ]			
<b>ConnectedCoolingLoops</b> (v1.23+) [ {	array		An array of links to cooling loops connected to this chassis.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details.
} ]			
<b>ContainedBy</b> {	object		The link to the chassis that contains this chassis.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another Chassis resource.
}			
<b>Contains</b> [ {	array		An array of links to any other chassis that this chassis has in it.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another Chassis resource.
} ]			

Property	Type	Attributes	Notes
<b>CooledBy</b> ( <i>deprecated v1.20</i> ) [ {	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>
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>CoolingUnits</b> ( <i>v1.23+</i> ) [ {	array		An array of links to cooling unit functionality contained in this chassis.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingUnit resource. See the Links section and the CoolingUnit schema for details.
} ]			
<b>Drives</b> ( <i>v1.2+</i> ) [ {	array		An array of links to the drives located in this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the Drive schema for details.
} ]			
<b>Facility</b> ( <i>v1.11+</i> ) {	object		The link to the facility that contains this chassis. See the Facility schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Facility resource. See the Links section and the Facility schema for details.
}			
<b>Fans</b> ( <i>v1.20+</i> ) [ {	array		An array of links to the fans that cool this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Fan resource. See the Links section and the Fan schema for details.
} ]			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the Manager schema for details.
} ]			
<b>ManagersInChassis</b> ( <i>v1.2+</i> ) [ {	array		An array of links to the managers located in this chassis.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevices</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeDevice resource. See the Links section and the <i>PCIeDevice</i> schema for details.
} ]			
<b>PowerDistribution</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
}			
<b>PoweredBy</b> (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>
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>PowerOutlets</b> (v1.18+) [ {	array		An array of links to the outlets that provide power to this chassis.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
} ]			
<b>PowerSupplies</b> (v1.20+) [ {	array		An array of links to the power supplies that provide power to this chassis.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PowerSupply resource. See the Links section and the <i>PowerSupply</i> schema for details.
} ]			
<b>Processors</b> (v1.9+) [ {	array		An array of links to the processors located in this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
} ]			
<b>ResourceBlocks</b> (v1.5+) [ {	array		An array of links to the resource blocks located in this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details.
} ]			
<b>Storage</b> (v1.2+) [ {	array		An array of links to the storage subsystems connected to or inside this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details.
} ]			
<b>Switches</b> (v1.7+) [ {	array		An array of links to the switches located in this chassis.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details.
} ]			
}			
<b>Location</b> (v1.2+) {}	object		The location of the chassis. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.14+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>LogServices</b> {	object		The link to the logs for this chassis. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LogService</i> . See the LogService schema for details.
}			



Property	Type	Attributes	Notes
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this chassis.
<b>MaxPowerWatts</b> (v1.12+)	number (Watts)	<i>read-only (null)</i>	The upper bound of the total power consumed by the chassis.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>MediaControllers</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MediaController</i> . See the MediaController schema for details.
}			
<b>Memory</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Memory</i> . See the Memory schema for details.
}			
<b>MemoryDomains</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MemoryDomain</i> . See the MemoryDomain schema for details.
}			
<b>MinPowerWatts</b> (v1.12+)	number (Watts)	<i>read-only (null)</i>	The lower bound of the total power consumed by the chassis.
<b>Model</b>	string	<i>read-only (null)</i>	The model number of the chassis.
<b>NetworkAdapters</b> (v1.4+) {	object		The link to the collection of network adapters associated with this chassis. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>NetworkAdapter</i> . See the <i>NetworkAdapter</i> schema for details.
}			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number of the chassis.
<b>PCleDevices</b> (v1.10+) {	object		The link to the collection of PCIe devices located in this chassis. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PCleDevice</i> . See the <i>PCleDevice</i> schema for details.
}			
<b>PCleSlots</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>PCleSlots</i> resource. See the Links section and the <i>PCleSlots</i> schema for details.
}			
<b>PhysicalSecurity</b> (v1.1+) {	object		The physical security state of the chassis.
<b>IntrusionSensor</b> (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>
<b>IntrusionSensorNumber</b> (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>
<b>IntrusionSensorReArm</b> (v1.1+)	string (enum)	<i>read-write (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>
}			

Property	Type	Attributes	Notes
<b>Power</b> ( <i>deprecated v1.15</i> ) {	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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Power resource. See the Links section and the <i>Power</i> schema for details.
}			
<b>PoweredByParent</b> ( <i>v1.20+</i> )	boolean	<i>read-only (null)</i>	Indicates that the chassis receives power from the containing chassis.
<b>PowerState</b> ( <i>v1.0.1+</i> )	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>
<b>PowerSubsystem</b> ( <i>v1.15+</i> ) {	object		The link to the power subsystem properties for this chassis. See the <i>PowerSubsystem</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PowerSubsystem resource. See the Links section and the <i>PowerSubsystem</i> schema for details.
}			
<b>Processors</b> ( <i>v1.22+</i> ) {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Processor</i> . See the <i>Processor</i> schema for details.
}			
<b>Replaceable</b> ( <i>v1.21+</i> )	boolean	<i>read-only (null)</i>	An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy.
<b>Sensors</b> ( <i>v1.9+</i> ) {	object		The link to the collection of sensors located in the equipment and sub-components. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Sensor</i> . See the <i>Sensor</i> schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number of the chassis.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU of the chassis.

Property	Type	Attributes	Notes
<b>SparePartNumber</b> (v1.16+)	string	<i>read-only</i> (null)	The spare part number of the chassis.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Thermal</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Thermal resource. See the Links section and the <i>Thermal</i> schema for details.
}			
<b>ThermalDirection</b> (v1.20+)	string (enum)	<i>read-only</i> (null)	Indicates the thermal management path through the chassis. <i>For the possible property values, see ThermalDirection in Property details.</i>
<b>ThermalManagedByParent</b> (v1.20+)	boolean	<i>read-only</i> (null)	Indicates that the chassis is thermally managed by the parent chassis.
<b>ThermalSubsystem</b> (v1.15+) {	object		The link to the thermal subsystem properties for this chassis. See the <i>ThermalSubsystem</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ThermalSubsystem resource. See the Links section and the <i>ThermalSubsystem</i> schema for details.
}			
<b>TrustedComponents</b> (v1.21+) {	object		The link to the trusted components in this chassis. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>TrustedComponent</i> . See the <i>TrustedComponent</i> schema for details.
}			
<b>UUID</b> (v1.7+)	string (uuid)	<i>read-only</i> (null)	The UUID for this chassis.
<b>Version</b> (v1.21+)	string	<i>read-only</i> (null)	The hardware version of this chassis.
<b>WeightKg</b> (v1.4+)	number (kg)	<i>read-only</i> (null)	The weight of the chassis.

Property	Type	Attributes	Notes
<b>WidthMm</b> (v1.4+)	number (mm)	<i>read-only</i> ( <i>null</i> )	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
<b>ResetType</b>	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.
Pod	A collection of equipment racks in a large, likely transportable, container.
PowerStrip (v1.25+)	A power strip, typically placed in the zero-U space of a rack.
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.

string	Description
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.

string	Description
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 <code>null</code> 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.



string	Description
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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

#### 6.20.5.9 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_25_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 1.7.1

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
<b>BreakerState</b>	string (enum)	<i>read-only (null)</i>	The state of the overcurrent protection device. <i>For the possible property values, see BreakerState in Property details.</i>
<b>CircuitType</b>	string (enum)	<i>read-only (null)</i>	The type of circuit. <i>For the possible property values, see CircuitType in Property details.</i>
<b>ConfigurationLocked</b> (v1.5+)	boolean	<i>read-write</i>	Indicates whether the configuration is locked.
<b>CriticalCircuit</b>	boolean	<i>read-write (null)</i>	Designates if this is a critical circuit.
<b>CurrentAmps</b> {}	object		The current (A) for this single-phase circuit. For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>ElectricalConsumerNames</b> (v1.4+) [ ]	array (string, null)	<i>read-write</i>	An array of names of downstream devices that are powered by this circuit.
<b>ElectricalContext</b>	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>
<b>ElectricalSourceManagerURI</b> (v1.4+)	string (URI)	<i>read-write</i>	The URI of the management interface for the upstream electrical source connection for this circuit.
<b>ElectricalSourceName</b> (v1.4+)	string	<i>read-write</i>	The name of the upstream electrical source, such as a circuit or outlet, connected to this circuit.
<b>EnergykWh</b> {}	object		The energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
<b>FrequencyHz</b> {}	object		The frequency (Hz) for this circuit. For more information about this property, see SensorExcerpt in Property Details.

Property	Type	Attributes	Notes
<b>IndicatorLED</b> ( <i>deprecated v1.1</i> )	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>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>BranchCircuit</b> {	object	(null)	A reference to the branch circuit related to this circuit.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Circuit resource.
}			
<b>DistributionCircuits</b> ( <i>v1.4+</i> ) [ {	array		An array of links to the circuits powered by this circuit.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another Circuit resource.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Outlets</b> [ {	array		An array of references to the outlets contained by this circuit.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
} ]			
<b>PowerOutlet</b> ( <i>v1.4+</i> ) {	object	(null)	A link to the power outlet that provides power to this circuit. See the <i>Outlet</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
}			
<b>SourceCircuit</b> ( <i>v1.4+</i> ) {	object	(null)	A link to the circuit that provides power to this circuit.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another Circuit resource.
}			
}			
<b>LocationIndicatorActive</b> ( <i>v1.1+</i> )	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.

Property	Type	Attributes	Notes
<b>NominalVoltage</b>	string (enum)	<i>read-only (null)</i>	The nominal voltage for this circuit. <i>For the possible property values, see NominalVoltage in Property details.</i>
<b>PhaseWiringType</b>	string (enum)	<i>read-only (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>
<b>PlugType</b>	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>
<b>PolyPhaseCurrentAmps {</b>	object	<i>(null)</i>	The current readings for this circuit.
<b>Line1 {}</b>	object		Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Line2 {}</b>	object		Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Line3 {}</b>	object		Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Neutral {}</b>	object		Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>}</b>			
<b>PolyPhaseEnergykWh {</b>	object	<i>(null)</i>	The energy readings for this circuit.
<b>Line1ToLine2 {}</b>	object		The Line 1 to Line 2 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
<b>Line1ToNeutral {}</b>	object		The Line 1 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
<b>Line2ToLine3 {}</b>	object		The Line 2 to Line 3 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
<b>Line2ToNeutral {}</b>	object		The Line 2 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
<b>Line3ToLine1 {}</b>	object		The Line 3 to Line 1 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.

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

Property	Type	Attributes	Notes
<b>Line2ToNeutral</b> {}	object		The Line 2 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line3ToLine1</b> {}	object		The Line 3 to Line 1 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line3ToNeutral</b> {}	object		The Line 3 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
}			
<b>PowerControlLocked</b> (v1.5+)	boolean	<i>read-write</i>	Indicates whether power control requests are locked.
<b>PowerCycleDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	<i>read-only (null)</i>	Indicates if the circuit can be powered.
<b>PowerLoadPercent</b> (v1.3+) {}	object		The power load (percent) for this circuit. For more information about this property, see SensorExcerpt in Property Details.
<b>PowerOffDelaySeconds</b>	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.
<b>PowerOnDelaySeconds</b>	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.
<b>PowerRestoreDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	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>
<b>PowerState</b>	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>
<b>PowerStateInTransition</b> (v1.5+)	boolean	<i>read-only</i>	Indicates whether the power state is undergoing a delayed transition.
<b>PowerWatts</b> {}	object		The power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
<b>RatedCurrentAmps</b>	number (A)	<i>read-only (null)</i>	The rated maximum current allowed for this circuit.



Property	Type	Attributes	Notes
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UnbalancedCurrentPercent</b> (v1.5+) {}	object		The current imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details.
<b>UnbalancedVoltagePercent</b> (v1.5+) {}	object		The voltage imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details.
<b>UserLabel</b> (v1.4+)	string	<i>read-write</i>	A user-assigned label.
<b>Voltage</b> {}	object		The voltage (V) for this single-phase circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>VoltageType</b>	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
<b>PowerState</b>	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)	optional	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 overcurrent 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.
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.

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.

#### 6.21.5.4 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.

string	Description
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).
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).
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).

string	Description
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).
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.

<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
-------------------------------	--------	---------------------	-----------------------------------



<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (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.

<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> (null)	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> (null)	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.

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

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

<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
-------------------------------	--------	----------------------------	-----------------------------------

<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only (null)</i>	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_1.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 1.2.2

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	read-write	An indication of whether security protocols are enabled for the component.
ComponentIntegrityType	string (enum)	read-only required	The type of security technology for the component. <i>For the possible property values, see ComponentIntegrityType in Property details.</i>
ComponentIntegrityTypeVersion	string	read-only required	The version of the security technology.
LastUpdated	string (date-time)	read-only (null)	The date and time when information for the component was last updated.

Property	Type	Attributes	Notes
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ComponentsProtected</b> [ {	array		An array of links to resources that the target component protects.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>SPDM</b> {	object		Integrity information about the SPDM Responder as reported by an SPDM Requester.
<b>ComponentCommunication</b> {	object	<i>(null)</i>	Information about communication between the SPDM Requester and SPDM Responder.
<b>Sessions</b> [ {	array		The active sessions or communication channels between two components.
<b>SessionId</b>	integer	<i>read-only (null)</i>	The identifier for an active session or communication channel between two components.
<b>SessionType</b>	string (enum)	<i>read-only (null)</i>	The type of session or communication channel between two components. <i>For the possible property values, see SessionType in Property details.</i>
} ]			
}			
<b>IdentityAuthentication</b> {	object	<i>(null)</i>	Identity authentication information about the SPDM Requester and SPDM Responder.
<b>RequesterAuthentication</b> {	object	<i>(null)</i>	Authentication information of the identity of the SPDM Requester.
<b>ProvidedCertificate</b> {	object		A link to the certificate that represents the identity of the SPDM Requester provided in mutual authentication. See the <i>Certificate</i> schema for details on this property.
<b>@odata.id</b>	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
}			
}			
<b>ResponderAuthentication</b> {	object	(null)	Authentication information of the identity of the SPDM Responder.
<b>ComponentCertificate</b> {	object		A link to the certificate that represents the identity of the component. See the <i>Certificate</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details.
}			
<b>VerificationStatus</b>	string (enum)	read-only (null)	The status of the verification of the identity of the component. <i>For the possible property values, see VerificationStatus in Property details.</i>
}			
}			
<b>MeasurementSet</b> {	object	(null)	Measurement information about the SPDM Responder.
<b>Measurements</b> [ {	array		Measurements from an SPDM Responder.
<b>LastUpdated</b>	string (date-time)	read-only (null)	The date and time when information for the measurement was last updated.
<b>Measurement</b>	string	read-only (null)	The measurement data.
<b>MeasurementHashAlgorithm</b>	string	read-only (null)	The hash algorithm used to compute the measurement.
<b>MeasurementIndex</b>	integer	read-only (null)	The index of the measurement.
<b>MeasurementType</b>	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>
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
<b>PartofSummaryHash</b>	boolean	<i>read-only (null)</i>	Indicates whether this measurement is part of the measurement summary.
<b>SecurityVersionNumber</b> (v1.1+)	string	<i>read-only (null)</i>	The security version number the measurement represents.
} ]			
<b>MeasurementSpecification</b>	string (enum)	<i>read-only (null)</i>	The measurement specification negotiated between the SPDM Requester and SPDM Responder. <i>For the possible property values, see MeasurementSpecification in Property details.</i>
<b>MeasurementSummary</b>	string	<i>read-only (null)</i>	The measurement summary data.
<b>MeasurementSummaryHashAlgorithm</b>	string	<i>read-only (null)</i>	The hash algorithm used to compute the measurement summary.
<b>MeasurementSummaryType</b>	string (enum)	<i>read-only (null)</i>	The type of measurement summary. <i>For the possible property values, see MeasurementSummaryType in Property details.</i>
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Requester</b> {	object	<i>required</i>	The link to the component that is reporting the integrity information of the target component.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TargetComponentURI</b>	string (URI)	<i>read-only required</i>	The link to the component whose integrity that this resource reports.
<b>TPM</b> {	object		Integrity information about the Trusted Platform Module (TPM).
<b>ComponentCommunication</b> {	object	<i>(null)</i>	Information about communication with the TPM.



Property	Type	Attributes	Notes
<b>Sessions</b> [ {	array		The active sessions or communication channels between two components.
<b>SessionId</b>	integer	<i>read-only (null)</i>	The identifier for an active session or communication channel between two components.
<b>SessionType</b>	string (enum)	<i>read-only (null)</i>	The type of session or communication channel between two components. <i>For the possible property values, see SessionType in Property details.</i>
} ]			
}			
<b>IdentityAuthentication</b> {	object	<i>(null)</i>	Identity authentication information about the TPM.
<b>ComponentCertificate</b> {	object		A link to the certificate that represents the identity of the component. See the <i>Certificate</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details.
}			
<b>VerificationStatus</b>	string (enum)	<i>read-only (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>
}			
<b>MeasurementSet</b> {	object	<i>(null)</i>	Measurement information from the TPM.
<b>Measurements</b> [ {	array		Measurements from a TPM.
<b>LastUpdated</b>	string (date-time)	<i>read-only (null)</i>	The date and time when information for the measurement was last updated.
<b>Measurement</b>	string	<i>read-only (null)</i>	The measurement data.
<b>MeasurementHashAlgorithm</b>	string	<i>read-only (null)</i>	The hash algorithm used to compute the measurement.
<b>PCR</b>	integer	<i>read-only (null)</i>	The Platform Configuration Register (PCR) bank of the measurement.

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

#### Response Payload

{			
---	--	--	--

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

### 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
<b>Certificate</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Certificate resource. See the Links section and the <i>Certificate</i> schema for details.
}			
<b>Nonce</b>	string	<i>optional</i>	A set of bytes as a hex-encoded string that is signed with the measurements. The value should be unique.
<b>PCRSelection</b>	string	<i>required</i>	An object that identifies the PCRs to sign.
<b>Scheme</b>	string	<i>required</i>	The signing scheme to use for the TPM attestation key.

##### Response Payload

{			
---	--	--	--

<b>Oem</b> (v1.2+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SignedMeasurements</b> (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.
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.

string	Description
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_2.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": "h6spEuxbyOtGhP35UoGhTcVX3iRaZQGdw4Yk5oQcabw=",
          "LastUpdated": "2021-10-31T20:14:27-07:00",

```

```

        "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
      },
      {
        "PCR": 3,
        "Measurement": "GnbzS4ToNQb+Y7SxXw4AvRDTf4Sz05eeA1A1Dca28AA=",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
      },
      {
        "PCR": 1,
        "Measurement":
"pLJa5Dyh8CDYFZ1WN0rsiSG1eyCPBlre42CD7CTywg7VkcC4afw4ZG3gQxi2XEFCt5jxz6tN1/cbx/DNx2/
t0g==",
        "LastUpdated": "2021-10-31T20:14:27-07:00",
        "MeasurementHashAlgorithm": "TPM_ALG_SHA512"
      },
      {
        "PCR": 3,
        "Measurement":
"GBgEucATV8omirTmYqY+vvbbisHR1jBKfVAEK1XSifBHnnIYXopsc0NEXURDSSyPj021NrPqnwiq5LhI1p6rzQ==",
        "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 1.0.1

Version	v1.0
---------	------



<b>Release</b>	2021.1
----------------	--------

### 6.23.1 Description

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

### 6.23.2 URIs

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

### 6.23.3 Properties

Property	Type	Attributes	Notes
<b>Client</b>	string	<i>read-only</i>	The client that owns the reservation.
<b>Manifest {</b>	object		The manifest document processed by the service that resulted in this reservation.
<b>Description</b>	string	<i>read-write (null)</i>	The description of this manifest.
<b>Expand</b>	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>
<b>Stanzas [ {</b>	array		An array of stanzas that describe the requests specified by this manifest.
<b>OEMStanzaType</b>	string	<i>read-write (null)</i>	The OEM-defined type of stanza.
<b>Request {}</b>	object	<i>(null)</i>	The request details for the stanza.
<b>Response {}</b>	object	<i>(null)</i>	The response details for the stanza.
<b>StanzaId</b>	string	<i>read-write (null)</i>	The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service.
<b>StanzaType</b>	string (enum)	<i>read-write (null)</i>	The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i>
<b>} ]</b>			

Property	Type	Attributes	Notes
<b>Timestamp</b>	string (date-time)	<i>read-write (null)</i>	The date and time when the manifest was created.
}			
<b>ReservationTime</b>	string (date-time)	<i>read-only</i>	The date and time the service created the reservation.
<b>ReservedResourceBlocks</b> [ {	array		The array of links to the reserved resource blocks.
<b>@odata.id</b>	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.

string	Description
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_1.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 1.2.2

<b>Version</b>	v1.2	v1.1	v1.0
<b>Release</b>	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
<b>ActivePool</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ResourceBlock</i> . See the ResourceBlock schema for details.
}			
<b>AllowOverprovisioning</b> (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.
<b>AllowZoneAffinity</b> (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.
<b>CompositionReservations</b> (v1.2+) {	object		The link to the collection of reservations with the composition reservation collection. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CompositionReservation</i> . See the <i>CompositionReservation</i> schema for details.
}			
<b>FreePool</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ResourceBlock</i> . See the <i>ResourceBlock</i> schema for details.
}			
<b>ReservationDuration</b> (v1.2+)	string (duration)	<i>read-write (null)</i>	The length of time a composition reservation is held before the service deletes the reservation and marks any related resource blocks as no longer reserved.
<b>ResourceBlocks</b> {	object		The resource blocks available on the service. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ResourceBlock</i> . See the <i>ResourceBlock</i> schema for details.
}			
<b>ResourceZones</b> {	object		The resource zones available on the service. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Zone</i> . See the <i>Zone</i> schema for details.
}			
<b>ServiceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this service is enabled.
<b>Status</b> {}	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
<b>Manifest</b> {	object	<i>optional</i>	The manifest containing the compose operation request.
<b>Description</b>	string	<i>read-write (null)</i>	The description of this manifest.
<b>Expand</b>	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>
<b>Stanzas</b> [ {	array		An array of stanzas that describe the requests specified by this manifest.
<b>OEMStanzaType</b>	string	<i>read-write (null)</i>	The OEM-defined type of stanza.
<b>Request</b> { }	object	<i>(null)</i>	The request details for the stanza.
<b>Response</b> { }	object	<i>(null)</i>	The response details for the stanza.
<b>StanzaId</b>	string	<i>read-write (null)</i>	The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service.
<b>StanzaType</b>	string (enum)	<i>read-write (null)</i>	The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i>
} ]			
<b>Timestamp</b>	string (date-time)	<i>read-write (null)</i>	The date and time when the manifest was created.
}			
<b>RequestFormat</b>	string (enum)	<i>required</i>	The format of the request. <i>For the possible property values, see RequestFormat in Property details.</i>
<b>RequestType</b>	string (enum)	<i>required</i>	The type of request. <i>For the possible property values, see RequestType in Property details.</i>
<b>ReservationId</b>	string	<i>optional</i>	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

{			
<b>Manifest</b> (v1.2+) {	object		The manifest containing the compose operation response.
<b>Description</b>	string	read-write (null)	The description of this manifest.
<b>Expand</b>	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>
<b>Stanzas</b> [ {	array		An array of stanzas that describe the requests specified by this manifest.
<b>OEMStanzaType</b>	string	read-write (null)	The OEM-defined type of stanza.
<b>Request</b> { }	object	(null)	The request details for the stanza.
<b>Response</b> { }	object	(null)	The response details for the stanza.
<b>Stanzald</b>	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.
<b>StanzaType</b>	string (enum)	read-write (null)	The type of stanza. <i>For the possible property values, see StanzaType in Property details.</i>
} ]			
<b>Timestamp</b>	string (date-time)	read-write (null)	The date and time when the manifest was created.
}			
<b>RequestFormat</b> (v1.2+)	string (enum)	read-only required	The format of the request. <i>For the possible property values, see RequestFormat in Property details.</i>
<b>RequestType</b> (v1.2+)	string (enum)	read-only required	The type of request. <i>For the possible property values, see RequestType in Property details.</i>
<b>ReservationId</b> (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

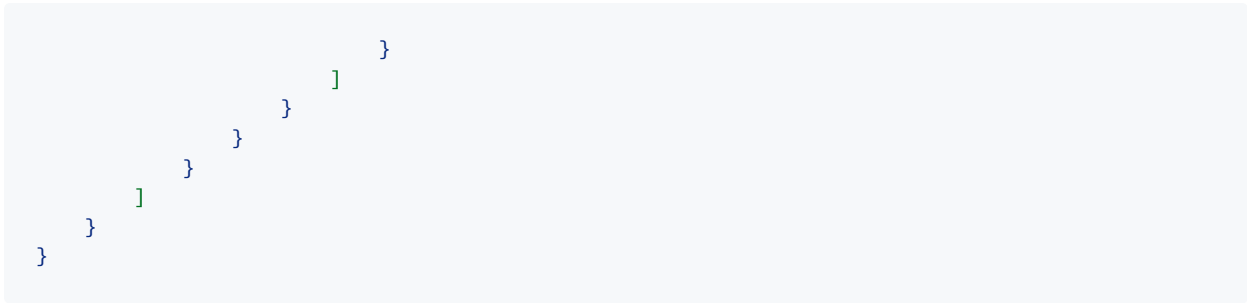
```
{
  "RequestFormat": "Manifest",
  "RequestType": "Apply",
  "Manifest": {
    "Description": "Specific composition example",
    "Timestamp": "2019-08-22T10:35:16+06:00",
    "Expand": "None",
```



```

"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",
      "@odata.type": "#ComputerSystem.v1_14_0.ComputerSystem",
      "Id": "ComposedCompute1",
      "Name": "Computer system composed from Compute1",
      "Processors": {
        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Processors"
      },
      "Memory": {
        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Memory"
      },
      "NetworkInterfaces": {
        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/NetworkInterfaces"
      },
      "Storage": {
        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Storage"
      },
      "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"
          }
        ]
      }
    }
  }
]

```



## 6.24.5 Property details

### 6.24.5.1 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.

### 6.24.5.2 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.

string	Description
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.
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_2.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 1.22.0

Version	v1.22	v1.21	v1.20	v1.19	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	...
Release	2023.3	2023.2	2022.3	2022.2	2022.1	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	...

### 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
<b>AssetTag</b>	string	<i>read-write (null)</i>	The user-definable tag that can track this computer system for inventory or other client purposes.
<b>Bios</b> (v1.1+) {	object		The link to the BIOS settings associated with this system. See the <i>Bios</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Bios resource. See the Links section and the <i>Bios</i> schema for details.
}			
<b>BiosVersion</b>	string	<i>read-only (null)</i>	The version of the system BIOS or primary system firmware.
<b>Boot</b> {	object		The boot settings for this system.

Property	Type	Attributes	Notes
<b>AliasBootOrder</b> (v1.6+) [ ]	array (string (enum))	<i>read-write</i> (null)	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>
<b>AutomaticRetryAttempts</b> (v1.11+)	integer	<i>read-write</i> (null)	The number of attempts the system will automatically retry booting.
<b>AutomaticRetryConfig</b> (v1.11+)	string (enum)	<i>read-write</i> (null)	The configuration of how the system retries booting automatically. <i>For the possible property values, see AutomaticRetryConfig in Property details.</i>
<b>BootNext</b> (v1.5+)	string	<i>read-write</i> (null)	The BootOptionReference of the Boot Option to perform a one-time boot from when BootSourceOverrideTarget is UefiBootNext .
<b>BootOptions</b> (v1.5+) {	object		The link to the collection of the UEFI boot options associated with this computer system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>BootOption</i> . See the BootOption schema for details.
}			
<b>BootOrder</b> (v1.5+) [ ]	array (string, null)	<i>read-write</i>	An array of BootOptionReference 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 @Redfish.Settings 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 @Redfish.Settings term.
<b>BootOrderPropertySelection</b> (v1.6+)	string (enum)	<i>read-write</i> (null)	The name of the boot order property that the system uses for the persistent boot order. <i>For the possible property values, see BootOrderPropertySelection in Property details.</i>
<b>BootSourceOverrideEnabled</b>	string (enum)	<i>read-write</i> (null)	The state of the boot source override feature. <i>For the possible property values, see BootSourceOverrideEnabled in Property details.</i>
<b>BootSourceOverrideMode</b> (v1.1+)	string (enum)	<i>read-write</i> (null)	The BIOS boot mode to use when the system boots from the BootSourceOverrideTarget boot source. <i>For the possible property values, see BootSourceOverrideMode in Property details.</i>

Property	Type	Attributes	Notes
<b>BootSourceOverrideTarget</b>	string (enum)	<i>read-write</i> (null)	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>
<b>Certificates</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>HttpBootUri</b> (v1.9+)	string (URI)	<i>read-write</i> (null)	The URI to boot from when <code>BootSourceOverrideTarget</code> is set to <code>UefiHttp</code> .
<b>RemainingAutomaticRetryAttempts</b> (v1.11+)	integer	<i>read-only</i> (null)	The number of remaining automatic retry boots.
<b>StopBootOnFault</b> (v1.15+)	string (enum)	<i>read-write</i> (null)	If the boot should stop on a fault. <i>For the possible property values, see <code>StopBootOnFault</code> in Property details.</i>
<b>TrustedModuleRequiredToBoot</b> (v1.14+)	string (enum)	<i>read-write</i> (null)	The Trusted Module boot requirement. <i>For the possible property values, see <code>TrustedModuleRequiredToBoot</code> in Property details.</i>
<b>UefiTargetBootSourceOverride</b>	string	<i>read-write</i> (null)	The UEFI device path of the device from which to boot when <code>BootSourceOverrideTarget</code> is <code>UefiTarget</code> .
}			
<b>BootProgress</b> (v1.13+) {	object	(null)	This object describes the last boot progress state.
<b>LastBootTimeSeconds</b> (v1.18+)	number	<i>read-only</i> (null)	The number of seconds the system spent booting to the operating system during the last boot.
<b>LastState</b> (v1.13+)	string (enum)	<i>read-only</i> (null)	The last boot progress state. <i>For the possible property values, see <code>LastState</code> in Property details.</i>
<b>LastStateTime</b> (v1.13+)	string (date-time)	<i>read-only</i> (null)	The date and time when the last boot state was updated.
<b>Oem</b> (v1.13+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
<b>OemLastState</b> (v1.13+)	string	<i>read-only</i> (null)	The OEM-specific last state, if the LastState type is OEM .
}			
<b>Certificates</b> (v1.14+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>Composition</b> (v1.18+) {	object	(null)	Information about the composition capabilities and state of the computer system.
<b>UseCases</b> (v1.18+) [ ]	array (string (enum))	<i>read-only</i> (null)	The composition use cases in which this computer system can participate. <i>For the possible property values, see UseCases in Property details.</i>
}			
<b>EthernetInterfaces</b> {	object		The link to the collection of Ethernet interfaces associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details.
}			
<b>FabricAdapters</b> (v1.10+) {	object		The link to the collection of fabric adapters associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>FabricAdapter</i> . See the FabricAdapter schema for details.
}			
<b>GraphicalConsole</b> (v1.13+) {	object		The information about the graphical console (KVM-IP) service of this system.
<b>ConnectTypesSupported</b> (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>
<b>MaxConcurrentSessions</b> (v1.13+)	integer	<i>read-only</i>	The maximum number of service sessions, regardless of protocol, that this system can support.

Property	Type	Attributes	Notes
<b>Port</b> (v1.13+)	integer	<i>read-write (null)</i>	The protocol port.
<b>ServiceEnabled</b> (v1.13+)	boolean	<i>read-write</i>	An indication of whether the service is enabled for this system.
}			
<b>GraphicsControllers</b> (v1.15+) {	object		The link to a collection of graphics controllers that can output video for this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>GraphicsController</i> . See the <i>GraphicsController</i> schema for details.
}			
<b>HostedServices</b> (v1.2+) {	object		The services that this computer system supports.
<b>Oem</b> (v1.2+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>StorageServices</b> (v1.2+) {	object		The link to a collection of storage services that this computer system supports.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
}			
<b>HostingRoles</b> (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>
<b>HostName</b>	string	<i>read-write (null)</i>	The DNS host name, without any domain information.
<b>HostWatchdogTimer</b> (v1.5+) {	object		The host watchdog timer functionality for this system.
<b>FunctionEnabled</b> (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.
<b>Oem</b> (v1.5+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.



Property	Type	Attributes	Notes
<b>Status</b> (v1.5+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TimeoutAction</b> (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>
<b>WarningAction</b> (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>
}			
<b>IdlePowerSaver</b> (v1.16+) {	object	(null)	The idle power saver settings of the computer system.
<b>Enabled</b> (v1.16+)	boolean	<i>read-write</i>	An indication of whether idle power saver is enabled.
<b>EnterDwellTimeSeconds</b> (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.
<b>EnterUtilizationPercent</b> (v1.16+)	number (%)	<i>read-write (null)</i>	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.
<b>ExitDwellTimeSeconds</b> (v1.16+)	integer (seconds)	<i>read-write (null)</i>	The duration in seconds the computer system is above the ExitUtilizationPercent value before the idle power save is stopped.
<b>ExitUtilizationPercent</b> (v1.16+)	number (%)	<i>read-write (null)</i>	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.
}			
<b>IndicatorLED</b> (deprecated v1.13)	string (enum)	<i>read-write (null)</i>	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>
<b>KeyManagement</b> (v1.16+) {	object	(null)	The key management settings of the computer system.

Property	Type	Attributes	Notes
<b>KMIPCertificates</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>KMIPServers</b> (v1.16+) [ {	array		The KMIP servers to which this computer system is subscribed.
<b>Address</b> (v1.16+)	string	<i>read-write (null)</i>	The KMIP server address.
<b>CacheDuration</b> (v1.20+)	string (duration)	<i>read-write (null)</i>	The duration the system caches KMIP data.
<b>CachePolicy</b> (v1.20+)	string (enum)	<i>read-write (null)</i>	The cache policy to control how KMIP data is cached. <i>For the possible property values, see CachePolicy in Property details.</i>
<b>Password</b> (v1.16+)	string	<i>read-write (null)</i>	The password to access the KMIP server. The value is <code>null</code> in responses.
<b>Port</b> (v1.16+)	integer	<i>read-write (null)</i>	The KMIP server port.
<b>Username</b> (v1.16+)	string	<i>read-write (null)</i>	The username to access the KMIP server.
} ]			
}			
<b>LastResetTime</b> (v1.12+)	string (date-time)	<i>read-only</i>	The date and time when the system was last reset or rebooted.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Chassis</b> [ {	array		An array of links to the chassis that contains this system.
<b>@odata.id</b>	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
<b>ConsumingComputerSystems</b> (v1.5+) [ {	array		An array of links to ComputerSystems that are realized, in whole or in part, from this ComputerSystem.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ComputerSystem resource.
} ]			
<b>CooledBy</b> [ {	array		An array of links to resources or objects that cool this computer system. Normally, the link is for either a chassis or a specific set of fans.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Endpoints</b> (v1.2+) [ {	array		An array of links to the endpoints that connect to this system.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>HostingComputerSystem</b> (v1.21+) {	object	(null)	The link to the system that is hosting this virtual machine.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ComputerSystem resource.
}			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for this system.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OffloadedNetworkDeviceFunctions</b> (v1.17+) [ {	array		The network device functions to which this system performs offload computation, such as with a SmartNIC.
<b>@odata.id</b>	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
} ]			
<b>PoweredBy</b> [ {	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.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>ResourceBlocks</b> (v1.4+) [ {	array		An array of links to the resource blocks that are used in this computer system.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details.
} ]			
<b>SupplyingComputerSystems</b> (v1.5+) [ {	array		An array of links to ComputerSystems that contribute, in whole or in part, to the implementation of this ComputerSystem.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ComputerSystem resource.
} ]			
<b>TrustedComponents</b> (v1.19+) [ {	array		An array of links to the trusted components for this system.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a TrustedComponent resource. See the Links section and the <i>TrustedComponent</i> schema for details.
} ]			
<b>VirtualMachines</b> (v1.21+) [ {	array		An array of links to the virtual machines this system is hosting.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ComputerSystem resource.
} ]			
}			
<b>LocationIndicatorActive</b> (v1.13+)	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>LogServices</b> {	object		The link to the collection of log services associated with this system. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LogService</i> . See the <i>LogService</i> schema for details.
}			
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer or OEM of this system.
<b>ManufacturingMode</b> (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.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>Memory</b> (v1.1+) {	object		The link to the collection of memory associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Memory</i> . See the <i>Memory</i> schema for details.
}			
<b>MemoryDomains</b> (v1.2+) {	object		The link to the collection of memory domains associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MemoryDomain</i> . See the <i>MemoryDomain</i> schema for details.
}			
<b>MemorySummary</b> {	object		The central memory of the system in general detail.
<b>MemoryMirroring</b> (v1.1+)	string (enum)	<i>read-only (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>
<b>Metrics</b> (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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryMetrics resource. See the Links section and the <i>MemoryMetrics</i> schema for details.
}			
<b>Status</b> ( <i>deprecated v1.16</i> ) {}	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>
<b>TotalSystemMemoryGiB</b>	number (GiBy)	<i>read-only (null)</i>	The total configured operating system-accessible memory (RAM), measured in GiB.
<b>TotalSystemPersistentMemoryGiB</b> (v1.4+)	number (GiBy)	<i>read-only (null)</i>	The total configured, system-accessible persistent memory, measured in GiB.
}			
<b>Model</b>	string	<i>read-only (null)</i>	The product name for this system, without the manufacturer name.
<b>NetworkInterfaces</b> (v1.3+) {	object		The link to the collection of Network Interfaces associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>NetworkInterface</i> . See the NetworkInterface schema for details.
}			
<b>OperatingSystem</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a OperatingSystem resource. See the Links section and the <i>OperatingSystem</i> schema for details.
}			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this system.
<b>PCleDevices</b> (v1.2+) [ {	array		The link to a collection of PCIe devices that this computer system uses.
<b>@odata.id</b>	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
<b>PCleFunctions</b> (v1.2+) [ {	array		The link to a collection of PCIe functions that this computer system uses.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
<b>PowerCycleDelaySeconds</b> (v1.13+)	number	<i>read-write (null)</i>	The number of seconds to delay power on after a <b>Reset</b> action requesting <b>PowerCycle</b> . Zero seconds indicates no delay.
<b>PowerMode</b> (v1.15+)	string (enum)	<i>read-write (null)</i>	The power mode setting of the computer system. <i>For the possible property values, see PowerMode in Property details.</i>
<b>PowerOffDelaySeconds</b> (v1.13+)	number	<i>read-write (null)</i>	The number of seconds to delay power off during a reset. Zero seconds indicates no delay to power off.
<b>PowerOnDelaySeconds</b> (v1.13+)	number	<i>read-write (null)</i>	The number of seconds to delay power on after a power cycle or during a reset. Zero seconds indicates no delay to power up.
<b>PowerRestorePolicy</b> (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>
<b>PowerState</b>	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>
<b>Processors</b> {	object		The link to the collection of processors associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Processor</i> . See the Processor schema for details.
}			
<b>ProcessorSummary</b> {	object		The central processors of the system in general detail.
<b>CoreCount</b> (v1.14+)	integer	<i>read-only (null)</i>	The number of processor cores in the system.
<b>Count</b>	integer	<i>read-only (null)</i>	The number of physical processors in the system.
<b>LogicalProcessorCount</b> (v1.5+)	integer	<i>read-only (null)</i>	The number of logical processors in the system.

Property	Type	Attributes	Notes
<b>Metrics</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ProcessorMetrics</i> resource. See the Links section and the <i>ProcessorMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only</i> (null)	The processor model for the primary or majority of processors in this system.
<b>Status</b> (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>
<b>ThreadingEnabled</b> (v1.15+)	boolean	<i>read-write</i>	An indication of whether threading is enabled on all processors in this system.
}			
<b>Redundancy</b> (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 <i>Redundancy</i> .
<b>SecureBoot</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>SecureBoot</i> resource. See the Links section and the <i>SecureBoot</i> schema for details.
}			
<b>SerialConsole</b> (v1.13+) {	object		The serial console services that this system provides.
<b>IPMI</b> (v1.13+) {}	object		The connection details for an IPMI Serial-over-LAN service. For more information about this property, see <i>SerialConsoleProtocol</i> in Property Details.
<b>MaxConcurrentSessions</b> (v1.13+)	integer	<i>read-only</i>	The maximum number of service sessions, regardless of protocol, that this system can support.



Property	Type	Attributes	Notes
<b>SSH</b> (v1.13+) {}	object		The connection details for an SSH serial console service. For more information about this property, see <code>SerialConsoleProtocol</code> in Property Details.
<b>Telnet</b> (v1.13+) {}	object		The connection details for a Telnet serial console service. For more information about this property, see <code>SerialConsoleProtocol</code> in Property Details.
}			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this system.
<b>SimpleStorage</b> {	object		The link to the collection of storage devices associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>SimpleStorage</i> . See the <i>SimpleStorage</i> schema for details.
}			
<b>SKU</b>	string	<i>read-only (null)</i>	The manufacturer SKU for this system.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>Storage</b> (v1.1+) {	object		The link to the collection of storage devices associated with this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Storage</i> . See the <i>Storage</i> schema for details.
}			
<b>SubModel</b> (v1.5+)	string	<i>read-only (null)</i>	The sub-model for this system.
<b>SystemType</b>	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>
<b>TrustedModules</b> (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>

Property	Type	Attributes	Notes
<b>FirmwareVersion</b> (v1.1+)	string	<i>read-only (null)</i>	The firmware version of this Trusted Module.
<b>FirmwareVersion2</b> (v1.3+)	string	<i>read-only (null)</i>	The second firmware version of this Trusted Module, if applicable.
<b>InterfaceType</b> (v1.1+)	string (enum)	<i>read-only (null)</i>	The interface type of the Trusted Module. <i>For the possible property values, see InterfaceType in Property details.</i>
<b>InterfaceTypeSelection</b> (v1.3+)	string (enum)	<i>read-only (null)</i>	The interface type selection supported by this Trusted Module. <i>For the possible property values, see InterfaceTypeSelection in Property details.</i>
<b>Oem</b> (v1.1+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Status</b> (v1.1+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
} ]			
<b>USBControllers</b> (v1.15+) {	object		The link to a collection of USB controllers for this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>USBController</i> . See the USBController schema for details.
}			
<b>UUID</b>	string (uuid)	<i>read-only (null)</i>	The UUID for this system. <i>For more information about this property, see Property details.</i>
<b>VirtualMedia</b> (v1.13+) {	object		The link to the virtual media services for this system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>VirtualMedia</i> . See the VirtualMedia schema for details.
}			
<b>VirtualMediaConfig</b> (v1.13+) {	object		The information about the virtual media service of this system.
<b>Port</b> (v1.13+)	integer	<i>read-write (null)</i>	The protocol port.
<b>ServiceEnabled</b> (v1.13+)	boolean	<i>read-write</i>	An indication of whether the service is enabled for this system.

Property	Type	Attributes	Notes
}			

## 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
<b>ComputerSystemETag</b>	string	<i>optional</i>	The current ETag of the system.
<b>ResourceBlock</b> {	object	<i>required</i>	The resource block to add to the system. See the <i>ResourceBlock</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details.
}			
<b>ResourceBlockETag</b>	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
<b>ComputerSystemETag</b>	string	<i>optional</i>	The current ETag of the system.
<b>DecommissionTypes</b> [ ]	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>
<b>OEMDecommissionTypes</b> [ ]	array (string)	<i>optional</i>	The OEM-specific types of data to remove from the system.
<b>RequireSecureErase</b>	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
<b>ComputerSystemETag</b>	string	<i>optional</i>	The current ETag of the system.
<b>ResourceBlock {</b>	object	<i>required</i>	The resource block to remove from the system. See the <i>ResourceBlock</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details.
<b>}</b>			
<b>ResourceBlockETag</b>	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
<b>ResetType</b>	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"
}
```

6.25.4.5 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.
Diagnostics	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 Environment (PXE).
Recovery	Boot to a system-designated recovery process or image.
RemoteDrive	Boot from a remote drive, such as an iSCSI target.

string	Description
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 Disabled .
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 Disabled .

#### 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.
Diagnostics	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 Environment (PXE).
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.



string	Description
UefiBootNext (v1.5+)	Boot to the UEFI device that the BootNext 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 UefiTargetBootSourceOverride 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 CacheDuration property.
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.

string	Description
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.

string	Description
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 <code>null</code> 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.

string	Description
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.
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.
EfficiencyFavorPerformance (v1.22+)	The system performs at reduced speeds at all utilizations to save power while attempting to maintain performance. This mode differs from <code>EfficiencyFavorPower</code> in that more performance is retained but less power is saved.

string	Description
EfficiencyFavorPower (v1.22+)	The system performs at reduced speeds at all utilizations to save power at the cost of performance. This mode differs from <code>PowerSaving</code> in that more performance is retained and less power is saved. This mode differs from <code>EfficiencyFavorPerformance</code> in that less performance is retained but more power is saved.
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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

<b>ConsoleEntryCommand</b> (v1.13+)	string	read-only (null)	The command string passed to the service to select or enter the system's serial console.
<b>HotKeySequenceDisplay</b> (v1.13+)	string	read-only (null)	The hotkey sequence available for the user to exit the serial console session.

<b>Port</b> (v1.13+)	integer	read-write (null)	The protocol port.
<b>ServiceEnabled</b> (v1.13+)	boolean	read-write	An indication of whether the service is enabled for this system.
<b>SharedWithManagerCLI</b> (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.
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_22_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 1.3.1

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 that 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
<b>ConnectionKeys</b> (v1.1+) {	object		The permission keys required to access the specified resources for this connection.
<b>CHAP</b> (v1.2+) {	object	(null)	The CHAP-specific permission key information for this connection.
<b>CHAPPassword</b> (v1.2+)	string	read-write (null)	The password for CHAP authentication. The value is <code>null</code> in responses.
<b>CHAPUsername</b> (v1.2+)	string	read-write (null)	The username for CHAP authentication.
<b>InitiatorCHAPPassword</b> (v1.2+)	string	read-write (null)	The initiator shared secret for mutual (2-way) CHAP authentication. The value is <code>null</code> in responses.

Property	Type	Attributes	Notes
<b>InitiatorCHAPUsername</b> (v1.2+)	string	<i>read-write</i> (null)	The initiator username for mutual (2-way) CHAP authentication.
<b>TargetCHAPPassword</b> (v1.2+)	string	<i>read-write</i> (null)	The target shared secret for mutual (2-way) CHAP authentication. The value is <code>null</code> in responses.
}			
<b>DHCHAP</b> (v1.2+) {	object	(null)	The DHCHAP-specific permission key information for this connection.
<b>LocalDHCHAPAuthSecret</b> (v1.2+)	string	<i>read-write</i> (null)	The local DHCHAP authentication secret. The value is <code>null</code> in responses.
<b>PeerDHCHAPAuthSecret</b> (v1.2+)	string	<i>read-write</i> (null)	The peer DHCHAP authentication secret. The value is <code>null</code> in responses.
}			
<b>GenZ</b> (v1.1+) {	object	(null)	The Gen-Z-specific permission key information for this connection.
<b>AccessKey</b> (v1.1+)	string	<i>read-write</i>	The Access Key for this connection.
<b>RKeyDomainCheckingEnabled</b> (v1.1+)	boolean	<i>read-write</i>	Indicates whether Region Key domain checking is enabled for this connection.
<b>RKeyReadOnlyKey</b> (v1.1+)	string	<i>read-write</i>	The read-only Region Key for this connection.
<b>RKeyReadWriteKey</b> (v1.1+)	string	<i>read-write</i>	The read-write Region Key for this connection.
}			
}			
<b>ConnectionType</b>	string (enum)	<i>read-only</i> (null)	The type of resources this connection specifies. <i>For the possible property values, see ConnectionType in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>InitiatorEndpointGroups</b> [ {	array		An array of links to the initiator endpoint groups that are associated with this connection.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details.
} ]			

Property	Type	Attributes	Notes
<b>InitiatorEndpoints</b> [ {	array		An array of links to the initiator endpoints that are associated with this connection.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>TargetEndpointGroups</b> [ {	array		An array of links to the target endpoint groups that are associated with this connection.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details.
} ]			
<b>TargetEndpoints</b> [ {	array		An array of links to the target endpoints that are associated with this connection.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
}			
<b>MemoryChunkInfo</b> (v1.1+) [ {	array		The set of memory chunks and access capabilities specified for this connection.
<b>AccessCapabilities</b> (v1.1+) [ ]	array (string (enum))	<i>read-write (null)</i>	Supported I/O access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i>
<b>AccessState</b> (v1.1+)	string (enum)	<i>read-write (null)</i>	The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i>
<b>MemoryChunk</b> (v1.1+) {	object	<i>(null)</i>	The specified memory chunk. See the <i>MemoryChunks</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a MemoryChunks resource. See the Links section and the <i>MemoryChunks</i> schema for details.
}			
} ]			
<b>MemoryRegionInfo</b> (v1.3+) [ {	array		The set of memory regions and access capabilities specified for this connection.

Property	Type	Attributes	Notes
<b>AccessCapabilities</b> (v1.3+) [ ]	array (string (enum))	<i>read-write (null)</i>	Supported I/O access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i>
<b>AccessState</b> (v1.3+)	string (enum)	<i>read-write (null)</i>	The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i>
<b>MemoryRegion</b> (v1.3+) {	object	<i>(null)</i>	The specified memory region. See the <i>MemoryRegion</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a MemoryRegion resource. See the Links section and the <i>MemoryRegion</i> schema for details.
}			
} ]			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>VolumeInfo</b> [ {	array		The set of volumes and access capabilities specified for this connection.
<b>AccessCapabilities</b> [ ]	array (string (enum))	<i>read-write (null)</i>	Supported I/O access capabilities. <i>For the possible property values, see AccessCapabilities in Property details.</i>
<b>AccessState</b>	string (enum)	<i>read-write (null)</i>	The access state for this connection. <i>For the possible property values, see AccessState in Property details.</i>
<b>LUN</b> (v1.2+)	integer	<i>read-write (null)</i>	The initiator-visible logical unit number (LUN) assigned to this volume.
<b>Volume</b> {	object		The specified volume.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
} ]			

## 6.26.4 Property details

### 6.26.4.1 AccessCapabilities

Supported I/O 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_1.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
<b>ConnectionMethodType</b>	string (enum)	<i>read-only (null)</i>	The type of connection method. <i>For the possible property values, see ConnectionMethodType in Property details.</i>
<b>ConnectionMethodVariant</b>	string	<i>read-only (null)</i>	The variant of connection method.
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>AggregationSources [</b>	array		An array of links to the access points using this connection method.
{			
<b>@odata.id</b>	string	<i>read-only</i>	Link to a AggregationSource resource. See the Links section and the <i>AggregationSource</i> schema for details.
} ]			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>TunnelingProtocol</b> (v1.1+)	string (enum)	<i>read-only (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
<b>EthernetInterfaces</b> {	object		The link to the collection of Ethernet interfaces associated with this container. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EthernetInterface</i> . See the <i>EthernetInterface</i> schema for details.
}			
<b>Limits</b> {	object	<i>(null)</i>	The resource limits allocated to this container.
<b>CPUCount</b>	number	<i>read-only</i> <i>(null)</i>	The number of processors available to this container.
<b>MemoryBytes</b>	integer (bytes)	<i>read-only</i> <i>(null)</i>	The amount of memory available to this container in bytes.
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ContainerImage</b> {	object		The link to the container image for this container. See the <i>ContainerImage</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ContainerImage</i> resource. See the Links section and the <i>ContainerImage</i> schema for details.
}			
<b>Oem</b> {}	object		See the <i>Oem</i> object definition in the <a href="#">Common properties</a> section.
}			
<b>MountPoints</b> [ {	array		The file system mount points configured for this container.
<b>Destination</b>	string	<i>read-only</i> <i>(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.
<b>Source</b>	string	<i>read-only</i> <i>(null)</i>	The file system path from the hosting system that is provided to this container.

Property	Type	Attributes	Notes
} ]			
<b>ProgrammaticId</b>	string	<i>read-only (null)</i>	The programmatic identifier for this container.
<b>StartTime</b>	string (date-time)	<i>read-only (null)</i>	The date and time when the container started running.
<b>Status</b> {}	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
<b>ResetType</b>	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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

## 6.28.6 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
<b>CreateTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The date and time when the container image was created.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Containers</b> [ {	array		The array of links to the containers running from this container image.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Container resource. See the Links section and the <i>Container</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SoftwareImage</b>	object		The link to the software image for this container image. See the <i>SoftwareInventory</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
}			
<b>ProgrammaticId</b>	string	<i>read-only</i> ( <i>null</i> )	The programmatic identifier for this container image.
<b>SizeBytes</b>	integer (bytes)	<i>read-only</i> ( <i>null</i> )	The size of this container image in bytes.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Type</b>	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>
<b>Version</b>	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 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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
<b>Accuracy</b> ( <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>
<b>AllowableMax</b>	number	<i>read-only (null)</i>	The maximum possible setting for this control.
<b>AllowableMin</b>	number	<i>read-only (null)</i>	The minimum possible setting for this control.
<b>AllowableNumericValues</b> [ ]	array (number, null)	<i>read-only</i>	The supported values for the set point.
<b>AssociatedSensors</b> [ {	array		An array of links to the sensors associated with this control.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Sensor resource. See the Links section and the <i>Sensor</i> schema for details.
} ]			
<b>ControlDelaySeconds</b>	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.
<b>ControlLoop</b> {	object	<i>(null)</i>	The control loop details.
<b>CoefficientUpdateTime</b>	string (date-time)	<i>read-only (null)</i>	The date and time that the control loop coefficients were changed.
<b>Differential</b>	number	<i>read-write (null)</i>	The differential coefficient.
<b>Integral</b>	number	<i>read-write (null)</i>	The integral coefficient.
<b>Proportional</b>	number	<i>read-write (null)</i>	The proportional coefficient.

Property	Type	Attributes	Notes
}			
<b>ControlMode</b>	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>
<b>ControlType</b>	string (enum)	<i>read-only (null)</i>	The type of control. <i>For the possible property values, see ControlType in Property details.</i>
<b>DeadBand</b>	number	<i>read-write (null)</i>	The maximum deviation from the set point allowed before the control will activate.
<b>DefaultSetPoint</b> (v1.3+)	number	<i>read-only (null)</i>	The default set point of the control.
<b>Implementation</b>	string (enum)	<i>read-only (null)</i>	The implementation of the control. <i>For the possible property values, see Implementation in Property details.</i>
<b>Increment</b>	number	<i>read-only (null)</i>	The smallest increment supported for the set point.
<b>Location</b> {}	object		The location information for this control. For property details, see Location.
<b>PhysicalContext</b>	string (enum)	<i>read-only (null)</i>	The area or device to which this control applies. <i>For the possible property values, see PhysicalContext in Property details.</i>
<b>PhysicalSubContext</b>	string (enum)	<i>read-only (null)</i>	The usage or location within a device to which this control applies. <i>For the possible property values, see PhysicalSubContext in Property details.</i>
<b>RelatedItem</b> [ {	array		An array of links to resources that this control services.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Sensor</b> {	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 DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>SetPoint</b>	number	<i>read-write (null)</i>	The desired set point of the control.

Property	Type	Attributes	Notes
<b>SetPointAccuracy</b> (v1.4+)	number	<i>read-only</i> (null)	Accuracy (+/-) of the set point.
<b>SetPointType</b>	string (enum)	<i>read-only</i> (null)	The set point type used to operate the control. <i>For the possible property values, see SetPointType in Property details.</i>
<b>SetPointUnits</b>	string	<i>read-only</i> (null)	The units of the set point.
<b>SetPointUpdateTime</b>	string (date-time)	<i>read-only</i> (null)	The date and time that the set point was changed.
<b>SettingMax</b>	number	<i>read-write</i> (null)	The maximum set point in the allowed range.
<b>SettingMin</b>	number	<i>read-write</i> (null)	The minimum set point in the allowed range.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

## 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
DutyCycle (v1.5+)	Duty cycle (%) control.
Frequency	Frequency (Hz) control.
FrequencyMHz (v1.1+)	Frequency (MHz) control.
Percent (v1.5+)	Percent-based 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 <code>PressurekPa</code> 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.
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.

### 6.30.5.5 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_5_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 1.0.1

<b>Version</b>	<i>v1.0</i>
<b>Release</b>	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
<b>Coolant</b> {	object		Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property.
<b>@odata.id</b>	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
}			
<b>CoolantConnectorType</b>	string (enum)	<i>read-only (null)</i>	The type of coolant connector. <i>For the possible property values, see CoolantConnectorType in Property details.</i>
<b>CoolingLoopName</b>	string	<i>read-write (null)</i>	The name of the cooling loop attached to this interface.
<b>CoolingManagerURI</b>	string (URI)	<i>read-write (null)</i>	The link to the application that manages the cooling loop.
<b>DeltaPressurekPa</b> {}	object		The differential pressure (kPa). For more information about this property, see SensorExcerpt in Property Details.
<b>DeltaTemperatureCelsius</b> {}	object		The differential temperature (C). For more information about this property, see SensorExcerpt in Property Details.
<b>FlowLitersPerMinute</b> {}	object		The liquid flow (L/min). For more information about this property, see SensorExcerpt in Property Details.
<b>HeatRemovedkW</b> {}	object		The heat removed (kW) through this connector. For more information about this property, see SensorExcerpt in Property Details.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ConnectedChassis</b> [ {	array		Any array of links to chassis at the other end of the connection.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>ConnectedCoolingLoop</b> {	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.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details.
}			
<b>ConnectedCoolingUnit</b> {	object	<i>(null)</i>	A link to the cooling unit at the other end of the connection. See the <i>CoolingUnit</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
}			
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>RatedFlowLitersPerMinute</b>	number (L/min)	<i>read-only (null)</i>	The rated liquid flow (L/min) for this loop interface.
<b>RatedFlowPressurekPa</b>	number (kPa)	<i>read-only (null)</i>	The pressure (kPa) at which the rated liquid flow is valid.
<b>RatedPressurekPa</b>	number (kPa)	<i>read-only (null)</i>	The rated pressure (kPa) for this connector.
<b>ReturnPressurekPa {}</b>	object		The return pressure (kPa). For more information about this property, see SensorExcerpt in Property Details.
<b>ReturnTemperatureCelsius {}</b>	object		The return temperature (C). For more information about this property, see SensorExcerpt in Property Details.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupplyPressurekPa {}</b>	object		The supply pressure (kPa). For more information about this property, see SensorExcerpt in Property Details.
<b>SupplyTemperatureCelsius {}</b>	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.

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

#### 6.31.5 Example response

```
{
  "@odata.type": "#CoolantConnector.v1_0_1.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 1.0.2

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 pipework, 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)	read-write	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	read-write (null)	The name of the additive.
AdditivePercent	number (%)	read-write (null)	The percent additives contained in the coolant.

Property	Type	Attributes	Notes
<b>CoolantType</b>	string (enum)	<i>read-write (null)</i>	The type of coolant. <i>For the possible property values, see CoolantType in Property details.</i>
<b>DensityKgPerCubicMeter</b>	number (kg/m <sup>3</sup> )	<i>read-write (null)</i>	The density (kg/m <sup>3</sup> ) of the coolant.
<b>RatedServiceHours</b>	number	<i>read-write (null)</i>	The rated hours of service life for this coolant.
<b>ServicedDate</b>	string (date-time)	<i>read-write (null)</i>	The date the coolant was last serviced.
<b>ServiceHours</b>	number	<i>read-write (null)</i>	The hours of service this coolant has provided.
<b>SpecificHeatkJoulesPerKgK</b>	number (kJ/kg/K)	<i>read-write (null)</i>	The specific heat capacity (kJ/(kg*K)) of the coolant.
}			
<b>CoolantLevelPercent {</b>	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> .
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>CoolantLevelStatus</b>	string (enum)	<i>read-only (null)</i>	The status of the coolant level in this cooling loop. <i>For the possible property values, see CoolantLevelStatus in Property details.</i>
<b>CoolantQuality</b>	string (enum)	<i>read-only (null)</i>	The quality of the coolant. <i>For the possible property values, see CoolantQuality in Property details.</i>
<b>CoolingManagerURI</b>	string (URI)	<i>read-write (null)</i>	The link to the application that manages the cooling loop.
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>Chassis {</b>	object	<i>(null)</i>	A link to the chassis that contains this equipment. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	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
}			
<b>Facility</b> {	object		A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details.
}			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this equipment.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>PrimaryCoolantConnectors</b> {	object		A link to the primary coolant connectors for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details.
}			
<b>RatedFlowLitersPerMinute</b>	number (L/min)	<i>read-only (null)</i>	The rated liquid flow (L/min) for this cooling loop.
<b>RatedPressurekPa</b>	number (kPa)	<i>read-only (null)</i>	The rated pressure (kPa) for this cooling loop.
<b>SecondaryCoolantConnectors</b> {	object		A link to the secondary coolant connectors for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
<b>SupplyEquipmentNames</b> [ ]	array (string, null)	<i>read-write</i>	An array of names of upstream devices that supply coolant to this cooling loop.
<b>UserLabel</b>	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.
OK	Normal.
Warning	A condition requires attention.

### 6.32.4.3 CoolantType

The type of coolant.

string	Description
Dielectric	Dielectric fluid.



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

### 6.32.5 Example response

```
{
  "@odata.type": "#CoolingLoop.v1_0_2.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 1.1.1

Version	v1.1	v1.0
---------	------	------

Release	2023.2	2023.1
---------	--------	--------

### 6.33.1 Description

This is the schema definition for a cooling system component or unit, such as a coolant 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
<b>Assembly</b> {	object		The link to the assembly associated with this cooling unit. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	<i>read-write (null)</i>	The user-assigned asset tag for this equipment.
<b>Coolant</b> {	object		Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Coolant resource. See the Links section and the <i>CoolingLoop</i> schema for details.
}			
<b>CoolantConnectorRedundancy</b> (v1.1+) [ { } ]	array (object)		The redundancy information for the coolant connectors in this cooling unit. For property details, see RedundantGroup.
<b>CoolingCapacityWatts</b>	integer	<i>read-only (null)</i>	The cooling capacity (W) of this equipment.
<b>EnvironmentMetrics</b> {	object		The link to the environment metrics for this equipment. See the <i>EnvironmentMetrics</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>EquipmentType</b>	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>
<b>FilterRedundancy</b> [ { } ]	array (object)		The redundancy information for the groups of filters in this unit. For property details, see RedundantGroup.
<b>Filters</b> {	object		A link to the filters for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Filter</i> . See the Filter schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only</i>	The firmware version of this equipment.
<b>LeakDetection</b> {	object		A link to the leak detection components associated with this equipment. See the <i>LeakDetection</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LeakDetection resource. See the Links section and the <i>LeakDetection</i> schema for details.
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Chassis</b> [ {	array		An array of links to the chassis that contain this equipment.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>Facility</b> {	object		A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details.
}			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this equipment.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem { }</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Location { }</b>	object		The location of the equipment. For property details, see Location.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this equipment.
<b>Model</b>	string	<i>read-only (null)</i>	The product model number of this equipment.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this equipment.
<b>PrimaryCoolantConnectors { }</b>	object		A link to the primary coolant connectors for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolantConnector</i> . See the CoolantConnector schema for details.
}			
<b>ProductionDate</b>	string (date-time)	<i>read-only (null)</i>	The production or manufacturing date of this equipment.
<b>PumpRedundancy [ { } ]</b>	array (object)		The redundancy information for the groups of pumps in this unit. For property details, see RedundantGroup.
<b>Pumps { }</b>	object		A link to the pumps for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Pump</i> . See the Pump schema for details.
}			
<b>Reservoirs { }</b>	object		A link to the reservoirs for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Reservoir</i> . See the Reservoir schema for details.
}			

Property	Type	Attributes	Notes
<b>SecondaryCoolantConnectors</b> {	object		A link to the secondary coolant connectors for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolantConnector</i> . See the <i>CoolantConnector</i> schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number for this equipment.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>UserLabel</b>	string	<i>read-write</i>	A user-assigned label.
<b>Version</b>	string	<i>read-only</i> (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 coolant distribution unit (CDU).
HeatExchanger	A heat exchanger.
ImmersionUnit	An immersion cooling unit.

## 6.33.5 Example response

```
{
  "@odata.type": "#CoolingUnit.v1_1_1.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 1.1.1

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 a PCIe device.

### 6.34.2 URIs

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

### 6.34.3 Properties

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

Property	Type	Attributes	Notes
<b>PCleFunctions</b> [ {	array		An array of links to the PCIe functions assigned to this CXL logical device.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
}			
<b>Log</b> {	object		The link to the log service associated with this CXL logical device. See the <i>LogService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details.
}			
<b>MemoryRegions</b> (v1.1+) {	object		The link to the collection of memory regions associated with this CXL logical device. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MemoryRegion</i> . See the <i>MemoryRegion</i> schema for details.
}			
<b>MemorySizeMiB</b>	integer (mebibytes)	<i>read-only</i>	The memory region size defined in this CXL logical device.
<b>QoS</b> {	object		The quality of service configuration for this CXL logical device.
<b>AllocatedBandwidth</b>	integer	<i>read-write (null)</i>	The bandwidth allocated for this CXL logical device in multiples of 256.
<b>LimitPercent</b>	integer (%)	<i>read-write (null)</i>	The bandwidth limit to this CXL logical device as a percentage.
}			
<b>QoSTelemetryCapabilities</b> {	object		The quality of service telemetry capabilities for this CXL logical device.
<b>EgressPortBackpressureSupported</b>	boolean	<i>read-only (null)</i>	Indicates whether the device supports the CXL Specification-defined 'Egress Port Backpressure' mechanism.



Property	Type	Attributes	Notes
<b>TemporaryThroughputReductionSupported</b>	boolean	<i>read-only (null)</i>	Indicates whether the device supports the CXL Specification-defined 'Temporary Throughput Reduction' mechanism.
}			
<b>SemanticsSupported</b> [ ]	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>
<b>Status</b> {}	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_1.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 1.18.0

Version	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	...
Release	2023.3	2023.1	2022.3	2022.1	2021.4	2021.2	2020.4	2020.3	2020.2	2019.4	2019.3	...

### 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
<b>Assembly</b> (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.
}			
<b>AssetTag</b>	string	read-write (null)	The user-assigned asset tag for this drive.
<b>BlockSizeBytes</b>	integer (bytes)	read-only (null)	The size, in bytes, of the smallest addressable unit, or block.
<b>CapableSpeedGbs</b>	number (Gbit/s)	read-only (null)	The speed, in gigabits per second (Gbit/s) units, at which this drive can communicate to a storage controller in ideal conditions.
<b>CapacityBytes</b>	integer (bytes)	read-only (null)	The size, in bytes, of this drive.
<b>Certificates</b> (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.
}			
<b>DriveFormFactor</b> (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>
<b>EncryptionAbility</b>	string (enum)	read-only (null)	The encryption ability of this drive. <i>For the possible property values, see EncryptionAbility in Property details.</i>
<b>EncryptionStatus</b>	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>
<b>EnvironmentMetrics</b> (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	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
<b>FailurePredicted</b>	boolean	<i>read-only</i> (null)	An indication of whether this drive currently predicts a failure in the near future.
<b>FirmwareVersion</b> (v1.17+)	string	<i>read-only</i> (null)	The firmware version for this drive.
<b>HotspareReplacementMode</b> (v1.5+)	string (enum)	<i>read-write</i> (null)	The replacement mode for the hot spare drive. <i>For the possible property values, see HotspareReplacementMode in Property details.</i>
<b>HotspareType</b>	string (enum)	<i>read-write</i> (null)	The type of hot spare that this drive serves as. <i>For the possible property values, see HotspareType in Property details.</i>
<b>Identifiers</b> [ { } ]	array (object)		The durable names for the drive. For property details, see Identifier.
<b>IndicatorLED</b> (deprecated v1.11)	string (enum)	<i>read-write</i> (null)	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>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ActiveSoftwareImage</b> (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.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
<b>Chassis</b> (v1.2+) {	object		The link to the chassis that contains this drive. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Chassis</i> resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Endpoints</b> (v1.1+) [ {	array		An array of links to the endpoints that connect to this drive.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Endpoint</i> resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>NetworkDeviceFunctions</b> (v1.14+) [ {	array		An array of links to the network device functions that provide network connectivity for this drive.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> (v1.6+) [ {	array		An array of links to the PCIe functions that the drive produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
<b>SoftwareImages</b> (v1.16+) [ {	array		The images that are associated with this drive.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>Storage</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details.
}			
<b>StoragePools</b> (v1.8+) [ {	array		An array of links to the storage pools to which this drive belongs.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Volumes</b> [ {	array		An array of links to the volumes that this drive either wholly or only partially contains.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
}			

Property	Type	Attributes	Notes
<b>Location</b> ( <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>
<b>LocationIndicatorActive</b> ( <i>v1.11+</i> )	boolean	<i>read-write</i> ( <i>null</i> )	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only</i> ( <i>null</i> )	The manufacturer of this drive.
<b>Measurements</b> ( <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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>MediaType</b>	string (enum)	<i>read-only</i> ( <i>null</i> )	The type of media contained in this drive. <i>For the possible property values, see MediaType in Property details.</i>
<b>Metrics</b> ( <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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a DriveMetrics resource. See the Links section and the <i>DriveMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only</i> ( <i>null</i> )	The model number for the drive.
<b>Multipath</b> ( <i>v1.9+</i> )	boolean	<i>read-only</i> ( <i>null</i> )	An indication of whether the drive is accessible from multiple paths.
<b>NegotiatedSpeedGbs</b>	number (Gbit/s)	<i>read-only</i> ( <i>null</i> )	The speed, in gigabits per second (Gbit/s) units, at which this drive currently communicates to the storage controller.
<b>Operations</b> ( <i>v1.1+</i> ) [ {	array		The operations currently running on the Drive.
<b>AssociatedTask</b> ( <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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Task resource. See the Links section and the <i>Task</i> schema for details.
}			

Property	Type	Attributes	Notes
<b>Operation</b> (v1.17+)	string (enum)	<i>read-only</i> (null)	The type of the operation. <i>For the possible property values, see Operation in Property details.</i>
<b>OperationName</b> (v1.1+, deprecated v1.17)	string	<i>read-only</i> (null)	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>
<b>PercentageComplete</b> (v1.1+)	integer (%)	<i>read-only</i> (null)	The percentage of the operation that has been completed.
} ]			
<b>PartNumber</b>	string	<i>read-only</i> (null)	The part number for this drive.
<b>PhysicalLocation</b> (v1.4+) {}	object		The location of the drive. For property details, see Location.
<b>PredictedMediaLifeLeftPercent</b>	number (%)	<i>read-only</i> (null)	The percentage of reads and writes that are predicted to be available for the media.
<b>Protocol</b>	string (enum)	<i>read-only</i> (null)	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>
<b>ReadyToRemove</b> (v1.10+)	boolean	<i>read-write</i> (null)	An indication of whether the drive is prepared by the system for removal.
<b>Revision</b>	string	<i>read-only</i> (null)	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.
<b>RotationSpeedRPM</b>	number ({rev}/min)	<i>read-only</i> (null)	The rotation speed of this drive, in revolutions per minute (RPM) units.
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number for this drive.
<b>SKU</b>	string	<i>read-only</i> (null)	The SKU for this drive.
<b>SlotCapableProtocols</b> (v1.16+) [ ]	array (string (enum))	<i>read-only</i> (null)	The drive protocols capable in this slot. <i>For the possible property values, see SlotCapableProtocols in Property details.</i>
<b>SlotFormFactor</b> (v1.16+)	string (enum)	<i>read-only</i> (null)	The form factor of the slot. <i>For the possible property values, see SlotFormFactor in Property details.</i>
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
<b>StatusIndicator</b>	string (enum)	<i>read-write (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>
<b>WriteCacheEnabled</b> (v1.7+)	boolean	<i>read-write (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
<b>ResetType</b>	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 RevertToOriginalFactoryState (v1.18+)

#### Description

This action reverts a self-encrypting drive (SED) to the original factory state.

#### Action URI



*{Base URI of target resource}*/Actions/Drive.RevertToOriginalFactoryState

### Action parameters

Parameter Name	Type	Attributes	Notes
<b>PhysicalSecureID</b>	string	<i>optional</i>	The physical secure ID (PSID). The PSID is generally printed on the drive label and used to revert an encrypted SED.

### Request Example

```
{
  "PhysicalSecureID": "89831871198324172084565217361041"
}
```

#### 6.35.4.3 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
<b>OverwritePasses</b> (v1.15+)	integer	<i>optional</i>	The number of times to overwrite the drive if performing an overwrite type of sanitization.
<b>SanitizationType</b> (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 (v1.18+)	An EDSFF 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 (v1.18+)	An M.2 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.
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 (v1.1+)	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.
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.

string	Description
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.
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).

string	Description
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).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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).



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.

### 6.35.5.13 SlotFormFactor

The form factor of the slot.

string	Description
Drive2_5	A 2.5 inch drive.
Drive3_5	A 3.5 inch drive.
EDSFF (v1.18+)	An EDSFF 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 (v1.18+)	An M.2 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.

### 6.35.5.14 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_18_0.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 1.2.0

Version	v1.2	v1.1	v1.0
Release	2023.3	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	read-only (null)	The total number of bad blocks reported by the drive.

Property	Type	Attributes	Notes
<b>CorrectableIOReadErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable read errors for the lifetime of the drive.
<b>CorrectableIOWriteErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable write errors for the lifetime of the drive.
<b>NativeCommandQueueDepth</b> (v1.1+)	integer	<i>read-only</i> (null)	The current depth of the Native Command Queue.
<b>NVMeSMART</b> {	object		The NVMe SMART metrics for the drive. See the <i>StorageControllerMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NVMeSMARTMetrics resource. See the Links section and the <i>StorageControllerMetrics</i> schema for details.
}			
<b>PowerOnHours</b>	number	<i>read-only</i> (null)	The number of power-on hours for the lifetime of the drive.
<b>ReadIOKiBytes</b> (v1.2+)	integer (KiBy)	<i>read-only</i> (null)	The number of kibibytes read.
<b>UncorrectableIOReadErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable read errors for the lifetime of the drive.
<b>UncorrectableIOWriteErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable write errors for the lifetime of the drive.
<b>WriteIOKiBytes</b> (v1.2+)	integer (KiBy)	<i>read-only</i> (null)	The number of kibibytes written.

### 6.36.4 Example response

```
{
  "@odata.type": "#DriveMetrics.v1_2_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 1.8.1

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
<b>ConnectedEntities</b> [ {	array		All the entities connected to this endpoint.
<b>EntityLink</b> {	object		The link to the associated entity.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>EntityPciId</b> {	object		The PCI ID of the connected entity.
<b>ClassCode</b> (v1.2+)	string	<i>read-only (null)</i>	The Class Code, Subclass, and Programming Interface code of this PCIe function.
<b>DeviceId</b>	string	<i>read-only (null)</i>	The Device ID of this PCIe function.
<b>FunctionNumber</b> (v1.2+)	integer	<i>read-only (null)</i>	The PCI ID of the connected entity.
<b>SubsystemId</b>	string	<i>read-only (null)</i>	The Subsystem ID of this PCIe function.
<b>SubsystemVendorId</b>	string	<i>read-only (null)</i>	The Subsystem Vendor ID of this PCIe function.
<b>VendorId</b>	string	<i>read-only (null)</i>	The Vendor ID of this PCIe function.
}			

Property	Type	Attributes	Notes
<b>EntityRole</b>	string (enum)	<i>read-only (null)</i>	The role of the connected entity. <i>For the possible property values, see EntityRole in Property details.</i>
<b>EntityType</b>	string (enum)	<i>read-only (null)</i>	The type of the connected entity. <i>For the possible property values, see EntityType in Property details.</i>
<b>GenZ</b> (v1.4+) {	object	<i>(null)</i>	The Gen-Z related properties for the entity.
<b>AccessKey</b> (v1.4+, deprecated v1.6)	string	<i>read-write (null)</i>	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>
<b>GCID</b> (v1.4+) {	object	<i>(null)</i>	The Global Component ID (GCID) for the entity.
<b>CID</b> (v1.4+)	string	<i>read-write (null)</i>	The component identifier portion of the GCID for the entity.
<b>SID</b> (v1.4+)	string	<i>read-write (null)</i>	The subnet identifier portion of the GCID for the entity.
}			
<b>RegionKey</b> (v1.4+, deprecated v1.6)	string	<i>read-write (null)</i>	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>
}			
<b>Identifiers</b> [ { } ]	array (object)		Identifiers for the remote entity. For property details, see Identifier.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PciClassCode</b> (deprecated v1.2)	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>
<b>PciFunctionNumber</b> (deprecated v1.2)	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>
} ]			
<b>EndpointProtocol</b>	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>



Property	Type	Attributes	Notes
<b>HostReservationMemoryBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of memory in bytes that the host should allocate to connect to this endpoint.
<b>Identifiers</b> [ { } ]	array (object)		Identifiers for this endpoint. For property details, see Identifier.
<b>IPTransportDetails</b> (v1.1+) [ {	array		An array of details for each IP transport supported by this endpoint. The array structure can model multiple IP addresses for this endpoint.
<b>IPv4Address</b> (v1.1+) { }	object		The IPv4 addresses assigned to the endpoint. For property details, see IPv4Address.
<b>IPv6Address</b> (v1.1+) { }	object		The IPv6 addresses assigned to the endpoint. For property details, see IPv6Address.
<b>Port</b> (v1.1+)	integer	<i>read-only</i>	The UDP or TCP port number used by the endpoint.
<b>TransportProtocol</b> (v1.1+)	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>
} ]			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>AddressPools</b> (v1.4+) [ {	array		An array of links to the address pools associated with this endpoint.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a AddressPool resource. See the Links section and the AddressPool schema for details.
} ]			
<b>ConnectedPorts</b> (v1.4+) [ {	array		An array of links to the switch ports or remote device ports at the other end of the link.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Port resource. See the Links section and the Port schema for details.
} ]			
<b>Connections</b> (v1.5+) [ {	array		The connections to which this endpoint belongs.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Connection resource. See the Links section and the Connection schema for details.
} ]			
<b>LocalPorts</b> (v1.7+) [ {	array		An array of links to the device ports that this endpoint represents.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
} ]			
<b>MutuallyExclusiveEndpoints</b> [ {	array		An array of links to the endpoints that cannot be used in zones if this endpoint is in a zone.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Endpoint resource.
} ]			
<b>NetworkDeviceFunction</b> (v1.1+) [ {	array		When NetworkDeviceFunction resources are present, this array contains links to the network device functions that connect to this endpoint.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Ports</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
} ]			
<b>Zones</b> (v1.6+) [ {	array		The zones to which this endpoint belongs.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details.
} ]			
}			
<b>PcId</b> {	object		The PCI ID of the endpoint.
<b>ClassCode</b> (v1.2+)	string	<i>read-only</i> (null)	The Class Code, Subclass, and Programming Interface code of this PCIe function.
<b>DeviceId</b>	string	<i>read-only</i> (null)	The Device ID of this PCIe function.

Property	Type	Attributes	Notes
<b>FunctionNumber</b> (v1.2+)	integer	<i>read-only</i> (null)	The PCI ID of the connected entity.
<b>SubsystemId</b>	string	<i>read-only</i> (null)	The Subsystem ID of this PCIe function.
<b>SubsystemVendorId</b>	string	<i>read-only</i> (null)	The Subsystem Vendor ID of this PCIe function.
<b>VendorId</b>	string	<i>read-only</i> (null)	The Vendor ID of this PCIe function.
}			
<b>Redundancy</b> [ { } ]	array (object)		Redundancy information for the lower-level endpoints supporting this endpoint. For property details, see Redundancy.
<b>Status</b> { }	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).

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.

#### 6.37.4.2 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 PCIe 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.

string	Description
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 PCIe 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.
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.

string	Description
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).
UHCI	Universal Host Controller Interface (UHCI).

string	Description
UPI	Intel UltraPath Interconnect (UPI).
USB	Universal Serial Bus (USB).
VGA	VGA.

### 6.37.5 Example response

```
{
  "@odata.type": "#Endpoint.v1_8_1.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 1.3.3

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 a 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
<b>AccessState</b> (deprecated v1.3)	string (enum)	read-write (null)	The access state for this group. <i>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.</i>
<b>Endpoints</b> (deprecated v1.3) [ {	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>
<b>@odata.id</b>	string	read-write	Link to a Endpoint resource. See the Links section and the Endpoint schema for details.
} ]			
<b>GroupType</b>	string (enum)	read-write (null)	The endpoint group type. <i>For the possible property values, see GroupType in Property details.</i>
<b>Identifier</b> { }	object		The durable name for the endpoint group. For property details, see Identifier.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Connections</b> (v1.3+) [ {	array		The connections to which this endpoint group belongs.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Connection resource. See the Links section and the <i>Connection</i> schema for details.
} ]			
<b>Endpoints</b> (v1.3+) [ {	array		The endpoints in this endpoint group.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Preferred</b> ( <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>
<b>TargetEndpointGroupIdentifier</b>	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_3.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 1.3.1

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
<b>AbsoluteHumidity</b> (v1.2+) {}	object		Absolute humidity (g/m <sup>3</sup> ). For more information about this property, see SensorExcerpt in Property Details.
<b>DewPointCelsius</b> (v1.1+) {}	object		The dew point temperature (C). For more information about this property, see SensorExcerpt in Property Details.
<b>EnergyJoules</b> (v1.2+) {}	object		Energy consumption (J). For more information about this property, see SensorExcerpt in Property Details.
<b>EnergykWh</b> {	object (excerpt)		Energy consumption (kWh). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> ( <i>null</i> )	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> ( <i>null</i> )	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> ( <i>null</i> )	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The date and time when the time-based properties were last reset.
}			
<b>FanSpeedsPercent</b> [ {	array (excerpt)		Fan speeds (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	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
<b>DeviceName</b> (v1.2+)	string	<i>read-only (null)</i>	The name of the device.
<b>PhysicalContext</b>	string (enum)	<i>read-only (null)</i>	The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i>
<b>PhysicalSubContext</b>	string (enum)	<i>read-only (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>
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	<i>read-only (null)</i>	The rotational speed.
} ]			
<b>HumidityPercent</b> { }	object		Humidity (percent). For more information about this property, see SensorExcerpt in Property Details.
<b>PowerLimitWatts</b> (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.
<b>AllowableMax</b>	number	<i>read-only (null)</i>	The maximum possible setting for this control.
<b>AllowableMin</b>	number	<i>read-only (null)</i>	The minimum possible setting for this control.
<b>ControlMode</b>	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>
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this control.
<b>DefaultSetPoint</b> (v1.3+)	number	<i>read-only (null)</i>	The default set point of the control.
<b>Reading</b>	number	<i>read-only (null)</i>	The reading of the sensor associated with this control.
<b>ReadingUnits</b>	string	<i>read-only (null)</i>	The units of the sensor reading associated with this control.
<b>SetPoint</b>	number	<i>read-write (null)</i>	The desired set point of the control.
}			

Property	Type	Attributes	Notes
<b>PowerLoadPercent</b> (v1.1+) {}	object		The power load (percent) for this device. For more information about this property, see SensorExcerpt in Property Details.
<b>PowerWatts</b> {	object (excerpt)		Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>ApparentVA</b>	number (V.A)	<i>read-only</i> ( <i>null</i> )	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> ( <i>null</i> )	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> ( <i>null</i> )	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
<b>TemperatureCelsius</b> {}	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.
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.



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.

### 6.39.5.3 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)	read-only (null)	The link to the resource that provides the data for this sensor.
Reading	number	read-only (null)	The sensor value.

6.39.6 Example response

```
{
  "@odata.type": "#EnvironmentMetrics.v1_3_1.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 1.12.0

Version	v1.12	v1.11	v1.10	v1.9	v1.8	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	...
Release	2023.3	2023.2	2023.1	2022.2	2021.2	2020.1	2019.1	2017.3	2017.1	2016.3	2016.2	...

### 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
<b>AutoNeg</b>	boolean	<i>read-write (null)</i>	An indication of whether the speed and duplex are automatically negotiated and configured on this interface.
<b>DHCPv4</b> (v1.4+) {	object		DHCPv4 configuration for this interface.
<b>DHCPEnabled</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether DHCP v4 is enabled on this Ethernet interface.
<b>FallbackAddress</b> (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>
<b>UseDNSServers</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether this interface uses DHCP v4-supplied DNS servers.
<b>UseDomainName</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether this interface uses a DHCP v4-supplied domain name.
<b>UseGateway</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether this interface uses a DHCP v4-supplied gateway.
<b>UseNTPServers</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the interface uses DHCP v4-supplied NTP servers.
<b>UseStaticRoutes</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the interface uses DHCP v4-supplied static routes.
}			

Property	Type	Attributes	Notes
<b>DHCPv6</b> (v1.4+) {	object		DHCPv6 configuration for this interface.
<b>OperatingMode</b> (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>
<b>UseDNSServers</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the interface uses DHCP v6-supplied DNS servers.
<b>UseDomainName</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether this interface uses a DHCP v6-supplied domain name.
<b>UseNTPServers</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the interface uses DHCP v6-supplied NTP servers.
<b>UseRapidCommit</b> (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.
}			
<b>EthernetInterfaceType</b> (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>
<b>FQDN</b>	string	<i>read-write (null)</i>	The complete, fully qualified domain name that DNS obtains for this interface.
<b>FullDuplex</b>	boolean	<i>read-write (null)</i>	An indication of whether full-duplex mode is enabled on the Ethernet connection for this interface.
<b>HostName</b>	string	<i>read-write (null)</i>	The DNS host name, without any domain information.
<b>InterfaceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this interface is enabled.
<b>IPv4Addresses</b> [ { } ]	array (object)		The IPv4 addresses currently in use by this interface. For property details, see IPv4Address.
<b>IPv4StaticAddresses</b> (v1.4+) [ { } ]	array (object)	<i>(null)</i>	The IPv4 static addresses assigned to this interface. See IPv4Addresses for the addresses in use by this interface. For property details, see IPv4Address.
<b>IPv6Addresses</b> [ { } ]	array (object)		The IPv6 addresses currently in use by this interface. For property details, see IPv6Address.
<b>IPv6AddressPolicyTable</b> [ {	array		An array that represents the RFC6724-defined address selection policy table.

Property	Type	Attributes	Notes
<b>Label</b>	integer	<i>read-write (null)</i>	The IPv6 label, as defined in RFC6724, section 2.1.
<b>Precedence</b>	integer	<i>read-write (null)</i>	The IPv6 precedence, as defined in RFC6724, section 2.1.
<b>Prefix</b>	string	<i>read-write (null)</i>	The IPv6 address prefix, as defined in RFC6724, section 2.1.
} ]			
<b>IPv6DefaultGateway</b>	string	<i>read-only (null)</i>	The IPv6 default gateway address in use on this interface.
<b>IPv6Enabled</b> (v1.12+)	boolean	<i>read-write (null)</i>	An indication of whether IPv6 is enabled on this interface.
<b>IPv6StaticAddresses</b> [ { } ]	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.
<b>IPv6StaticDefaultGateways</b> (v1.4+) [ { } ]	array (object)	(null)	The IPv6 static default gateways for this interface. For property details, see IPv6GatewayStaticAddress v1.1.4).
<b>Links</b> (v1.1+) {	object	<i>required on create</i>	The links to other resources that are related to this resource.
<b>AffiliatedInterfaces</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another EthernetInterface resource.
} ]			
<b>Chassis</b> (v1.3+) {	object		The link to the chassis that contains this Ethernet interface. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Endpoints</b> (v1.1+) [ {	array		An array of links to the endpoints that connect to this Ethernet interface.
<b>@odata.id</b>	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
<b>HostInterface</b> (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	read-only	Link to a HostInterface resource. See the Links section and the <i>HostInterface</i> schema for details.
}			
<b>NetworkDeviceFunction</b> (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	read-only	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
}			
<b>NetworkDeviceFunctions</b> (v1.7+) [ {	array		The link to the network device functions that constitute this Ethernet interface.
@odata.id	string	read-only	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Ports</b> (v1.9+) [ {	array		The links to the ports providing this Ethernet interface.
@odata.id	string	read-only	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
} ]			
<b>RelatedInterfaces</b> (v1.9+) [ {	array	required on create	The links to the Ethernet interfaces that constitute this Ethernet interface.
@odata.id	string	read-write	Link to another EthernetInterface resource.
} ]			
}			
<b>LinkStatus</b> (v1.1+)	string (enum)	read-only (null)	The link status of this interface, or port. <i>For the possible property values, see LinkStatus in Property details.</i>

Property	Type	Attributes	Notes
<b>MACAddress</b>	string	<i>read-write (null)</i>	The currently configured MAC address of the interface, or logical port.
<b>MaxIPv6StaticAddresses</b>	integer	<i>read-only (null)</i>	The maximum number of static IPv6 addresses that can be configured on this interface.
<b>MTUSize</b>	integer	<i>read-write (null)</i>	The currently configured maximum transmission unit (MTU), in bytes, on this interface.
<b>NameServers [ ]</b>	array (string)	<i>read-only</i>	The DNS servers in use on this interface.
<b>PermanentMACAddress</b>	string	<i>read-only (null)</i>	The permanent MAC address assigned to this interface, or port.
<b>RoutingScope</b> (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>
<b>SpeedMbps</b>	integer (Mbit/s)	<i>read-write (null)</i>	The current speed, in Mbit/s, of this interface.
<b>StatelessAddressAutoConfig</b> (v1.4+) {	object		Stateless address autoconfiguration (SLAAC) parameters for this interface.
<b>IPv4AutoConfigEnabled</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether IPv4 stateless address autoconfiguration (SLAAC) is enabled for this interface.
<b>IPv6AutoConfigEnabled</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether IPv6 stateless address autoconfiguration (SLAAC) is enabled for this interface.
}			
<b>StaticNameServers</b> (v1.4+) [ ]	array (string, null)	<i>read-write</i>	The statically-defined set of DNS server IPv4 and IPv6 addresses.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TeamMode</b> (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>
<b>UefiDevicePath</b>	string	<i>read-only (null)</i>	The UEFI device path for this interface.
<b>VLAN</b> {	object		If this network interface supports more than one VLAN, this property is absent. VLAN collections appear in the Links property of this resource.
<b>Tagged</b> (v1.3+)	boolean	<i>read-write (null)</i>	An indication of whether this VLAN is tagged or untagged for this interface.



Property	Type	Attributes	Notes
<b>VLANEnable</b>	boolean	<i>read-write required on create (null)</i>	An indication of whether this VLAN is enabled for this VLAN network interface.
<b>VLANId</b>	integer	<i>read-write required on create (null)</i>	The ID for this VLAN.
<b>VLANPriority</b> (v1.2+)	integer	<i>read-write (null)</i>	The priority for this VLAN.
}			
<b>VLANs</b> ( <i>deprecated v1.7</i> ) {	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>
<b>@odata.id</b>	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>
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_12_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 1.10.0

Version	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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
<b>Context</b> (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.
<b>Events</b> [ {	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.
<b>Actions</b> (v1.2+) {}	object		The available actions for this resource.
<b>AdditionalDataSizeBytes</b> (v1.8+)	integer (bytes)	<i>read-only (null)</i>	The size of the additional data for this event.
<b>AdditionalDataURI</b> (v1.8+)	string (URI)	<i>read-only (null)</i>	The URI at which to access the additional data for the event, such as diagnostic data, image captures, or other files.

Property	Type	Attributes	Notes
<b>Context</b> (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>
<b>CPER</b> (v1.8+) {	object		Details for a CPER section or record associated with this event.
<b>NotificationType</b> (v1.8+)	string (uuid)	read-only (null)	The CPER Notification Type for a CPER record.
<b>Oem</b> (v1.8+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SectionType</b> (v1.8+)	string (uuid)	read-only (null)	The CPER Section Type.
}			
<b>DiagnosticData</b> (v1.8+)	string	read-only (null)	A Base64-encoded set of diagnostic data associated with this event.
<b>DiagnosticDataType</b> (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>
<b>EventGroupId</b> (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.
<b>EventId</b>	string	read-only	The unique instance identifier of an event.
<b>EventTimestamp</b>	string (date-time)	read-only	The time the event occurred.
<b>EventType</b> (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>
<b>LogEntry</b> (v1.7+) {	object		The link to a log entry if an entry was created for this event. See the LogEntry schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a LogEntry resource. See the Links section and the LogEntry schema for details.
}			

Property	Type	Attributes	Notes
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>Message</b>	string	<i>read-only</i>	The human-readable event message.
<b>MessageArgs</b> [ ]	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.
<b>MessageId</b>	string	<i>read-only required</i>	The identifier for the message.
<b>MessageSeverity</b> (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>
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OEMDiagnosticDataType</b> (v1.9+)	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.
<b>OriginOfCondition</b> {	object		A link to the resource or object that originated the condition that caused the event to be generated.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>Resolution</b> (v1.9+)	string	<i>read-only</i>	Used to provide suggestions on how to resolve the situation that caused the event.
<b>ResolutionSteps</b> (v1.10+) [ { } ]	array (object)		The list of recommended steps to resolve the cause of the event. For property details, see ResolutionStep.
<b>Severity</b> (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>
<b>SpecificEventExistsInGroup</b> (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 1.14.0

Version	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	...
Release	2023.3	2022.3	2022.1	2021.2	2020.4	2020.3	2020.1	2019.3	2019.2	2019.1	2018.2	...

### 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
<b>Certificates</b> (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.
}			
<b>ClientCertificates</b> (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.
}			
<b>Context</b>	string	read-write required (null)	A client-supplied string that is stored with the event destination subscription.
<b>DeliveryRetryPolicy</b> (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>
<b>Destination</b>	string (URI)	read-only required on create	The URI of the destination event receiver.
<b>EventFormatType</b> (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
<b>EventTypes</b> (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 <code>Other</code>.</i>
<b>ExcludeMessageIds</b> (v1.12+) [ ]	array (string, null)	read-only	The list of MessageIds that are not sent to this event destination.
<b>ExcludeRegistryPrefixes</b> (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.
<b>HeartbeatIntervalMinutes</b> (v1.11+)	integer	read-only (null)	Interval for sending heartbeat events to the destination in minutes.
<b>HttpHeaders</b> [ {	array		An array of settings for HTTP headers, such as authorization information. This array is <code>null</code> or an empty array in responses. An empty array is the preferred return value on read operations.
<b>(pattern)</b>	string	read-write	Property names follow regular expression pattern " <code>^[^:\\s]+\$</code> "
} ]			
<b>IncludeOriginOfCondition</b> (v1.8+)	boolean	read-only (null)	An indication of whether the events subscribed to will also include the entire resource or object referenced by the OriginOfCondition property in the event payload.
<b>MessageIds</b> (v1.1+) [ ]	array (string, null)	read-only	The list of MessageIds that are sent to this event destination.
<b>MetricReportDefinitions</b> (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.
<b>@odata.id</b>	string	read-only	Link to a MetricReportDefinition resource. See the Links section and the <i>MetricReportDefinition</i> schema for details.
} ]			
<b>OEMProtocol</b> (v1.9+)	string	read-only	The OEM-defined protocol type of the event connection.
<b>OEMSubscriptionType</b> (v1.9+)	string	read-only	The OEM-defined subscription type for events.

Property	Type	Attributes	Notes
<b>OriginResources</b> (v1.1+) [ {	array		The array of resources for which the service sends only related events.
<b>@odata.id</b>	string (URI)	read-only	The unique identifier for a resource.
} ]			
<b>Protocol</b>	string (enum)	read-only required on create	The protocol type of the event connection. <i>For the possible property values, see Protocol in Property details.</i>
<b>RegistryPrefixes</b> (v1.4+) [ ]	array (string, null)	read-only	The list of prefixes for the message registries that contain the MessageIds that are sent to this event destination.
<b>ResourceTypes</b> (v1.4+) [ ]	array (string, null)	read-only	The list of resource type values (schema names) that correspond to the OriginOfCondition. The version and full namespace should not be specified.
<b>SendHeartbeat</b> (v1.11+)	boolean	read-only (null)	Send a heartbeat event periodically to the destination.
<b>Severities</b> (v1.13+) [ ]	array (string (enum))	read-only (null)	The list of severities that are sent to this event destination. <i>For the possible property values, see Severities in Property details.</i>
<b>SNMP</b> (v1.7+) {	object		Settings for an SNMP event destination.
<b>AuthenticationKey</b> (v1.7+)	string	read-write (null)	The secret authentication key for SNMPv3.
<b>AuthenticationKeySet</b> (v1.10+)	boolean	read-only	Indicates if the AuthenticationKey property is set.
<b>AuthenticationProtocol</b> (v1.7+)	string (enum)	read-write (null)	The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i>
<b>EncryptionKey</b> (v1.7+)	string	read-write (null)	The secret authentication key for SNMPv3.
<b>EncryptionKeySet</b> (v1.10+)	boolean	read-only	Indicates if the EncryptionKey property is set.
<b>EncryptionProtocol</b> (v1.7+)	string (enum)	read-write (null)	The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i>
<b>TrapCommunity</b> (v1.7+)	string	read-write (null)	The SNMP trap community string.
}			

Property	Type	Attributes	Notes
<b>Status</b> (v1.6+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SubordinateResources</b> (v1.4+)	boolean	<i>read-only (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.
<b>SubscriptionType</b> (v1.3+)	string (enum)	<i>read-only required (null)</i>	The subscription type for events. <i>For the possible property values, see SubscriptionType in Property details.</i>
<b>SyslogFilters</b> (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.
<b>LogFacilities</b> (v1.9+) [ ]	array (string (enum))	<i>read-write (null)</i>	The types of programs that can log messages. <i>For the possible property values, see LogFacilities in Property details.</i>
<b>LowestSeverity</b> (v1.9+)	string (enum)	<i>read-write (null)</i>	The lowest severity level message that will be forwarded. <i>For the possible property values, see LowestSeverity in Property details.</i>
} ]			
<b>VerifyCertificate</b> (v1.9+)	boolean	<i>read-write (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
<b>DeliverBufferedEventDuration</b> (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.
CFB128_AES192 (v1.14+)	CFB128-AES-192 encryption.
CFB128_AES256 (v1.14+)	CFB128-AES-256 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 (v1.13+)	The destination follows the Kafka protocol for event notifications.
OEM (v1.9+)	The destination follows an OEM protocol for event notifications.
Redfish	The destination follows the Redfish Specification for event notifications.
SMTP (v1.7+)	The destination follows the SMTP specification for event notifications.
SNMPv1 (v1.7+)	The destination follows the SNMPv1 protocol for event notifications.
SNMPv2c (v1.7+)	The destination follows the SNMPv2c protocol for event notifications.
SNMPv3 (v1.7+)	The destination follows the SNMPv3 protocol for event notifications.
SyslogRELp (v1.9+)	The destination follows syslog RELP for event notifications.
SyslogTCP (v1.9+)	The destination follows syslog TCP-based transport for event notifications.
SyslogTLS (v1.9+)	The destination follows syslog TLS-based transport for event notifications.
SyslogUDP (v1.9+)	The destination follows syslog UDP-based transport 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_14_0.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 1.10.1

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
<b>DeliveryRetryAttempts</b>	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.
<b>DeliveryRetryIntervalSeconds</b>	integer (seconds)	<i>read-write</i>	The interval, in seconds, between retry attempts for sending any event.
<b>EventFormatTypes</b> (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
<b>EventTypesForSubscription</b> (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>
<b>ExcludeMessageId</b> (v1.8+)	boolean	read-only	An indication of whether the service supports filtering by the ExcludeMessageIds property.
<b>ExcludeRegistryPrefix</b> (v1.8+)	boolean	read-only	An indication of whether the service supports filtering by the ExcludeRegistryPrefixes property.
<b>IncludeOriginOfConditionSupported</b> (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.
<b>RegistryPrefixes</b> (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.
<b>ResourceTypes</b> (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.
<b>ServerSentEventUri</b> (v1.1+)	string (URI)	read-only	The link to a URI for receiving Server-Sent Event representations for the events that this service generates.
<b>ServiceEnabled</b>	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.
<b>Severities</b> (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>
<b>SMTP</b> (v1.5+) {	object		Settings for SMTP event delivery.
<b>Authentication</b> (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
<b>ConnectionProtocol</b> (v1.5+)	string (enum)	<i>read-write</i> (null)	The connection type to the outgoing SMTP server. <i>For the possible property values, see ConnectionProtocol in Property details.</i>
<b>FromAddress</b> (v1.5+)	string	<i>read-write</i> (null)	The 'from' email address of the outgoing email.
<b>Password</b> (v1.5+)	string	<i>read-write</i> (null)	The password for authentication with the SMTP server. The value is <code>null</code> in responses.
<b>PasswordSet</b> (v1.9+)	boolean	<i>read-only</i>	Indicates if the Password property is set.
<b>Port</b> (v1.5+)	integer	<i>read-write</i> (null)	The destination SMTP port.
<b>ServerAddress</b> (v1.5+)	string	<i>read-write</i> (null)	The address of the SMTP server.
<b>ServiceEnabled</b> (v1.5+)	boolean	<i>read-write</i> (null)	An indication if SMTP for event delivery is enabled.
<b>Username</b> (v1.5+)	string	<i>read-write</i> (null)	The username for authentication with the SMTP server.
}			
<b>SSEFilterPropertiesSupported</b> (v1.2+) {	object		The set of properties that are supported in the <code>\$filter</code> query parameter for the ServerSentEventUri.
<b>EventFormatType</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the EventFormatType property.
<b>EventType</b> (v1.2+, deprecated v1.3)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the EventTypes 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>
<b>MessageId</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the MessageIds property.
<b>MetricReportDefinition</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the MetricReportDefinitions property.
<b>OriginResource</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the OriginResources property.
<b>RegistryPrefix</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the RegistryPrefixes property.

Property	Type	Attributes	Notes
<b>ResourceType</b> (v1.2+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the ResourceTypes property.
<b>SubordinateResources</b> (v1.4+)	boolean	<i>read-only</i>	An indication of whether the service supports filtering by the SubordinateResources property.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SubordinateResourcesSupported</b> (v1.2+)	boolean	<i>read-only</i> (null)	An indication of whether the service supports the SubordinateResources property on both event subscriptions and generated events.
<b>Subscriptions</b> {	object		The link to a collection of event destinations. Contains a link to a resource.
<b>@odata.id</b>	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
<b>EventGroupId</b> (v1.3+)	integer	<i>optional</i>	The group identifier for the event.
<b>EventId</b>	string	<i>optional</i>	The ID for the event to add.



Parameter Name	Type	Attributes	Notes
<b>EventTimestamp</b>	string (date-time)	<i>optional</i>	The date and time for the event to add.
<b>EventType</b> (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>
<b>Message</b>	string	<i>optional</i>	The human-readable message for the event to add.
<b>MessageArgs [ ]</b>	array (string)	<i>optional</i>	An array of message arguments for the event to add.
<b>MessageId</b>	string	<i>required</i>	The MessageId for the event to add.
<b>MessageSeverity</b> (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>
<b>OriginOfCondition</b>	string (URI)	<i>optional</i>	The URL in the OriginOfCondition property of the event to add. It is not a reference object.
<b>Severity</b>	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_1.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 1.7.1

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
<b>AccountProviderType</b>	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>
<b>Authentication {</b>	object		The authentication information for the external account provider.
<b>AuthenticationType</b>	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>
<b>EncryptionKey (v1.2+)</b>	string	<i>read-write (null)</i>	Specifies the encryption key.
<b>EncryptionKeySet (v1.2+)</b>	boolean	<i>read-only (null)</i>	Indicates if the EncryptionKey property is set.
<b>KerberosKeytab</b>	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.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Password</b>	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.
<b>Token</b>	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.
<b>Username</b>	string	<i>read-write</i>	The user name for the service.
}			
<b>Certificates (v1.1+) {</b>	object		The link to a collection of certificates that the external account provider uses. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>LDAPService {</b>	object		The additional mapping information needed to parse a generic LDAP service.

Property	Type	Attributes	Notes
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SearchSettings</b> {	object		The required settings to search an external LDAP service.
<b>BaseDistinguishedNames</b> [ ]	array (string, null)	<i>read-write</i>	The base distinguished names to use to search an external LDAP service.
<b>EmailAttribute</b> (v1.7+)	string	<i>read-write (null)</i>	The attribute name that contains the LDAP user's email address.
<b>GroupNameAttribute</b>	string	<i>read-write (null)</i>	The attribute name that contains the LDAP group name entry.
<b>GroupsAttribute</b>	string	<i>read-write (null)</i>	The attribute name that contains the groups for a user on the LDAP user entry.
<b>SSHKeyAttribute</b> (v1.4+)	string	<i>read-write (null)</i>	The attribute name that contains the LDAP user's SSH public key entry.
<b>UsernameAttribute</b>	string	<i>read-write (null)</i>	The attribute name that contains the LDAP user name entry.
}			
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>OAuth2Service</b> (v1.3+) {	object	(null)	The additional information needed to parse an OAuth 2.0 service.
<b>Audience</b> (v1.3+) [ ]	array (string)	<i>read-only</i>	The allowable audience strings of the Redfish service.
<b>Issuer</b> (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> .
<b>Mode</b> (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>
<b>OAuthServiceSigningKeys</b> (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
<b>Oem</b> (v1.6+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Priority</b> (v1.2+)	integer	<i>read-write (null)</i>	The authentication priority for the external account provider.
<b>RemoteRoleMapping</b> [ {	array		The mapping rules to convert the external account providers account information to the local Redfish role.
<b>LocalRole</b>	string	<i>read-write (null)</i>	The name of the local Redfish role to which to map the remote user or group.
<b>MFABypass</b> (v1.5+) {	object	<i>(null)</i>	The multi-factor authentication bypass settings. See the <i>AccountService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MFABypass resource. See the Links section and the <i>AccountService</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>RemoteGroup</b>	string	<i>read-write (null)</i>	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.
<b>RemoteUser</b>	string	<i>read-write (null)</i>	The name of the remote user that maps to the local Redfish role to which this entity links.
} ]			
<b>Retries</b> (v1.6+)	integer	<i>read-write (null)</i>	The number of times to retry connecting to an address in the <i>ServiceAddresses</i> property before attempting the next address in the array.
<b>ServiceAddresses</b> [ ]	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.
<b>ServiceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this service is enabled.
<b>TACACSplusService</b> (v1.2+) {	object	<i>(null)</i>	The additional information needed to parse a TACACS+ services.
<b>AuthorizationService</b> (v1.6+)	string	<i>read-write</i>	The TACACS+ service authorization argument.



Property	Type	Attributes	Notes
<b>Oem</b> (v1.6+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PasswordExchangeProtocols</b> (v1.2+) [ ]	array (string (enum))	<i>read-write (null)</i>	Indicates the allowed TACACS+ password exchange protocols. <i>For the possible property values, see PasswordExchangeProtocols in Property details.</i>
<b>PrivilegeLevelArgument</b> (v1.2+)	string	<i>read-write (null)</i>	Indicates the name of the TACACS+ argument name in an authorization request.
}			
<b>TimeoutSeconds</b> (v1.6+)	integer	<i>read-write (null)</i>	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_1.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 1.3.1

Version	v1.3	v1.2	v1.1	v1.0
Release	2022.1	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
<b>AddressPools</b> (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 AddressPool schema for details.
}			
<b>Connections</b> (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 Connection schema for details.
}			
<b>EndpointGroups</b> (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 EndpointGroup schema for details.
}			
<b>Endpoints</b> {	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 Endpoint schema for details.
}			
<b>FabricType</b>	string (enum)	read-only (null)	The protocol being sent over this fabric. <i>For the possible property values, see FabricType in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>MaxZones</b>	integer	read-only (null)	The maximum number of zones the switch can currently configure.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Switches</b> {	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_1.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 1.5.2

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
<b>ASICManufacturer</b>	string	<i>read-only (null)</i>	The manufacturer name for the ASIC of this fabric adapter.
<b>ASICPartNumber</b>	string	<i>read-only (null)</i>	The part number for the ASIC on this fabric adapter.
<b>ASICRevisionIdentifier</b>	string	<i>read-only (null)</i>	The revision identifier for the ASIC on this fabric adapter.
<b>FabricType</b> (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>
<b>FabricTypeCapabilities</b> (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>
<b>FirmwareVersion</b>	string	<i>read-only (null)</i>	The firmware version of this fabric adapter.
<b>GenZ</b> {	object		The Gen-Z specific properties for this fabric adapter.
<b>MSDT</b> {	object		The Multi Subnet Destination Table for the component. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details.
}			
<b>PIDT</b> [ ]	array (string, null)	<i>read-write</i>	An array of table entry values for the Packet Injection Delay Table.
<b>RequestorVCAT</b> {	object		The Requestor Virtual Channel Action Table for the component. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details.



Property	Type	Attributes	Notes
}			
<b>ResponderVCAT</b> {	object		The Responder Virtual Channel Action Table for the component. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details.
}			
<b>RITable</b> [ ]	array (string, null)	<i>read-write</i>	An array of table entry values for the Responder Interface Table.
<b>SSDT</b> {	object		The Single Subnet Destination Table for the component. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details.
}			
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Endpoints</b> [ {	array		An array of links to the endpoints that represent the logical fabric connection to this fabric adapter.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>MemoryDomains</b> (v1.3+) [ {	array		An array of links to the memory domains associated with this fabric adapter.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevices</b> (v1.2+) [ {	array		An array of links to the PCIe devices associated with this fabric adapter.
<b>@odata.id</b>	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
<b>Processors</b> (v1.5+) [ {	array		An array of links to the processors that this fabric adapter provides to a fabric.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
}]			
}			
<b>Location</b> (v1.1+) { }	object		The location of the fabric adapter. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.4+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer or OEM of this fabric adapter.
<b>Model</b>	string	<i>read-only</i> (null)	The model string for this fabric adapter.
<b>PartNumber</b>	string	<i>read-only</i> (null)	The part number for this fabric adapter.
<b>PCIeInterface</b> {	object		The PCIe interface details for this fabric adapter.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only</i> (null)	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only</i> (null)	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
<b>Ports</b> {	object		The link to the collection of ports that exist on the fabric adapter. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number for this fabric adapter.

Property	Type	Attributes	Notes
<b>SKU</b>	string	<i>read-only (null)</i>	The manufacturer SKU for this fabric adapter.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this fabric adapter.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UUID</b>	string (uuid)	<i>read-only (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_2.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": {
```

[illegible]



```
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568",
        "0x12234568"
    ],
    },
    "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1"
}
```

6.47 Facility 1.4.1

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.1	2021.3	2021.2	2020.4	2019.4

6.47.1 Description

The Facility schema represents the physical location containing equipment, such as a room, building, or campus.

6.47.2 URIs

/redfish/v1/Facilities/{FacilityId}

### 6.47.3 Properties

Property	Type	Attributes	Notes
<b>AmbientMetrics</b> (v1.1+) {	object		The link to the ambient environment metrics for this facility. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>EnvironmentMetrics</b> (v1.1+) {	object		The link to the environment metrics for this facility. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>FacilityType</b>	string (enum)	<i>read-only required</i>	The type of location this resource represents. <i>For the possible property values, see FacilityType in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>CDUs</b> (v1.4+) [ {	array		An array of links to the coolant distribution units in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a <i>CoolingUnit</i> resource. See the Links section and the <i>CoolingUnit</i> schema for details.
} ]			
<b>ContainedByFacility</b> {	object		The link to the facility that contains this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another <i>Facility</i> resource.
}			
<b>ContainsChassis</b> [ {	array		An array of links to the outermost chassis contained within this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a <i>Chassis</i> resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>ContainsFacilities</b> [ {	array		An array of links to other facilities contained within this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another <i>Facility</i> resource.

Property	Type	Attributes	Notes
} ]			
<b>CoolingLoops</b> (v1.4+) [ {	array		An array of links to the cooling loops in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingLoop resource. See the Links section and the <i>CoolingLoop</i> schema for details.
} ]			
<b>ElectricalBuses</b> (v1.3+) [ {	array		An array of links to the electrical buses in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>FloorPDUs</b> [ {	array		An array of links to the floor power distribution units in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>ImmersionUnits</b> (v1.4+) [ {	array		An array of links to the immersion cooling units in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a CoolingUnit resource. See the Links section and the <i>CoolingUnit</i> schema for details.
} ]			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this facility.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PowerShelves</b> (v1.2+) [ {	array		An array of links to the power shelves in this facility.
<b>@odata.id</b>	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
<b>RackPDUs</b> [ {	array		An array of links to the rack-level power distribution units in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>Switchgear</b> [ {	array		An array of links to the switchgear in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>TransferSwitches</b> [ {	array		An array of links to the transfer switches in this facility.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
}			
<b>Location</b> {}	object		The location of the facility. For property details, see Location.
<b>PowerDomains</b> {	object		Link to the power domains in this facility. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerDomain</i> . See the PowerDomain schema for details.
}			
<b>Status</b> {}	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_1.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 1.5.1

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
<b>Assembly</b> {	object		The link to the assembly associated with this fan. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>FanDiameterMm</b> (v1.4+)	integer (mm)	<i>read-only</i> (null)	The diameter of the fan assembly in millimeter units.
<b>HotPluggable</b>	boolean	<i>read-only</i> (null)	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>Links</b> (v1.2+) {	object		The links to other resources that are related to this resource.
<b>CoolingChassis</b> (v1.2+) [ {	array		An array of links to the chassis that are directly cooled by this fan.
<b>@odata.id</b>	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
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Location</b> {}	object		The location of the fan. For property details, see Location.
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this fan.
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this fan.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this fan.
<b>PhysicalContext</b>	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>
<b>PowerWatts</b> (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.
<b>ApparentVA</b>	number (V.A)	<i>read-only (null)</i>	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only (null)</i>	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only (null)</i>	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>Replaceable</b> (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.
<b>SecondarySpeedPercent</b> (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
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	<i>read-only (null)</i>	The rotational speed.
}			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this fan.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this fan.
<b>SpeedPercent</b> {	object (excerpt)		The fan speed (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	<i>read-only (null)</i>	The rotational speed.
}			
<b>Status</b> {}	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_1.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 1.0.1

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
<b>Assembly</b> {	object		The link to the assembly associated with this filter. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>HotPluggable</b>	boolean	<i>read-only (null)</i>	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>Location</b> { }	object		The location of the filter. For property details, see Location.
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this filter.
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this filter.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this filter.
<b>PhysicalContext</b>	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>
<b>RatedServiceHours</b>	number	<i>read-only (null)</i>	The rated hours of service life for this filter.
<b>Replaceable</b>	boolean	<i>read-only (null)</i>	An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this filter.
<b>ServicedDate</b>	string (date-time)	<i>read-write (null)</i>	The date this filter was put into service.
<b>ServiceHours</b>	number	<i>read-write (null)</i>	The hours of service this filter has provided.

Property	Type	Attributes	Notes
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this filter.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UserLabel</b>	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_1.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 1.0.1

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
<b>AssetTag</b>	string	<i>read-write</i> (null)	The user-assigned asset tag for this graphics controller.
<b>BiosVersion</b>	string	<i>read-only</i> (null)	The version of the graphics controller BIOS or primary graphics controller firmware.
<b>DriverVersion</b>	string	<i>read-only</i> (null)	The version of the graphics controller driver loaded in the operating system.
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>Oem { }</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice {</b>	object	(null)	A link to the PCIe device that represents this graphics controller. See the <i>PCleDevice</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
<b>}</b>			
<b>Processors [ {</b>	array		An array of links to the processors that are a part of this graphics controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
<b>} ]</b>			
<b>}</b>			
<b>Location { }</b>	object		The location of the graphics controller. For property details, see Location.
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer of this graphics controller.



Property	Type	Attributes	Notes
<b>Model</b>	string	<i>read-only</i> (null)	The product model number of this graphics controller.
<b>PartNumber</b>	string	<i>read-only</i> (null)	The part number for this graphics controller.
<b>Ports</b> {	object		The ports of the graphics controller. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number for this graphics controller.
<b>SKU</b>	string	<i>read-only</i> (null)	The SKU for this graphics controller.
<b>SparePartNumber</b>	string	<i>read-only</i> (null)	The spare part number of the graphics controller.
<b>Status</b> {}	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_1.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 1.0.1

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	read-only	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.

Property	Type	Attributes	Notes
}			
<b>HotPluggable</b>	boolean	<i>read-only (null)</i>	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Managers</b> [ {	array		An array of links to the managers heated by this heater.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Memory</b> [ {	array		An array of links to the memory devices heated by this heater.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details.
} ]			
<b>NetworkAdapters</b> [ {	array		An array of links to the network adapters heated by this heater.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkAdapter resource. See the Links section and the <i>NetworkAdapter</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Processors</b> [ {	array		An array of links to the processors heated by this heater.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
} ]			
<b>StorageControllers</b> [ {	array		An array of links to the storage controllers heated by this heater.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a StorageController resource. See the Links section and the <i>StorageController</i> schema for details.
} ]			
}			
<b>Location</b> {}	object		The location of the heater. For property details, see Location.
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.

Property	Type	Attributes	Notes
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this heater.
<b>Metrics {</b>	object		The link to the heater metrics resource associated with this heater. See the <i>HeaterMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a HeaterMetrics resource. See the Links section and the <i>HeaterMetrics</i> schema for details.
<b>}</b>			
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this heater.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this heater.
<b>PhysicalContext</b>	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>
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this heater.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this heater.
<b>Status { }</b>	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_1.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 1.0.1

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
<b>PowerWatts</b> {	object (excerpt)		Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.

Property	Type	Attributes	Notes
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> (null)	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
}			
<b>PrePowerOnHeatingTimeSeconds</b>	integer	<i>read-only</i> (null)	The total number of seconds the heater was active while the device it heats was powered off.
<b>RuntimeHeatingTimeSeconds</b>	integer	<i>read-only</i> (null)	The total number of seconds the heater was active while the device it heats was powered on.
<b>TemperatureReadingsCelsius</b> [ {	array (excerpt)		The temperatures (in degree Celsius units) from all related sensors for this device. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>DeviceName</b> (v1.2+)	string	<i>read-only</i> (null)	The name of the device.
<b>PhysicalContext</b>	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>
<b>PhysicalSubContext</b>	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>
<b>Reading</b>	number	<i>read-only</i> (null)	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_1.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.ResetMetrics"
    }
  }
},
```

```
"@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Heaters/CPU1Heater/Metrics"
}
```

## 6.53 HostInterface 1.3.1

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 Redfish host interface. A Redfish 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
<b>AuthenticationModes</b> [ ]	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>
<b>AuthNoneRoleId</b> (v1.2+)	string	<i>read-write</i>	The role when no authentication on this interface is used.
<b>CredentialBootstrapping</b> (v1.3+) {	object		The credential bootstrapping settings for this interface.
<b>EnableAfterReset</b> (v1.3+)	boolean	<i>read-write (null)</i>	An indication of whether credential bootstrapping is enabled after a reset for this interface.
<b>Enabled</b> (v1.3+)	boolean	<i>read-write (null)</i>	An indication of whether credential bootstrapping is enabled for this interface.
<b>RoleId</b> (v1.3+)	string	<i>read-write</i>	The role used for the bootstrap account created for this interface.
}			

Property	Type	Attributes	Notes
<b>ExternallyAccessible</b>	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> .
<b>FirmwareAuthEnabled</b> ( <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>
<b>FirmwareAuthRoleId</b> ( <i>deprecated v1.3</i> )	string	<i>read-write</i>	The Redfish 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>
<b>HostEthernetInterfaces</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EthernetInterface</i> . See the <i>EthernetInterface</i> schema for details.
}			
<b>HostInterfaceType</b>	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>
<b>InterfaceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this interface is enabled.
<b>KernelAuthEnabled</b> ( <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>
<b>KernelAuthRoleId</b> ( <i>deprecated v1.3</i> )	string	<i>read-write</i>	The Redfish 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>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>AuthNoneRole</b> ( <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.
<b>@odata.id</b>	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
}			
<b>ComputerSystems</b> [ {	array		An array of links to the computer systems connected to this host interface.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
} ]			
<b>CredentialBootstrappingRole</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Role resource. See the Links section and the <i>Role</i> schema for details.
}			
<b>FirmwareAuthRole</b> (deprecated v1.3) {	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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Role resource. See the Links section and the <i>Role</i> schema for details.
}			
<b>KernelAuthRole</b> (deprecated v1.3) {	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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Role resource. See the Links section and the <i>Role</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>ManagerEthernetInterface</b> {	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
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
}			
<b>NetworkProtocol {</b>	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ManagerNetworkProtocol resource. See the Links section and the <i>ManagerNetworkProtocol</i> schema for details.
}			
<b>Status {}</b>	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_1.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 1.2.3

<b>Version</b>	v1.2	v1.1	v1.0
<b>Release</b>	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
<b>CreatedBy</b>	string	<i>read-only</i>	The person or program that created this job entry.
<b>EndTime</b>	string (date-time)	<i>read-only</i>	The date and time when the job was completed.
<b>EstimatedDuration</b> (v1.1+)	string (duration)	<i>read-only</i> (null)	The estimated total time required to complete the job.
<b>HidePayload</b>	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> .
<b>JobState</b>	string (enum)	<i>read-write</i>	The state of the job. <i>For the possible property values, see JobState in Property details.</i>
<b>JobStatus</b>	string (enum)	<i>read-only</i>	The status of the job. <i>For the possible property values, see JobStatus in Property details.</i>
<b>Links</b> (v1.2+) {	object		Contains references to other resources that are related to this resource.
<b>CreatedResources</b> (v1.2+) [ {	array		An array of URIs referencing the resources created as the result of this job.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>MaxExecutionTime</b>	string	<i>read-write (null)</i>	The maximum amount of time the job is allowed to execute.
<b>Messages [ { } ]</b>	array (object)		An array of messages associated with the job. For property details, see Message.
<b>Payload {</b>	object		The HTTP and JSON request payload details for this job.
<b>HttpHeaders [ ]</b>	array (string)	<i>read-only</i>	An array of HTTP headers in this job.
<b>HttpOperation</b>	string	<i>read-only</i>	The HTTP operation that executes this job.
<b>JsonBody</b>	string	<i>read-only</i>	The JSON payload to use in the execution of this job.
<b>TargetUri</b>	string (URI)	<i>read-only</i>	The link to the target for this job.
}			
<b>PercentComplete</b>	integer (%)	<i>read-only (null)</i>	The completion percentage of this job.
<b>Schedule {}</b>	object		The schedule settings for this job. For property details, see Schedule.
<b>StartTime</b>	string (date-time)	<i>read-only</i>	The date and time when the job was started or is scheduled to start.
<b>StepOrder [ ]</b>	array (string)	<i>read-only</i>	The serialized execution order of the job steps.
<b>Steps {</b>	object		The link to a collection of steps for this job. Contains a link to a resource.
<b>@odata.id</b>	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_3.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 1.0.5

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
<b>DateTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The current date and time setting for the job service.
<b>Jobs {</b>	object		The links to the jobs collection. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Job</i> . See the Job schema for details.
<b>}</b>			
<b>Log {</b>	object		The link to a log service that the job service uses. This service can be a dedicated log service or a pointer to a log service under another resource, such as a manager. See the <i>LogService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details.
<b>}</b>			
<b>ServiceCapabilities {</b>	object		The supported capabilities of this job service implementation.
<b>MaxJobs</b>	integer	<i>read-only</i> ( <i>null</i> )	The maximum number of jobs supported.
<b>MaxSteps</b>	integer	<i>read-only</i> ( <i>null</i> )	The maximum number of job steps supported.
<b>Scheduling</b>	boolean	<i>read-only</i> ( <i>null</i> )	An indication of whether scheduling of jobs is supported.
<b>}</b>			
<b>ServiceEnabled</b>	boolean	<i>read-write</i> ( <i>null</i> )	An indication of whether this service is enabled.

Property	Type	Attributes	Notes
<b>Status</b> {}	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_5.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

<b>Version</b>	v1.1	v1.0
<b>Release</b>	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
<b>Languages</b> [ ]	array (string)	<i>read-only required</i>	The RFC5646-conformant language codes for the available schemas.
<b>Location</b> [ {	array	<i>required</i>	Location information for this schema file.
<b>ArchiveFile</b>	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.
<b>ArchiveUri</b>	string (URI)	<i>read-only</i>	The link to an archive file, if the schema is hosted on the service in an archive file.
<b>Language</b>	string	<i>read-only</i>	The language code for the schema file.
<b>PublicationUri</b>	string (URI)	<i>read-only</i>	The link to publicly available (canonical) URI for schema.
<b>Uri</b>	string (URI)	<i>read-only</i>	The link to locally available URI for schema.
} ]			
<b>Schema</b>	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 1.4.0

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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/PublicIdentitySSHKey/{KeyId}
/redfish/v1/UpdateService/RemoteServerSSHKeys/{KeyId}

```

### 6.57.3 Properties

Property	Type	Attributes	Notes
<b>KeyString</b>	string	<i>read-only required on create (null)</i>	The string for the key.
<b>KeyType</b>	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>
<b>NVMeoF {</b>	object	<i>(null)</i>	NVMe-oF specific properties.
<b>HostKeyId</b>	string	<i>read-write (null)</i>	The identifier of the host key paired with this target key.
<b>NQN</b>	string	<i>read-only required on create (null)</i>	The NVMe Qualified Name (NQN) of the host or target subsystem associated with this key.
<b>OEMSecurityProtocolType</b>	string	<i>read-only (null)</i>	The OEM security protocol that this key uses.
<b>SecureHashAllowList [ ]</b>	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>
<b>SecurityProtocolType</b>	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>
<b>}</b>			
<b>SSH (v1.2+) {</b>	object	<i>(null)</i>	SSH specific properties.
<b>Comment (v1.4+)</b>	string	<i>read-only (null)</i>	The user-specified comment associated with this key, which typically contains the client's username and host name.
<b>Fingerprint (v1.2+)</b>	string	<i>read-only (null)</i>	A fingerprint of the key.

Property	Type	Attributes	Notes
<b>RemoteServerHostName</b> (v1.3+)	string	<i>read-only</i> (null)	The host name of the remote server associated with this key.
}			
<b>UserDescription</b> (v1.1+)	string	<i>read-write</i> (null)	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).

string	Description
OEM	OEM.
TLS_PSK	Transport Layer Security Pre-Shared Key (TLS PSK).

### 6.57.5 Example response

```
{
  "@odata.type": "#Key.v1_4_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
<b>IsDefault</b>	boolean	<i>read-write (null)</i>	Indicates if this is the default key policy.
<b>KeyPolicyType</b>	string (enum)	<i>read-only required on create (null)</i>	The type of key policy. <i>For the possible property values, see KeyPolicyType in Property details.</i>
<b>NVMeoF {</b>	object	<i>(null)</i>	NVMe-oF specific properties.
<b>CipherSuiteAllowList [ ]</b>	array (string (enum))	<i>read-write (null)</i>	The cipher suites that this key policy allows. <i>For the possible property values, see CipherSuiteAllowList in Property details.</i>
<b>DHGroupAllowList [ ]</b>	array (string (enum))	<i>read-write (null)</i>	The Diffie-Hellman (DH) groups that this key policy allows. <i>For the possible property values, see DHGroupAllowList in Property details.</i>
<b>OEMSecurityProtocolAllowList [ ]</b>	array (string, null)	<i>read-write</i>	The OEM security protocols that this key policy allows.
<b>SecureHashAllowList [ ]</b>	array (string (enum))	<i>read-write (null)</i>	The secure hash algorithms that this key policy allows. <i>For the possible property values, see SecureHashAllowList in Property details.</i>
<b>SecurityProtocolAllowList [ ]</b>	array (string (enum))	<i>read-write (null)</i>	The security protocols that this key policy allows. <i>For the possible property values, see SecurityProtocolAllowList in Property details.</i>
<b>SecurityTransportAllowList [ ]</b>	array (string (enum))	<i>read-write (null)</i>	The security transports that this key policy allows. <i>For the possible property values, see SecurityTransportAllowList in Property details.</i>
<b>}</b>			

### 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
<b>NVMeoFKeyPolicies</b> {	object		The NVMe-oF key policies maintained by this service. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>KeyPolicy</i> . See the KeyPolicy schema for details.
}			
<b>NVMeoFSecrets</b> {	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
<b>LeakDetectorGroups</b> [ {	array		The groups of leak detection equipment.
<b>Detectors</b> [ {	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.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this leak detector.
<b>DetectorState</b>	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>
<b>PhysicalContext</b>	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>
<b>PhysicalSubContext</b>	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>
} ]			
<b>GroupName</b>	string	<i>read-only</i>	The name of this leak detector group.
<b>HumidityPercent</b> {	object (excerpt)		Humidity (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
} ]			
<b>LeakDetectors</b> {	object		The link to the collection of leak detectors within this subsystem. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LeakDetector</i> . See the LeakDetector schema for details.
}			
<b>Status</b> {}	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 1.0.1

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
<b>DetectorState</b>	string (enum)	<i>read-only (null)</i>	The state of the leak detector. <i>For the possible property values, see DetectorState in Property details.</i>
<b>LeakDetectorType</b>	string (enum)	<i>read-only (null)</i>	The type of leak detection sensor. <i>For the possible property values, see LeakDetectorType in Property details.</i>
<b>Location {}</b>	object		The location information for this leak detector. For property details, see Location.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this leak detector.
<b>Model</b>	string	<i>read-only (null)</i>	The model number of the leak detector.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number of the leak detector.
<b>PhysicalContext</b>	string (enum)	<i>read-only (null)</i>	The area or device to which this leak detector applies. <i>For the possible property values, see PhysicalContext in Property details.</i>
<b>PhysicalSubContext</b>	string (enum)	<i>read-only (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>
<b>SensingFrequency</b>	number	<i>read-only (null)</i>	The time interval between readings of the physical leak detector.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number of the leak detector.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU of the leak detector.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number of the leak detector.
<b>Status {}</b>	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_1.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 1.1.2

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
}			
<b>DownloadURI</b>	string (URI)	<i>read-only</i>	The URI from which to download the license file.
<b>EntitlementId</b>	string	<i>read-only (null)</i>	The entitlement identifier for this license.
<b>ExpirationDate</b>	string (date-time)	<i>read-only (null)</i>	The date and time when the license expires.
<b>GracePeriodDays</b>	integer	<i>read-only (null)</i>	The grace days of this license.
<b>InstallDate</b>	string (date-time)	<i>read-only (null)</i>	The date and time when the license was installed.
<b>LicenseInfoURI</b>	string (URI)	<i>read-only (null)</i>	The URI at which more information about this license can be obtained.
<b>LicenseOrigin</b>	string (enum)	<i>read-only (null)</i>	This indicates the origin of the license. <i>For the possible property values, see LicenseOrigin in Property details.</i>
<b>LicenseString</b>	string	<i>read-only required on create (null)</i>	The Base64-encoded string of the license.
<b>LicenseType</b>	string (enum)	<i>read-only (null)</i>	The type of the license. <i>For the possible property values, see LicenseType in Property details.</i>
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>AuthorizedDevices</b> [ {	array		An array of links to the devices authorized by the license.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Oem { }</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>TargetServices</b> (v1.1+) [ {	array		An array of links to the managers where the license is installed.
<b>@odata.id</b>	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
}			
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer or producer of this license.
<b>MaxAuthorizedDevices</b>	integer	<i>read-only (null)</i>	The maximum number of devices authorized by the license.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this license.
<b>RemainingDuration</b>	string (duration)	<i>read-only (null)</i>	The remaining usage duration before the license expires.
<b>RemainingUseCount</b>	integer	<i>read-only (null)</i>	The remaining usage count before the license expires.
<b>Removable</b>	boolean	<i>read-only (null)</i>	An indication of whether the license is removable.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this license.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU for this license.
<b>Status {}</b>	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_2.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 1.1.1

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	read-write (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
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>License</i> . See the License schema for details.
}			
<b>ServiceEnabled</b>	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
<b>AuthorizedDevices</b> (v1.1+) [ {	array	<i>optional</i>	An array of links to the devices to be authorized by the license.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>LicenseFileURI</b>	string (URI)	<i>required</i>	The URI of the license file to install.
<b>Password</b>	string	<i>optional</i>	The password to access the URI specified by the LicenseFileURI parameter.
<b>TargetServices</b> (v1.1+) [ {	array	<i>optional</i>	An array of links to the managers where the license will be installed.
<b>@odata.id</b>	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
<b>TransferProtocol</b>	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>
<b>Username</b>	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_1.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 1.16.0

Version	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	...
Release	2023.3	2023.1	2022.3	2022.2	2022.1	2021.4	2021.3	2021.1	2020.4	2020.3	2020.1	...

### 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/{PCIeDeviceId}/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
<b>AdditionalDataSizeBytes</b> (v1.7+)	integer (bytes)	read-only (null)	The size of the additional data for this log entry.
<b>AdditionalDataURI</b> (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.
<b>CPER</b> (v1.15+) {	object		Details for a CPER section or record associated with this log entry.
<b>NotificationType</b> (v1.15+)	string (uuid)	read-only (null)	The CPER Notification Type for a CPER record.
<b>Oem</b> (v1.15+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SectionType</b> (v1.15+)	string (uuid)	read-only (null)	The CPER Section Type.
}			
<b>Created</b>	string (date-time)	read-only	The date and time when the log entry was created.
<b>CXLEntryType</b> (v1.14+)	string (enum)	read-only	The specific CXL entry type. <i>For the possible property values, see CXLEntryType in Property details.</i>
<b>DiagnosticData</b> (v1.15+)	string	read-only (null)	A Base64-encoded set of diagnostic data associated with this log entry.
<b>DiagnosticDataType</b> (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>
<b>EntryCode</b>	string (enum)	read-only (null)	The entry code for the log entry if the entry type is <code>SEL</code> . <i>For the possible property values, see EntryCode in Property details.</i>
<b>EntryType</b>	string (enum)	read-only required	The type of log entry. <i>For the possible property values, see EntryType in Property details.</i>
<b>EventGroupId</b> (v1.4+)	integer	read-only (null)	An identifier that correlates events with the same cause.
<b>EventId</b> (v1.1+)	string	read-only	The unique instance identifier for an event.

Property	Type	Attributes	Notes
<b>EventTimestamp</b> (v1.1+)	string (date-time)	<i>read-only</i>	The date and time when the event occurred.
<b>EventType</b> (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>
<b>FirstOverflowTimestamp</b> (v1.14+)	string (date-time)	<i>read-only</i>	The timestamp of the first overflow captured after this log entry.
<b>GeneratorId</b> (v1.5+)	string	<i>read-only</i> (null)	An identifier of the device that has generated the IPMI SEL Event Record.
<b>LastOverflowTimestamp</b> (v1.14+)	string (date-time)	<i>read-only</i>	The timestamp of the last overflow captured after this log entry.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OriginOfCondition</b> {	object		The link to the resource that caused the log entry.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>RelatedItem</b> (v1.12+) [ {	array		An array of links to resources associated with this log entry.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>RelatedLogEntries</b> (v1.12+) [ {	array		An array of links to other log entries that are related to this log entry.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another LogEntry resource.
} ]			
}			

Property	Type	Attributes	Notes
<b>Message</b>	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.
<b>MessageArgs [ ]</b>	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.
<b>MessageId</b>	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.
<b>Modified</b> (v1.6+)	string (date-time)	<i>read-only</i>	The date and time when the log entry was last modified.
<b>OEMDiagnosticDataType</b> (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.
<b>OemLogEntryCode</b> (v1.3+)	string	<i>read-only (null)</i>	The OEM-specific entry code, if the LogEntryCode type is <code>OEM</code> .
<b>OemRecordFormat</b>	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.
<b>OemSensorType</b> (v1.3+)	string	<i>read-only (null)</i>	The OEM-specific sensor type if the sensor type is <code>OEM</code> .
<b>Originator</b> (v1.11+)	string	<i>read-only</i>	The source of the log entry.
<b>OriginatorType</b> (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>
<b>OverflowErrorCount</b> (v1.14+)	integer	<i>read-only</i>	The count of overflow errors that occurred after this log entry.
<b>Persistency</b> (v1.14+)	boolean	<i>read-only</i>	Indicates whether the log entry is persistent across a cold reset of the device.
<b>Resolution</b> (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
<b>ResolutionSteps</b> (v1.16+) [ { } ]	array (object)		The list of recommended steps to resolve the cause of the log entry. For property details, see ResolutionStep.
<b>Resolved</b> (v1.8+)	boolean	read-write (null)	Indicates if the cause of the log entry has been resolved or repaired.
<b>SensorNumber</b>	integer	read-only (null)	The IPMI-defined sensor number.
<b>SensorType</b>	string (enum)	read-only (null)	The sensor type to which the log entry pertains if the entry type is SEL . For the possible property values, see SensorType in Property details.
<b>ServiceProviderNotified</b> (v1.9+)	boolean	read-only (null)	Indicates if the log entry has been sent to the service provider.
<b>Severity</b>	string (enum)	read-only (null)	The severity of the log entry. For the possible property values, see Severity in Property details.
<b>SpecificEventExistsInGroup</b> (v1.13+)	boolean	read-only	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/ Coprocesor	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_16_0.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 1.6.0

Version	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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
<b>AutoDSTEnabled</b> (v1.3+)	boolean	<i>read-write</i>	An indication of whether the log service is configured for automatic Daylight Saving Time (DST) adjustment.
<b>DateTime</b>	string (date-time)	<i>read-write</i> (null)	The current date and time with UTC offset of the log service.
<b>DateTimeLocalOffset</b>	string	<i>read-write</i> (null)	The time offset from UTC that the DateTime property is in <code>+HH:MM</code> format.
<b>Entries</b> {	object		The link to the log entry collection. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LogEntry</i> . See the LogEntry schema for details.
}			

Property	Type	Attributes	Notes
<b>LogEntryType</b> (v1.1+)	string (enum)	read-only (null)	The format of the log entries. <i>For the possible property values, see LogEntryType in Property details.</i>
<b>LogPurposes</b> (v1.4+) [ ]	array (string (enum))	read-only (null)	The purposes of the log. <i>For the possible property values, see LogPurposes in Property details.</i>
<b>MaxNumberOfRecords</b>	integer	read-only	The maximum number of log entries that this service can have.
<b>OEMLogPurpose</b> (v1.4+)	string	read-only (null)	The OEM-specified purpose of the log if LogPurposes contains <code>OEM</code> .
<b>Overflow</b> (v1.4+)	boolean	read-only	Indicates whether the log service has overflowed.
<b>OverWritePolicy</b>	string (enum)	read-only	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>
<b>Persistency</b> (v1.4+)	boolean	read-only	Indicates whether the log service is persistent across a cold reset.
<b>ServiceEnabled</b>	boolean	read-write (null)	An indication of whether this service is enabled.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SyslogFilters</b> (v1.2+) [ {	array		A list of syslog message filters to be logged locally.
<b>LogFacilities</b> (v1.2+) [ ]	array (string (enum))	read-write (null)	The types of programs that can log messages. <i>For the possible property values, see LogFacilities in Property details.</i>
<b>LowestSeverity</b> (v1.2+)	string (enum)	read-write (null)	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
<b>LogEntriesETag</b> (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
<b>DiagnosticDataType</b>	string (enum)	<i>required</i>	The type of diagnostic data to collect. <i>For the possible property values, see DiagnosticDataType in Property details.</i>
<b>OEMDiagnosticDataType</b>	string	<i>optional</i>	The OEM-defined type of diagnostic data to collect.
<b>Password</b> (v1.6+)	string	<i>optional</i>	The password to access the URI specified by the TargetURI parameter.
<b>TargetURI</b> (v1.6+)	string (URI)	<i>optional</i>	The URI to access when sending the diagnostic data.

Parameter Name	Type	Attributes	Notes
<b>TransferProtocol</b> (v1.6+)	string (enum)	<i>optional</i>	The network protocol that the service uses to send the diagnostic data. <i>For the possible property values, see TransferProtocol in Property details.</i>
<b>UserName</b> (v1.6+)	string	<i>optional</i>	The user name to access the URI specified by the TargetURI parameter.

### Request Example

```
{  
  "DiagnosticDataType": "Manager"  
}
```

#### 6.65.4.3 PushDiagnosticData (v1.6+)

##### Description

The action to push an existing diagnostic data to a target URI.

##### Action URI

*{Base URI of target resource}*/Actions/LogService.PushDiagnosticData

##### Action parameters

Parameter Name	Type	Attributes	Notes
<b>AdditionalDataURI</b>	string (URI)	<i>required</i>	The URI of the diagnostic data to transfer to the URI specified by the TargetURI parameter.
<b>Password</b>	string	<i>optional</i>	The password to access the URI specified by the TargetURI parameter.
<b>TargetURI</b>	string (URI)	<i>required</i>	The URI to access when sending the diagnostic data.
<b>TransferProtocol</b>	string (enum)	<i>optional</i>	The network protocol that the service uses to send the diagnostic data. <i>For the possible property values, see TransferProtocol in Property details.</i>
<b>UserName</b>	string	<i>optional</i>	The user name to access the URI specified by the TargetURI parameter.

### Request Example



```
{
  "AdditionalDataUri": "/redfish/v1/LogService/Diags/10242023T132938.bin",
  "TargetURI": "https://192.168.24.34/receivedfiles/192-168-89-33_10242023T132938.bin",
  "UserName": "Admin",
  "Password": "FluffyBunny23",
  "TransferProtocol": "HTTPS"
}
```

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.

string	Description
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.

string	Description
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.

#### 6.65.5.7 TransferProtocol

The network protocol that the service uses to send the diagnostic data.

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).

#### 6.65.6 Example response

```
{
```

```

"@odata.type": "#LogService.v1_6_0.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 1.19.0

Version	v1.19	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	...
Release	2023.3	2023.1	2022.3	2022.2	2022.1	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	...

### 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 (baseboard management controllers), 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
<b>AdditionalFirmwareVersions</b> (v1.15+) {	object		The additional firmware versions of the manager.
<b>Bootloader</b> (v1.7+)	string	<i>read-only</i> ( <i>null</i> )	The bootloader version contained in this software, such as U-Boot or UEFI.
<b>Kernel</b> (v1.7+)	string	<i>read-only</i> ( <i>null</i> )	The kernel version contained in this software.
<b>Microcode</b> (v1.7+)	string	<i>read-only</i> ( <i>null</i> )	The microcode version contained in this software, such as processor microcode.
<b>Oem</b> (v1.7+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OSDistribution</b> (v1.8+)	string	<i>read-only</i> ( <i>null</i> )	The operating system name of this software.
}			
<b>AutoDSTEnabled</b> (v1.4+)	boolean	<i>read-write</i>	An indication of whether the manager is configured for automatic Daylight Saving Time (DST) adjustment.
<b>Certificates</b> (v1.13+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>CommandShell</b> {	object		The command shell service that this manager provides.
<b>ConnectTypesSupported</b> [ ]	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>
<b>MaxConcurrentSessions</b>	integer	<i>read-only</i>	The maximum number of service sessions, regardless of protocol, that this manager can support.
<b>ServiceEnabled</b>	boolean	<i>read-write</i>	An indication of whether the service is enabled for this manager.
}			
<b>DateTime</b>	string (date- time)	<i>read-write</i> ( <i>null</i> )	The current date and time with UTC offset of the manager.

Property	Type	Attributes	Notes
<b>DateTimeLocalOffset</b>	string	<i>read-write (null)</i>	The time offset from UTC that the DateTime property is in <code>+HH:MM</code> format.
<b>DaylightSavingTime</b> (v1.19+) {	object		The daylight saving time settings for this manager.
<b>EndTime</b> (v1.19+)	string (date-time)	<i>read-write</i>	The end date and time with UTC offset of daylight saving time.
<b>OffsetMinutes</b> (v1.19+)	integer	<i>read-write</i>	The daylight saving time offset in minutes.
<b>StartTime</b> (v1.19+)	string (date-time)	<i>read-write</i>	The start date and time with UTC offset of daylight saving time.
<b>TimeZoneName</b> (v1.19+)	string	<i>read-write</i>	The time zone of the manager when daylight saving time is in effect.
}			
<b>DedicatedNetworkPorts</b> (v1.16+) {	object		The dedicated network ports of the manager. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>EthernetInterfaces</b> {	object		The link to a collection of NICs that this manager uses for network communication. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only (null)</i>	The firmware version of this manager.
<b>GraphicalConsole</b> {	object		The information about the graphical console service of this manager.
<b>ConnectTypesSupported</b> [ ]	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>
<b>MaxConcurrentSessions</b>	integer	<i>read-only</i>	The maximum number of service sessions, regardless of protocol, that this manager can support.
<b>ServiceEnabled</b>	boolean	<i>read-write</i>	An indication of whether the service is enabled for this manager.

Property	Type	Attributes	Notes
}			
<b>HostInterfaces</b> (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	read-only	Link to Collection of <i>HostInterface</i> . See the <i>HostInterface</i> schema for details.
}			
<b>LastResetTime</b> (v1.9+)	string (date-time)	read-only	The date and time when the manager was last reset or rebooted.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ActiveSoftwareImage</b> (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	read-write	Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
<b>ManagedBy</b> (v1.9+) [ {	array		The array of links to the managers responsible for managing this manager.
@odata.id	string	read-only	Link to another Manager resource.
} ]			
<b>ManagerForChassis</b> [ {	array		An array of links to the chassis this manager controls.
@odata.id	string	read-only	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>ManagerForManagers</b> (v1.9+) [ {	array		An array of links to the managers that are managed by this manager.
@odata.id	string	read-only	Link to another Manager resource.
} ]			
<b>ManagerForServers</b> [ {	array		An array of links to the systems that this manager controls.



Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
} ]			
<b>ManagerForSwitches</b> (v1.4+) [ {	array		An array of links to the switches that this manager controls.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details.
} ]			
<b>ManagerInChassis</b> (v1.1+) {	object		The link to the chassis where this manager is located. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SelectedNetworkPort</b> (v1.18+) {	object	(null)	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.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
}			
<b>SoftwareImages</b> (v1.6+) [ {	array		The images that are associated with this manager.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
}			
<b>Location</b> (v1.11+) {}	object		The location of the manager. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.11+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>LogServices</b> {	object		The link to a collection of logs that the manager uses. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LogService</i> . See the <i>LogService</i> schema for details.
}			
<b>ManagerDiagnosticData</b> (v1.14+) {	object	(null)	The diagnostic data for this manager. See the <i>ManagerDiagnosticData</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ManagerDiagnosticData</i> resource. See the Links section and the <i>ManagerDiagnosticData</i> schema for details.
}			
<b>ManagerType</b>	string (enum)	<i>read-only</i>	The type of manager that this resource represents. <i>For the possible property values, see ManagerType in Property details.</i>
<b>Manufacturer</b> (v1.7+)	string	<i>read-only</i> (null)	The manufacturer of this manager.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>MeasurementBlock</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>Model</b>	string	<i>read-only</i> (null)	The model information of this manager, as defined by the manufacturer.
<b>NetworkProtocol</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ManagerNetworkProtocol</i> resource. See the Links section and the <i>ManagerNetworkProtocol</i> schema for details.
}			
<b>PartNumber</b> (v1.7+)	string	<i>read-only</i> (null)	The part number of the manager.
<b>PowerState</b> (v1.2+)	string (enum)	<i>read-only</i> (null)	The current power state of the manager. <i>For the possible property values, see PowerState in Property details.</i>
<b>Redundancy</b> [ { } ]	array (object)		The redundancy information for the managers of this system. For property details, see Redundancy.

Property	Type	Attributes	Notes
<b>RemoteAccountService</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>AccountService</i> resource. See the Links section and the <i>AccountService</i> schema for details.
}			
<b>RemoteRedfishServiceUri</b> (v1.5+)	string (URI)	<i>read-only</i> ( <i>null</i> )	The URI of the Redfish service root for the remote manager that this resource represents.
<b>SecurityPolicy</b> (v1.16+) {	object	( <i>null</i> )	The security policy settings for this manager. See the <i>SecurityPolicy</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>SecurityPolicy</i> resource. See the Links section and the <i>SecurityPolicy</i> schema for details.
}			
<b>SerialConsole</b> ( <i>deprecated</i> 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>
<b>ConnectTypesSupported</b> [ ]	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>
<b>MaxConcurrentSessions</b>	integer	<i>read-only</i>	The maximum number of service sessions, regardless of protocol, that this manager can support.
<b>ServiceEnabled</b>	boolean	<i>read-write</i>	An indication of whether the service is enabled for this manager.
}			
<b>SerialInterfaces</b> {	object		The link to a collection of serial interfaces that this manager uses for serial and console communication. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>SerialInterface</i> . See the <i>SerialInterface</i> schema for details.
}			
<b>SerialNumber</b> (v1.7+)	string	<i>read-only</i> ( <i>null</i> )	The serial number of the manager.
<b>ServiceEntryPointUUID</b>	string (uuid)	<i>read-only</i> ( <i>null</i> )	The UUID of the Redfish service that is hosted by this manager.

Property	Type	Attributes	Notes
<b>ServiceIdentification</b> (v1.15+)	string	<i>read-write</i> (null)	A product instance identifier displayed in the Redfish service root.
<b>SharedNetworkPorts</b> (v1.16+) {	object		The shared network ports of the manager. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details.
}			
<b>SparePartNumber</b> (v1.11+)	string	<i>read-only</i> (null)	The spare part number of the manager.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>TimeZoneName</b> (v1.10+)	string	<i>read-write</i>	The time zone of the manager.
<b>USBPorts</b> (v1.12+) {	object		The USB ports of the manager. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details.
}			
<b>UUID</b>	string (uuid)	<i>read-only</i> (null)	The UUID for this manager.
<b>Version</b> (v1.17+)	string	<i>read-only</i> (null)	The hardware version of this manager.
<b>VirtualMedia</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	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
<b>NewManager</b> {	object	<i>required</i>	The manager to which to fail over.
<b>@odata.id</b>	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
<b>Add</b> [ {	array	<i>optional</i>	An array of managers to add to the redundancy set.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Manager resource.

Parameter Name	Type	Attributes	Notes
} ]			
<b>Remove</b> [ {	array	<i>optional</i>	An array of managers to remove from the redundancy set.
<b>@odata.id</b>	string	<i>read-only</i>	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
<b>ResetType</b>	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"
}
```

```
}
```

#### 6.66.4.4 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
<b>ResetType</b>	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.

string	Description
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 as part of a larger system.



string	Description
BMC	A controller that provides management functions for one or more computer systems. Commonly known as a BMC (baseboard management controller). Examples of this include a BMC dedicated to one system or a multi-host manager providing BMC capabilities to multiple systems.
EnclosureManager	A controller that provides management functions for a chassis, group of devices, or group of systems with their own BMCs (baseboard management controllers). An example of this is a manager that aggregates and orchestrates management functions across multiple BMCs in an enclosure.
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. An example of this is a manager that aggregates and orchestrates management functions across multiple managers, such as enclosure managers and BMCs (baseboard management controllers), in 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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

#### 6.66.5.4.2 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_19_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 1.12.0

Version	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	...
Release	2023.3	2023.2	2022.3	2022.1	2021.1	2020.4	2020.1	2019.4	2019.3	2019.1	2018.3	...

### 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
<b>AccountExpiration</b> (v1.8+)	string (date-time)	<i>read-write</i> ( <i>null</i> )	Indicates the date and time when this account expires. If <code>null</code> , the account never expires.
<b>AccountTypes</b> (v1.4+) [ ]	array (string (enum))	<i>read-write</i> <i>required</i> ( <i>null</i> )	The list of services in the manager that the account is allowed to access. <i>For the possible property values, see AccountTypes in Property details.</i>
<b>Certificates</b> (v1.2+) {	object		The link to a collection of user identity certificates for this account. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>EmailAddress</b> (v1.11+)	string	<i>read-write</i> ( <i>null</i> )	The email address associated with this account.
<b>Enabled</b>	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.
<b>HostBootstrapAccount</b> (v1.8+)	boolean	<i>read-only</i>	An indication of whether this account is a bootstrap account for the host interface.
<b>Keys</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Key</i> . See the Key schema for details.
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Role</b> {	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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Role resource. See the Links section and the <i>Role</i> schema for details.
}			
}			
<b>Locked</b>	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.
<b>MFABypass</b> (v1.10+) {	object	(null)	The multi-factor authentication bypass settings for this account. See the <i>AccountService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MFABypass resource. See the Links section and the <i>AccountService</i> schema for details.
}			
<b>OEMAccountTypes</b> (v1.4+) [ ]	array (string, null)	<i>read-write</i>	The OEM account types.
<b>OneTimePasscodeDeliveryAddress</b> (v1.11+)	string	<i>read-write</i> (null)	The address used to receive one-time passcode messages for multi-factor authentication.
<b>Password</b>	string	<i>read-write</i> <i>required</i> <i>on create</i> (null)	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.
<b>PasswordChangeRequired</b> (v1.3+)	boolean	<i>read-write</i> (null)	An indication of whether the service requires that the password for this account be changed before further access to the account is allowed.
<b>PasswordExpiration</b> (v1.6+)	string (date- time)	<i>read-write</i> (null)	Indicates the date and time when this account password expires. If <code>null</code> , the account password never expires.
<b>PhoneNumber</b> (v1.11+)	string	<i>read-write</i> (null)	The contact phone number associated with this account.
<b>RoleId</b>	string	<i>read-write</i> <i>required</i> <i>on create</i>	The role for this account.
<b>SNMP</b> (v1.4+) {	object	(null)	The SNMP settings for this account.

Property	Type	Attributes	Notes
<b>AuthenticationKey</b> (v1.4+)	string	<i>read-write (null)</i>	The secret authentication key for SNMPv3.
<b>AuthenticationKeySet</b> (v1.5+)	boolean	<i>read-only</i>	Indicates if the AuthenticationKey property is set.
<b>AuthenticationProtocol</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	The authentication protocol for SNMPv3. <i>For the possible property values, see AuthenticationProtocol in Property details.</i>
<b>EncryptionKey</b> (v1.4+)	string	<i>read-write (null)</i>	The secret encryption key used in SNMPv3.
<b>EncryptionKeySet</b> (v1.5+)	boolean	<i>read-only</i>	Indicates if the EncryptionKey property is set.
<b>EncryptionProtocol</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	The encryption protocol for SNMPv3. <i>For the possible property values, see EncryptionProtocol in Property details.</i>
}			
<b>StrictAccountTypes</b> (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.
<b>UserName</b>	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
<b>NewPassword</b>	string	<i>required</i>	The new account password.

Parameter Name	Type	Attributes	Notes
<b>SessionAccountPassword</b>	string	<i>required</i>	The password of the account tied to the current session.

### Request Example

```
{  
  "SessionAccountPassword": "secret123",  
  "NewPassword": "B3tt3rS3cur1tY!"  
}
```

## 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 another 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 another 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.
CFB128_AES192 (v1.12+)	CFB128-AES-192 encryption.
CFB128_AES256 (v1.12+)	CFB128-AES-256 encryption.
None	No encryption.

### 6.67.6 Example response

```
{
  "@odata.type": "#ManagerAccount.v1_12_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 1.2.2

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	read-only (null)	The number of seconds the manager spent in the firmware stage.

Property	Type	Attributes	Notes
<b>InitrdTimeSeconds</b>	number	<i>read-only (null)</i>	The number of seconds the manager spent in the initrd boot stage.
<b>KernelTimeSeconds</b>	number	<i>read-only (null)</i>	The number of seconds the manager spent in the kernel stage.
<b>LoaderTimeSeconds</b>	number	<i>read-only (null)</i>	The number of seconds the manager spent in the loader stage.
<b>UserSpaceTimeSeconds</b>	number	<i>read-only (null)</i>	The number of seconds the manager spent in the user space boot stage.
}			
<b>FreeStorageSpaceKiB</b>	integer (KiBy)	<i>read-only (null)</i>	The available storage space on this manager in kibibytes (KiB).
<b>I2CBuses</b> [ {	array		The statistics of the I2C buses.
<b>BusErrorCount</b>	integer	<i>read-only (null)</i>	The number of bus errors on this I2C bus.
<b>I2CBusName</b>	string	<i>read-only</i>	The name of the I2C bus.
<b>NACKCount</b>	integer	<i>read-only (null)</i>	The number of NACKs on this I2C bus.
<b>TotalTransactionCount</b>	integer	<i>read-only (null)</i>	The total number of transactions on this I2C bus.
} ]			
<b>MemoryECCStatistics</b> {	object		The memory ECC statistics of the manager.
<b>CorrectableECCErrorCount</b>	integer	<i>read-only (null)</i>	The number of correctable errors since reset.
<b>UncorrectableECCErrorCount</b>	integer	<i>read-only (null)</i>	The number of uncorrectable errors since reset.
}			
<b>MemoryStatistics</b> {	object		The memory statistics of the manager.
<b>AvailableBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of memory available in bytes for starting new processes without swapping.
<b>BuffersAndCacheBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of memory used in bytes by kernel buffers, page caches, and slabs.

Property	Type	Attributes	Notes
<b>FreeBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of free memory in bytes.
<b>SharedBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of shared memory in bytes.
<b>TotalBytes</b>	integer (bytes)	<i>read-only (null)</i>	The total amount of memory in bytes.
<b>UsedBytes</b>	integer (bytes)	<i>read-only (null)</i>	The amount of used memory in bytes.
}			
<b>ProcessorStatistics</b> {	object		The processor statistics of the manager.
<b>KernelPercent</b>	number (%)	<i>read-only (null)</i>	The percentage of CPU time spent in kernel mode.
<b>UserPercent</b>	number (%)	<i>read-only (null)</i>	The percentage of CPU time spent in user mode.
}			
<b>ServiceRootUptimeSeconds</b> (v1.2+)	number	<i>read-only (null)</i>	The wall-clock time the service root hosted by this manager has been running in seconds.
<b>TopProcesses</b> [ {	array		The statistics of the top processes of this manager.
<b>CommandLine</b>	string	<i>read-only</i>	The command line of this process.
<b>KernelTimeSeconds</b>	number	<i>read-only (null)</i>	The number of seconds this process executed in kernel space.
<b>ResidentSetSizeBytes</b>	integer (bytes)	<i>read-only (null)</i>	The resident set size of this process in bytes.
<b>RestartAfterFailureCount</b> (v1.1+)	integer	<i>read-only (null)</i>	The number of times this process has restarted unexpectedly.
<b>RestartCount</b> (v1.1+)	integer	<i>read-only (null)</i>	The number of times this process has restarted.
<b>UptimeSeconds</b> (v1.1+)	number	<i>read-only (null)</i>	The wall-clock time this process has been running in seconds.
<b>UserTimeSeconds</b>	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_2.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-read -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 1.10.0

Version	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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
<b>DHCP</b> (v1.1+) {}	object		The settings for this manager's DHCPv4 protocol support. For more information about this property, see Protocol in Property Details.
<b>DHCPv6</b> (v1.3+) {}	object		The settings for this manager's DHCPv6 protocol support. For more information about this property, see Protocol in Property Details.
<b>FQDN</b>	string	<i>read-only (null)</i>	The fully qualified domain name for the manager obtained by DNS including the host name and top-level domain name.
<b>FTP</b> (v1.10+) {}	object		The settings for this manager's FTP protocol support. For more information about this property, see Protocol in Property Details.
<b>FTPS</b> (v1.10+) {}	object		The settings for this manager's FTP over SSL (FTPS) protocol support that apply to all system instances controlled by this manager. For more information about this property, see Protocol in Property Details.
<b>HostName</b>	string	<i>read-only (null)</i>	The DNS host name of this manager, without any domain information.
<b>HTTP</b> {}	object		The settings for this manager's HTTP protocol support. For more information about this property, see Protocol in Property Details.
<b>HTTPS</b> {	object		The settings for this manager's HTTPS protocol support.

Property	Type	Attributes	Notes
<b>Certificates</b> (v1.4+) {	object		The link to a collection of certificates used for HTTPS by this manager. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>Port</b>	integer	<i>read-write (null)</i>	The protocol port.
<b>ProtocolEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether the protocol is enabled.
}			
<b>IPMI</b> {}	object		The settings for this manager's IPMI-over-LAN protocol support. For more information about this property, see Protocol in Property Details.
<b>KVMIP</b> {}	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.
<b>NTP</b> (v1.2+) {	object		The settings for this manager's NTP protocol support.
<b>NetworkSuppliedServers</b> (v1.9+) [ ]	array (string, null)	<i>read-only</i>	The NTP servers supplied by other network protocols to this manager.
<b>NTPServers</b> (v1.2+) [ ]	array (string, null)	<i>read-write</i>	Indicates to which user-supplied NTP servers this manager is subscribed.
<b>Port</b>	integer	<i>read-write (null)</i>	The protocol port.
<b>ProtocolEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether the protocol is enabled.
}			
<b>Proxy</b> (v1.8+) {	object	(null)	The HTTP/HTTPS proxy information for this manager.



Property	Type	Attributes	Notes
<b>Enabled</b> (v1.8+)	boolean	<i>read-write</i>	Indicates if the manager uses the proxy server.
<b>ExcludeAddresses</b> (v1.8+) [ ]	array (string, null)	<i>read-write</i>	Addresses that do not require the proxy server to access.
<b>Password</b> (v1.8+)	string	<i>read-write (null)</i>	The password for the proxy. The value is <code>null</code> in responses.
<b>PasswordSet</b> (v1.8+)	boolean	<i>read-only</i>	Indicates if the Password property is set.
<b>ProxyAutoConfigURI</b> (v1.8+)	string (URI)	<i>read-write (null)</i>	The URI used to access a proxy auto-configuration (PAC) file.
<b>ProxyServerURI</b> (v1.8+)	string (URI)	<i>read-write</i>	The URI of the proxy server, including the scheme and any non-default port value.
<b>Username</b> (v1.8+)	string	<i>read-write</i>	The username for the proxy.
}			
<b>RDP</b> (v1.3+) {}	object		The settings for this manager's Remote Desktop Protocol support. For more information about this property, see Protocol in Property Details.
<b>RFB</b> (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.
<b>SFTP</b> (v1.10+) {}	object		The settings for this manager's Secure Shell File Transfer Protocol (SFTP) support. For more information about this property, see Protocol in Property Details.
<b>SNMP</b> {	object		The settings for this manager's SNMP support.
<b>AuthenticationProtocol</b> (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>
<b>CommunityAccessMode</b> (v1.5+, deprecated v1.10)	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. Deprecated in v1.10 and later. This property has been deprecated in favor of AccessMode inside CommunityStrings.</i>

Property	Type	Attributes	Notes
<b>CommunityStrings</b> (v1.5+) [ {	array		The SNMP community strings.
<b>AccessMode</b> (v1.5+)	string (enum)	<i>read-write (null)</i>	The access level of the SNMP community. <i>For the possible property values, see AccessMode in Property details.</i>
<b>CommunityString</b> (v1.5+)	string	<i>read-write (null)</i>	The SNMP community string.
<b>IPv4AddressRangeLower</b> (v1.10+)	string	<i>read-write (null)</i>	The lowest IPv4 address in the range allowed to access the service.
<b>IPv4AddressRangeUpper</b> (v1.10+)	string	<i>read-write (null)</i>	The highest IPv4 address in the range allowed to access the service.
<b>Name</b> (v1.5+)	string	<i>read-write (null)</i>	The name of the SNMP community.
<b>RestrictCommunityToIPv4AddressRange</b> (v1.10+)	boolean	<i>read-only</i>	Indicates if this community is restricted to accessing the service from a range of IPv4 addresses.
} ]			
<b>EnableSNMPv1</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates if access via SNMPv1 is enabled.
<b>EnableSNMPv2c</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates if access via SNMPv2c is enabled.
<b>EnableSNMPv3</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates if access via SNMPv3 is enabled.
<b>EncryptionProtocol</b> (v1.5+)	string (enum)	<i>read-write (null)</i>	The encryption protocol used for SNMPv3 access to this manager. <i>For the possible property values, see EncryptionProtocol in Property details.</i>
<b>EngineId</b> (v1.5+) {	object	<i>(null)</i>	The engine ID.
<b>ArchitectureId</b> (v1.6+)	string	<i>read-write (null)</i>	The architecture identifier.
<b>EnterpriseSpecificMethod</b> (v1.5+)	string	<i>read-write (null)</i>	The enterprise-specific method.
<b>PrivateEnterpriseId</b> (v1.5+)	string	<i>read-only (null)</i>	The private enterprise ID.
}			

Property	Type	Attributes	Notes
<b>HideCommunityStrings</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates if the community strings should be hidden.
<b>Port</b>	integer	<i>read-write (null)</i>	The protocol port.
<b>ProtocolEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether the protocol is enabled.
<b>TrapPort</b> (v1.10+)	integer	<i>read-write (null)</i>	The SNMP trap port.
}			
<b>SSDP</b> {	object		The settings for this manager's SSDP support.
<b>NotifyIPv6Scope</b>	string (enum)	<i>read-write (null)</i>	The IPv6 scope for multicast NOTIFY messages for SSDP. <i>For the possible property values, see NotifyIPv6Scope in Property details.</i>
<b>NotifyMulticastIntervalSeconds</b>	integer (seconds)	<i>read-write (null)</i>	The time interval, in seconds, between transmissions of the multicast NOTIFY ALIVE message from this service for SSDP.
<b>NotifyTTL</b>	integer	<i>read-write (null)</i>	The time-to-live hop count for SSDP multicast NOTIFY messages.
<b>Port</b>	integer	<i>read-write (null)</i>	The protocol port.
<b>ProtocolEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether the protocol is enabled.
}			
<b>SSH</b> {}	object		The settings for this manager's Secure Shell (SSH) protocol support. For more information about this property, see Protocol in Property Details.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Telnet</b> {}	object		The settings for this manager's Telnet protocol support. For more information about this property, see Protocol in Property Details.

Property	Type	Attributes	Notes
<b>VirtualMedia</b> {}	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 Protocol in Property Details.

## 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.
CFB128_AES192 (v1.10+)	CFB128-AES-192 encryption.
CFB128_AES256 (v1.10+)	CFB128-AES-256 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.

<b>Port</b>	integer	<i>read-write (null)</i>	The protocol port.
-------------	---------	--------------------------	--------------------

<b>ProtocolEnabled</b>	boolean	<i>read- write (null)</i>	An indication of whether the protocol is enabled.
------------------------	---------	-----------------------------------	---

6.69.5 Example response

```
{
  "@odata.type": "#ManagerNetworkProtocol.v1_10_0.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 1.3.1 (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
<b>EnvironmentMetrics</b> (v1.2+) {	object		The link to the environment metrics for this media controller. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			

Property	Type	Attributes	Notes
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>Endpoints [ {</b>	array		An array of links to the endpoints that connect to this media controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
<b>}]</b>			
<b>MemoryDomains [ {</b>	array		An array of links to the memory domains associated with this media controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryDomain resource. See the Links section and the <i>MemoryDomain</i> schema for details.
<b>}]</b>			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>}</b>			
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this media controller.
<b>MediaControllerType</b>	string (enum)	<i>read-only (null)</i>	The type of media controller. <i>For the possible property values, see MediaControllerType in Property details.</i>
<b>Model</b>	string	<i>read-only (null)</i>	The model of this media controller.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number of this media controller.
<b>Ports {</b>	object		The link to the collection of ports associated with this media controller. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of Port. See the Port schema for details.
<b>}</b>			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number of this media controller.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UUID (v1.1+)</b>	string (uuid)	<i>read-only (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
<b>ResetType</b>	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"  
}
```

## 6.70.5 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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

## 6.70.6 Example response

```
{
  "@odata.type": "#MediaController.v1_3_1.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 1.19.0

Version	v1.19	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	...
Release	2023.3	2023.2	2022.3	2022.2	2022.1	2021.4	2021.2	2021.1	2020.4	2020.3	2019.4	...

### 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
<b>AllocationAlignmentMiB</b> (v1.2+)	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	The boundary that memory regions are allocated on, measured in mebibytes (MiB).
<b>AllocationIncrementMiB</b> (v1.2+)	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	The size of the smallest unit of allocation for a memory region in mebibytes (MiB).
<b>AllowedSpeedsMHz</b> [ ]	array (MHz) (integer)	<i>read-only</i>	Speeds supported by this memory device.
<b>Assembly</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>BaseModuleType</b>	string (enum)	<i>read-only</i> ( <i>null</i> )	The base module type of the memory device. For the possible property values, see <i>BaseModuleType</i> in Property details.
<b>BusWidthBits</b>	integer	<i>read-only</i> ( <i>null</i> )	The bus width, in bits.
<b>CacheSizeMiB</b> (v1.4+)	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	Total size of the cache portion memory in MiB.
<b>CapacityMiB</b>	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	Memory capacity in mebibytes (MiB).
<b>Certificates</b> (v1.11+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>ConfigurationLocked</b> (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.
<b>CXL</b> (v1.17+) {	object		CXL properties for this memory device.

Property	Type	Attributes	Notes
<b>LabelStorageSizeBytes</b> (v1.17+)	integer (bytes)	<i>read-only</i>	The size of the label storage area in bytes of this memory device.
<b>StagedNonVolatileSizeMiB</b> (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 256 MiB.
<b>StagedVolatileSizeMiB</b> (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.
}			
<b>DataWidthBits</b>	integer	<i>read-only</i> (null)	Data width in bits.
<b>DeviceID</b> (deprecated v1.3)	string	<i>read-only</i> (null)	Device ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of ModuleProductID.</i>
<b>DeviceLocator</b> (deprecated v1.9)	string	<i>read-only</i> (null)	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>
<b>Enabled</b> (v1.12+)	boolean	<i>read-write</i>	An indication of whether this memory is enabled.
<b>EnvironmentMetrics</b> (v1.11+) {	object		The link to the environment metrics for this memory. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>ErrorCorrection</b>	string (enum)	<i>read-only</i> (null)	Error correction scheme supported for this memory device. <i>For the possible property values, see ErrorCorrection in Property details.</i>
<b>FirmwareApiVersion</b>	string	<i>read-only</i> (null)	Version of API supported by the firmware.
<b>FirmwareRevision</b>	string	<i>read-only</i> (null)	Revision of firmware on the memory controller.

Property	Type	Attributes	Notes
<b>FunctionClasses</b> (deprecated v1.3) [ ]	array (string)	read-only	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>
<b>HealthData</b> (v1.17+) {	object		The health data of this memory device.
<b>PredictedMediaLifeLeftPercent</b> (v1.17+, deprecated v1.19)	number (%)	read-only (null)	The current health of the memory device as a percentage. <i>Deprecated in v1.19 and later. This property has been deprecated in favor of PredictedMediaLifeLeftPercent in the MemoryMetrics resource.</i>
}			
<b>IsRankSpareEnabled</b>	boolean	read-only (null)	An indication of whether rank spare is enabled for this memory device.
<b>IsSpareDeviceEnabled</b>	boolean	read-only (null)	An indication of whether a spare device is enabled for this memory device.
<b>Links</b> (v1.2+) {	object		The links to other resources that are related to this resource.
<b>Batteries</b> (v1.15+) [ {	array		The batteries that provide power to this memory device during a power-loss event.
<b>@odata.id</b>	string	read-only	Link to a Battery resource. See the Links section and the <i>Battery</i> schema for details.
} ]			
<b>Chassis</b> (v1.2+) {	object		The link to the chassis that contains this memory device. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Endpoints</b> (v1.17+) [ {	array		An array of links to the endpoints associated with this memory.
<b>@odata.id</b>	string	read-only	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			

Property	Type	Attributes	Notes
<b>MemoryMediaSources</b> (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.
} ]			
<b>MemoryRegionMediaSources</b> (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.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Processors</b> (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.
} ]			
}			
<b>Location</b> (v1.4+) {}	object		The location of the memory device. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.10+)	boolean	read-write (null)	An indicator allowing an operator to physically locate this resource.
<b>Log</b> (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	read-only	Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details.
}			
<b>LogicalSizeMiB</b> (v1.4+)	integer (mebibytes)	read-only (null)	Total size of the logical memory in MiB.

Property	Type	Attributes	Notes
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The memory device manufacturer.
<b>MaxTDPMilliWatts</b> [ ]	array (milliWatts) (integer)	<i>read-only</i>	Set of maximum power budgets supported by the memory device in milliwatt units.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>MemoryDeviceType</b>	string (enum)	<i>read-only (null)</i>	Type details of the memory device. <i>For the possible property values, see MemoryDeviceType in Property details.</i>
<b>MemoryLocation</b> {	object		Memory connection information to sockets and memory controllers.
<b>Channel</b>	integer	<i>read-only (null)</i>	The channel number to which the memory device is connected.
<b>MemoryController</b>	integer	<i>read-only (null)</i>	The memory controller number to which the memory device is connected.
<b>Slot</b>	integer	<i>read-only (null)</i>	The slot number to which the memory device is connected.
<b>Socket</b>	integer	<i>read-only (null)</i>	The socket number to which the memory device is connected.
}			
<b>MemoryMedia</b> [ ]	array (string (enum))	<i>read-only</i>	Media of this memory device. <i>For the possible property values, see MemoryMedia in Property details.</i>
<b>MemorySubsystemControllerManufacturerID</b> (v1.3+)	string	<i>read-only (null)</i>	The manufacturer ID of the memory subsystem controller of this memory device.
<b>MemorySubsystemControllerProductID</b> (v1.3+)	string	<i>read-only (null)</i>	The product ID of the memory subsystem controller of this memory device.



Property	Type	Attributes	Notes
<b>MemoryType</b>	string (enum)	<i>read-only (null)</i>	The type of memory device. <i>For the possible property values, see MemoryType in Property details.</i>
<b>Metrics {</b>	object		The link to the metrics associated with this memory device. See the <i>MemoryMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryMetrics resource. See the Links section and the <i>MemoryMetrics</i> schema for details.
}			
<b>Model</b> (v1.11+)	string	<i>read-only (null)</i>	The product model number of this device.
<b>ModuleManufacturerID</b> (v1.3+)	string	<i>read-only (null)</i>	The manufacturer ID of this memory device.
<b>ModuleProductID</b> (v1.3+)	string	<i>read-only (null)</i>	The product ID of this memory device.
<b>NonVolatileSizeLimitMiB</b> (v1.17+)	integer (mebibytes)	<i>read-write</i>	The total non-volatile memory capacity in mebibytes (MiB).
<b>NonVolatileSizeMiB</b> (v1.4+)	integer (mebibytes)	<i>read-only (null)</i>	Total size of the non-volatile portion memory in MiB.
<b>OperatingMemoryModes [ ]</b>	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>
<b>OperatingSpeedMhz</b>	integer (MHz)	<i>read-only (null)</i>	Operating speed of the memory device in MHz or MT/s as appropriate.
<b>OperatingSpeedRangeMHz</b> (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.
<b>AllowableMax</b>	number	<i>read-only (null)</i>	The maximum possible setting for this control.
<b>AllowableMin</b>	number	<i>read-only (null)</i>	The minimum possible setting for this control.
<b>AllowableNumericValues [ ]</b>	array (number, null)	<i>read-only</i>	The supported values for the set point.

Property	Type	Attributes	Notes
<b>ControlMode</b>	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>
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this control.
<b>Reading</b>	number	<i>read-only (null)</i>	The reading of the sensor associated with this control.
<b>ReadingUnits</b>	string	<i>read-only (null)</i>	The units of the sensor reading associated with this control.
<b>SettingMax</b>	number	<i>read-write (null)</i>	The maximum set point in the allowed range.
<b>SettingMin</b>	number	<i>read-write (null)</i>	The minimum set point in the allowed range.
}			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The product part number of this device.
<b>PersistentRegionNumberLimit</b> (v1.2+)	integer	<i>read-only (null)</i>	Total number of persistent regions this memory device can support.
<b>PersistentRegionSizeLimitMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	Total size of persistent regions in mebibytes (MiB).
<b>PersistentRegionSizeMaxMiB</b> (v1.2+)	integer (mebibytes)	<i>read-only (null)</i>	Maximum size of a single persistent region in mebibytes (MiB).
<b>PoisonListMaxMediaErrorRecords</b> (v1.17+)	integer	<i>read-write</i>	The maximum number of media error records this device can track in its poison list.
<b>PowerManagementPolicy</b> {	object		Power management policy information.
<b>AveragePowerBudgetMilliWatts</b>	integer (milliWatts)	<i>read-only (null)</i>	Average power budget, in milliwatt units.
<b>MaxTDPMilliWatts</b>	integer (milliWatts)	<i>read-only (null)</i>	Maximum TDP in milliwatt units.
<b>PeakPowerBudgetMilliWatts</b>	integer (milliWatts)	<i>read-only (null)</i>	Peak power budget, in milliwatt units.
<b>PolicyEnabled</b>	boolean	<i>read-only (null)</i>	An indication of whether the power management policy is enabled.
}			

Property	Type	Attributes	Notes
<b>RankCount</b>	integer	<i>read-only (null)</i>	Number of ranks available in the memory device.
<b>Regions</b> [ {	array		Memory regions information within the memory device.
<b>MasterPassphraseEnabled</b> (v1.17+)	boolean	<i>read-only (null)</i>	An indication of whether the master passphrase is enabled for this region.
<b>MemoryClassification</b>	string (enum)	<i>read-only (null)</i>	The classification of memory that the memory region occupies. <i>For the possible property values, see MemoryClassification in Property details.</i>
<b>OffsetMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	Offset within the memory that corresponds to the start of this memory region in mebibytes (MiB).
<b>PassphraseEnabled</b> (v1.5+)	boolean	<i>read-only (null)</i>	An indication of whether the passphrase is enabled for this region.
<b>PassphraseState</b> (deprecated v1.5)	boolean	<i>read-only (null)</i>	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>
<b>RegionId</b>	string	<i>read-only (null)</i>	Unique region ID representing a specific region within the memory device.
<b>SizeMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	Size of this memory region in mebibytes (MiB).
} ]			
<b>SecurityCapabilities</b> {	object		Security capabilities of the memory device.
<b>ConfigurationLockCapable</b> (v1.7+)	boolean	<i>read-only (null)</i>	An indication of whether this memory device supports the locking, or freezing, of the configuration.
<b>DataLockCapable</b> (v1.7+)	boolean	<i>read-only (null)</i>	An indication of whether this memory device supports data locking.
<b>MaxPassphraseCount</b>	integer	<i>read-only (null)</i>	Maximum number of passphrases supported for this memory device.
<b>PassphraseCapable</b>	boolean	<i>read-only (null)</i>	An indication of whether the memory device is passphrase capable.

Property	Type	Attributes	Notes
<b>PassphraseLockLimit</b> (v1.7+)	integer	read-only (null)	The maximum number of incorrect passphrase attempts allowed before memory device is locked.
<b>SecurityStates</b> (deprecated v1.7) [ ]	array (string (enum))	read-only	Security states supported by the memory device. For the possible property values, see <i>SecurityStates</i> in Property details. Deprecated in v1.7 and later. This property has been deprecated in favor of using the individual <i>PassphraseCapable</i> , <i>DataLockCapable</i> and <i>ConfigurationLockCapable</i> properties.
}			
<b>SecurityState</b> (v1.7+)	string (enum)	read-write (null)	The current security state of this memory device. For the possible property values, see <i>SecurityState</i> in Property details.
<b>SecurityStates</b> (v1.17+) {	object		The security states of this memory device.
<b>MasterPassphraseAttemptCountReached</b> (v1.17+)	boolean	read-only (null)	An indication of whether an incorrect master passphrase attempt count has been reached.
<b>UserPassphraseAttemptCountReached</b> (v1.17+)	boolean	read-only (null)	An indication of whether an incorrect user passphrase attempt count has been reached.
}			
<b>SerialNumber</b>	string	read-only (null)	The product serial number of this device.
<b>SpareDeviceCount</b>	integer	read-only (null)	Number of unused spare devices available in the memory device.
<b>SparePartNumber</b> (v1.11+)	string	read-only (null)	The spare part number of the memory.
<b>Status</b> (v1.1+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>SubsystemDeviceID</b> (deprecated v1.3)	string	read-only (null)	Subsystem device ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerProductID.</i>
<b>SubsystemVendorID</b> (deprecated v1.3)	string	read-only (null)	SubSystem vendor ID. <i>Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerManufacturerID.</i>

Property	Type	Attributes	Notes
<b>VendorID</b> ( <i>deprecated v1.3</i> )	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>
<b>VolatileRegionNumberLimit</b> ( <i>v1.2+</i> )	integer	<i>read-only (null)</i>	Total number of volatile regions this memory device can support.
<b>VolatileRegionSizeLimitMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	Total size of volatile regions in mebibytes (MiB).
<b>VolatileRegionSizeMaxMiB</b> ( <i>v1.2+</i> )	integer (mebibytes)	<i>read-only (null)</i>	Maximum size of a single volatile region in mebibytes (MiB).
<b>VolatileSizeLimitMiB</b> ( <i>v1.17+</i> )	integer (mebibytes)	<i>read-write</i>	The total volatile memory capacity in mebibytes (MiB).
<b>VolatileSizeMiB</b> ( <i>v1.4+</i> )	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 the given region.

#### Action URI

*{Base URI of target resource}*/Actions/Memory.DisableMasterPassphrase

#### Action parameters

Parameter Name	Type	Attributes	Notes
<b>Passphrase</b>	string	<i>required</i>	The master passphrase for the specified region.
<b>RegionId</b>	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 the given region.

##### Action URI

*{Base URI of target resource}/Actions/Memory.DisablePassphrase*

##### Action parameters

Parameter Name	Type	Attributes	Notes
<b>Passphrase</b>	string	<i>required</i>	Passphrase for doing the operation.
<b>RegionId</b>	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
<b>PhysicalAddress</b>	string	<i>required</i>	The device persistent physical address in which to perform a poison injection as a hex-encoded string.

##### Request Example

```
{
  "PhysicalAddress": "0x80000000"
}
```

#### 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
<b>Passphrase</b>	string	<i>required</i>	Passphrase for doing the operation.

Parameter Name	Type	Attributes	Notes
<b>RegionId</b>	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
<b>ResetType</b>	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
<b>Length</b>	integer	<i>required</i>	The length of the target region to scan in bytes from the physical address.
<b>NoEventLog</b>	boolean	<i>optional</i>	Indicates whether events related to the media scan are not logged.
<b>PhysicalAddress</b>	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
<b>Passphrase</b>	string	<i>required</i>	Passphrase for doing the operation.
<b>RegionId</b>	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
<b>Passphrase</b>	string	<i>required</i>	The master passphrase to set for the specified region.
<b>RegionId</b>	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
<b>Passphrase</b>	string	<i>required</i>	Passphrase for doing the operation.
<b>RegionId</b>	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
<b>Passphrase</b>	string	<i>required</i>	The passphrase required to complete the operation.
<b>RegionId</b>	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.
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.

string	Description
Logical (v1.4+)	Logical device, such as when the memory is fabric-attached.
LPDDR3_SDRAM	LPDDR3 SDRAM.
LPDDR4_SDRAM	LPDDR4 SDRAM.
LPDDR5_SDRAM (v1.19+)	LPDDR5 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 composed of volatile memory.
IntelOptane (v1.6+)	The memory device is an Intel Optane Persistent Memory Module.
NVDIMM_F	The memory device is composed of non-volatile memory.
NVDIMM_N	The memory device is composed of volatile memory backed by non-volatile memory.
NVDIMM_P	The memory device is composed 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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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>
Locked	Secure mode is enabled and access to the data is locked.
Passphraselimit	Number of attempts to unlock the memory exceeded limit.
Unlocked (deprecated v1.7)	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_19_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 1.6.1

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
<b>AddressRangeOffsetMiB</b> (v1.3+)	integer (mebibytes)	<i>read-only</i> (null)	Offset of the memory chunk in the address range in MiB.
<b>AddressRangeType</b>	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>
<b>DisplayName</b> (v1.4+)	string	<i>read-write</i> (null)	A user-configurable string to name the memory chunk.
<b>InterleaveSets</b> [ {	array		The interleave sets for the memory chunk.
<b>Memory</b> {	object		Describes a memory device of the interleave set.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>MemoryLevel</b>	integer	<i>read-only</i> (null)	Level of the interleave set for multi-level tiered memory.
<b>OffsetMiB</b>	integer (mebibytes)	<i>read-only</i> (null)	Offset within the DIMM that corresponds to the start of this memory region, measured in mebibytes (MiB).
<b>RegionId</b>	string	<i>read-only</i> (null)	DIMM region identifier.
<b>SizeMiB</b>	integer (mebibytes)	<i>read-only</i> (null)	Size of this memory region measured in mebibytes (MiB).

Property	Type	Attributes	Notes
} ]			
<b>IsMirrorEnabled</b>	boolean	<i>read-only (null)</i>	An indication of whether memory mirroring is enabled for this memory chunk.
<b>IsSpare</b>	boolean	<i>read-only (null)</i>	An indication of whether sparing is enabled for this memory chunk.
<b>Links</b> (v1.3+) {	object		The links to other resources that are related to this resource.
<b>CXLLLogicalDevices</b> (v1.5+) [ {	array		An array of links to the CXL logical devices associated with this memory chunk.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a CXLLLogicalDevice resource. See the Links section and the <i>CXLLLogicalDevice</i> schema for details.
} ]			
<b>Endpoints</b> (v1.3+) [ {	array		An array of links to the endpoints that connect to this memory chunk.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>MemoryRegions</b> (v1.6+) [ {	array		An array of links to the memory regions for which this memory chunk provides capacity.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryRegion resource. See the Links section and the <i>MemoryRegion</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>MediaLocation</b> (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>
<b>MemoryChunkSizeMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	Size of the memory chunk measured in mebibytes (MiB).
<b>RequestedOperationalState</b> (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>
<b>Status</b> (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.
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_1.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
<b>AllowsBlockProvisioning</b>	boolean	<i>read-only (null)</i>	An indication of whether this memory domain supports the provisioning of blocks of memory.
<b>AllowsMemoryChunkCreation</b>	boolean	<i>read-only (null)</i>	An indication of whether this memory domain supports the creation of memory chunks.
<b>AllowsMirroring</b> (v1.1+)	boolean	<i>read-only (null)</i>	An indication of whether this memory domain supports the creation of memory chunks with mirroring enabled.
<b>AllowsSparing</b> (v1.1+)	boolean	<i>read-only (null)</i>	An indication of whether this memory domain supports the creation of memory chunks with sparing enabled.
<b>InterleaveableMemorySets</b> [ {	array		The interleave sets for the memory chunk.
<b>MemorySet</b> [ {	array		The set of memory for a particular interleave set.
<b>@odata.id</b>	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
} ]			
<b>Links</b> (v1.3+) {	object		The links to other Resources that are related to this Resource.
<b>CXLLogicalDevices</b> (v1.5+)	array		An array of links to the CXL logical devices associated with this memory domain.
[ {			
<b>@odata.id</b>	string	<i>read-only</i>	Link to a CXLLogicalDevice resource. See the Links section and the <i>CXLLogicalDevice</i> schema for details.
} ]			
<b>FabricAdapters</b> (v1.5+) [ {	array		An array of links to the fabric adapters that present this memory domain to a fabric.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a FabricAdapter resource. See the Links section and the <i>FabricAdapter</i> schema for details.
} ]			
<b>MediaControllers</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MediaController resource. See the Links section and the <i>MediaController</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> (v1.5+) [ {	array		An array of links to the PCIe functions representing this memory domain.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
}			
<b>MemoryChunkIncrementMiB</b> (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).
<b>MemoryChunks</b> {	object		The link to the collection of memory chunks associated with this memory domain. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MemoryChunks</i> . See the MemoryChunks schema for details.



Property	Type	Attributes	Notes
}			
<b>MemorySizeMiB</b> (v1.5+)	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	The total size of the memory domain in mebibytes (MiB).
<b>MinMemoryChunkSizeMiB</b> (v1.5+)	integer (mebibytes)	<i>read-only</i> ( <i>null</i> )	The minimum size allowed for a memory chunk within this domain in mebibytes (MiB).
<b>Status</b> (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 1.7.2

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
<b>BandwidthPercent</b> (v1.2+)	number (%)	read-only (null)	The memory bandwidth utilization as a percentage.
<b>BlockSizeBytes</b>	integer (bytes)	read-only (null)	The block size, in bytes.
<b>CapacityUtilizationPercent</b> (v1.7+)	number (%)	read-only (null)	The memory capacity utilization as a percentage.
<b>CorrectedPersistentErrorCount</b> (v1.6+)	integer	read-only (null)	The number of corrected errors in persistent memory.
<b>CorrectedVolatileErrorCount</b> (v1.6+)	integer	read-only (null)	The number of corrected errors in volatile memory.
<b>CurrentPeriod</b> {	object		The memory metrics since the last reset or ClearCurrentPeriod action.
<b>BlocksRead</b>	integer	read-only (null)	The number of blocks read since reset.

Property	Type	Attributes	Notes
<b>BlocksWritten</b>	integer	<i>read-only</i> (null)	The number of blocks written since reset.
<b>CorrectableECCErrorCount</b> (v1.4+)	integer	<i>read-only</i> (null)	The number of correctable errors since reset.
<b>IndeterminateCorrectableErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of indeterminate correctable errors since reset.
<b>IndeterminateUncorrectableErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of indeterminate uncorrectable errors since reset.
<b>UncorrectableECCErrorCount</b> (v1.4+)	integer	<i>read-only</i> (null)	The number of uncorrectable errors since reset.
}			
<b>CXL</b> (v1.6+) {	object	(null)	The memory metrics specific to CXL devices.
<b>AlertCapabilities</b> (v1.6+) {	object	(null)	The conditions that would generate an alert to the CXL Fabric Manager or host.
<b>CorrectableECCError</b> (v1.6+)	boolean	<i>read-only</i> (null)	Indicates whether correctable ECC errors generate an alert to the CXL Fabric Manager or host.
<b>SpareBlock</b> (v1.6+)	boolean	<i>read-only</i> (null)	Indicates whether spare block conditions generate an alert to the CXL Fabric Manager or host.
<b>Temperature</b> (v1.6+)	boolean	<i>read-only</i> (null)	Indicates whether temperature conditions generate an alert to the CXL Fabric Manager or host.
<b>UncorrectableECCError</b> (v1.6+)	boolean	<i>read-only</i> (null)	Indicates whether uncorrectable ECC errors generate an alert to the CXL Fabric Manager or host.
}			
}			
<b>DirtyShutdownCount</b> (v1.6+)	integer	<i>read-only</i> (null)	The number of shutdowns while outstanding writes have not completed to persistent memory.
<b>HealthData</b> {	object		The health information of the memory.
<b>AlarmTrips</b> {	object		Alarm trip information about the memory.
<b>AddressParityError</b>	boolean	<i>read-only</i> (null)	An indication of whether an address parity error was detected that a retry could not correct.

Property	Type	Attributes	Notes
<b>CorrectableECCError</b>	boolean	<i>read-only</i> (null)	An indication of whether the correctable error threshold crossing alarm trip was detected.
<b>SpareBlock</b>	boolean	<i>read-only</i> (null)	An indication of whether the spare block capacity crossing alarm trip was detected.
<b>Temperature</b>	boolean	<i>read-only</i> (null)	An indication of whether a temperature threshold alarm trip was detected.
<b>UncorrectableECCError</b>	boolean	<i>read-only</i> (null)	An indication of whether the uncorrectable error threshold alarm trip was detected.
}			
<b>DataLossDetected</b>	boolean	<i>read-only</i> (null)	An indication of whether data loss was detected.
<b>LastShutdownSuccess</b>	boolean	<i>read-only</i> (null)	An indication of whether the last shutdown succeeded.
<b>PerformanceDegraded</b>	boolean	<i>read-only</i> (null)	An indication of whether performance has degraded.
<b>PredictedMediaLifeLeftPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	The percentage of reads and writes that are predicted to still be available for the media.
<b>RemainingSpareBlockPercentage</b>	number (%)	<i>read-only</i> (null)	The remaining spare blocks, as a percentage.
}			
<b>LifeTime</b> {	object		The memory metrics for the lifetime of the memory.
<b>BlocksRead</b>	integer	<i>read-only</i> (null)	The number of blocks read for the lifetime of the memory.
<b>BlocksWritten</b>	integer	<i>read-only</i> (null)	The number of blocks written for the lifetime of the memory.
<b>CorrectableECCErrorCount</b> (v1.4+)	integer	<i>read-only</i> (null)	The number of correctable errors for the lifetime of the memory.
<b>IndeterminateCorrectableErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of indeterminate correctable errors for the lifetime of the memory.
<b>IndeterminateUncorrectableErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of indeterminate uncorrectable errors for the lifetime of the memory.
<b>UncorrectableECCErrorCount</b> (v1.4+)	integer	<i>read-only</i> (null)	The number of uncorrectable errors for the lifetime of the memory.

Property	Type	Attributes	Notes
}			
<b>OperatingSpeedMHz</b> (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_2.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 1.0.1

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)	read-write	The memory region block size in mebibytes (MiB).
ExtentsCount	integer	read-only (null)	The number of extents defined for this memory region.
HardwareManagedCoherencyRegion	boolean	read-only (null)	An indication of whether the device manages the cache coherency across hosts for this memory region.

Property	Type	Attributes	Notes
<b>MemoryChunks</b> [ {	array		The set of memory chunks providing capacity for this memory region.
<b>ChunkLink</b> {	object		The link to the memory chunk providing capacity to the memory region. See the <i>MemoryChunks</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryChunks resource. See the Links section and the <i>MemoryChunks</i> schema for details.
}			
<b>ChunkOffsetMiB</b>	integer (mebibytes)	<i>read-only</i>	Offset of the memory chunk within the memory region in mebibytes (MiB).
}			
<b>MemoryExtents</b> [ {	array		The set of memory extents defined for this memory region.
<b>ExtentOffsetMiB</b>	integer (mebibytes)	<i>read-only</i>	Offset of the memory extent within the memory region in mebibytes (MiB).
<b>ExtentSizeMiB</b>	integer (mebibytes)	<i>read-only</i>	Size of the memory extent in mebibytes (MiB).
<b>SequenceNumber</b>	integer	<i>read-only (null)</i>	The memory extent sequence number.
<b>Tag</b>	string	<i>read-only</i>	The user-assigned tag of this memory extent.
}			
<b>NonVolatileRegion</b>	boolean	<i>read-only (null)</i>	An indication of whether this memory region represents non-volatile memory.
<b>RegionBaseOffsetMiB</b>	integer (mebibytes)	<i>read-only</i>	The offset of the memory region in the device address range in mebibytes (MiB).
<b>RegionNumber</b>	integer	<i>read-only</i>	The memory region number.
<b>RegionSizeMiB</b>	integer (mebibytes)	<i>read-only</i>	The size of the memory region in mebibytes (MiB).
<b>RegionType</b>	string (enum)	<i>read-only required</i>	The type of memory region. <i>For the possible property values, see RegionType in Property details.</i>
<b>SanitizeOnRelease</b>	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.

Property	Type	Attributes	Notes
ShareableRegion	boolean	read-only (null)	An indication of whether this 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 changed 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_1.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 1.6.2

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
<b>Language</b>	string	<i>read-only required</i>	The RFC5646-conformant language code for the message registry.
<b>Messages {</b>	object	<i>required</i>	The message keys contained in the message registry.
<b>(pattern) {</b>	object		Property names follow regular expression pattern "[A-Za-z0-9]+"
<b>ArgDescriptions (v1.3+) [</b> <b>]</b>	array (string, null)	<i>read-only</i>	The MessageArg descriptions, in order, used for this message.

Property	Type	Attributes	Notes
<b>ArgLongDescriptions</b> (v1.3+) [ ]	array (string, null)	<i>read-only</i>	The MessageArg normative descriptions, in order, used for this message.
<b>ClearingLogic</b> (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.
<b>ClearsAll</b> (v1.2+)	boolean	<i>read-only</i> (null)	An indication of whether all prior conditions and messages are cleared, provided the ClearsIf condition is met.
<b>ClearsIf</b> (v1.2+)	string (enum)	<i>read-only</i> (null)	The condition when the event is cleared. <i>For the possible property values, see ClearsIf in Property details.</i>
<b>ClearsMessage</b> (v1.2+) [ ]	array (string, null)	<i>read-only</i>	The array of MessageIds that this message clears when the other conditions are met.
}			
<b>Deprecated</b> (v1.5+)	string	<i>read-only</i> (null)	The reason the message has been deprecated.
<b>Description</b>	string	<i>read-only</i> <i>required</i>	A short description of how and when to use this message.
<b>LongDescription</b> (v1.3+)	string	<i>read-only</i> (null)	The normative language that describes this message's usage.
<b>MapsToGeneralMessages</b> (v1.6+) [ ]	array (string, null)	<i>read-only</i>	The general or less-specific messages related to this message.
<b>Message</b>	string	<i>read-only</i> <i>required</i>	The actual message.
<b>MessageSeverity</b> (v1.4+)	string (enum)	<i>read-only</i> <i>required</i> (null)	The severity of the message. <i>For the possible property values, see MessageSeverity in Property details.</i>
<b>NumberOfArgs</b>	integer	<i>read-only</i> <i>required</i>	The number of arguments in the message.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>ParamTypes</b> [ ]	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>

Property	Type	Attributes	Notes
<b>ReplacedBy</b> (v1.6+)	string	<i>read-only (null)</i>	The message identifier that replaces this message.
<b>Resolution</b>	string	<i>read-only required</i>	Used to provide suggestions on how to resolve the situation that caused the error.
<b>Severity</b> (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>
<b>VersionAdded</b> (v1.5+)	string	<i>read-only (null)</i>	The registry version which added this message.
<b>VersionDeprecated</b> (v1.5+)	string	<i>read-only (null)</i>	The registry version when the message was deprecated.
}			
}			
<b>OwningEntity</b>	string	<i>read-only required</i>	The organization or company that publishes this message registry.
<b>RegistryPrefix</b>	string	<i>read-only required</i>	The single-word prefix that is used in forming and decoding MessageIds.
<b>RegistryVersion</b>	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 the URI."
    }
  }
}
```

6.77 MessageRegistryFile 1.1.4

Version	v1.1	v1.0
Release	2017.1	2016.1

6.77.1 Description

The MessageRegistryFile schema describes the registry file locator resource. This referenced registry file can be any type of registry, such as a message registry, privilege registry, or attribute registry.

6.77.2 URIs

/redfish/v1/Registries/{MessageRegistryFileId}

6.77.3 Properties

Property	Type	Attributes	Notes
Languages [ ]	array (string)	read-only required	The RFC5646-conformant language codes for the available registries.
Location [ {	array	required	The location information for this registry file.
ArchiveFile	string	read-only	If the service hosts the registry in an archive file, the name of the file within the archive.

Property	Type	Attributes	Notes
<b>ArchiveUri</b>	string (URI)	<i>read-only</i>	If the registry is hosted on the service in an archive file, the link to the archive file.
<b>Language</b>	string	<i>read-only</i>	The language code for the registry file.
<b>PublicationUri</b>	string (URI)	<i>read-only</i>	The link to publicly available (canonical) URI for the registry.
<b>Uri</b>	string (URI)	<i>read-only</i>	The link to locally available URI for the registry.
} ]			
<b>Registry</b>	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_4.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 1.3.3

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
<b>Accuracy</b>	number	<i>read-only (null)</i>	The estimated percent error of measured versus actual values.
<b>Calculable</b>	string (enum)	<i>read-write (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>
<b>CalculationAlgorithm</b>	string (enum)	<i>read-only (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>
<b>CalculationParameters</b> [ {	array		The metric properties that are part of a calculation that this metric definition defines.
<b>ResultMetric</b>	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.
<b>SourceMetric</b>	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.
} ]			

Property	Type	Attributes	Notes
<b>CalculationTimeInterval</b>	string (duration)	<i>read-write</i> ( <i>null</i> )	The time interval over which the metric calculation is performed.
<b>Calibration</b>	number	<i>read-only</i> ( <i>null</i> )	The calibration offset added to the metric reading.
<b>DiscreteValues</b> [ ]	array (string, null)	<i>read-write</i>	This array property specifies possible values of a discrete metric.
<b>Implementation</b>	string (enum)	<i>read-only</i> ( <i>null</i> )	The implementation of the metric. <i>For the possible property values, see Implementation in Property details.</i>
<b>IsLinear</b>	boolean	<i>read-write</i> ( <i>null</i> )	An indication of whether the metric values are linear versus non-linear.
<b>LogicalContexts</b> (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>
<b>MaxReadingRange</b>	number	<i>read-only</i> ( <i>null</i> )	Maximum value for metric reading.
<b>MetricDataType</b>	string (enum)	<i>read-write</i> ( <i>null</i> )	The data type of the metric. <i>For the possible property values, see MetricDataType in Property details.</i>
<b>MetricProperties</b> [ ]	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.
<b>MetricType</b>	string (enum)	<i>read-write</i> ( <i>null</i> )	The type of metric. <i>For the possible property values, see MetricType in Property details.</i>
<b>MinReadingRange</b>	number	<i>read-only</i> ( <i>null</i> )	Minimum value for metric reading.
<b>OEMCalculationAlgorithm</b> (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.
<b>PhysicalContext</b>	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>
<b>Precision</b>	integer	<i>read-only</i> ( <i>null</i> )	Number of significant digits in the metric reading.
<b>SensingInterval</b>	string (duration)	<i>read-write</i> ( <i>null</i> )	The time interval between when a metric is updated.
<b>TimestampAccuracy</b>	string (duration)	<i>read-only</i> ( <i>null</i> )	The accuracy of the timestamp.



Property	Type	Attributes	Notes
<b>Units</b>	string	<i>read-write (null)</i>	The units of measure for this metric.
<b>Wildcards</b> [ {	array		The wildcards and their substitution values for the entries in the MetricProperties array property.
<b>Name</b>	string	<i>read-only (null)</i>	The string used as a wildcard.
<b>Values</b> [ ]	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.
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.

string	Description
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.

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.

### 6.78.5 Example response

```
{
  "@odata.type": "#MetricDefinition.v1_3_3.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
<b>Context</b> (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.
<b>MetricReportDefinition</b> {	object		The link to the definition of this metric report. See the <i>MetricReportDefinition</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MetricReportDefinition resource. See the Links section and the <i>MetricReportDefinition</i> schema for details.
}			
<b>MetricValues</b> [ {	array		An array of metric values for the metered items of this metric report.
<b>MetricDefinition</b> (deprecated v1.5) {	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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MetricDefinition resource. See the Links section and the <i>MetricDefinition</i> schema for details.
}			
<b>MetricId</b>	string	<i>read-only</i> (null)	The metric definitions identifier that contains additional information for the source metric.
<b>MetricProperty</b>	string (URI)	<i>read-only</i> (null)	The URI for the property from which this metric is derived.
<b>MetricValue</b>	string	<i>read-only</i> (null)	The metric value, as a string.
<b>Oem</b> (v1.2+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Timestamp</b>	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.
} ]			
<b>ReportSequence</b> (deprecated v1.3)	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>
<b>Timestamp</b> (v1.1+)	string (date-time)	<i>read-only</i> (null)	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 1.4.5

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
<b>AppendLimit</b>	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.
<b>Links</b> (v1.2+) {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Triggers</b> (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> .
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Triggers resource. See the Links section and the <i>Triggers</i> schema for details.
} ]			
}			
<b>MetricProperties</b> [ ]	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.
<b>MetricReport</b> {	object		The most recent metric report produced by this metric report definition. See the <i>MetricReport</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MetricReport resource. See the Links section and the <i>MetricReport</i> schema for details.
}			
<b>MetricReportDefinitionEnabled</b> (v1.2+)	boolean	<i>read-write</i> (null)	An indication of whether the generation of new metric reports is enabled.
<b>MetricReportDefinitionType</b>	string (enum)	<i>read-write</i> (null)	Specifies when the metric report is generated. <i>For the possible property values, see MetricReportDefinitionType in Property details.</i>
<b>MetricReportHeartbeatInterval</b> (v1.2+)	string (duration)	<i>read-write</i> (null)	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> .

Property	Type	Attributes	Notes
<b>Metrics</b> [ {	array		The list of metrics to include in the metric report. The metrics might include calculations to apply to metric properties.
<b>CollectionDuration</b>	string (duration)	<i>read-write</i> ( <i>null</i> )	The duration over which the function is computed.
<b>CollectionFunction</b>	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>
<b>CollectionTimeScope</b>	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>
<b>MetricId</b>	string	<i>read-write</i> ( <i>null</i> )	The metric definition identifier that contains the metric properties to include in the metric report.
<b>MetricProperties</b> [ ]	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.
<b>Oem</b> (v1.4+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
} ]			
<b>ReportActions</b> [ ]	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>
<b>ReportTimespan</b> (v1.3+)	string (duration)	<i>read-write</i> ( <i>null</i> )	The maximum timespan that a metric report can cover.
<b>ReportUpdates</b>	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>
<b>Schedule</b> {}	object		The schedule for generating the metric report. For property details, see Schedule.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
<b>SuppressRepeatedMetricValue</b> (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.
<b>Wildcards</b> [ {	array		The set of wildcards and their substitution values for the entries in the MetricProperties property.
<b>Keys</b> (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>
<b>Name</b>	string	<i>read-write</i> (null)	The string used as a wildcard.
<b>Values</b> (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 the 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_5.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/{Twid}/Power#/PowerControl/{Pwid}/PowerConsumedWatts"
],
"@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/PlatformPowerUsage"
}

```

## 6.81 NetworkAdapter 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	2023.3	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
<b>Assembly</b> (v1.1+) {	object		The link to the assembly resource associated with this adapter. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	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
<b>Certificates</b> (v1.6+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>Controllers</b> [ {	array		The set of network controllers ASICs that make up this NetworkAdapter.
<b>ControllerCapabilities</b> {	object		The capabilities of this controller.
<b>DataCenterBridging</b> {	object		Data center bridging (DCB) for this controller.
<b>Capable</b>	boolean	<i>read-only (null)</i>	An indication of whether this controller is capable of data center bridging (DCB).
}			
<b>NetworkDeviceFunctionCount</b>	integer	<i>read-only (null)</i>	The maximum number of physical functions available on this controller.
<b>NetworkPortCount</b>	integer	<i>read-only (null)</i>	The number of physical ports on this controller.
<b>NPAR</b> (v1.2+) {	object		NIC Partitioning (NPAR) capabilities for this controller.
<b>NparCapable</b> (v1.2+)	boolean	<i>read-only (null)</i>	An indication of whether the controller supports NIC function partitioning.
<b>NparEnabled</b> (v1.2+)	boolean	<i>read-write (null)</i>	An indication of whether NIC function partitioning is active on this controller.
}			
<b>NPIV</b> {	object		N_Port ID Virtualization (NPIV) capabilities for this controller.
<b>MaxDeviceLogins</b>	integer	<i>read-only (null)</i>	The maximum number of N_Port ID Virtualization (NPIV) logins allowed simultaneously from all ports on this controller.
<b>MaxPortLogins</b>	integer	<i>read-only (null)</i>	The maximum number of N_Port ID Virtualization (NPIV) logins allowed per physical port on this controller.
}			
<b>VirtualizationOffload</b> {	object		Virtualization offload for this controller.

Property	Type	Attributes	Notes
<b>SRIOV</b> {	object		Single-root input/output virtualization (SR-IOV) capabilities.
<b>SRIOVVEPACapable</b>	boolean	<i>read-only</i> (null)	An indication of whether this controller supports single root input/output virtualization (SR-IOV) in Virtual Ethernet Port Aggregator (VEPA) mode.
}			
<b>VirtualFunction</b> {	object		The virtual function of the controller.
<b>DeviceMaxCount</b>	integer	<i>read-only</i> (null)	The maximum number of virtual functions supported by this controller.
<b>MinAssignmentGroupSize</b>	integer	<i>read-only</i> (null)	The minimum number of virtual functions that can be allocated or moved between physical functions for this controller.
<b>NetworkPortMaxCount</b>	integer	<i>read-only</i> (null)	The maximum number of virtual functions supported per network port for this controller.
}			
}			
}			
<b>FirmwarePackageVersion</b>	string	<i>read-only</i> (null)	The version of the user-facing firmware package.
<b>Identifiers</b> (v1.3+) [ { } ]	array (object)		The durable names for the network adapter controller. For property details, see Identifier.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ActiveSoftwareImage</b> (v1.10+) {	object		The link to the software inventory resource that represents the active firmware image for this controller. See the <i>SoftwareInventory</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
<b>NetworkDeviceFunctions</b> [ {	array		An array of links to the network device functions associated with this network controller.



Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>NetworkPorts</b> ( <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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevices</b> [ {	array		An array of links to the PCIe devices associated with this network controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
} ]			
<b>Ports</b> ( <i>v1.5+</i> ) [ {	array		An array of links to the ports associated with this network controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
} ]			
<b>SoftwareImages</b> ( <i>v1.10+</i> ) [ {	array		The images that are associated with this controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
}			
<b>Location</b> ( <i>v1.1+</i> ) { }	object		The location of the network adapter controller. For property details, see Location.
<b>PCleInterface</b> ( <i>v1.2+</i> ) {	object		The PCIe interface details for this controller.
<b>LanesInUse</b> ( <i>v1.3+</i> )	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.

Property	Type	Attributes	Notes
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only</i> (null)	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
} ]			
<b>EnvironmentMetrics</b> (v1.7+) {	object		The link to the environment metrics for this network adapter. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>Identifiers</b> (v1.4+) [ { } ]	array (object)		The durable names for the network adapter. For property details, see Identifier.
<b>LLDPEnabled</b> (v1.7+)	boolean	<i>read-write</i>	Enable or disable LLDP globally for an adapter.
<b>Location</b> (v1.4+) {}	object		The location of the network adapter. For property details, see Location.
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer or OEM of this network adapter.
<b>Measurements</b> (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>
<b>@odata.id</b>	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
<b>Metrics</b> (v1.7+) {	object	(null)	The link to the metrics associated with this adapter. See the <i>NetworkAdapterMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a <i>NetworkAdapterMetrics</i> resource. See the Links section and the <i>NetworkAdapterMetrics</i> schema for details.
}			
<b>Model</b>	string	read-only (null)	The model string for this network adapter.
<b>NetworkDeviceFunctions</b> {	object		The link to the collection of network device functions associated with this network adapter. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>NetworkDeviceFunction</i> . See the <i>NetworkDeviceFunction</i> schema for details.
}			
<b>NetworkPorts</b> (deprecated v1.5) {	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>
<b>@odata.id</b>	string	read-only	Link to Collection of <i>NetworkPort</i> . See the <i>NetworkPort</i> schema for details.
}			
<b>PartNumber</b>	string	read-only (null)	Part number for this network adapter.
<b>Ports</b> (v1.5+) {	object		The link to the collection of ports associated with this network adapter. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details.
}			
<b>Processors</b> (v1.8+) {	object		The link to the collection of offload processors contained in this network adapter. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Processor</i> . See the <i>Processor</i> schema for details.
}			

Property	Type	Attributes	Notes
SerialNumber	string	read-only (null)	The serial number for this network adapter.
SKU	string	read-only (null)	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 Status.

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 MaxPCleType

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.
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_10_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/11111111100"
            }
        ],
    },
    "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
<b>CPUCorePercent</b>	number (%)	read-only (null)	The device CPU core utilization as a percentage.
<b>HostBusRXPercent</b>	number (%)	read-only (null)	The host bus, such as PCIe, RX utilization as a percentage.
<b>HostBusTXPercent</b>	number (%)	read-only (null)	The host bus, such as PCIe, TX utilization as a percentage.
<b>NCSIRXBytes</b>	integer (bytes)	read-only (null)	The total number of NC-SI bytes received since reset.
<b>NCSIRXFrames</b>	integer	read-only (null)	The total number of NC-SI frames received since reset.
<b>NCSITXBytes</b>	integer (bytes)	read-only (null)	The total number of NC-SI bytes sent since reset.

Property	Type	Attributes	Notes
<b>NCSITXFrames</b>	integer	<i>read-only</i> (null)	The total number of NC-SI frames sent since reset.
<b>RXBytes</b>	integer (bytes)	<i>read-only</i> (null)	The total number of bytes received since reset.
<b>RXMulticastFrames</b>	integer	<i>read-only</i> (null)	The total number of good multicast frames received since reset.
<b>RXUnicastFrames</b>	integer	<i>read-only</i> (null)	The total number of good unicast frames received since reset.
<b>TXBytes</b>	integer (bytes)	<i>read-only</i> (null)	The total number of bytes transmitted since reset.
<b>TXMulticastFrames</b>	integer	<i>read-only</i> (null)	The total number of good multicast frames transmitted since reset.
<b>TXUnicastFrames</b>	integer	<i>read-only</i> (null)	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 1.9.1

Version	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2022.2	2021.4	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
<b>AllowDeny</b> (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.
}			
<b>AssignablePhysicalNetworkPorts</b> (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.
} ]			
<b>AssignablePhysicalPorts</b> (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.

Property	Type	Attributes	Notes
} ]			
<b>BootMode</b>	string (enum)	<i>read-write (null)</i>	The boot mode configured for this network device function. <i>For the possible property values, see BootMode in Property details.</i>
<b>DeviceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether the network device function is enabled.
<b>Ethernet {</b>	object		The Ethernet capabilities, status, and configuration values for this network device function.
<b>EthernetInterfaces</b> (v1.7+) {	object	<i>(null)</i>	The Ethernet interface collection that represents all the Ethernet Interfaces on this network device function. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EthernetInterface</i> . See the EthernetInterface schema for details.
}			
<b>MACAddress</b>	string	<i>read-write (null)</i>	The currently configured MAC address.
<b>MTUSize</b>	integer	<i>read-write (null)</i>	The maximum transmission unit (MTU) configured for this network device function.
<b>MTUSizeMaximum</b> (v1.5+)	integer	<i>read-only (null)</i>	The largest maximum transmission unit (MTU) size supported for this network device function.
<b>PermanentMACAddress</b>	string	<i>read-only (null)</i>	The permanent MAC address assigned to this function.
<b>VLAN</b> (v1.3+) {	object		The VLAN information for this interface. If this network interface supports more than one VLAN, this property is not present.
<b>Tagged</b> (v1.3+)	boolean	<i>read-write (null)</i>	An indication of whether this VLAN is tagged or untagged for this interface.
<b>VLANEnable</b>	boolean	<i>read-write required on create (null)</i>	An indication of whether this VLAN is enabled for this VLAN network interface.
<b>VLANId</b>	integer	<i>read-write required on create (null)</i>	The ID for this VLAN.

Property	Type	Attributes	Notes
<b>VLANPriority</b> (v1.2+)	integer	<i>read-write (null)</i>	The priority for this VLAN.
}			
<b>VLANs</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>VlanNetworkInterface</i> . See the <i>VlanNetworkInterface</i> schema for details.
}			
}			
<b>FibreChannel</b> {	object		The Fibre Channel capabilities, status, and configuration values for this network device function.
<b>AllowFIPVLANDiscovery</b>	boolean	<i>read-write (null)</i>	An indication of whether the FCoE Initialization Protocol (FIP) populates the FCoE VLAN ID.
<b>BootTargets</b> [ {	array		An array of Fibre Channel boot targets configured for this network device function.
<b>BootPriority</b>	integer	<i>read-write (null)</i>	The relative priority for this entry in the boot targets array.
<b>LUNID</b>	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.
<b>WWPN</b>	string	<i>read-write (null)</i>	The World Wide Port Name (WWPN) from which to boot.
} ]			
<b>FCoEActiveVLANId</b>	integer	<i>read-only (null)</i>	The active FCoE VLAN ID.
<b>FCoELocalVLANId</b>	integer	<i>read-write (null)</i>	The locally configured FCoE VLAN ID.
<b>FibreChannelId</b> (v1.3+)	string	<i>read-only (null)</i>	The Fibre Channel ID that the switch assigns for this interface.
<b>PermanentWWNN</b>	string	<i>read-only (null)</i>	The permanent World Wide Node Name (WWNN) address assigned to this function.

Property	Type	Attributes	Notes
<b>PermanentWWPN</b>	string	<i>read-only (null)</i>	The permanent World Wide Port Name (WWPN) address assigned to this function.
<b>WWNN</b>	string	<i>read-write (null)</i>	The currently configured World Wide Node Name (WWNN) address of this function.
<b>WWNSource</b>	string (enum)	<i>read-write (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>
<b>WWPN</b>	string	<i>read-write (null)</i>	The currently configured World Wide Port Name (WWPN) address of this function.
}			
<b>HTTPBoot</b> (v1.9+) {	object		The HTTP and HTTPS boot capabilities, status, and configuration values for this network device function.
<b>BootMediaURI</b> (v1.9+)	string (URI)	<i>read-write (null)</i>	The URI of the boot media loaded with this network device function.
}			
<b>InfiniBand</b> (v1.5+) {	object		The InfiniBand capabilities, status, and configuration values for this network device function.
<b>MTUSize</b> (v1.5+)	integer	<i>read-write (null)</i>	The maximum transmission unit (MTU) configured for this network device function.
<b>NodeGUID</b> (v1.5+)	string	<i>read-only (null)</i>	This is the currently configured node GUID of the network device function.
<b>PermanentNodeGUID</b> (v1.5+)	string	<i>read-only (null)</i>	The permanent node GUID assigned to this network device function.
<b>PermanentPortGUID</b> (v1.5+)	string	<i>read-only (null)</i>	The permanent port GUID assigned to this network device function.
<b>PermanentSystemGUID</b> (v1.5+)	string	<i>read-only (null)</i>	The permanent system GUID assigned to this network device function.
<b>PortGUID</b> (v1.5+)	string	<i>read-only (null)</i>	The currently configured port GUID of the network device function.
<b>SupportedMTUSizes</b> (v1.5+) [ ]	array (integer, null)	<i>read-only</i>	The maximum transmission unit (MTU) sizes supported for this network device function.
<b>SystemGUID</b> (v1.5+)	string	<i>read-only (null)</i>	This is the currently configured system GUID of the network device function.

Property	Type	Attributes	Notes
}			
<b>iSCSIBoot {</b>	object		The iSCSI boot capabilities, status, and configuration values for this network device function.
<b>AuthenticationMethod</b>	string (enum)	<i>read-write (null)</i>	The iSCSI boot authentication method for this network device function. <i>For the possible property values, see AuthenticationMethod in Property details.</i>
<b>CHAPSecret</b>	string	<i>read-write (null)</i>	The shared secret for CHAP authentication.
<b>CHAPUsername</b>	string	<i>read-write (null)</i>	The user name for CHAP authentication.
<b>InitiatorDefaultGateway</b>	string	<i>read-write (null)</i>	The IPv6 or IPv4 iSCSI boot default gateway.
<b>InitiatorIPAddress</b>	string	<i>read-write (null)</i>	The IPv6 or IPv4 address of the iSCSI initiator.
<b>InitiatorName</b>	string	<i>read-write (null)</i>	The iSCSI initiator name.
<b>InitiatorNetmask</b>	string	<i>read-write (null)</i>	The IPv6 or IPv4 netmask of the iSCSI boot initiator.
<b>IPAddressType</b>	string (enum)	<i>read-write (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>
<b>IPMaskDNSViaDHCP</b>	boolean	<i>read-write (null)</i>	An indication of whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask.
<b>MutualCHAPSecret</b>	string	<i>read-write (null)</i>	The CHAP secret for two-way CHAP authentication.
<b>MutualCHAPUsername</b>	string	<i>read-write (null)</i>	The CHAP user name for two-way CHAP authentication.
<b>PrimaryDNS</b>	string	<i>read-write (null)</i>	The IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.
<b>PrimaryLUN</b>	integer	<i>read-write (null)</i>	The logical unit number (LUN) for the primary iSCSI boot target.
<b>PrimaryTargetIPAddress</b>	string	<i>read-write (null)</i>	The IPv4 or IPv6 address for the primary iSCSI boot target.

Property	Type	Attributes	Notes
<b>PrimaryTargetName</b>	string	<i>read-write (null)</i>	The name of the iSCSI primary boot target.
<b>PrimaryTargetTCPPort</b>	integer	<i>read-write (null)</i>	The TCP port for the primary iSCSI boot target.
<b>PrimaryVLANEnable</b>	boolean	<i>read-write (null)</i>	An indication of whether the primary VLAN is enabled.
<b>PrimaryVLANId</b>	integer	<i>read-write (null)</i>	The 802.1q VLAN ID to use for iSCSI boot from the primary target.
<b>RouterAdvertisementEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether IPv6 router advertisement is enabled for the iSCSI boot target.
<b>SecondaryDNS</b>	string	<i>read-write (null)</i>	The IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.
<b>SecondaryLUN</b>	integer	<i>read-write (null)</i>	The logical unit number (LUN) for the secondary iSCSI boot target.
<b>SecondaryTargetIPAddress</b>	string	<i>read-write (null)</i>	The IPv4 or IPv6 address for the secondary iSCSI boot target.
<b>SecondaryTargetName</b>	string	<i>read-write (null)</i>	The name of the iSCSI secondary boot target.
<b>SecondaryTargetTCPPort</b>	integer	<i>read-write (null)</i>	The TCP port for the secondary iSCSI boot target.
<b>SecondaryVLANEnable</b>	boolean	<i>read-write (null)</i>	An indication of whether the secondary VLAN is enabled.
<b>SecondaryVLANId</b>	integer	<i>read-write (null)</i>	The 802.1q VLAN ID to use for iSCSI boot from the secondary target.
<b>TargetInfoViaDHCP</b>	boolean	<i>read-write (null)</i>	An indication of whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.
}			
<b>Limits</b> (v1.7+) [ {	array		The byte and packet limits for this network device function.
<b>BurstBytesPerSecond</b> (v1.7+)	integer	<i>read-write (null)</i>	The maximum number of bytes per second in a burst for this network device function.
<b>BurstPacketsPerSecond</b> (v1.7+)	integer	<i>read-write (null)</i>	The maximum number of packets per second in a burst for this network device function.

Property	Type	Attributes	Notes
<b>Direction</b> (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>
<b>SustainedBytesPerSecond</b> (v1.7+)	integer	<i>read-write</i> (null)	The maximum number of sustained bytes per second for this network device function.
<b>SustainedPacketsPerSecond</b> (v1.7+)	integer	<i>read-write</i> (null)	The maximum number of sustained packets per second for this network device function.
} ]			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Endpoints</b> (v1.2+) [ {	array		An array of links to endpoints associated with this network device function.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>EthernetInterface</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
}			
<b>EthernetInterfaces</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
<b>OffloadProcessors</b> (v1.7+) [ {	array		The processors that perform offload computation for this network function, such as with a SmartNIC.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
} ]			
<b>OffloadSystem</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
}			
<b>PCleFunction</b> {	object		The link to the PCIe function associated with this network device function. See the <i>PCleFunction</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCleFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
}			
<b>PhysicalNetworkPortAssignment</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Port resource. See the Links section and the <i>Port</i> schema for details.
}			
<b>PhysicalPortAssignment</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkPort resource. See the Links section and the <i>NetworkPort</i> schema for details.
}			
}			
<b>MaxVirtualFunctions</b>	integer	<i>read-only (null)</i>	The number of virtual functions that are available for this network device function.



Property	Type	Attributes	Notes
<b>Metrics</b> (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.
<b>@odata.id</b>	string	read-only	Link to a <i>NetworkDeviceFunctionMetrics</i> resource. See the Links section and the <i>NetworkDeviceFunctionMetrics</i> schema for details.
}			
<b>NetDevFuncCapabilities</b> [ ]	array (string (enum))	read-only (null)	An array of capabilities for this network device function. <i>For the possible property values, see NetDevFuncCapabilities in Property details.</i>
<b>NetDevFuncType</b>	string (enum)	read-write (null)	The configured capability of this network device function. <i>For the possible property values, see NetDevFuncType in Property details.</i>
<b>PhysicalNetworkPortAssignment</b> (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>
<b>@odata.id</b>	string	read-only	Link to a <i>Port</i> resource. See the Links section and the <i>Port</i> schema for details.
}			
<b>PhysicalPortAssignment</b> (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>
<b>@odata.id</b>	string	read-only	Link to a <i>NetworkPort</i> resource. See the Links section and the <i>NetworkPort</i> schema for details.
}			
<b>SAVIEEnabled</b> (v1.7+)	boolean	read-write (null)	Indicates if Source Address Validation Improvement (SAVI) is enabled for this network device function.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>VirtualFunctionsEnabled</b>	boolean	read-only (null)	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_1.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",
  "WWNSource": "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 1.1.2

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	read-only (null)	The total number of offloaded TCP/IPv4 connections.

Property	Type	Attributes	Notes
<b>NumOffloadedIPv6Conns</b>	integer	<i>read-only (null)</i>	The total number of offloaded TCP/IPv6 connections.
}			
<b>FibreChannel</b> (v1.1+) {	object		The network function metrics specific to Fibre Channel adapters.
<b>PortLoginAccepts</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of port login (PLOGI) accept (ACC) responses.
<b>PortLoginRejects</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of port login (PLOGI) reject (RJT) responses.
<b>PortLoginRequests</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of port login (PLOGI) requests transmitted.
<b>RXCongestionFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Congestion Fabric Performance Impact Notifications (FPINs) received.
<b>RXDeliveryFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Delivery Fabric Performance Impact Notifications (FPINs) received.
<b>RXExchanges</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Fibre Channel exchanges received.
<b>RXLinkIntegrityFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) received.
<b>RXPeerCongestionFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) received.
<b>RXSequences</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Fibre Channel sequences received.
<b>TXCongestionFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Congestion Fabric Performance Impact Notifications (FPINs) sent.
<b>TXDeliveryFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Delivery Fabric Performance Impact Notifications (FPINs) sent.
<b>TXExchanges</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Fibre Channel exchanges transmitted.
<b>TXLinkIntegrityFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) sent.
<b>TXPeerCongestionFPINs</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) sent.
<b>TXSequences</b> (v1.1+)	integer	<i>read-only (null)</i>	The total number of Fibre Channel sequences transmitted.

Property	Type	Attributes	Notes
}			
<b>RXAvgQueueDepthPercent</b>	number (%)	<i>read-only (null)</i>	The average RX queue depth as the percentage.
<b>RXBytes</b>	integer (bytes)	<i>read-only (null)</i>	The total number of bytes received on a network function.
<b>RXFrames</b>	integer	<i>read-only (null)</i>	The total number of frames received on a network function.
<b>RXMulticastFrames</b>	integer	<i>read-only (null)</i>	The total number of good multicast frames received on a network function since reset.
<b>RXQueuesEmpty</b>	boolean	<i>read-only (null)</i>	Whether nothing is in a network function's RX queues to DMA.
<b>RXQueuesFull</b>	integer	<i>read-only (null)</i>	The number of RX queues that are full.
<b>RXUnicastFrames</b>	integer	<i>read-only (null)</i>	The total number of good unicast frames received on a network function since reset.
<b>TXAvgQueueDepthPercent</b>	number (%)	<i>read-only (null)</i>	The average TX queue depth as the percentage.
<b>TXBytes</b>	integer (bytes)	<i>read-only (null)</i>	The total number of bytes sent on a network function.
<b>TXFrames</b>	integer	<i>read-only (null)</i>	The total number of frames sent on a network function.
<b>TXMulticastFrames</b>	integer	<i>read-only (null)</i>	The total number of good multicast frames transmitted on a network function since reset.
<b>TXQueuesEmpty</b>	boolean	<i>read-only (null)</i>	Whether all TX queues for a network function are empty.
<b>TXQueuesFull</b>	integer	<i>read-only (null)</i>	The number of TX queues that are full.
<b>TXUnicastFrames</b>	integer	<i>read-only (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_2.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
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>NetworkAdapter</b> {	object		The link to the network adapter that contains this network interface. See the <i>NetworkAdapter</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>NetworkAdapter</i> resource. See the Links section and the <i>NetworkAdapter</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>NetworkDeviceFunctions</b> {	object		The link to the network device functions associated with this network interface. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>NetworkDeviceFunction</i> . See the <i>NetworkDeviceFunction</i> schema for details.
}			
<b>NetworkPorts</b> ( <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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>NetworkPort</i> . See the <i>NetworkPort</i> schema for details.
}			
<b>Ports</b> ( <i>v1.2+</i> ) {	object		The link to the ports associated with this network interface. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the <i>Port</i> schema for details.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

### 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 1.4.2 (deprecated)

Version	v1.4 <i>Deprecated</i>	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
<b>ActiveLinkTechnology</b>	string (enum)	<i>read-write (null)</i>	Network port active link technology. <i>For the possible property values, see ActiveLinkTechnology in Property details.</i>
<b>AssociatedNetworkAddresses</b> [ ]	array (string, null)	<i>read-only</i>	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.
<b>CurrentLinkSpeedMbps</b> (v1.2+)	integer (Mbit/s)	<i>read-write (null)</i>	Network port current link speed.
<b>EEEEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled for this network port.
<b>FCFabricName</b> (v1.2+)	string	<i>read-only (null)</i>	The FC Fabric Name provided by the switch.
<b>FCPortConnectionType</b> (v1.2+)	string (enum)	<i>read-only (null)</i>	The connection type of this port. <i>For the possible property values, see FCPortConnectionType in Property details.</i>
<b>FlowControlConfiguration</b>	string (enum)	<i>read-write (null)</i>	The locally configured 802.3x flow control setting for this network port. <i>For the possible property values, see FlowControlConfiguration in Property details.</i>
<b>FlowControlStatus</b>	string (enum)	<i>read-only (null)</i>	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>
<b>LinkStatus</b>	string (enum)	<i>read-only (null)</i>	The status of the link between this port and its link partner. <i>For the possible property values, see LinkStatus in Property details.</i>
<b>MaxFrameSize</b> (v1.2+)	integer (bytes)	<i>read-only (null)</i>	The maximum frame size supported by the port.
<b>NetDevFuncMaxBWAlloc</b> [ {	array		An array of maximum bandwidth allocation percentages for the network device functions associated with this port.
<b>MaxBWAllocPercent</b>	integer (%)	<i>read-write (null)</i>	The maximum bandwidth allocation percentage allocated to the corresponding network device function instance.
<b>NetworkDeviceFunction</b> {	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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
}			
} ]			
<b>NetDevFuncMinBWAlloc</b> [ {	array		An array of minimum bandwidth allocation percentages for the network device functions associated with this port.
<b>MinBWAllocPercent</b>	integer (%)	<i>read-write (null)</i>	The minimum bandwidth allocation percentage allocated to the corresponding network device function instance.
<b>NetworkDeviceFunction</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
}			
} ]			
<b>NumberDiscoveredRemotePorts</b> (v1.2+)	integer	<i>read-only (null)</i>	The number of ports not on this adapter that this port has discovered.
<b>PhysicalPortNumber</b>	string	<i>read-only (null)</i>	The physical port number label for this port.
<b>PortMaximumMTU</b>	integer	<i>read-only (null)</i>	The largest maximum transmission unit (MTU) that can be configured for this network port.
<b>SignalDetected</b>	boolean	<i>read-only (null)</i>	An indication of whether the port has detected enough signal on enough lanes to establish a link.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedEthernetCapabilities</b> [ ]	array (string (enum))	<i>read-only (null)</i>	The set of Ethernet capabilities that this port supports. <i>For the possible property values, see SupportedEthernetCapabilities in Property details.</i>
<b>SupportedLinkCapabilities</b> [ {	array		The link capabilities of this port.
<b>AutoSpeedNegotiation</b> (v1.2+)	boolean	<i>read-only (null)</i>	An indication of whether the port is capable of autonegotiating speed.
<b>CapableLinkSpeedMbps</b> (v1.2+) [ ]	array (integer, null)	<i>read-only</i>	The set of link speed capabilities of this port.

Property	Type	Attributes	Notes
<b>LinkNetworkTechnology</b>	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>
<b>LinkSpeedMbps</b> ( <i>deprecated v1.2</i> )	integer (Mbit/s)	<i>read-only (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>
} ]			
<b>VendorId</b> (v1.2+)	string	<i>read-only (null)</i>	The vendor Identification for this port.
<b>WakeOnLANEnabled</b>	boolean	<i>read-write (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.

string	Description
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.
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.

string	Description
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.
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_2.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/111111111100"
            },
            "MinBWAllocPercent": 25
        }
    ],
    "NetDevFuncMaxBWAlloc": [
        {
            "NetworkDeviceFunction": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
            },
            "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 1.0.3

Version	v1.0
---------	------

<b>Release</b>	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
<b>BaseSpeedMHz</b>	integer (MHz)	<i>read-only (null)</i>	The base (nominal) clock speed of the processor in MHz.
<b>BaseSpeedPrioritySettings</b> [ {	array		The clock speed for sets of cores when the configuration is operational.
<b>BaseSpeedMHz</b>	integer (MHz)	<i>read-only (null)</i>	The clock speed to configure the set of cores in MHz.
<b>CoreCount</b>	integer	<i>read-only (null)</i>	The number of cores to configure with a specified speed.
<b>CoreIDs</b> [ ]	array (integer, null)	<i>read-only</i>	The identifier of the cores to configure with the specified speed.
} ]			
<b>MaxJunctionTemperatureCelsius</b>	integer (Celsius)	<i>read-only (null)</i>	The maximum temperature of the junction in degree Celsius units.
<b>MaxSpeedMHz</b>	integer (MHz)	<i>read-only (null)</i>	The maximum clock speed to which the processor can be configured in MHz.
<b>TDPWatts</b>	integer (Watts)	<i>read-only (null)</i>	The thermal design point of the processor in watt units.
<b>TotalAvailableCoreCount</b>	integer	<i>read-only (null)</i>	The number of cores in the processor that can be configured.

Property	Type	Attributes	Notes
<b>TurboProfile</b> [ {	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.
<b>ActiveCoreCount</b>	integer	<i>read-only</i> (null)	The number of active cores to be configured with the specified maximum clock speed.
<b>MaxSpeedMHz</b>	integer (MHz)	<i>read-only</i> (null)	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_3.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 1.0.1

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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Application</i> . See the Application schema for details.
}			
<b>ContainerEngines</b> [ {	array		The container engines running in this operating system.
<b>ManagementURIs</b> [ ]	array (URI) (string, null)	<i>read-only</i>	The URIs to manage this container engine.
<b>SupportedImageTypes</b> [ ]	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>
<b>Type</b>	string (enum)	<i>read-only (null)</i>	The type of container engine. <i>For the possible property values, see Type in Property details.</i>
<b>Version</b>	string	<i>read-only (null)</i>	The version of this container engine.
} ]			
<b>ContainerImages</b> {	object		The link to the collection of container images available to container engines on this operating system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ContainerImage</i> . See the ContainerImage schema for details.
}			
<b>Containers</b> {	object		The link to the collection of containers running under this operating system. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Container</i> . See the Container schema for details.
}			
<b>Kernel</b> {	object	<i>(null)</i>	The kernel information for this operating system.
<b>Machine</b>	string	<i>read-only (null)</i>	The machine hardware name of the kernel.
<b>Name</b>	string	<i>read-only (null)</i>	The name of the kernel.
<b>Release</b>	string	<i>read-only (null)</i>	The release of the kernel.

Property	Type	Attributes	Notes
<b>Version</b>	string	<i>read-only (null)</i>	The version of the kernel.
}			
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SoftwareImage {</b>	object		The link to the software image for this operating system. See the <i>SoftwareInventory</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SoftwareInventory resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
}			
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Type</b>	string (enum)	<i>read-only (null)</i>	The type of operating system. <i>For the possible property values, see Type in Property details.</i>
<b>UptimeSeconds</b>	integer	<i>read-only (null)</i>	The wall-clock time this operating system has been running in seconds.
<b>VirtualMachineEngines [ {</b>	array		The virtual machine engines running in this operating system.
<b>ManagementURIs [ ]</b>	array (URI) (string, null)	<i>read-only</i>	The URIs to manage this virtual machine engine.
<b>SupportedImageTypes [ ]</b>	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>
<b>Type</b>	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>
<b>Version</b>	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.
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.
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.



string	Description
VMwareESX	VMware ESX or ESXi.
Xen	Xen.

6.88.5 Example response

```
{
  "@odata.type": "#OperatingSystem.v1_0_1.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 1.0.1

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
<b>Authentication</b>	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> .
<b>Certificates {</b>	object		The link to a collection of server certificates for the remote client referenced by the EndpointURI property. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
<b>}</b>			

Property	Type	Attributes	Notes
<b>ClientCertificates</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>ConnectionEnabled</b>	boolean	<i>read-write (null)</i>	Indicates if the outbound connection is enabled.
<b>EndpointURI</b>	string (URI)	<i>read-only required on create</i>	The URI of the WebSocket connection to the remote client.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Session</b> {	object	<i>(null)</i>	The link to the session for this outbound connection. See the <i>Session</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Session resource. See the Links section and the <i>Session</i> schema for details.
}			
}			
<b>PreUpgradeHTTPHeaders</b> {	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.
<b>(pattern)</b>	string	<i>read-write</i>	Property names follow regular expression pattern " <code>^[^:\s]+\$</code> "
}			
<b>RetryPolicy</b> {	object		The retry policy for this outbound connection.
<b>ConnectionRetryPolicy</b>	string (enum)	<i>read-only (null)</i>	The type of retry policy for this outbound connection. <i>For the possible property values, see ConnectionRetryPolicy in Property details.</i>
<b>RetryCount</b>	integer	<i>read-write (null)</i>	The number of retries to attempt if the retry policy specifies a maximum number of retries.
<b>RetryIntervalMinutes</b>	integer	<i>read-write (null)</i>	The retry interval in minutes.

Property	Type	Attributes	Notes
}			
<b>Roles [ ]</b>	array (string, null)	<i>read-only required on create</i>	The Redfish roles that contain the privileges of the remote client for the outbound connection.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>WebSocketPingIntervalMinutes</b>	integer	<i>read-write required on create (null)</i>	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_1.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 1.4.2

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 a 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
<b>ConfigurationLocked</b> (v1.4+)	boolean	<i>read-write</i>	Indicates whether the configuration is locked.
<b>CurrentAmps</b> { }	object		The current (A) for this single-phase outlet. For more information about this property, see <i>SensorCurrentExcerpt</i> in Property Details.
<b>ElectricalConsumerNames</b> (v1.3+) [ ]	array (string, null)	<i>read-write</i>	An array of names of downstream devices that are powered by this outlet.
<b>ElectricalContext</b>	string (enum)	<i>read-only</i> (null)	The combination of current-carrying conductors. <i>For the possible property values, see ElectricalContext in Property details.</i>
<b>EnergykWh</b> {	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> .
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> (null)	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>SensorResetTime</b>	string (date- time)	<i>read-only</i> (null)	The date and time when the time-based properties were last reset.
}			

Property	Type	Attributes	Notes
<b>FrequencyHz</b> {	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> .
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
<b>IndicatorLED</b> ( <i>deprecated v1.1</i> )	string (enum)	<i>read-write</i> ( <i>null</i> )	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>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>BranchCircuit</b> {	object	( <i>null</i> )	A reference to the branch circuit related to this outlet. See the <i>Circuit</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Circuit resource. See the Links section and the <i>Circuit</i> schema for details.
}			
<b>Chassis</b> ( <i>v1.3+</i> ) [ {	array		Any array of links to chassis connected to this outlet.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>DistributionCircuits</b> ( <i>v1.3+</i> ) [ {	array		An array of links to mains or input circuits powered by this outlet.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Circuit resource. See the Links section and the <i>Circuit</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PowerSupplies</b> ( <i>v1.3+</i> ) [ {	array		An array of links to the power supplies connected to this outlet.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerSupply resource. See the Links section and the <i>PowerSupply</i> schema for details.
} ]			

Property	Type	Attributes	Notes
}			
<b>LocationIndicatorActive</b> (v1.1+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>NominalVoltage</b>	string (enum)	<i>read-only</i> (null)	The nominal voltage for this outlet. <i>For the possible property values, see NominalVoltage in Property details.</i>
<b>OutletType</b>	string (enum)	<i>read-only</i> (null)	The type of receptacle according to NEMA, IEC, or regional standards. <i>For the possible property values, see OutletType in Property details.</i>
<b>PhaseWiringType</b>	string (enum)	<i>read-only</i> (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>
<b>PolyPhaseCurrentAmps {</b>	object	(null)	The current readings for this outlet.
<b>Line1 {}</b>	object		Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Line2 {}</b>	object		Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Line3 {}</b>	object		Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
<b>Neutral {}</b>	object		Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
}			
<b>PolyPhaseVoltage {</b>	object	(null)	The voltage readings for this outlet.
<b>Line1ToLine2 {}</b>	object		The Line 1 to Line 2 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line1ToNeutral {}</b>	object		The Line 1 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line2ToLine3 {}</b>	object		The Line 2 to Line 3 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line2ToNeutral {}</b>	object		The Line 2 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.



Property	Type	Attributes	Notes
<b>Line3ToLine1</b> {}	object		The Line 3 to Line 1 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>Line3ToNeutral</b> {}	object		The Line 3 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
}			
<b>PowerControlLocked</b> (v1.4+)	boolean	<i>read-write</i>	Indicates whether power control requests are locked.
<b>PowerCycleDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	<i>read-only (null)</i>	Indicates if the outlet can be powered.
<b>PowerLoadPercent</b> (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 DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>PowerOffDelaySeconds</b>	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.
<b>PowerOnDelaySeconds</b>	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.
<b>PowerRestoreDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	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>
<b>PowerState</b>	string (enum)	<i>read-only (null)</i>	The power state of the outlet. <i>For the possible property values, see PowerState in Property details.</i>
<b>PowerStateInTransition</b> (v1.4+)	boolean	<i>read-only</i>	Indicates whether the power state is undergoing a delayed transition.
<b>PowerWatts</b> {	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 DataSourceUri.

Property	Type	Attributes	Notes
<b>ApparentVA</b>	number (V.A)	<i>read-only (null)</i>	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only (null)</i>	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only (null)</i>	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>RatedCurrentAmps</b>	number (A)	<i>read-only (null)</i>	The rated maximum current allowed for this outlet.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UserLabel</b> (v1.3+)	string	<i>read-write</i>	A user-assigned label.
<b>Voltage {}</b>	object		The voltage (V) for this single-phase outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
<b>VoltageType</b>	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)	optional	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.

string	Description
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.

#### 6.90.5.2 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.

string	Description
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.
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).
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.

<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	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.

<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	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_2.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 1.1.2

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
<b>ConfigurationLocked</b> (v1.1+)	boolean	<i>read-write</i>	Indicates whether the configuration is locked.
<b>CreatedBy</b>	string	<i>read-write</i> (null)	The creator of this outlet group.
<b>EnergykWh</b> {	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 DataSourceUri.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> (null)	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> (null)	The date and time when the time-based properties were last reset.
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Outlets</b> [ {	array		The set of outlets in this outlet group.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
} ]			
}			
<b>PowerControlLocked</b> (v1.1+)	boolean	<i>read-write</i>	Indicates whether power control requests are locked.

Property	Type	Attributes	Notes
<b>PowerCycleDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	<i>read-only (null)</i>	Indicates if the outlet group can be powered.
<b>PowerOffDelaySeconds</b>	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.
<b>PowerOnDelaySeconds</b>	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.
<b>PowerRestoreDelaySeconds</b>	number	<i>read-write (null)</i>	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	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>
<b>PowerState</b>	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>
<b>PowerStateInTransition</b> (v1.1+)	boolean	<i>read-only</i>	Indicates whether the power state is undergoing a delayed transition.
<b>PowerWatts {</b>	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.
<b>ApparentVA</b>	number (V.A)	<i>read-only (null)</i>	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only (null)</i>	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only (null)</i>	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>Status {}</b>	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
<b>PowerState</b>	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_2.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 1.13.0

Version	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	...
Release	2023.3	2023.2	2022.3	2022.2	2021.4	2021.3	2021.1	2020.4	2020.3	2019.2	2018.2	...

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}/PCleDevices/{PCleDeviceId}  
 /redfish/v1/Systems/{ComputerSystemId}/PCleDevices/{PCleDeviceId}  
 \* Note: Some URIs omitted for brevity, refer to schema for the complete list.

6.92.3 Properties

Property	Type	Attributes	Notes
<b>Assembly</b> (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	read-only	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	read-write (null)	The user-assigned asset tag for this PCIe device.



Property	Type	Attributes	Notes
<b>CXLDevice</b> (v1.11+) {	object	(null)	The CXL-specific properties of this PCIe device.
<b>DeviceType</b> (v1.11+)	string (enum)	read-only (null)	The CXL device type. <i>For the possible property values, see DeviceType in Property details.</i>
<b>DynamicCapacity</b> (v1.12+) {	object	(null)	The CXL dynamic capacity device (DCD) information for this CXL device.
<b>AddCapacityPoliciesSupported</b> (v1.12+) [ ]	array (string (enum))	read-only (null)	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>
<b>MaxDynamicCapacityRegions</b> (v1.12+)	integer	read-only (null)	The maximum number of dynamic capacity memory regions available per host from this CXL device.
<b>MaxHosts</b> (v1.12+)	integer	read-only (null)	The maximum number of hosts supported by this CXL device.
<b>MemoryBlockSizesSupported</b> (v1.12+) [ {	array		The set of memory block sizes supported by memory regions in this CXL device.
<b>BlockSizeMiB</b> (v1.12+) [ ]	array (mebibytes) (integer, null)	read-only	Set of memory block sizes supported by this memory region defined in mebibytes (MiB).
<b>RegionNumber</b> (v1.12+)	integer	read-only (null)	The memory region number.
} ]			
<b>ReleaseCapacityPoliciesSupported</b> (v1.12+) [ ]	array (string (enum))	read-only (null)	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>
<b>SanitizationOnReleaseSupport</b> (v1.12+) [ {	array		An indication of whether the sanitization on capacity release is configurable for the memory regions in this CXL device.
<b>RegionNumber</b> (v1.12+)	integer	read-only (null)	The memory region number.
<b>SanitizationOnReleaseSupported</b> (v1.12+)	boolean	read-only (null)	An indication of whether the sanitization on capacity release is configurable for this memory region.

Property	Type	Attributes	Notes
} ]			
<b>TotalDynamicCapacityMiB</b> (v1.12+)	integer (mebibytes)	<i>read-only</i> (null)	The total memory media capacity of the CXL device available for dynamic assignment in mebibytes (MiB).
}			
<b>EgressPortCongestionSupport</b> (v1.11+)	boolean	<i>read-only</i> (null)	Indicates whether the CXL device supports egress port congestion management.
<b>MaxNumberLogicalDevices</b> (v1.11+)	integer	<i>read-only</i> (null)	The maximum number of logical devices supported by this CXL device.
<b>ThroughputReductionSupport</b> (v1.11+)	boolean	<i>read-only</i> (null)	Indicates whether the CXL device supports throughput reduction.
<b>Timestamp</b> (v1.11+)	string (date-time)	<i>read-write</i>	The timestamp set on the CXL device.
}			
<b>CXLLogicalDevices</b> (v1.11+) {	object		The link to the collection of CXL logical devices within this PCIe device. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CXLLogicalDevice</i> . See the <i>CXLLogicalDevice</i> schema for details.
}			
<b>DeviceType</b>	string (enum)	<i>read-only</i>	The device type for this PCIe device. <i>For the possible property values, see DeviceType in Property details.</i>
<b>EnvironmentMetrics</b> (v1.7+) {	object		The link to the environment metrics for this PCIe device. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>EnvironmentMetrics</i> resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only</i> (null)	The version of firmware for this PCIe device.
<b>Links</b> {	object		The links to other resources that are related to this resource.

Property	Type	Attributes	Notes
<b>Chassis</b> [ {	array		An array of links to the chassis in which the PCIe device is contained.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> ( <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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
<b>Processors</b> ( <i>v1.12+</i> ) [ {	array		An array of links to the processors that are directly connected or directly bridged to this PCIe device.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
} ]			
<b>Switch</b> ( <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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details.
}			
}			
<b>LocationIndicatorActive</b> ( <i>v1.12+</i> )	boolean	<i>read-write</i> ( <i>null</i> )	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only</i> ( <i>null</i> )	The manufacturer of this PCIe device.
<b>Model</b>	string	<i>read-only</i> ( <i>null</i> )	The model number for the PCIe device.

Property	Type	Attributes	Notes
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this PCIe device.
<b>PCleFunctions</b> (v1.4+) {	object		The link to the collection of PCIe functions associated with this PCIe device. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PCleFunction</i> . See the <i>PCleFunction</i> schema for details.
}			
<b>PCleInterface</b> (v1.3+) {	object		The PCIe interface details for this PCIe device.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
<b>ReadyToRemove</b> (v1.7+)	boolean	<i>read-write (null)</i>	An indication of whether the PCIe device is prepared by the system for removal.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this PCIe device.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU for this PCIe device.
<b>Slot</b> (v1.9+) {	object	<i>(null)</i>	Information about the slot for this PCIe device.
<b>HotPluggable</b> (v1.12+)	boolean	<i>read-only (null)</i>	An indication of whether this PCIe slot supports hotplug.
<b>Lanes</b> (v1.9+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this slot.

Property	Type	Attributes	Notes
<b>LaneSplitting</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	The lane splitting strategy used in the PCIe slot. <i>For the possible property values, see LaneSplitting in Property details.</i>
<b>Location</b> (v1.9+) {}	object		The location of the PCIe slot. For property details, see Location.
<b>PCleType</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	The PCIe specification this slot supports. <i>For the possible property values, see PCleType in Property details.</i>
<b>SlotType</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	The PCIe slot type. <i>For the possible property values, see SlotType in Property details.</i>
}			
<b>SparePartNumber</b> (v1.6+)	string	<i>read-only (null)</i>	The spare part number of the PCIe device.
<b>StagedVersion</b> (v1.11+)	string	<i>read-only</i>	The staged firmware version for this PCIe device; this firmware is not yet active.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UUID</b> (v1.5+)	string (uuid)	<i>read-only (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 MaxPCleType

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 PCleType

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_13_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 1.5.1

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	read-only (null)	The Class Code of this PCIe function.

Property	Type	Attributes	Notes
<b>DeviceClass</b>	string (enum)	<i>read-only</i>	The class for this PCIe function. <i>For the possible property values, see DeviceClass in Property details.</i>
<b>DeviceId</b>	string	<i>read-only</i> (null)	The Device ID of this PCIe function.
<b>Enabled</b> (v1.3+)	boolean	<i>read-write</i>	An indication of whether this PCIe device function is enabled.
<b>FunctionId</b>	integer	<i>read-only</i> (null)	The PCIe function number.
<b>FunctionProtocol</b> (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>
<b>FunctionType</b>	string (enum)	<i>read-only</i>	The type of the PCIe function. <i>For the possible property values, see FunctionType in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>CXLLogicalDevice</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a CXLLogicalDevice resource. See the Links section and the <i>CXLLogicalDevice</i> schema for details.
}			
<b>Drives</b> [ {	array		An array of links to the drives that this PCIe function produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>EthernetInterfaces</b> [ {	array		An array of links to the Ethernet interfaces that this PCIe function produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
} ]			
<b>MemoryDomains</b> (v1.5+) [ {	array		An array of links to the memory domains that the PCIe function produces.
<b>@odata.id</b>	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
<b>NetworkDeviceFunctions</b> (v1.2+) [ {	array		An array of links to the network device functions that the PCIe function produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice</b> {	object		The link to the PCIe device on which this function resides. See the <i>PCleDevice</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCleDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
}			
<b>Processor</b> (v1.4+) {	object	(null)	The link to a processor that is hosted on this PCIe function. See the <i>Processor</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
}			
<b>StorageControllers</b> [ {	array		An array of links to the storage controllers that this PCIe function produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a StorageController resource. See the Links section and the <i>Storage</i> schema for details.
} ]			
}			
<b>RevisionId</b>	string	<i>read-only</i> (null)	The Revision ID of this PCIe function.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SubsystemId</b>	string	<i>read-only</i> (null)	The Subsystem ID of this PCIe function.
<b>SubsystemVendorId</b>	string	<i>read-only</i> (null)	The Subsystem Vendor ID of this PCIe function.
<b>VendorId</b>	string	<i>read-only</i> (null)	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_1.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	read-only (null)	An indication of whether this PCIe slot supports hotplug.
Lanes	integer	read-only (null)	The number of PCIe lanes supported by this slot.

Property	Type	Attributes	Notes
<b>Links</b> {	object		The links to other Resources that are related to this Resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice</b> [ {	array		An array of links to the PCIe devices contained in this slot.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCleDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
} ]			
<b>Processors</b> (v1.5+) [ {	array		An array of links to the processors that are directly connected or directly bridged to this PCIe slot.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Processor resource. See the Links section and the <i>Processor</i> schema for details.
} ]			
}			
<b>Location</b> {}	object		The location of the PCIe slot. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b>	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>
<b>SlotType</b>	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>
<b>Status</b> {}	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 1.11.0

Version	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	...
Release	2023.3	2023.2	2023.1	2022.3	2022.2	2021.4	2021.2	2021.1	2020.3	2019.4	2017.3	...

### 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
<b>ActiveWidth</b> (v1.2+)	integer	<i>read-only</i>	The number of active lanes for this interface.
<b>CapableProtocolVersions</b> (v1.4+) [ ]	array (string, null)	<i>read-only</i>	The protocol versions capable of being sent over this port.
<b>CurrentProtocolVersion</b> (v1.4+)	string	<i>read-only (null)</i>	The protocol version being sent over this port.
<b>CurrentSpeedGbps</b>	number (Gbit/s)	<i>read-only (null)</i>	The current speed of this port.
<b>CXL</b> (v1.8+) {	object	(null)	CXL properties for this port.
<b>Congestion</b> (v1.8+) {	object	(null)	The congestion properties for this CXL port.
<b>BackpressureSampleInterval</b> (v1.8+)	integer	<i>read-write (null)</i>	The interval for the CXL Specification-defined 'Egress Port Congestion' mechanism to take samples in nanoseconds.
<b>CompletionCollectionInterval</b> (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.
<b>CongestionTelemetryEnabled</b> (v1.8+)	boolean	<i>read-write (null)</i>	Indicates whether congestion telemetry collection is enabled for this port.
<b>EgressModeratePercentage</b> (v1.8+)	integer (%)	<i>read-write (null)</i>	The threshold for moderate egress port congestion as a percentage.
<b>EgressSeverePercentage</b> (v1.8+)	integer (%)	<i>read-write (null)</i>	The threshold for severe egress port congestion as a percentage.
<b>MaxSustainedRequestCmpBias</b> (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
<b>ConnectedDeviceMode</b> (v1.8+)	string (enum)	read-only (null)	The connected device mode. <i>For the possible property values, see ConnectedDeviceMode in Property details.</i>
<b>ConnectedDeviceType</b> (v1.8+)	string (enum)	read-only (null)	The connected device type. <i>For the possible property values, see ConnectedDeviceType in Property details.</i>
<b>CurrentPortConfigurationState</b> (v1.8+)	string (enum)	read-only (null)	The current port configuration state. <i>For the possible property values, see CurrentPortConfigurationState in Property details.</i>
<b>MaxLogicalDeviceCount</b> (v1.8+)	integer	read-only (null)	The maximum number of logical devices supported.
<b>QoSTelemetryCapabilities</b> (v1.8+) {	object	(null)	The quality of service telemetry capabilities for this CXL port.
<b>EgressPortBackpressureSupported</b> (v1.8+)	boolean	read-only (null)	Indicates whether the port supports the CXL Specification-defined 'Egress Port Backpressure' mechanism.
<b>TemporaryThroughputReductionSupported</b> (v1.8+)	boolean	read-only (null)	Indicates whether the port supports the CXL Specification-defined 'Temporary Throughput Reduction' mechanism.
}			
<b>SupportedCXLModes</b> (v1.11+) [ ]	array (string (enum))	read-only (null)	The supported device modes. <i>For the possible property values, see SupportedCXLModes in Property details.</i>
<b>TemporaryThroughputReductionEnabled</b> (v1.8+)	boolean	read-write (null)	Indicates whether temporary throughput reduction is enabled.
}			
<b>Enabled</b> (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>
<b>EnvironmentMetrics</b> (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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>Ethernet</b> (v1.3+) {	object	( <i>null</i> )	Ethernet properties for this port.
<b>AssociatedMACAddresses</b> (v1.4+) [ ]	array (string, null)	<i>read-only</i>	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.
<b>EEEEnabled</b> (v1.5+)	boolean	<i>read-write</i> ( <i>null</i> )	Indicates whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled on this port.
<b>FlowControlConfiguration</b> (v1.3+)	string (enum)	<i>read-write</i> ( <i>null</i> )	The locally configured 802.3x flow control setting for this port. <i>For the possible property values, see FlowControlConfiguration in Property details.</i>
<b>FlowControlStatus</b> (v1.3+)	string (enum)	<i>read-only</i> ( <i>null</i> )	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>
<b>LLDPEnabled</b> (v1.4+)	boolean	<i>read-write</i>	Enable/disable LLDP for this port.
<b>LLDPReceive</b> (v1.4+) {	object	( <i>null</i> )	LLDP data being received on this link.
<b>ChassisId</b> (v1.4+)	string	<i>read-only</i> ( <i>null</i> )	Link Layer Data Protocol (LLDP) chassis ID received from the remote partner across this link.
<b>ChassisIdSubtype</b> (v1.4+)	string (enum)	<i>read-only</i> ( <i>null</i> )	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>
<b>ManagementAddressIPv4</b> (v1.4+)	string	<i>read-only</i> ( <i>null</i> )	The IPv4 management address received from the remote partner across this link.

Property	Type	Attributes	Notes
<b>ManagementAddressIPv6</b> (v1.4+)	string	<i>read-only (null)</i>	The IPv6 management address received from the remote partner across this link.
<b>ManagementAddressMAC</b> (v1.4+)	string	<i>read-only (null)</i>	The management MAC address received from the remote partner across this link.
<b>ManagementVlanId</b> (v1.4+)	integer	<i>read-only (null)</i>	The management VLAN ID received from the remote partner across this link.
<b>PortId</b> (v1.4+)	string	<i>read-only (null)</i>	A colon-delimited string of hexadecimal octets identifying a port.
<b>PortIdSubtype</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	The port ID subtype received from the remote partner across this link. <i>For the possible property values, see PortIdSubtype in Property details.</i>
<b>SystemCapabilities</b> (v1.8+) [ ]	array (string (enum))	<i>read-only (null)</i>	The system capabilities received from the remote partner across this link. <i>For the possible property values, see SystemCapabilities in Property details.</i>
<b>SystemDescription</b> (v1.8+)	string	<i>read-only (null)</i>	The system description received from the remote partner across this link.
<b>SystemName</b> (v1.8+)	string	<i>read-only (null)</i>	The system name received from the remote partner across this link.
}			
<b>LLDPTransmit</b> (v1.4+) {	object	<i>(null)</i>	LLDP data being transmitted on this link.
<b>ChassisId</b> (v1.4+)	string	<i>read-write (null)</i>	Link Layer Data Protocol (LLDP) chassis ID.
<b>ChassisIdSubtype</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	The type of identifier used for the chassis ID. <i>For the possible property values, see ChassisIdSubtype in Property details.</i>
<b>ManagementAddressIPv4</b> (v1.4+)	string	<i>read-write (null)</i>	The IPv4 management address to be transmitted from this endpoint.
<b>ManagementAddressIPv6</b> (v1.4+)	string	<i>read-write (null)</i>	The IPv6 management address to be transmitted from this endpoint.
<b>ManagementAddressMAC</b> (v1.4+)	string	<i>read-write (null)</i>	The management MAC address to be transmitted from this endpoint.
<b>ManagementVlanId</b> (v1.4+)	integer	<i>read-write (null)</i>	The management VLAN ID to be transmitted from this endpoint.

Property	Type	Attributes	Notes
<b>PortId</b> (v1.4+)	string	<i>read-write (null)</i>	A colon-delimited string of hexadecimal octets identifying a port to be transmitted from this endpoint.
<b>PortIdSubtype</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	The port ID subtype to be transmitted from this endpoint. <i>For the possible property values, see PortIdSubtype in Property details.</i>
<b>SystemCapabilities</b> (v1.8+) [ ]	array (string (enum))	<i>read-write (null)</i>	The system capabilities to be transmitted from this endpoint. <i>For the possible property values, see SystemCapabilities in Property details.</i>
<b>SystemDescription</b> (v1.8+)	string	<i>read-write (null)</i>	The system description to be transmitted from this endpoint.
<b>SystemName</b> (v1.8+)	string	<i>read-write (null)</i>	The system name to be transmitted from this endpoint.
}			
<b>SupportedEthernetCapabilities</b> (v1.3+, deprecated v1.5) [ ]	array (string (enum))	<i>read-only (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>
<b>WakeOnLANEnabled</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates whether Wake on LAN (WoL) is enabled on this port.
}			
<b>FibreChannel</b> (v1.3+) {	object	(null)	Fibre Channel properties for this port.
<b>AssociatedWorldWideNames</b> (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.
<b>FabricName</b> (v1.3+)	string	<i>read-only (null)</i>	The Fibre Channel Fabric Name provided by the switch.

Property	Type	Attributes	Notes
<b>NumberDiscoveredRemotePorts</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of ports not on the associated device that the associated device has discovered through this port.
<b>PortConnectionType</b> (v1.3+)	string (enum)	<i>read-only (null)</i>	The connection type of this port. <i>For the possible property values, see PortConnectionType in Property details.</i>
}			
<b>FunctionMaxBandwidth</b> (v1.4+) [ {	array		An array of maximum bandwidth allocation percentages for the functions associated with this port.
<b>AllocationPercent</b> (v1.4+)	integer (%)	<i>read-write (null)</i>	The maximum bandwidth allocation percentage allocated to the corresponding network device function instance.
<b>NetworkDeviceFunction</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
}			
} ]			
<b>FunctionMinBandwidth</b> (v1.4+) [ {	array		An array of minimum bandwidth allocation percentages for the functions associated with this port.
<b>AllocationPercent</b> (v1.4+)	integer (%)	<i>read-write (null)</i>	The minimum bandwidth allocation percentage allocated to the corresponding network device function instance.
<b>NetworkDeviceFunction</b> (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.



Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>NetworkDeviceFunction</i> resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
}			
} ]			
<b>GenZ (v1.2+) {</b>	object		Gen-Z specific properties.
<b>LPRT (v1.2+) {</b>	object		The Linear Packet Relay Table for the port. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details.
}			
<b>MPRT (v1.2+) {</b>	object		The Multi-subnet Packet Relay Table for the port. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>RouteEntry</i> . See the <i>RouteEntry</i> schema for details.
}			
<b>VCAT (v1.2+) {</b>	object		The Virtual Channel Action Table for the port. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>VCATEntry</i> . See the <i>VCATEntry</i> schema for details.
}			
}			
<b>InfiniBand (v1.6+) {</b>	object	(null)	InfiniBand properties for this port.
<b>AssociatedNodeGUIDs (v1.6+) [ ]</b>	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.

Property	Type	Attributes	Notes
<b>AssociatedPortGUIDs</b> (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.
<b>AssociatedSystemGUIDs</b> (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.
}			
<b>InterfaceEnabled</b> (v1.2+)	boolean	<i>read-write</i> (null)	An indication of whether the port is enabled.
<b>LinkConfiguration</b> (v1.3+) [ {	array		The link configuration of this port.
<b>AutoSpeedNegotiationCapable</b> (v1.3+)	boolean	<i>read-only</i> (null)	An indication of whether the port is capable of autonegotiating speed.
<b>AutoSpeedNegotiationEnabled</b> (v1.3+)	boolean	<i>read-write</i> (null)	Controls whether this port is configured to enable autonegotiating speed.
<b>CapableLinkSpeedGbps</b> (v1.3+) [ ]	array (Gbit/s) (number, null)	<i>read-only</i>	The set of link speed capabilities of this port.
<b>ConfiguredNetworkLinks</b> (v1.3+) [ {	array		The set of link speed and width pairs this port is configured to use for autonegotiation.
<b>ConfiguredLinkSpeedGbps</b> (v1.3+)	number (Gbit/s)	<i>read-write</i> (null)	The link speed per lane this port is configured to use for autonegotiation.
<b>ConfiguredWidth</b> (v1.3+)	integer	<i>read-write</i> (null)	The link width this port is configured to use for autonegotiation in conjunction with the link speed.
} ]			
} ]			

Property	Type	Attributes	Notes
<b>LinkNetworkTechnology</b> (v1.2+)	string (enum)	<i>read-only</i> (null)	The link network technology capabilities of this port. <i>For the possible property values, see LinkNetworkTechnology in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>AssociatedEndpoints</b> [ {	array		An array of links to the endpoints at the other end of the link.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>Cables</b> (v1.5+) [ {	array		An array of links to the cables connected to this port.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Cable resource. See the Links section and the <i>Cable</i> schema for details.
} ]			
<b>ConnectedPorts</b> (v1.2+) [ {	array		An array of links to the remote device ports at the other end of the link.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Port resource.
} ]			
<b>ConnectedSwitches</b> [ {	array		An array of links to the switches at the other end of the link.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details.
} ]			
<b>ConnectedSwitchPorts</b> [ {	array		An array of links to the switch ports at the other end of the link.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Port resource.
} ]			
<b>EthernetInterfaces</b> (v1.7+) [ {	array		The links to the Ethernet interfaces this port provides.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
} ]			
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>LinkState</b> (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>
<b>LinkStatus</b> (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>
<b>LinkTransitionIndicator</b> (v1.2+)	integer	<i>read-write</i>	The number of link state transitions for this interface.
<b>Location</b> (v1.1+) {}	object		The location of the port. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.3+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>MaxFrameSize</b> (v1.3+)	integer (bytes)	<i>read-only</i> (null)	The maximum frame size supported by the port.
<b>MaxSpeedGbps</b>	number (Gbit/s)	<i>read-only</i> (null)	The maximum speed of this port as currently configured.
<b>Metrics</b> (v1.2+) {	object	(null)	The link to the metrics associated with this port. See the <i>PortMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PortMetrics resource. See the Links section and the <i>PortMetrics</i> schema for details.
}			
<b>PortId</b>	string	<i>read-only</i> (null)	The label of this port on the physical package for this port.
<b>PortMedium</b> (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>

Property	Type	Attributes	Notes
<b>PortProtocol</b>	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>
<b>PortType</b>	string (enum)	<i>read-only</i> (null)	The type of this port. <i>For the possible property values, see PortType in Property details.</i>
<b>RemotePortId</b> (v1.8+)	string	<i>read-only</i> (null)	The identifier of the remote port to which this port is connected.
<b>SFP</b> (v1.4+) {	object	(null)	The small form-factor pluggable (SFP) device associated with this port.
<b>FiberConnectionType</b> (v1.4+)	string (enum)	<i>read-only</i> (null)	The type of fiber connection currently used by this SFP. <i>For the possible property values, see FiberConnectionType in Property details.</i>
<b>Manufacturer</b> (v1.4+)	string	<i>read-only</i> (null)	The manufacturer of this SFP.
<b>MediumType</b> (v1.4+)	string (enum)	<i>read-only</i> (null)	The medium type connected to this SFP. <i>For the possible property values, see MediumType in Property details.</i>
<b>PartNumber</b> (v1.4+)	string	<i>read-only</i> (null)	The part number for this SFP.
<b>SerialNumber</b> (v1.4+)	string	<i>read-only</i> (null)	The serial number for this SFP.
<b>Status</b> (v1.4+) {}	object		The status and health of the resource and its subordinate or dependent resources. <i>For property details, see Status.</i>
<b>SupportedSFPTypes</b> (v1.4+) [ ]	array (string (enum))	<i>read-only</i> (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>
<b>Type</b> (v1.4+)	string (enum)	<i>read-only</i> (null)	The type of SFP device that is attached to this port. <i>For the possible property values, see Type in Property details.</i>
}			
<b>SignalDetected</b> (v1.2+)	boolean	<i>read-only</i> (null)	An indication of whether a signal is detected on this interface.

Property	Type	Attributes	Notes
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Width</b>	integer	<i>read-only (null)</i>	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
<b>ResetType</b>	string (enum)	<i>optional</i>	The type of reset. For the possible property values, see ResetType 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 on 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 an alphanumeric 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 on 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.

string	Description
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).
FabricLink (v1.11+)	Fabric link.
Reserved (deprecated v1.11)	Reserved. <i>Deprecated in v1.11 and later. This value has been deprecated in favor of <code>FabricLink</code>.</i>
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 on 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 an alphanumeric 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 on 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.

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.

#### 6.95.5.16 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.

string	Description
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

#### 6.95.5.18 SupportedCXLModes

The supported device modes.

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.

#### 6.95.5.19 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.

#### 6.95.5.20 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.
QSFPDD	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+.

#### 6.95.5.21 SystemCapabilities

The system capabilities received from the remote partner across this link.

string	Description
Bridge	Bridge.
DOCSISCableDevice	DOCSIS cable device.



string	Description
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.

#### 6.95.5.22 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.
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_11_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 1.5.1

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
<b>CXL</b> (v1.4+) {	object		The port metrics specific to CXL ports.
<b>BackpressureAveragePercentage</b> (v1.4+)	integer (%)	<i>read-only</i>	The average congestion of the port as a percentage.
}			
<b>FibreChannel</b> (v1.2+) {	object		The Fibre Channel-specific port metrics for network ports.
<b>CorrectableFECErrors</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of correctable forward error correction (FEC) errors.
<b>InvalidCRCs</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of invalid cyclic redundancy checks (CRCs).
<b>InvalidTXWords</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of invalid transmission words.
<b>LinkFailures</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of link failures.
<b>LossesOfSignal</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of losses of signal.
<b>LossesOfSync</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of losses of sync.

Property	Type	Attributes	Notes
<b>RXBBCreditZero</b> (v1.2+)	integer	<i>read-only</i> (null)	The number of times the receive buffer-to-buffer credit count transitioned to zero.
<b>RXExchanges</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of Fibre Channel exchanges received.
<b>RXSequences</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of Fibre Channel sequences received.
<b>TXBBCredits</b> (v1.2+)	integer	<i>read-only</i> (null)	The number of transmit buffer-to-buffer credits the port is configured to use.
<b>TXBBCreditZero</b> (v1.2+)	integer	<i>read-only</i> (null)	The number of times the transmit buffer-to-buffer credit count transitioned to zero.
<b>TXBBCreditZeroDurationMilliseconds</b> (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.
<b>TXExchanges</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of Fibre Channel exchanges transmitted.
<b>TXSequences</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of Fibre Channel sequences transmitted.
<b>UncorrectableFECErrors</b> (v1.2+)	integer	<i>read-only</i> (null)	The total number of uncorrectable forward error correction (FEC) errors.
}			
<b>GenZ {</b>	object		The port metrics specific to Gen-Z ports.
<b>AccessKeyViolations</b>	integer	<i>read-only</i> (null)	The total number of Access Key Violations detected.
<b>EndToEndCRCErrors</b>	integer	<i>read-only</i> (null)	The total number of ECRC transient errors detected.
<b>LinkNTE</b>	integer	<i>read-only</i> (null)	The total number of link-local non-transient errors detected.
<b>LLRRecovery</b>	integer	<i>read-only</i> (null)	The total number of times Link-Level Reliability (LLR) recovery has been initiated.
<b>MarkedECN</b>	integer	<i>read-only</i> (null)	The number of packets with the Congestion ECN bit set.
<b>NonCRCTransientErrors</b>	integer	<i>read-only</i> (null)	The total number transient errors detected that are unrelated to CRC validation.

Property	Type	Attributes	Notes
<b>PacketCRCErrors</b>	integer	<i>read-only</i> (null)	The total number of PCRC transient errors detected.
<b>PacketDeadlineDiscards</b>	integer	<i>read-only</i> (null)	The number of packets discarded due to the Congestion Deadline subfield reaching zero.
<b>ReceivedECN</b>	integer	<i>read-only</i> (null)	The number of packets received on this interface with the Congestion ECN bit set.
<b>RXStompedECRC</b>	integer	<i>read-only</i> (null)	The total number of packets received with a stomped ECRC field.
<b>TXStompedECRC</b>	integer	<i>read-only</i> (null)	The total number of packets that this interface stomped the ECRC field.
}			
<b>Networking</b> (v1.1+) {	object		The port metrics for network ports, including Ethernet, Fibre Channel, and InfiniBand, that are not specific to one of these protocols.
<b>RDMAProtectionErrors</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA protection errors.
<b>RDMAProtocolErrors</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA protocol errors.
<b>RDMARXBytes</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA bytes received on a port since reset.
<b>RDMARXRequests</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA requests received on a port since reset.
<b>RDMATXBytes</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA bytes transmitted on a port since reset.
<b>RDMATXReadRequests</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA read requests transmitted on a port since reset.
<b>RDMATXRequests</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA requests transmitted on a port since reset.
<b>RDMATXSendRequests</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA send requests transmitted on a port since reset.
<b>RDMATXWriteRequests</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of RDMA write requests transmitted on a port since reset.
<b>RXBroadcastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of valid broadcast frames received on a port since reset.

Property	Type	Attributes	Notes
<b>RXDiscards</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames discarded in a port's receive path since reset.
<b>RXFalseCarrierErrors</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of false carrier errors received from phy on a port since reset.
<b>RXFCSErrors</b> (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.
<b>RXFrameAlignmentErrors</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames received with alignment errors on a port since reset.
<b>RXFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames received on a port since reset.
<b>RXMulticastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of valid multicast frames received on a port since reset.
<b>RXOversizeFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames that exceed the maximum frame size.
<b>RXPauseXOFFFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of flow control frames from the network to pause transmission.
<b>RXPauseXONFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of flow control frames from the network to resume transmission.
<b>RXPFCFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of priority flow control (PFC) frames received on a port since reset.
<b>RXUndersizeFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames that are smaller than the minimum frame size of 64 bytes.
<b>RXUnicastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of valid unicast frames received on a port since reset.
<b>TXBroadcastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of good broadcast frames transmitted on a port since reset.
<b>TXDiscards</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames discarded in a port's transmit path since reset.
<b>TXExcessiveCollisions</b> (v1.1+)	integer	<i>read-only</i> (null)	The number of times a single transmitted frame encountered more than 15 collisions.
<b>TXFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of frames transmitted on a port since reset.
<b>TXLateCollisions</b> (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.

Property	Type	Attributes	Notes
<b>TXMulticastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of good multicast frames transmitted on a port since reset.
<b>TXMultipleCollisions</b> (v1.1+)	integer	<i>read-only</i> (null)	The times that a transmitted frame encountered 2-15 collisions.
<b>TXPauseXOFFFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of XOFF frames transmitted to the network.
<b>TXPauseXONFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of XON frames transmitted to the network.
<b>TXPFCFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of priority flow control (PFC) frames sent on a port since reset.
<b>TXSingleCollisions</b> (v1.1+)	integer	<i>read-only</i> (null)	The times that a successfully transmitted frame encountered a single collision.
<b>TXUnicastFrames</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of good unicast frames transmitted on a port since reset.
}			
<b>PCIEErrors</b> (v1.3+) {	object		The PCIe errors associated with this port.
<b>CorrectableErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe correctable errors for this device.
<b>FatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe fatal errors for this device.
<b>L0ToRecoveryCount</b> (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.
<b>NAKReceivedCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by the receiver.
<b>NAKSentCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by this device.
<b>NonFatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe non-fatal errors for this device.
<b>ReplayCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replays issued by this device.
<b>ReplayRolloverCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replay rollovers issued by this device.

Property	Type	Attributes	Notes
<b>UnsupportedRequestCount</b> (v1.13+)	integer	<i>read-only</i> (null)	The total number of PCIe unsupported requests received by this device.
}			
<b>RXBytes</b> (v1.1+)	integer (bytes)	<i>read-only</i> (null)	The total number of bytes received on a port since reset.
<b>RXErrors</b> (v1.1+)	integer	<i>read-only</i> (null)	The total number of received errors on a port since reset.
<b>SAS</b> (v1.1+) [ {	array		The physical (phy) metrics for Serial Attached SCSI (SAS). Each member represents a single phy.
<b>InvalidDwordCount</b> (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.
<b>LossOfDwordSynchronizationCount</b> (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.
<b>PhyResetProblemCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of times a phy reset problem has occurred.
<b>RunningDisparityErrorCount</b> (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.
} ]			
<b>Transceivers</b> (v1.1+) [ {	array		The metrics for the transceivers in this port. Each member represents a single transceiver.
<b>RXInputPowerMilliWatts</b> (v1.1+)	number (milliWatts)	<i>read-only</i> (null)	The RX input power value of a small form-factor pluggable (SFP) transceiver.
<b>SupplyVoltage</b> (v1.1+)	number (Volts)	<i>read-only</i> (null)	The supply voltage of a small form-factor pluggable (SFP) transceiver.
<b>TXBiasCurrentMilliAmps</b> (v1.1+)	number (mA)	<i>read-only</i> (null)	The TX bias current value of a small form-factor pluggable (SFP) transceiver.
<b>TXOutputPowerMilliWatts</b> (v1.1+)	number (milliWatts)	<i>read-only</i> (null)	The TX output power value of a small form-factor pluggable (SFP) transceiver.
} ]			
<b>TXBytes</b> (v1.1+)	integer (bytes)	<i>read-only</i> (null)	The total number of bytes transmitted on a port since reset.



Property	Type	Attributes	Notes
<b>TXErrors</b> (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_1.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 1.7.2 (deprecated)

Version	v1.7 <i>Deprecated</i>	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2019.3	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
<b>PowerControl</b> [ {	array		The set of power control functions, including power reading and limiting.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> (v1.3+) { }	object		The available actions for this resource.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>Name</b>	string	<i>read-only (null)</i>	The power control function name.
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PhysicalContext</b> (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>
<b>PowerAllocatedWatts</b>	number (Watts)	<i>read-only (null)</i>	The total amount of power that has been allocated or budgeted to chassis.
<b>PowerAvailableWatts</b>	number (Watts)	<i>read-only (null)</i>	The amount of reserve power capacity, in watt units, that remains. This value is the PowerCapacityWatts value minus the PowerAllocatedWatts value.
<b>PowerCapacityWatts</b>	number (Watts)	<i>read-only (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.
<b>PowerConsumedWatts</b>	number (Watts)	<i>read-only (null)</i>	The actual power that the chassis consumes, in watt units.
<b>PowerLimit</b> {	object		The power limit status and configuration information for this chassis.
<b>CorrectionInMs</b>	integer (ms)	<i>read-write (null)</i>	The time required for the limiting process to reduce power consumption to below the limit.

Property	Type	Attributes	Notes
<b>LimitException</b>	string (enum)	<i>read-write (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>
<b>LimitInWatts</b>	number (Watts)	<i>read-write (null)</i>	The power limit, in watt units. If <code>null</code> , power capping is disabled.
}			
<b>PowerMetrics {</b>	object		The power readings for this chassis.
<b>AverageConsumedWatts</b>	number (Watts)	<i>read-only (null)</i>	The average power level over the measurement window over the last IntervalInMin minutes.
<b>IntervalInMin</b>	integer (min)	<i>read-only (null)</i>	The time interval, or window, over which the power metrics are measured.
<b>MaxConsumedWatts</b>	number (Watts)	<i>read-only (null)</i>	The highest power consumption level, in watt units, that has occurred over the measurement window within the last IntervalInMin minutes.
<b>MinConsumedWatts</b>	number (Watts)	<i>read-only (null)</i>	The lowest power consumption level, in watt units, over the measurement window that occurred within the last IntervalInMin minutes.
}			
<b>PowerRequestedWatts</b>	number (Watts)	<i>read-only (null)</i>	The potential power, in watt units, 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.
<b>RelatedItem [ {</b>	array		An array of links to resources or objects associated with this power limit.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Status { }</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
} ]			
<b>PowerSupplies [ {</b>	array		The set of power supplies associated with this system or device.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.

Property	Type	Attributes	Notes
<b>Actions</b> (v1.3+) {}	object		The available actions for this resource.
<b>Assembly</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>EfficiencyPercent</b> (v1.5+)	number (%)	<i>read-only (null)</i>	The measured efficiency of this power supply as a percentage.
<b>FirmwareVersion</b>	string	<i>read-only (null)</i>	The firmware version for this power supply.
<b>HotPluggable</b> (v1.5+)	boolean	<i>read-only (null)</i>	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>IndicatorLED</b> (v1.2+)	string (enum)	<i>read-write (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>
<b>InputRanges</b> (v1.1+) [ {	array		The input ranges that the power supply can use.
<b>InputType</b> (v1.1+)	string (enum)	<i>read-only (null)</i>	The Input type (AC or DC). <i>For the possible property values, see InputType in Property details.</i>
<b>MaximumFrequencyHz</b> (v1.1+)	number (Hz)	<i>read-only (null)</i>	The maximum line input frequency at which this power supply input range is effective.
<b>MaximumVoltage</b> (v1.1+)	number (Volts)	<i>read-only (null)</i>	The maximum line input voltage at which this power supply input range is effective.
<b>MinimumFrequencyHz</b> (v1.1+)	number (Hz)	<i>read-only (null)</i>	The minimum line input frequency at which this power supply input range is effective.
<b>MinimumVoltage</b> (v1.1+)	number (Volts)	<i>read-only (null)</i>	The minimum line input voltage at which this power supply input range is effective.
<b>Oem</b> (v1.1+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OutputWattage</b> (v1.1+)	number (Watts)	<i>read-only (null)</i>	The maximum capacity of this power supply when operating in this input range.
} ]			
<b>LastPowerOutputWatts</b>	number (Watts)	<i>read-only (null)</i>	The average power output of this power supply.

Property	Type	Attributes	Notes
<b>LineInputVoltage</b>	number (Volts)	<i>read-only (null)</i>	The line input voltage at which the power supply is operating.
<b>LineInputVoltageType</b>	string (enum)	<i>read-only (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>
<b>Location</b> (v1.5+) { }	object		The location of the power supply. For property details, see Location.
<b>Manufacturer</b> (v1.1+)	string	<i>read-only (null)</i>	The manufacturer of this power supply.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this power supply.
<b>Name</b>	string	<i>read-only (null)</i>	The name of the power supply.
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this power supply.
<b>PowerCapacityWatts</b>	number (Watts)	<i>read-only (null)</i>	The maximum capacity of this power supply.
<b>PowerInputWatts</b> (v1.5+)	number (Watts)	<i>read-only (null)</i>	The measured input power of this power supply.
<b>PowerOutputWatts</b> (v1.5+)	number (Watts)	<i>read-only (null)</i>	The measured output power of this power supply.
<b>PowerSupplyType</b>	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>
<b>Redundancy</b> [ { } ]	array (object)		The set of redundancy groups for this power supply. For property details, see Redundancy.
<b>RelatedItem</b> [ {	array		An array of links to resources or objects associated with this power supply.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			

Property	Type	Attributes	Notes
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this power supply.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this power supply.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
} ]			
<b>Redundancy</b> [ { } ]	array (object)		The redundancy information for the set of power supplies in this chassis. For property details, see Redundancy.
<b>Voltages</b> [ {	array		The set of voltage sensors for this chassis.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> (v1.3+) {}	object		The available actions for this resource.
<b>LowerThresholdCritical</b>	number (Volts)	<i>read-only (null)</i>	The value at which the reading is below normal range but not yet fatal.
<b>LowerThresholdFatal</b>	number (Volts)	<i>read-only (null)</i>	The value at which the reading is below normal range and fatal.
<b>LowerThresholdNonCritical</b>	number (Volts)	<i>read-only (null)</i>	The value at which the reading is below normal range.
<b>MaxReadingRange</b>	number (Volts)	<i>read-only (null)</i>	Maximum value for this sensor.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>MinReadingRange</b>	number (Volts)	<i>read-only (null)</i>	Minimum value for this sensor.
<b>Name</b>	string	<i>read-only (null)</i>	Voltage sensor name.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PhysicalContext</b>	string (enum)	<i>read-only</i>	The area or device to which this voltage measurement applies. For the possible property values, see PhysicalContext in Property details.
<b>ReadingVolts</b>	number (Volts)	<i>read-only (null)</i>	The reading of the voltage sensor.

Property	Type	Attributes	Notes
<b>RelatedItem</b> [ {	array		An array of links to resources or objects to which this voltage measurement applies.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>SensorNumber</b>	integer	<i>read-only (null)</i>	A numerical identifier to represent the voltage sensor.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UpperThresholdCritical</b>	number (Volts)	<i>read-only (null)</i>	The value at which the reading is above normal range but not yet fatal.
<b>UpperThresholdFatal</b>	number (Volts)	<i>read-only (null)</i>	The value at which the reading is above normal range and fatal.
<b>UpperThresholdNonCritical</b>	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
<b>MemberId</b>	string	<i>required</i>	The MemberId of the power supply within the PowerSupplies array on which to perform the reset.

Parameter Name	Type	Attributes	Notes
<b>ResetType</b>	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.
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.
ACHighLine (deprecated v1.1)	277V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC277V.</i>
ACLowLine (deprecated v1.1)	100-127V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC120V.</i>
ACMidLine (deprecated v1.1)	200-240V AC input. <i>Deprecated in v1.1 and later. This value has been deprecated in favor of AC240V.</i>
ACWideRange (v1.1+)	Wide range AC input.
DC240V (v1.1+)	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.
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.

#### 6.97.5.6 PowerSupplyType

The power supply type (AC or DC).

string	Description
AC	Alternating Current (AC) power supply.

string	Description
ACorDC	The power supply supports both DC and 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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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_2.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 1.3.3

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
<b>AssetTag</b>	string	<i>read-write</i> ( <i>null</i> )	The user-assigned asset tag for this equipment.
<b>Branches</b> {	object		A link to the branch circuits for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Circuit</i> . See the Circuit schema for details.
}			
<b>EquipmentType</b>	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>
<b>Feeders</b> {	object		A link to the feeder circuits for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Circuit</i> . See the Circuit schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only</i>	The firmware version of this equipment.
<b>Links</b> {	object		The links to other resources that are related to this resource.



Property	Type	Attributes	Notes
<b>Chassis</b> [ {	array		An array of links to the chassis that contain this equipment.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>Facility</b> {	object		A link to the facility that contains this equipment. See the <i>Facility</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Facility resource. See the Links section and the <i>Facility</i> schema for details.
}			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this equipment.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Location</b> { }	object		The location of the equipment. For property details, see Location.
<b>Mains</b> {	object		A link to the power input circuits for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Circuit</i> . See the Circuit schema for details.
}			
<b>MainsRedundancy</b> (v1.1+) { }	object		The redundancy information for the mains (input) circuits for this equipment. For property details, see RedundantGroup.
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer of this equipment.
<b>Metrics</b> {	object		A link to the summary metrics for this equipment. See the <i>PowerDistributionMetrics</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>PowerDistributionMetrics</i> resource. See the Links section and the <i>PowerDistributionMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only (null)</i>	The product model number of this equipment.
<b>OutletGroups {</b>	object		A link to the outlet groups for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>OutletGroup</i> . See the <i>OutletGroup</i> schema for details.
}			
<b>Outlets {</b>	object		A link to the outlets for this equipment. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Outlet</i> . See the <i>Outlet</i> schema for details.
}			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this equipment.
<b>PowerSupplies</b> ( <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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerSupply</i> . See the <i>PowerSupply</i> schema for details.
}			
<b>PowerSupplyRedundancy</b> ( <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>
<b>ProductionDate</b>	string (date-time)	<i>read-only (null)</i>	The production or manufacturing date of this equipment.

Property	Type	Attributes	Notes
<b>Sensors</b> ( <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	read-only	Link to Collection of <i>Sensor</i> . See the Sensor schema for details.
}			
<b>SerialNumber</b>	string	read-only (null)	The serial number for this equipment.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Subfeeds</b> {	object		A link to the subfeed circuits for this equipment. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>Circuit</i> . See the Circuit schema for details.
}			
<b>TransferConfiguration</b> {	object	(null)	The configuration settings for an automatic transfer switch.
<b>ActiveMainsId</b>	string	read-write (null)	The mains circuit that is switched on and qualified to supply power to the output circuit.
<b>AutoTransferEnabled</b>	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.
<b>ClosedTransitionAllowed</b>	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.
<b>ClosedTransitionTimeoutSeconds</b>	integer	read-write (null)	The time in seconds to wait for a closed transition to occur.
<b>PreferredMainsId</b>	string	read-write (null)	The preferred source for the mains circuit to this equipment.
<b>RetransferDelaySeconds</b>	integer	read-write (null)	The time in seconds to delay the automatic transfer from the alternate mains circuit back to the preferred mains circuit.

Property	Type	Attributes	Notes
<b>RetransferEnabled</b>	boolean	<i>read-write</i> (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.
<b>TransferDelaySeconds</b>	integer	<i>read-write</i> (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.
<b>TransferInhibit</b>	boolean	<i>read-write</i> (null)	Indicates if any transfer is inhibited.
}			
<b>TransferCriteria</b> {	object	(null)	The criteria used to initiate a transfer for an automatic transfer switch.
<b>OverNominalFrequencyHz</b>	number (Hz)	<i>read-write</i> (null)	The frequency in hertz units over the nominal value that satisfies a criterion for transfer.
<b>OverVoltageRMSPercentage</b>	number (%)	<i>read-write</i> (null)	The positive percentage of voltage RMS over the nominal value that satisfies a criterion for transfer.
<b>TransferSensitivity</b>	string (enum)	<i>read-write</i> (null)	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>
<b>UnderNominalFrequencyHz</b>	number (Hz)	<i>read-write</i> (null)	The frequency in hertz units under the nominal value that satisfies a criterion for transfer.
<b>UnderVoltageRMSPercentage</b>	number (%)	<i>read-write</i> (null)	The negative percentage of voltage RMS under the nominal value that satisfies a criterion for transfer.
}			
<b>UserLabel</b> (v1.3+)	string	<i>read-write</i>	A user-assigned label.
<b>UUID</b>	string (uuid)	<i>read-only</i> (null)	The UUID for this equipment.
<b>Version</b>	string	<i>read-only</i> (null)	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_3.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 1.3.1

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
<b>AbsoluteHumidity</b> (v1.3+) {}	object		Absolute humidity (g/m <sup>3</sup> ). For more information about this property, see SensorExcerpt in Property Details.
<b>EnergykWh</b> {	object (excerpt)		Energy consumption (kWh). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	read-only (null)	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.

Property	Type	Attributes	Notes
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> ( <i>null</i> )	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The date and time when the time-based properties were last reset.
}			
<b>HumidityPercent</b> (v1.1+) {}	object		Humidity (percent). For more information about this property, see SensorExcerpt in Property Details.
<b>PowerLoadPercent</b> (v1.2+) {}	object		The power load (percent) for this equipment. For more information about this property, see SensorExcerpt in Property Details.
<b>PowerWatts</b> {	object (excerpt)		Power consumption (W). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>ApparentVA</b>	number (V.A)	<i>read-only</i> ( <i>null</i> )	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> ( <i>null</i> )	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> ( <i>null</i> )	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
<b>TemperatureCelsius</b> (v1.1+) {}	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)	read-only (null)	The link to the resource that provides the data for this sensor.
Reading	number	read-only (null)	The sensor value.

6.99.6 Example response

```
{
  "@odata.type": "#PowerDistributionMetrics.v1_3_1.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 1.2.1

Version	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2019.4

6.100.1 Description

The PowerDomain schema contains the definition for the DCIM power domain.

6.100.2 URIs

/redfish/v1/Facilities/{FacilityId}/PowerDomains/{PowerDomainId}

6.100.3 Properties

Property	Type	Attributes	Notes
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ElectricalBuses</b> (v1.2+) [ {	array		An array of links to the electrical buses in this power domain.
<b>@odata.id</b>	string	read-write	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			

Property	Type	Attributes	Notes
<b>FloorPDUs</b> [ {	array		An array of links to the floor power distribution units in this power domain.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this power domain.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PowerShelves</b> (v1.1+) [ {	array		An array of links to the power shelves in this power domain.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>RackPDUs</b> [ {	array		An array of links to the rack-level power distribution units in this power domain.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>Switchgear</b> [ {	array		An array of links to the switchgear in this power domain.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a PowerDistribution resource. See the Links section and the <i>PowerDistribution</i> schema for details.
} ]			
<b>TransferSwitches</b> [ {	array		An array of links to the transfer switches in this power domain.
<b>@odata.id</b>	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
<b>Status</b> {}	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_1.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 1.2.1

<b>Version</b>	v1.2	v1.1	v1.0
<b>Release</b>	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
<b>ElectricalBuses</b> (v1.2+) {	object		The link to a collection of electrical buses. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			
<b>FloorPDUs</b> {	object		A link to a collection of floor power distribution units. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>ManagedBy</b> [	array		An array of links to the managers responsible for managing this power equipment.
{			
@odata.id	string	read-only	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>PowerShelves</b> (v1.1+) {	object		A link to a collection of power shelves. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			
<b>RackPDUs</b> {	object		A link to a collection of rack-level power distribution units. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>Switchgear {</b>	object		A link to a collection of switchgear. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			
<b>TransferSwitches {</b>	object		A link to a collection of transfer switches. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerDistribution</i> . See the <i>PowerDistribution</i> schema for details.
}			

#### 6.101.4 Example response

```
{
  "@odata.type": "#PowerEquipment.v1_2_1.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 1.1.1

<b>Version</b>	<i>v1.1</i>	<i>v1.0</i>
<b>Release</b>	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
<b>Allocation</b> {	object		Power allocation for this subsystem.
<b>AllocatedWatts</b>	number (Watts)	<i>read-only</i> ( <i>null</i> )	The total amount of power that has been allocated or budgeted to this subsystem.
<b>RequestedWatts</b>	number (Watts)	<i>read-only</i> ( <i>null</i> )	The potential power, in watt units, 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.
}			
<b>Batteries</b> ( <i>v1.1+</i> ) {	object		The link to the collection of batteries within this subsystem. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Battery</i> . See the Battery schema for details.
}			
<b>CapacityWatts</b>	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.
<b>PowerSupplies</b> {	object		The link to the collection of power supplies within this subsystem. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>PowerSupply</i> . See the <i>PowerSupply</i> schema for details.
}			
<b>PowerSupplyRedundancy</b> [ { } ]	array (object)		The redundancy information for the set of power supplies in this subsystem. For property details, see <i>RedundantGroup</i> .
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .

### 6.102.4 Example response

```
{
  "@odata.type": "#PowerSubsystem.v1_1_1.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 1.5.3

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
<b>Assembly</b> {	object		The link to the assembly associated with this power supply. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>EfficiencyRatings</b> [ {	array		The efficiency ratings of this power supply.
<b>EfficiencyPercent</b>	number (%)	<i>read-only (null)</i>	The rated efficiency of this power supply at the specified load.
<b>LoadPercent</b>	number (%)	<i>read-only (null)</i>	The electrical load for this rating.

Property	Type	Attributes	Notes
} ]			
<b>ElectricalSourceManagerURIs</b> (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.
<b>ElectricalSourceNames</b> (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.
<b>FirmwareVersion</b>	string	<i>read-only</i> (null)	The firmware version for this power supply.
<b>HotPluggable</b>	boolean	<i>read-only</i> (null)	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>InputNominalVoltageType</b>	string (enum)	<i>read-only</i> (null)	The nominal voltage type that is detected on the line input to this power supply. <i>For the possible property values, see InputNominalVoltageType in Property details.</i>
<b>InputRanges</b> [ {	array		The input ranges that the power supply can use.
<b>CapacityWatts</b>	number (Watts)	<i>read-only</i> (null)	The maximum capacity of this power supply when operating in this input range.
<b>NominalVoltageType</b>	string (enum)	<i>read-only</i> (null)	The input voltage range. <i>For the possible property values, see NominalVoltageType in Property details.</i>
} ]			
<b>LineInputStatus</b> (v1.3+)	string (enum)	<i>read-only</i> (null)	The status of the line input. <i>For the possible property values, see LineInputStatus in Property details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Outlet</b> (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>
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
}			

Property	Type	Attributes	Notes
<b>PoweringChassis</b> (v1.4+) [ {	array		An array of links to the chassis that are directly powered by this power supply.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>PowerOutlets</b> (v1.2+) [ {	array		An array of links to the outlets that provide power to this power supply.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Outlet resource. See the Links section and the <i>Outlet</i> schema for details.
} ]			
}			
<b>Location</b> {}	object		The location of the power supply. For property details, see Location.
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this power supply.
<b>Metrics</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PowerSupplyMetrics resource. See the Links section and the <i>PowerSupplyMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this power supply.
<b>OutputNominalVoltageType</b> (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>
<b>OutputRails</b> [ {	array		The output power rails provided by this power supply.
<b>NominalVoltage</b>	number	<i>read-only (null)</i>	The nominal voltage of this output power rail.
<b>PhysicalContext</b>	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>

Property	Type	Attributes	Notes
} ]			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this power supply.
<b>PhaseWiringType</b>	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>
<b>PlugType</b>	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>
<b>PowerCapacityWatts</b>	number (Watts)	<i>read-only (null)</i>	The maximum capacity of this power supply.
<b>PowerSupplyType</b>	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>
<b>ProductionDate</b> (v1.1+)	string (date-time)	<i>read-only (null)</i>	The production or manufacturing date of this power supply.
<b>Replaceable</b> (v1.5+)	boolean	<i>read-only (null)</i>	An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this power supply.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this power supply.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Version</b> (v1.1+)	string	<i>read-only (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)	optional	The type of reset. For the possible property values, see ResetType in Property details.

Request Example

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

6.103.5 Property details

6.103.5.1 InputNominalVoltageType

The nominal voltage type that is detected on 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.

string	Description
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.

#### 6.103.5.2 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.

string	Description
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.
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.
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.

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.

### 6.103.5.7 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).

string	Description
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).
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 and AC.
DC	Direct Current (DC) power supply.

string	Description
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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

### 6.103.6 Example response

```
{
  "@odata.type": "#PowerSupply.v1_5_3.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 1.1.1

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
<b>EnergykWh</b> {	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.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	read-only (null)	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	read-only (null)	Reactive energy (kVARh).
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b>	string (date-time)	read-only (null)	The date and time when the time-based properties were last reset.
}			
<b>FanSpeedPercent</b> (deprecated v1.1) {	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 DataSourceUri. <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>
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	read-only (null)	The rotational speed.
}			



Property	Type	Attributes	Notes
<b>FanSpeedsPercent</b> (v1.1+) [ {	array (excerpt)		Fan speeds (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>DeviceName</b> (v1.2+)	string	read-only (null)	The name of the device.
<b>PhysicalContext</b>	string (enum)	read-only (null)	The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i>
<b>PhysicalSubContext</b>	string (enum)	read-only (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>
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	read-only (null)	The rotational speed.
} ]			
<b>FrequencyHz</b> {	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 DataSourceUri.
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
}			
<b>InputCurrentAmps</b> {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	read-only (null)	The total harmonic distortion percent (% THD).
}			

Property	Type	Attributes	Notes
<b>InputPowerWatts</b> {	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 DataSourceUri.
<b>ApparentVA</b>	number (V.A)	<i>read-only</i> ( <i>null</i> )	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> ( <i>null</i> )	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> ( <i>null</i> )	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
<b>InputVoltage</b> {	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.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> ( <i>null</i> )	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> ( <i>null</i> )	The total harmonic distortion percent (% THD).
}			
<b>OutputPowerWatts</b> {	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.
<b>ApparentVA</b>	number (V.A)	<i>read-only</i> ( <i>null</i> )	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	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
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> (null)	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
}			
<b>RailCurrentAmps</b> [ {	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.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	The total harmonic distortion percent (% THD).
} ]			
<b>RailPowerWatts</b> [ {	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 DataSourceUri.
<b>ApparentVA</b>	number (V.A)	<i>read-only</i> (null)	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> (null)	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only</i> (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	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.

Property	Type	Attributes	Notes
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
} ]			
<b>RailVoltage</b> [ {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> ( <i>null</i> )	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> ( <i>null</i> )	The total harmonic distortion percent (% THD).
} ]			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TemperatureCelsius</b> {	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.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	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.
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.

string	Description
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.
Upper	The upper portion of the chassis.

string	Description
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_1.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_12VOutput",
  "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_12Current",
    "Reading": 2.58
  }
],
"OutputPowerWatts": {
  "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1OutputPower",
  "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.ResetMetrics"
    }
  },
  "@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
<b>Mappings</b> [ {	array		The mappings between entities and the relevant privileges that access those entities.
<b>Entity</b>	string	<i>read-only</i>	The Resource name, such as <code>Manager</code> .
<b>OperationMap</b> {	object		List mapping between HTTP methods and privilege required for the Resource.
<b>DELETE</b> [ {	array		The privilege required to complete an HTTP DELETE operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>GET</b> [ {	array		The privilege required to complete an HTTP GET operation.

Property	Type	Attributes	Notes
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>HEAD</b> [ {	array		The privilege required to complete an HTTP HEAD operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PATCH</b> [ {	array		The privilege required to complete an HTTP PATCH operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>POST</b> [ {	array		The privilege required to complete an HTTP POST operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PUT</b> [ {	array		The privilege required to complete an HTTP PUT operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
}			
<b>PropertyOverrides</b> [ {	array		The privilege overrides of properties within a Resource.
<b>OperationMap</b> {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
<b>DELETE</b> [ {	array		The privilege required to complete an HTTP DELETE operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>GET</b> [ {	array		The privilege required to complete an HTTP GET operation.
<b>Privilege</b> [ ]	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
} ]			
<b>HEAD</b> [ {	array		The privilege required to complete an HTTP HEAD operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PATCH</b> [ {	array		The privilege required to complete an HTTP PATCH operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>POST</b> [ {	array		The privilege required to complete an HTTP POST operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PUT</b> [ {	array		The privilege required to complete an HTTP PUT operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
}			
<b>Targets</b> [ ]	array (string, null)	<i>read-only</i>	The set of URIs, Resource types, or properties.
} ]			
<b>ResourceURIOverrides</b> [ {	array		The privilege overrides of Resource URIs.
<b>OperationMap</b> {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
<b>DELETE</b> [ {	array		The privilege required to complete an HTTP DELETE operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>GET</b> [ {	array		The privilege required to complete an HTTP GET operation.

Property	Type	Attributes	Notes
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
<b>HEAD</b> [ {	array		The privilege required to complete an HTTP HEAD operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
<b>PATCH</b> [ {	array		The privilege required to complete an HTTP PATCH operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
<b>POST</b> [ {	array		The privilege required to complete an HTTP POST operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
<b>PUT</b> [ {	array		The privilege required to complete an HTTP PUT operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
}			
<b>Targets</b> [ ]	array (string, null)	<i>read-only</i>	The set of URIs, Resource types, or properties.
}]			
<b>SubordinateOverrides</b> [ {	array		The privilege overrides of the subordinate Resource.
<b>OperationMap</b> {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
<b>DELETE</b> [ {	array		The privilege required to complete an HTTP DELETE operation.
<b>Privilege</b> [ ]	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
} ]			
<b>GET</b> [ {	array		The privilege required to complete an HTTP GET operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>HEAD</b> [ {	array		The privilege required to complete an HTTP HEAD operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PATCH</b> [ {	array		The privilege required to complete an HTTP PATCH operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>POST</b> [ {	array		The privilege required to complete an HTTP POST operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
<b>PUT</b> [ {	array		The privilege required to complete an HTTP PUT operation.
<b>Privilege</b> [ ]	array (string)	<i>read-only</i>	An array of privileges that are required to complete a specific HTTP operation on a Resource.
} ]			
}			
<b>Targets</b> [ ]	array (string, null)	<i>read-only</i>	The set of URIs, Resource types, or properties.
} ]			
} ]			
<b>OEMPrivilegesUsed</b> [ ]	array (string)	<i>read-only</i>	The set of OEM privileges used in this mapping.

Property	Type	Attributes	Notes
<b>PrivilegesUsed</b> [ ]	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.
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 1.19.0

Version	v1.19	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	...
Release	2023.3	2023.1	2022.3	2022.2	2022.1	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	...

### 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
<b>AccelerationFunctions</b> (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.
}			
<b>AdditionalFirmwareVersions</b> (v1.15+) {	object		The additional firmware versions of the processor.
<b>Bootloader</b> (v1.7+)	string	read-only (null)	The bootloader version contained in this software, such as U-Boot or UEFI.
<b>Kernel</b> (v1.7+)	string	read-only (null)	The kernel version contained in this software.
<b>Microcode</b> (v1.7+)	string	read-only (null)	The microcode version contained in this software, such as processor microcode.
<b>Oem</b> (v1.7+) { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OSDistribution</b> (v1.8+)	string	read-only (null)	The operating system name of this software.
}			
<b>AppliedOperatingConfig</b> (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	read-write	Link to a <i>OperatingConfig</i> resource. See the Links section and the <i>OperatingConfig</i> schema for details.
}			
<b>Assembly</b> (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	read-only	Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details.

Property	Type	Attributes	Notes
}			
<b>BaseSpeedMHz</b> (v1.10+)	integer (MHz)	<i>read-only (null)</i>	The base (nominal) clock speed of the processor in MHz.
<b>BaseSpeedPriorityState</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	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>
<b>Certificates</b> (v1.11+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>Enabled</b> (v1.12+)	boolean	<i>read-write</i>	An indication of whether this processor is enabled.
<b>EnvironmentMetrics</b> (v1.11+) {	object		The link to the environment metrics for this processor. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>Family</b> (v1.16+)	string	<i>read-only (null)</i>	The processor family.
<b>FirmwareVersion</b> (v1.7+)	string	<i>read-only</i>	The firmware version of the processor.
<b>FPGA</b> (v1.4+) {	object		The properties for processors of the FPGA type.
<b>ExternalInterfaces</b> (v1.4+) [ {	array		An array of the FPGA external interfaces.
<b>Ethernet</b> (v1.4+) {	object		The Ethernet-related information for this interface.
<b>MaxLanes</b> (v1.4+)	integer	<i>read-only (null)</i>	The number of lanes supported by this interface.
<b>MaxSpeedMbps</b> (v1.4+)	integer (Mbit/s)	<i>read-only (null)</i>	The maximum speed supported by this interface.
<b>Oem</b> (v1.4+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			

Property	Type	Attributes	Notes
<b>InterfaceType</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	The interface type. <i>For the possible property values, see InterfaceType in Property details.</i>
<b>PCle</b> (v1.4+) {	object		The PCIe-related information for this interface.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
} ]			
<b>FirmwareId</b> (v1.4+)	string	<i>read-only</i>	The FPGA firmware identifier.
<b>FirmwareManufacturer</b> (v1.4+)	string	<i>read-only</i>	The FPGA firmware manufacturer.
<b>FirmwareVersion</b> (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>
<b>FpgaType</b> (v1.4+)	string (enum)	<i>read-only</i>	The FPGA type. <i>For the possible property values, see FpgaType in Property details.</i>
<b>HostInterface</b> (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>
<b>Ethernet</b> (v1.4+) {	object		The Ethernet-related information for this interface.
<b>MaxLanes</b> (v1.4+)	integer	<i>read-only (null)</i>	The number of lanes supported by this interface.
<b>MaxSpeedMbps</b> (v1.4+)	integer (Mbit/s)	<i>read-only (null)</i>	The maximum speed supported by this interface.
<b>Oem</b> (v1.4+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
}			
<b>InterfaceType</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	The interface type. <i>For the possible property values, see InterfaceType in Property details.</i>
<b>PCle</b> (v1.4+) {	object		The PCIe-related information for this interface.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
}			
<b>Model</b> (v1.4+)	string	<i>read-only</i>	The FPGA model.
<b>Oem</b> (v1.4+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleVirtualFunctions</b> (v1.4+)	integer	<i>read-write</i>	The number of PCIe Virtual Functions.
<b>ProgrammableFromHost</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the FPGA firmware can be reprogrammed from the host by using system software.
<b>ReconfigurationSlots</b> (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.
<b>AccelerationFunction</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>AccelerationFunction</i> resource. See the <i>Links</i> section and the <i>AccelerationFunction</i> schema for details.
}			

Property	Type	Attributes	Notes
<b>ProgrammableFromHost</b> (v1.4+)	boolean	<i>read-write (null)</i>	An indication of whether the reconfiguration slot can be reprogrammed from the host by using system software.
<b>SlotId</b> (v1.4+)	string	<i>read-only (null)</i>	The FPGA reconfiguration slot identifier.
<b>UUID</b> (v1.4+)	string (uuid)	<i>read-only (null)</i>	The UUID for this reconfiguration slot.
} ]			
}			
<b>HighSpeedCoreIDs</b> (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.
<b>InstructionSet</b>	string (enum)	<i>read-only (null)</i>	The instruction set of the processor. <i>For the possible property values, see InstructionSet in Property details.</i>
<b>Links</b> (v1.1+) {	object		The links to other resources that are related to this resource.
<b>Chassis</b> (v1.1+) {	object		The link to the chassis that contains this processor. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>ConnectedProcessors</b> (v1.4+) [ {	array		An array of links to the processors directly connected to this processor.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Processor resource.
} ]			
<b>Endpoints</b> (v1.4+) [ {	array		An array of links to the endpoints that connect to this processor.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>FabricAdapters</b> (v1.17+) [ {	array		An array of links to the fabric adapters that present this processor to a fabric.
<b>@odata.id</b>	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
} ]			
<b>GraphicsController</b> (v1.12+) {	object	(null)	A link to the graphics controller associated with this processor. See the <i>GraphicsController</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a GraphicsController resource. See the Links section and the <i>GraphicsController</i> schema for details.
}			
<b>Memory</b> (v1.11+) [ {	array		An array of links to the memory associated with this processor.
<b>@odata.id</b>	string	read-only	Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details.
} ]			
<b>NetworkDeviceFunctions</b> (v1.13+) [ {	array		The network device functions to which this processor performs offload computation, such as with a SmartNIC.
<b>@odata.id</b>	string	read-only	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice</b> (v1.4+) {	object		The link to the PCIe device associated with this processor. See the <i>PCleDevice</i> schema for details on this property.
<b>@odata.id</b>	string	read-only	Link to a PCleDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
}			
<b>PCleFunctions</b> (v1.4+) [ {	array		An array of links to the PCleFunctions associated with this processor.
<b>@odata.id</b>	string	read-only	Link to a PCleFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
}			

Property	Type	Attributes	Notes
<b>Location</b> (v1.2+) {}	object		The location of the processor. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.10+)	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The processor manufacturer.
<b>MaxSpeedMHz</b>	integer (MHz)	<i>read-only (null)</i>	The maximum clock speed of the processor.
<b>MaxTDPWatts</b> (v1.4+)	integer (Watts)	<i>read-only (null)</i>	The maximum Thermal Design Power (TDP) in watt units.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>MemorySummary</b> (v1.11+) {	object		The summary of all memory associated with this processor.
<b>ECCModeEnabled</b> (v1.13+)	boolean	<i>read-write (null)</i>	An indication of whether memory ECC mode is enabled for this processor.
<b>Metrics</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MemoryMetrics resource. See the Links section and the <i>MemoryMetrics</i> schema for details.
}			
<b>TotalCacheSizeMiB</b> (v1.11+)	integer (mebibytes)	<i>read-only (null)</i>	Total size of cache memory of this processor.
<b>TotalMemorySizeMiB</b> (v1.11+)	integer (mebibytes)	<i>read-only (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.
}			
<b>Metrics</b> (v1.4+) {	object		The link to the metrics associated with this processor. See the <i>ProcessorMetrics</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ProcessorMetrics resource. See the Links section and the <i>ProcessorMetrics</i> schema for details.
}			
<b>MinSpeedMHz</b> (v1.8+)	integer (MHz)	<i>read-only (null)</i>	The minimum clock speed of the processor in MHz.
<b>Model</b>	string	<i>read-only (null)</i>	The product model number of this device.
<b>OperatingConfigs</b> (v1.9+) {	object		The link to the collection of operating configurations that can be applied to this processor. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>OperatingConfig</i> . See the OperatingConfig schema for details.
}			
<b>OperatingSpeedMHz</b> (v1.8+)	integer (MHz)	<i>read-only (null)</i>	Operating speed of the processor in MHz.
<b>OperatingSpeedRangeMHz</b> (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.
<b>AllowableMax</b>	number	<i>read-only (null)</i>	The maximum possible setting for this control.
<b>AllowableMin</b>	number	<i>read-only (null)</i>	The minimum possible setting for this control.
<b>AllowableNumericValues</b> [ ]	array (number, null)	<i>read-only</i>	The supported values for the set point.
<b>ControlMode</b>	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>
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this control.
<b>Reading</b>	number	<i>read-only (null)</i>	The reading of the sensor associated with this control.
<b>ReadingUnits</b>	string	<i>read-only (null)</i>	The units of the sensor reading associated with this control.



Property	Type	Attributes	Notes
<b>SettingMax</b>	number	<i>read-write (null)</i>	The maximum set point in the allowed range.
<b>SettingMin</b>	number	<i>read-write (null)</i>	The minimum set point in the allowed range.
}			
<b>PartNumber</b> (v1.7+)	string	<i>read-only (null)</i>	The part number of the processor.
<b>Ports</b> (v1.13+) {	object		The link to the collection of ports for this processor. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>PowerState</b> (v1.17+)	string (enum)	<i>read-only (null)</i>	The current power state of the processor. <i>For the possible property values, see PowerState in Property details.</i>
<b>ProcessorArchitecture</b>	string (enum)	<i>read-only (null)</i>	The architecture of the processor. <i>For the possible property values, see ProcessorArchitecture in Property details.</i>
<b>ProcessorId</b> {	object		The identification information for this processor.
<b>EffectiveFamily</b>	string	<i>read-only (null)</i>	The effective family for this processor.
<b>EffectiveModel</b>	string	<i>read-only (null)</i>	The effective model for this processor.
<b>IdentificationRegisters</b>	string	<i>read-only (null)</i>	The raw manufacturer-provided processor identification registers for this processor.
<b>MicrocodeInfo</b>	string	<i>read-only (null)</i>	The microcode information for this processor.
<b>ProtectedIdentificationNumber</b> (v1.10+)	string	<i>read-only (null)</i>	The Protected Processor Identification Number (PPIN) for this processor.
<b>Step</b>	string	<i>read-only (null)</i>	The step value for this processor.
<b>VendorId</b>	string	<i>read-only (null)</i>	The vendor identification for this processor.
}			

Property	Type	Attributes	Notes
<b>ProcessorIndex</b> (v1.16+)	integer	<i>read-only (null)</i>	The logical index of this processor within the system.
<b>ProcessorMemory</b> (v1.4+) [ {	array		The memory directly attached or integrated within this processor. Examples include internal cache, dedicated memory for the processor, and system memory.
<b>CapacityMiB</b> (v1.4+)	integer (mebibytes)	<i>read-only (null)</i>	The memory capacity in MiB.
<b>IntegratedMemory</b> (v1.4+)	boolean	<i>read-only (null)</i>	An indication of whether this memory is integrated within the processor.
<b>MemoryType</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	The type of memory used by this processor. <i>For the possible property values, see MemoryType in Property details.</i>
<b>SpeedMHz</b> (v1.4+)	integer	<i>read-only (null)</i>	The operating speed of the memory in MHz.
} ]			
<b>ProcessorType</b>	string (enum)	<i>read-only (null)</i>	The type of processor. <i>For the possible property values, see ProcessorType in Property details.</i>
<b>Replaceable</b> (v1.16+)	boolean	<i>read-only (null)</i>	An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy.
<b>SerialNumber</b> (v1.7+)	string	<i>read-only (null)</i>	The serial number of the processor.
<b>Socket</b>	string	<i>read-only (null)</i>	The socket or location of the processor.
<b>SparePartNumber</b> (v1.11+)	string	<i>read-only (null)</i>	The spare part number of the processor.
<b>SpeedLimitMHz</b> (v1.10+)	integer (MHz)	<i>read-write (null)</i>	The clock limit of the processor in MHz.
<b>SpeedLocked</b> (v1.10+)	boolean	<i>read-write (null)</i>	Indicates whether the clock speed of the processor is fixed at the value specified in the SpeedLimitMHz property.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SubProcessors</b> (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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Processor</i> . See the Processor schema for details.
}			
<b>SystemInterface</b> (v1.8+) {	object		The interface between the system and the processor.
<b>Ethernet</b> (v1.4+) {	object		The Ethernet-related information for this interface.
<b>MaxLanes</b> (v1.4+)	integer	<i>read-only (null)</i>	The number of lanes supported by this interface.
<b>MaxSpeedMbps</b> (v1.4+)	integer (Mbit/s)	<i>read-only (null)</i>	The maximum speed supported by this interface.
<b>Oem</b> (v1.4+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>InterfaceType</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	The interface type. <i>For the possible property values, see InterfaceType in Property details.</i>
<b>PCle</b> (v1.4+) {	object		The PCIe-related information for this interface.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
}			
<b>TDPWatts</b> (v1.4+)	integer (Watts)	<i>read-only (null)</i>	The nominal Thermal Design Power (TDP) in watt units.

Property	Type	Attributes	Notes
<b>ThrottleCauses</b> (v1.16+) [ ]	array (string (enum))	<i>read-only (null)</i>	The causes of the processor being throttled. <i>For the possible property values, see ThrottleCauses in Property details.</i>
<b>Throttled</b> (v1.16+)	boolean	<i>read-only (null)</i>	An indication of whether the processor is throttled.
<b>TotalCores</b>	integer	<i>read-only (null)</i>	The total number of cores that this processor contains.
<b>TotalEnabledCores</b> (v1.5+)	integer	<i>read-only (null)</i>	The total number of enabled cores that this processor contains.
<b>TotalThreads</b>	integer	<i>read-only (null)</i>	The total number of execution threads that this processor supports.
<b>TurboState</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	The state of turbo for this processor. <i>For the possible property values, see TurboState in Property details.</i>
<b>UUID</b> (v1.4+)	string (uuid)	<i>read-only (null)</i>	The UUID for this processor.
<b>Version</b> (v1.7+)	string	<i>read-only (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
<b>ResetType</b>	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.

string	Description
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.
RV32 (v1.19+)	RISC-V 32-bit.
RV64 (v1.19+)	RISC-V 64-bit.
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.

string	Description
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.
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.



string	Description
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.
RISC-V (v1.19+)	RISC-V.
x86	x86 or x86-64.

#### 6.106.5.11 ProcessorType

The type of processor.

string	Description
Accelerator	An accelerator.
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.
Partition (v1.19+)	A partition in a single processor.
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).

string	Description
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the unit.
GracefulRestart	Shut down gracefully and restart the unit.
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 turbo for this processor.

string	Description
Disabled	Turbo is disabled.
Enabled	Turbo is enabled.

### 6.106.6 Example response

```
{
  "@odata.type": "#Processor.v1_19_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 1.6.3

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
<b>AverageFrequencyMHz</b> ( <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>
<b>BandwidthPercent</b>	number (%)	<i>read-only (null)</i>	The bandwidth usage of this processor as a percentage.
<b>Cache</b> [ {	array		The processor cache metrics.
<b>CacheMiss</b>	number	<i>read-only (null)</i>	The number of cache line misses in millions.

Property	Type	Attributes	Notes
<b>CacheMissesPerInstruction</b>	number	<i>read-only (null)</i>	The number of cache misses per instruction.
<b>HitRatio</b>	number	<i>read-only (null)</i>	The cache line hit ratio.
<b>Level</b>	string	<i>read-only (null)</i>	The cache level.
<b>OccupancyBytes</b>	integer (bytes)	<i>read-only (null)</i>	The total cache level occupancy in bytes.
<b>OccupancyPercent</b>	number (%)	<i>read-only (null)</i>	The total cache occupancy percentage.
} ]			
<b>CacheMetricsTotal</b> (v1.2+) {	object		The total cache metrics for this processor.
<b>CurrentPeriod</b> (v1.2+) {	object		The cache metrics since the last reset or ClearCurrentPeriod action for this processor.
<b>CorrectableECCErrorCount</b> (v1.2+)	integer	<i>read-only (null)</i>	The number of correctable errors of cache memory since reset or ClearCurrentPeriod action for this processor.
<b>UncorrectableECCErrorCount</b> (v1.2+)	integer	<i>read-only (null)</i>	The number of uncorrectable errors of cache memory since reset or ClearCurrentPeriod action for this processor.
}			
<b>LifeTime</b> (v1.2+) {	object		The cache metrics for the lifetime of this processor.
<b>CorrectableECCErrorCount</b> (v1.2+)	integer	<i>read-only (null)</i>	The number of correctable errors for the lifetime of the cache memory.
<b>UncorrectableECCErrorCount</b> (v1.2+)	integer	<i>read-only (null)</i>	The number of uncorrectable errors for the lifetime of the cache memory.
}			
}			
<b>ConsumedPowerWatt</b> (deprecated v1.2)	number (Watts)	<i>read-only (null)</i>	The power, in watt units, 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>
<b>CoreMetrics</b> [ {	array		The processor core metrics.
<b>CoreCache</b> [ {	array		The cache metrics of this core in the processor.

Property	Type	Attributes	Notes
<b>CacheMiss</b>	number	<i>read-only</i> (null)	The number of cache line misses in millions.
<b>CacheMissesPerInstruction</b>	number	<i>read-only</i> (null)	The number of cache misses per instruction.
<b>HitRatio</b>	number	<i>read-only</i> (null)	The cache line hit ratio.
<b>Level</b>	string	<i>read-only</i> (null)	The cache level.
<b>OccupancyBytes</b>	integer (bytes)	<i>read-only</i> (null)	The total cache level occupancy in bytes.
<b>OccupancyPercent</b>	number (%)	<i>read-only</i> (null)	The total cache occupancy percentage.
} ]			
<b>CoreId</b>	string	<i>read-only</i> (null)	The processor core identifier.
<b>CorrectableCoreErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of correctable core errors.
<b>CorrectableOtherErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of correctable errors of all other components.
<b>CStateResidency</b> [ {	array		The C-state residency of this core in the processor.
<b>Level</b>	string	<i>read-only</i> (null)	The C-state level, such as C0, C1, or C2.
<b>ResidencyPercent</b>	number (%)	<i>read-only</i> (null)	The percentage of time that the processor or core has spent in this particular level of C-state.
} ]			
<b>InstructionsPerCycle</b>	number	<i>read-only</i> (null)	The number of instructions per clock cycle of this core.
<b>IOStallCount</b>	number	<i>read-only</i> (null)	The number of stalled cycles due to I/O operations.
<b>MemoryStallCount</b>	number	<i>read-only</i> (null)	The number of stalled cycles due to memory operations.
<b>UncorrectableCoreErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of uncorrectable core errors.

Property	Type	Attributes	Notes
<b>UncorrectableOtherErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of uncorrectable errors of all other components.
<b>UnhaltedCycles</b>	number	<i>read-only</i> (null)	The unhalted cycles count of this core.
} ]			
<b>CoreVoltage</b> (v1.3+) {	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 DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	<i>read-only</i> (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number (%)	<i>read-only</i> (null)	The total harmonic distortion percent (% THD).
}			
<b>CorrectableCoreErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of correctable core errors.
<b>CorrectableOtherErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of correctable errors of all other components.
<b>FrequencyRatio</b>	number	<i>read-only</i> (null)	The frequency relative to the nominal processor frequency ratio.
<b>KernelPercent</b>	number (%)	<i>read-only</i> (null)	The percentage of time spent in kernel mode.
<b>LocalMemoryBandwidthBytes</b>	integer (bytes)	<i>read-only</i> (null)	The local memory bandwidth usage in bytes.
<b>OperatingSpeedMHz</b> (v1.1+)	integer (MHz)	<i>read-only</i> (null)	Operating speed of the processor in MHz.
<b>PCIEErrors</b> (v1.4+) {	object		The PCIe errors associated with this processor.
<b>CorrectableErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe correctable errors for this device.
<b>FatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe fatal errors for this device.



Property	Type	Attributes	Notes
<b>L0ToRecoveryCount</b> (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.
<b>NAKReceivedCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by the receiver.
<b>NAKSentCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by this device.
<b>NonFatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe non-fatal errors for this device.
<b>ReplayCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replays issued by this device.
<b>ReplayRolloverCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replay rollovers issued by this device.
<b>UnsupportedRequestCount</b> (v1.13+)	integer	<i>read-only</i> (null)	The total number of PCIe unsupported requests received by this device.
}			
<b>PowerLimitThrottleDuration</b> (v1.6+)	string (duration)	<i>read-only</i> (null)	The total duration of throttling caused by a power limit of the processor since reset.
<b>RemoteMemoryBandwidthBytes</b>	integer (bytes)	<i>read-only</i> (null)	The remote memory bandwidth usage in bytes.
<b>TemperatureCelsius</b> ( <i>deprecated</i> v1.2)	number (Celsius)	<i>read-only</i> (null)	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>
<b>ThermalLimitThrottleDuration</b> (v1.6+)	string (duration)	<i>read-only</i> (null)	The total duration of throttling caused by a thermal limit of the processor since reset.
<b>ThrottlingCelsius</b>	number (Celsius)	<i>read-only</i> (null)	The CPU margin to throttle (temperature offset in degree Celsius units).
<b>UncorrectableCoreErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of uncorrectable core errors.
<b>UncorrectableOtherErrorCount</b> (v1.5+)	integer	<i>read-only</i> (null)	The number of uncorrectable errors of all other components.
<b>UserPercent</b>	number (%)	<i>read-only</i> (null)	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_3.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 1.0.1

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
<b>Assembly</b> {	object		The link to the assembly associated with this pump. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	<i>read-write (null)</i>	The user-assigned asset tag for this equipment.
<b>Filters</b> {	object		A link to a collection of filters. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Filter</i> . See the <i>Filter</i> schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only</i>	The firmware version of this equipment.
<b>Location</b> {}	object		The location of the pump. For property details, see <i>Location</i> .
<b>LocationIndicatorActive</b>	boolean	<i>read-write (null)</i>	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this pump.
<b>Model</b>	string	<i>read-only (null)</i>	The model number for this pump.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this pump.

Property	Type	Attributes	Notes
<b>PhysicalContext</b>	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>
<b>ProductionDate</b>	string (date-time)	<i>read-only (null)</i>	The production or manufacturing date of this equipment.
<b>PumpSpeedPercent</b> {	object (excerpt)		The pump speed (%). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
<b>SpeedRPM</b> (v1.2+)	number ({rev}/min)	<i>read-only (null)</i>	The rotational speed.
}			
<b>PumpType</b>	string (enum)	<i>read-only (null)</i>	The type of pump. <i>For the possible property values, see PumpType in Property details.</i>
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this pump.
<b>ServiceHours</b>	number	<i>read-write (null)</i>	The hours of service this pump has provided.
<b>SparePartNumber</b>	string	<i>read-only (null)</i>	The spare part number for this pump.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UserLabel</b>	string	<i>read-write</i>	A user-assigned label.
<b>Version</b>	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.
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.

#### 6.108.4.2 PumpType

The type of pump.

string	Description
Compressor	A compressor.

string	Description
Liquid	A water or liquid pump.

### 6.108.5 Example response

```
{
  "@odata.type": "#Pump.v1_0_1.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 1.1.1

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
<b>ClientType</b>	string (enum)	<i>read-write required</i>	The type of registered client. <i>For the possible property values, see ClientType in Property details.</i>
<b>ClientURI</b>	string (URI)	<i>read-write</i>	The URI of the registered client.
<b>Context</b> (v1.1+)	string	<i>read-write</i>	A client-supplied data for providing context for its own use.
<b>CreatedDate</b>	string (date-time)	<i>read-only</i>	The date and time when the client entry was created.
<b>ExpirationDate</b>	string (date-time)	<i>read-write</i>	The date and time when the client entry will expire.
<b>ManagedResources</b> [ {	array		An array of resources that the registered client monitors or configures.
<b>IncludesSubordinates</b>	boolean	<i>read-write (null)</i>	Indicates whether the subordinate resources of the managed resource are also managed by the registered client.
<b>ManagedResourceURI</b>	string (URI)	<i>read-write (null)</i>	The URI of the resource or resource collection managed by the registered client.
<b>PreferExclusive</b>	boolean	<i>read-write (null)</i>	Indicates whether the registered client expects to have exclusive access to the managed resource.
} ]			
<b>SubContext</b> (v1.1+)	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_1.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 1.0.1

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
<b>Assembly</b> {	object		The link to the assembly associated with this reservoir. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>CapacityLiters</b>	number	<i>read-only</i> (null)	The capacity of the reservoir (L).
<b>Coolant</b> {	object		Details about the coolant used in this unit. See the <i>CoolingLoop</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Coolant resource. See the Links section and the <i>CoolingLoop</i> schema for details.
}			
<b>Filters</b> {	object		A link to a collection of filters. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Filter</i> . See the Filter schema for details.
}			
<b>FluidLevelPercent</b> {	object (excerpt)		The fluid capacity filled (percent). This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> (null)	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
}			
<b>FluidLevelStatus</b>	string (enum)	<i>read-only</i> (null)	The status of the fluid level in this reservoir. <i>For the possible property values, see FluidLevelStatus in Property details.</i>

Property	Type	Attributes	Notes
<b>InternalPressurekPa</b> {	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> .
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
}			
<b>Location</b> {}	object		The location of the reservoir. For property details, see <i>Location</i> .
<b>LocationIndicatorActive</b>	boolean	<i>read-write</i> ( <i>null</i> )	An indicator allowing an operator to physically locate this resource.
<b>Manufacturer</b>	string	<i>read-only</i> ( <i>null</i> )	The manufacturer of this reservoir.
<b>Model</b>	string	<i>read-only</i> ( <i>null</i> )	The model number for this reservoir.
<b>PartNumber</b>	string	<i>read-only</i> ( <i>null</i> )	The part number for this reservoir.
<b>PhysicalContext</b>	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>
<b>ReservoirType</b>	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>
<b>SerialNumber</b>	string	<i>read-only</i> ( <i>null</i> )	The serial number for this reservoir.
<b>SparePartNumber</b>	string	<i>read-only</i> ( <i>null</i> )	The spare part number for this reservoir.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>UserLabel</b>	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.
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.

#### 6.110.4.3 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_1.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 1.4.2

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 of a resource block, 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
<b>Client</b> (v1.4+)	string	<i>read-write</i> (null)	The client to which this resource block is assigned.
<b>CompositionStatus</b> {	object	<i>required</i>	The composition status details for this resource block.
<b>CompositionState</b>	string (enum)	<i>read-only</i> <i>required</i> (null)	The current state of the resource block from a composition perspective. <i>For the possible property values, see CompositionState in Property details.</i>
<b>MaxCompositions</b> (v1.1+)	integer	<i>read-only</i> (null)	The maximum number of compositions in which this resource block can participate simultaneously.
<b>NumberOfCompositions</b> (v1.1+)	integer	<i>read-only</i> (null)	The number of compositions in which this resource block is currently participating.
<b>Reserved</b>	boolean	<i>read-write</i> (null)	An indication of whether any client has reserved the resource block.



Property	Type	Attributes	Notes
<b>SharingCapable</b> (v1.1+)	boolean	<i>read-only</i> (null)	An indication of whether this resource block can participate in multiple compositions simultaneously.
<b>SharingEnabled</b> (v1.1+)	boolean	<i>read-write</i> (null)	An indication of whether this resource block is allowed to participate in multiple compositions simultaneously.
}			
<b>ComputerSystems</b> [ {	array		An array of links to the computer systems available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
} ]			
<b>Drives</b> (v1.3+) [ {	array		An array of links to the drives available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>EthernetInterfaces</b> [ {	array		An array of links to the Ethernet interfaces available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EthernetInterface resource. See the Links section and the <i>EthernetInterface</i> schema for details.
} ]			
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Chassis</b> [ {	array		An array of links to the chassis in which this resource block is contained.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>ComputerSystems</b> [ {	array		An array of links to the computer systems that are composed from this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ComputerSystem resource. See the Links section and the <i>ComputerSystem</i> schema for details.
} ]			
<b>ConsumingResourceBlocks</b> (v1.4+) [ {	array		An array of links to resource blocks that depend on this resource block.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ResourceBlock resource.
} ]			
<b>Oem { }</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SupplyingResourceBlocks</b> (v1.4+) [ {	array		An array of links to resource blocks that this resource block depends on.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another ResourceBlock resource.
} ]			
<b>Zones [ {</b>	array		An array of links to the zones in which this resource block is bound.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Zone resource. See the Links section and the <i>Zone</i> schema for details.
} ]			
}			
<b>Memory [ {</b>	array		An array of links to the memory available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Memory resource. See the Links section and the <i>Memory</i> schema for details.
} ]			
<b>NetworkInterfaces [ {</b>	array		An array of links to the Network Interfaces available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkInterface resource. See the Links section and the <i>NetworkInterface</i> schema for details.
} ]			
<b>Pool</b> (v1.4+)	string (enum)	<i>read-write</i> (null)	The pool to which this resource block belongs. <i>For the possible property values, see Pool in Property details.</i>
<b>Processors [ {</b>	array		An array of links to the processors available in this resource block.
<b>@odata.id</b>	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
<b>ResourceBlockType</b> [ ]	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>
<b>SimpleStorage</b> [ {	array		An array of links to the simple storage available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SimpleStorage resource. See the Links section and the SimpleStorage schema for details.
} ]			
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Storage</b> [ {	array		An array of links to the storage available in this resource block.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the Storage 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.
Memory	This resource block contains resources of type <code>Memory</code> .
Network	This resource block contains network resources, such as resources 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_2.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/Block1OnboardNIC"
    },
    "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
<b>AlternateRoleId</b> (v1.3+)	string	<i>read-only</i>	An equivalent role to use when this role is restricted.
<b>AssignedPrivileges</b> [ ]	array (string (enum))	<i>read-write</i>	The Redfish privileges for this role. <i>For the possible property values, see AssignedPrivileges in Property details.</i>
<b>IsPredefined</b>	boolean	<i>read-only</i>	An indication of whether the role is predefined by Redfish or an OEM rather than a client-defined role.
<b>OemPrivileges</b> [ ]	array (string)	<i>read-write</i>	The OEM privileges for this role.
<b>Restricted</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether use of the role is restricted.
<b>RoleId</b> (v1.2+)	string	<i>read-only required on create</i>	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.
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.

string	Description
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
<b>MinimumHopCount</b>	integer	<i>read-write</i>	The minimum number of hops.
<b>RawEntryHex</b>	string	<i>read-write</i>	The raw data of route entry rows.
<b>RouteSet</b> {	object		The link to the collection of route set entries associated with this route. Contains a link to a resource.
<b>@odata.id</b>	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

<b>Version</b>	<i>v1.0</i>
<b>Release</b>	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
<b>EgressIdentifier</b>	integer	<i>read-write</i>	The egress interface identifier.
<b>HopCount</b>	integer	<i>read-write</i>	The number of hops.
<b>Valid</b>	boolean	<i>read-write</i>	An indication of whether the entry is valid.
<b>VCAction</b>	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 1.1.1

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
<b>SecureBootCurrentBoot</b>	string (enum)	read-only (null)	The UEFI Secure Boot state during the current boot cycle. <i>For the possible property values, see SecureBootCurrentBoot in Property details.</i>
<b>SecureBootDatabases</b> (v1.1+) {	object		A link to the collection of UEFI Secure Boot databases. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>SecureBootDatabase</i> . See the SecureBootDatabase schema for details.
}			
<b>SecureBootEnable</b>	boolean	read-write (null)	An indication of whether UEFI Secure Boot is enabled.
<b>SecureBootMode</b>	string (enum)	read-only (null)	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
<b>ResetKeyType</b>	string (enum)	<i>required</i>	The type of reset or delete to perform on the UEFI Secure Boot databases. <i>For the possible property values, see ResetKeyType in Property details.</i>

#### 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_1.SecureBoot",
  "Id": "SecureBoot",
  "Name": "UEFI Secure Boot",
  "Actions": {
    "#SecureBoot.ResetKeys": {
      "target": "/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys",
      "ResetKeysType@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 1.0.2

<b>Version</b>	v1.0
<b>Release</b>	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
<b>Certificates</b> {	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.
}			
<b>DatabaseId</b>	string	read-only	This property contains the name of the UEFI Secure Boot database.
<b>Signatures</b> {	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
<b>ResetKeyType</b>	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 contents of this UEFI Secure Boot key database.
ResetAllKeysToDefault	Reset the contents of this UEFI Secure Boot key database to the default values.



### 6.116.6 Example response

```
{
  "@odata.type": "#SecureBootDatabase.v1_0_2.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",
      "ResetKeysType@Redfish.AllowableValues": [
        "ResetAllKeysToDefault",
        "DeleteAllKeys"
      ]
    }
  },
  "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK"
}
```

## 6.117 SecurityPolicy 1.0.1

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
<b>OverrideParentManager</b>	boolean	<i>read-write</i>	Override the security policy of the parent manager.
<b>SPDM {</b>	object		The SPDM policy.
<b>Allowed {</b>	object	<i>(null)</i>	The SPDM policy settings that are allowed, such as the allowable SPDM versions and algorithms.
<b>Algorithms {</b>	object	<i>(null)</i>	The SPDM algorithms.
<b>AEAD [ ]</b>	array (string, null)	<i>read-write</i>	The AEAD algorithms.
<b>BaseAsym [ ]</b>	array (string, null)	<i>read-write</i>	The asymmetric signature algorithms.
<b>BaseHash [ ]</b>	array (string, null)	<i>read-write</i>	The hash algorithms.
<b>}</b>			
<b>Versions [ ]</b>	array (string, null)	<i>read-write</i>	The SPDM versions.
<b>}</b>			
<b>AllowExtendedAlgorithms</b>	boolean	<i>read-write</i> <i>(null)</i>	An indication of whether SPDM extended algorithms are allowed.
<b>Denied {</b>	object	<i>(null)</i>	The SPDM policy settings that are prohibited, such as the prohibited SPDM versions and algorithms.
<b>Algorithms {</b>	object	<i>(null)</i>	The SPDM algorithms.
<b>AEAD [ ]</b>	array (string, null)	<i>read-write</i>	The AEAD algorithms.
<b>BaseAsym [ ]</b>	array (string, null)	<i>read-write</i>	The asymmetric signature algorithms.

Property	Type	Attributes	Notes
<b>BaseHash</b> [ ]	array (string, null)	<i>read-write</i>	The hash algorithms.
}			
<b>Versions</b> [ ]	array (string, null)	<i>read-write</i>	The SPDM versions.
}			
<b>Enabled</b>	boolean	<i>read-write (null)</i>	An indication of whether SPDM communication with devices is enabled.
<b>RevokedCertificates</b> {	object	<i>(null)</i>	The revoked SPDM device certificates. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>SecureSessionEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether SPDM secure sessions with devices is enabled.
<b>TrustedCertificates</b> {	object	<i>(null)</i>	The trusted SPDM device certificates. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>VerifyCertificate</b>	boolean	<i>read-write (null)</i>	An indication of whether the manager will verify the certificate of the SPDM endpoint.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TLS</b> {	object		The TLS policy.
<b>Client</b> {	object		The TLS policy.
<b>Allowed</b> {}	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
<b>Denied {}</b>	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.
<b>RevokedCertificates {</b>	object	(null)	The revoked TLS server certificates. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>TrustedCertificates {</b>	object	(null)	The trusted TLS server certificates. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>VerifyCertificate</b>	boolean	read-write (null)	An indication of whether the manager will verify the certificate of the remote TLS endpoint.
}			
<b>Server {</b>	object		The TLS policy.
<b>Allowed {}</b>	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.
<b>Denied {}</b>	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.
<b>RevokedCertificates {</b>	object	(null)	The revoked TLS server certificates. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>TrustedCertificates {</b>	object	(null)	The trusted TLS server certificates. Contains a link to a resource.
<b>@odata.id</b>	string	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			

Property	Type	Attributes	Notes
<b>VerifyCertificate</b>	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.

<b>Algorithms {</b>	object	( <i>null</i> )	The TLS algorithms.														
<b>CipherSuites [ ]</b>	array (string, null)	<i>read- write</i>	The TLS cipher suites.														
<b>SignatureAlgorithms [ ]</b>	array (string, null)	<i>read- write</i>	The TLS signature algorithms.														
}																	
<b>Versions [ ]</b>	array (string, null)	<i>read- write</i>	The TLS versions.														

## 6.117.5 Example response

```
{
  "@odata.type": "#SecurityPolicy.v1_0_1.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 1.8.1

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
<b>Accuracy</b> (deprecated v1.8)	number (%)	read-only (null)	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>
<b>AdjustedMaxAllowableOperatingValue</b>	number	read-only (null)	The adjusted maximum allowable operating value for this equipment based on the environmental conditions.
<b>AdjustedMinAllowableOperatingValue</b>	number	read-only (null)	The adjusted minimum allowable operating value for this equipment based on the environmental conditions.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	read-only (null)	Apparent energy (kVAh).
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in volt-ampere units.
<b>AverageReading</b> (v1.4+)	number	read-only (null)	The average sensor value.
<b>AveragingInterval</b> (v1.4+)	string (duration)	read-write (null)	The interval over which the average sensor value is calculated.
<b>AveragingIntervalAchieved</b> (v1.4+)	boolean	read-only (null)	Indicates that enough readings were collected to calculate the average sensor reading over the averaging interval time.
<b>Calibration</b> (v1.4+)	number	read-write (null)	The calibration offset applied to the Reading.
<b>CalibrationTime</b> (v1.4+)	string (date-time)	read-write (null)	The date and time that the sensor was last calibrated.
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>ElectricalContext</b>	string (enum)	read-only (null)	The combination of current-carrying conductors. <i>For the possible property values, see ElectricalContext in Property details.</i>
<b>Implementation</b> (v1.1+)	string (enum)	read-only (null)	The implementation of the sensor. <i>For the possible property values, see Implementation in Property details.</i>

Property	Type	Attributes	Notes
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> (null)	The total accumulation value for this sensor.
<b>Links</b> (v1.3+) {	object		The links to other resources that are related to this resource.
<b>AssociatedControls</b> (v1.4+) [ {	array		An array of links to the controls that can affect this sensor.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Control resource. See the Links section and the <i>Control</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>LoadPercent</b> (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>
<b>Location</b> {}	object		The location information for this sensor. For property details, see Location.
<b>LowestReading</b> (v1.4+)	number	<i>read-only</i> (null)	The lowest sensor value.
<b>LowestReadingTime</b> (v1.4+)	string (date-time)	<i>read-only</i> (null)	The time when the lowest sensor value occurred.
<b>MaxAllowableOperatingValue</b>	number	<i>read-only</i> (null)	The maximum allowable operating value for this equipment.
<b>MinAllowableOperatingValue</b>	number	<i>read-only</i> (null)	The minimum allowable operating value for this equipment.
<b>PeakReading</b>	number	<i>read-only</i> (null)	The peak sensor value.
<b>PeakReadingTime</b>	string (date-time)	<i>read-only</i> (null)	The time when the peak sensor value occurred.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only</i> (null)	The phase angle (degrees) between the current and voltage waveforms.

Property	Type	Attributes	Notes
<b>PhysicalContext</b>	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>
<b>PhysicalSubContext</b>	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>
<b>PowerFactor</b>	number	<i>read-only</i> (null)	The power factor for this sensor.
<b>Precision</b>	number	<i>read-only</i> (null)	The number of significant digits in the reading.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> (null)	Reactive energy (kVARh).
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only</i> (null)	The sensor value.
<b>ReadingAccuracy</b> (v1.8+)	number	<i>read-only</i> (null)	Accuracy (+/-) of the reading.
<b>ReadingBasis</b> (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>
<b>ReadingRangeMax</b>	number	<i>read-only</i> (null)	The maximum possible value for this sensor.
<b>ReadingRangeMin</b>	number	<i>read-only</i> (null)	The minimum possible value for this sensor.
<b>ReadingTime</b> (v1.1+)	string (date-time)	<i>read-only</i> (null)	The date and time that the reading was acquired from the sensor.
<b>ReadingType</b>	string (enum)	<i>read-only</i> (null)	The type of sensor. <i>For the possible property values, see ReadingType in Property details.</i>
<b>ReadingUnits</b>	string	<i>read-only</i> (null)	The units of the reading and thresholds.
<b>RelatedItem</b> (v1.2+) [ {	array		An array of links to resources or objects that this sensor services.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>SensingFrequency</b> ( <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>
<b>SensingInterval</b> ( <i>v1.1+</i> )	string (duration)	<i>read-only</i> ( <i>null</i> )	The time interval between readings of the sensor.
<b>SensorGroup</b> ( <i>v1.4+</i> ) {}	object		The group of sensors that provide readings for this sensor. For property details, see RedundantGroup.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The date and time when the time-based properties were last reset.
<b>SpeedRPM</b> ( <i>v1.2+</i> )	number ({rev}/min)	<i>read-only</i> ( <i>null</i> )	The rotational speed.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>THDPercent</b> ( <i>v1.1+</i> )	number (%)	<i>read-only</i> ( <i>null</i> )	The total harmonic distortion percent (% THD).
<b>Thresholds</b> {	object		The set of thresholds defined for this sensor.
<b>LowerCaution</b> {}	object		The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details.
<b>LowerCautionUser</b> ( <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.
<b>LowerCritical</b> {}	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.
<b>LowerCriticalUser</b> ( <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
<b>LowerFatal</b> {}	object		The value at which the reading is below normal range and fatal. For more information about this property, see Threshold in Property Details.
<b>UpperCaution</b> {}	object		The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details.
<b>UpperCautionUser</b> (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.
<b>UpperCritical</b> {}	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.
<b>UpperCriticalUser</b> (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.
<b>UpperFatal</b> {}	object		The value at which the reading is above normal range and fatal. For more information about this property, see Threshold in Property Details.
}			
<b>VoltageType</b>	string (enum)	read-only (null)	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/m <sup>3</sup> ).
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 <sup>3</sup> /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.

<b>Activation</b>	string (enum)	read- write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation in Property details</a>.</i>
<b>DwellTime</b>	string (duration)	read- write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>HysteresisDuration</b> (v1.7+)	string (duration)	read- write (null)	The duration the sensor value must not violate the threshold before the threshold is deactivated.
<b>HysteresisReading</b> (v1.7+)	number	read- write (null)	The reading offset from the threshold value required to clear the threshold.

<b>Reading</b>	number	<i>read- write (null)</i>	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_1.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)	read-write	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)	read-only	The type of connector used for this interface. <i>For the possible property values, see ConnectorType in Property details.</i>
DataBits	string (enum)	read-write	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)	read-write	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	read-write (null)	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
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Parity</b>	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>
<b>PinOut</b>	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>
<b>SignalType</b>	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>
<b>StopBits</b>	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
<b>Conditions</b> [ { } ]	array (object)	(null)	Conditions reported by this service that require attention. For property details, see Condition.
<b>HealthRollup</b>	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 1.16.1

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
<b>AccountService</b> {	object		The link to the account service. See the <i>AccountService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>AccountService</i> resource. See the Links section and the <i>AccountService</i> schema for details.
}			
<b>AggregationService</b> (v1.8+) {	object		The link to the aggregation service. See the <i>AggregationService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>AggregationService</i> resource. See the Links section and the <i>AggregationService</i> schema for details.
}			
<b>Cables</b> (v1.11+) {	object		The link to a collection of cables. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Cable</i> . See the <i>Cable</i> schema for details.
}			
<b>CertificateService</b> (v1.5+) {	object		The link to the certificate service. See the <i>CertificateService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>CertificateService</i> resource. See the Links section and the <i>CertificateService</i> schema for details.
}			
<b>Chassis</b> {	object		The link to a collection of chassis. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Chassis</i> . See the <i>Chassis</i> schema for details.
}			
<b>ComponentIntegrity</b> (v1.13+) {	object		The link to a collection of component integrity information. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ComponentIntegrity</i> . See the <i>ComponentIntegrity</i> schema for details.
}			
<b>CompositionService</b> (v1.2+) {	object		The link to the composition service. See the <i>CompositionService</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a CompositionService resource. See the Links section and the <i>CompositionService</i> schema for details.
}			
<b>EventService</b> {	object		The link to the event service. See the <i>EventService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EventService resource. See the Links section and the <i>EventService</i> schema for details.
}			
<b>Fabrics</b> (v1.1+) {	object		The link to a collection of fabrics. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Fabric</i> . See the Fabric schema for details.
}			
<b>Facilities</b> (v1.6+) {	object		The link to a collection of facilities. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Facility</i> . See the Facility schema for details.
}			
<b>JobService</b> (v1.4+) {	object		The link to the job service. See the <i>JobService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a JobService resource. See the Links section and the <i>JobService</i> schema for details.
}			
<b>JsonSchemas</b> {	object		The link to a collection of JSON Schema files. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>JsonSchemaFile</i> . See the JsonSchemaFile schema for details.
}			
<b>KeyService</b> (v1.11+) {	object		The link to the key service. See the <i>KeyService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a KeyService resource. See the Links section and the <i>KeyService</i> schema for details.
}			
<b>LicenseService</b> (v1.12+) {	object		The link to the license service. See the <i>LicenseService</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>LicenseService</i> resource. See the Links section and the <i>LicenseService</i> schema for details.
}			
<b>Links</b> {	object	<i>required</i>	The links to other resources that are related to this resource.
<b>ManagerProvidingService</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Manager</i> resource. See the Links section and the <i>Manager</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Sessions</b> {	object	<i>required</i>	The link to a collection of sessions. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Session</i> . See the <i>Session</i> schema for details.
}			
}			
<b>Managers</b> {	object		The link to a collection of managers. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Manager</i> . See the <i>Manager</i> schema for details.
}			
<b>NVMeDomains</b> (v1.10+) {}	object		The link to a collection of NVMe domains.
<b>PowerEquipment</b> (v1.6+) {	object		The link to a set of power equipment. See the <i>PowerEquipment</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>PowerEquipment</i> resource. See the Links section and the <i>PowerEquipment</i> schema for details.
}			
<b>Product</b> (v1.3+)	string	<i>read-only</i> (null)	The product associated with this Redfish service.
<b>ProtocolFeaturesSupported</b> (v1.3+) {	object		The information about protocol features that the service supports.
<b>DeepOperations</b> (v1.7+) {	object		The information about deep operations that the service supports.

Property	Type	Attributes	Notes
<b>DeepPATCH</b> (v1.7+)	boolean	<i>read-only</i>	An indication of whether the service supports the deep PATCH operation.
<b>DeepPOST</b> (v1.7+)	boolean	<i>read-only</i>	An indication of whether the service supports the deep POST operation.
<b>MaxLevels</b> (v1.7+)	integer	<i>read-only</i>	The maximum levels of resources allowed in deep operations.
}			
<b>ExcerptQuery</b> (v1.4+)	boolean	<i>read-only</i>	An indication of whether the service supports the <code>excerpt</code> query parameter.
<b>ExpandQuery</b> (v1.3+) {	object		The information about the use of <code>\$expand</code> in the service.
<b>ExpandAll</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether the service supports the asterisk ( <code>*</code> ) option of the <code>\$expand</code> query parameter.
<b>Levels</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether the service supports the <code>\$levels</code> option of the <code>\$expand</code> query parameter.
<b>Links</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether this service supports the tilde ( <code>~</code> ) option of the <code>\$expand</code> query parameter.
<b>MaxLevels</b> (v1.3+)	integer	<i>read-only</i>	The maximum <code>\$levels</code> option value in the <code>\$expand</code> query parameter.
<b>NoLinks</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether the service supports the period ( <code>.</code> ) option of the <code>\$expand</code> query parameter.
}			
<b>FilterQuery</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether the service supports the <code>\$filter</code> query parameter.
<b>MultipleHTTPRequests</b> (v1.14+)	boolean	<i>read-only</i>	An indication of whether the service supports multiple outstanding HTTP requests.
<b>OnlyMemberQuery</b> (v1.4+)	boolean	<i>read-only</i>	An indication of whether the service supports the <code>only</code> query parameter.
<b>SelectQuery</b> (v1.3+)	boolean	<i>read-only</i>	An indication of whether the service supports the <code>\$select</code> query parameter.
}			
<b>RedfishVersion</b>	string	<i>read-only</i>	The version of the Redfish service.
<b>RegisteredClients</b> (v1.13+) {	object		The link to a collection of registered clients. Contains a link to a resource.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>RegisteredClient</i> . See the <i>RegisteredClient</i> schema for details.
}			
<b>Registries</b> {	object		The link to a collection of registries. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MessageRegistryFile</i> . See the <i>MessageRegistryFile</i> schema for details.
}			
<b>ResourceBlocks</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>ResourceBlock</i> . See the <i>ResourceBlock</i> schema for details.
}			
<b>ServiceConditions</b> (v1.13+) {	object		The link to the service conditions. See the <i>ServiceConditions</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ServiceConditions</i> resource. See the Links section and the <i>ServiceConditions</i> schema for details.
}			
<b>ServiceIdentification</b> (v1.14+)	string	<i>read-only</i>	The vendor or user-provided product and service identifier.
<b>SessionService</b> {	object		The link to the sessions service. See the <i>SessionService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>SessionService</i> resource. See the Links section and the <i>SessionService</i> schema for details.
}			
<b>Storage</b> (v1.9+) {	object		The link to a collection of storage subsystems. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Storage</i> . See the <i>Storage</i> schema for details.
}			
<b>StorageServices</b> (v1.1+) {}	object		The link to a collection of storage services.



Property	Type	Attributes	Notes
<b>StorageSystems</b> (v1.1+) {}	object		The link to a collection of storage systems.
<b>Systems</b> {	object		The link to a collection of systems. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>ComputerSystem</i> . See the <i>ComputerSystem</i> schema for details.
}			
<b>Tasks</b> {	object		The link to the task service. See the <i>TaskService</i> schema for details on this property.
@odata.id	string	read-only	Link to a <i>TaskService</i> resource. See the Links section and the <i>TaskService</i> schema for details.
}			
<b>TelemetryService</b> (v1.4+) {	object		The link to the telemetry service. See the <i>TelemetryService</i> schema for details on this property.
@odata.id	string	read-only	Link to a <i>TelemetryService</i> resource. See the Links section and the <i>TelemetryService</i> schema for details.
}			
<b>ThermalEquipment</b> (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	read-only	Link to a <i>ThermalEquipment</i> resource. See the Links section and the <i>ThermalEquipment</i> schema for details.
}			
<b>UpdateService</b> (v1.1+) {	object		The link to the update service. See the <i>UpdateService</i> schema for details on this property.
@odata.id	string	read-only	Link to a <i>UpdateService</i> resource. See the Links section and the <i>UpdateService</i> schema for details.
}			
<b>UUID</b>	string (uuid)	read-only (null)	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.
<b>Vendor</b> (v1.5+)	string	read-only (null)	The vendor or manufacturer associated with this Redfish service.

## 6.121.4 Property details

### 6.121.4.1 idRef

@odata.id	string (URI)	read-only	The unique identifier for a resource.
-----------	-----------------	-----------	---------------------------------------

## 6.121.5 Example response

```
{
  "@odata.type": "#ServiceRoot.v1_16_1.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 1.7.1

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
<b>ClientOriginIPAddress</b> (v1.3+)	string	<i>read-only</i> (null)	The IP address of the client that created the session.
<b>Context</b> (v1.5+)	string	<i>read-only</i> (null)	A client-supplied string that is stored with the session.
<b>CreatedTime</b> (v1.4+)	string (date-time)	<i>read-only</i> (null)	The date and time when the session was created.
<b>Links</b> (v1.7+) {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OutboundConnection</b> (v1.7+) {	object	(null)	The outbound connection associated with this session. See the <i>OutboundConnection</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a OutboundConnection resource. See the Links section and the <i>OutboundConnection</i> schema for details.
}			
}			
<b>OemSessionType</b> (v1.2+)	string	<i>read-only</i> (null)	The active OEM-defined session type.
<b>Password</b>	string	<i>read-only</i> <i>required on create</i> (null)	The password for this session. The value is <code>null</code> in responses.
<b>Roles</b> (v1.7+) [ ]	array (string, null)	<i>read-only</i>	The Redfish roles that contain the privileges of this session.
<b>SessionType</b> (v1.2+)	string (enum)	<i>read-only</i> (null)	The active session type. <i>For the possible property values, see SessionType in Property details.</i>
<b>Token</b> (v1.6+)	string	<i>read-only</i> (null)	The multi-factor authentication token for this session. The value is <code>null</code> in responses.
<b>UserName</b>	string	<i>read-only</i> <i>required on create</i> (null)	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 another 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 another 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_1.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
<b>ServiceEnabled</b>	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.
<b>Sessions {</b>	object		The link to a collection of sessions. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Session</i> . See the Session schema for details.
<b>}</b>			
<b>SessionTimeout</b>	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.
<b>Status {}</b>	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	read-only required on create (null)	The string for the signature.
SignatureType	string	read-only required on create (null)	The format of the signature.

Property	Type	Attributes	Notes
<b>SignatureTypeRegistry</b>	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>
<b>UefiSignatureOwner</b>	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
<b>Devices</b> [ {	array		The storage devices.
<b>CapacityBytes</b> (v1.1+)	integer (bytes)	<i>read-only (null)</i>	The size, in bytes, of the storage device.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The name of the manufacturer of this device.
<b>Model</b>	string	<i>read-only (null)</i>	The product model number of this device.
<b>Name</b>	string	<i>read-only required</i>	The name of the Resource or array member.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>Status</b> {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
} ]			
<b>Links</b> (v1.2+) {	object		The links to other Resources that are related to this Resource.
<b>Chassis</b> (v1.2+) {	object		The link to the chassis that contains this simple storage. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.

Property	Type	Attributes	Notes
<b>Storage</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details.
}			
}			
<b>Status</b> {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
<b>UefiDevicePath</b>	string	<i>read-only</i> (null)	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": 8000000000000,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      }
    },
    {
      "Name": "SATA Bay 2",
      "Manufacturer": "Contoso",
      "Model": "3000GT7",
      "CapacityBytes": 4000000000000,
      "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 1.10.1

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
<b>Bootloader</b> (v1.7+)	string	<i>read-only (null)</i>	The bootloader version contained in this software, such as U-Boot or UEFI.
<b>Kernel</b> (v1.7+)	string	<i>read-only (null)</i>	The kernel version contained in this software.
<b>Microcode</b> (v1.7+)	string	<i>read-only (null)</i>	The microcode version contained in this software, such as processor microcode.
<b>Oem</b> (v1.7+) { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OSDistribution</b> (v1.8+)	string	<i>read-only (null)</i>	The operating system name of this software.
}			
<b>AssociatedPhysicalContext</b> (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>
<b>LowestSupportedVersion</b> (v1.1+)	string	<i>read-only (null)</i>	The lowest supported version of this software.
<b>Manufacturer</b> (v1.2+)	string	<i>read-only (null)</i>	The manufacturer or producer of this software.
<b>Measurement</b> (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>
<b>Measurement</b> (v1.4+)	string	<i>read-only (null)</i>	The hexadecimal string representation of the numeric value of the DSP0274-defined Measurement field of the measurement block.
<b>MeasurementIndex</b> (v1.5+)	integer	<i>read-only (null)</i>	The DSP0274-defined Index field of the measurement block.
<b>MeasurementSize</b> (v1.4+)	integer	<i>read-only (null)</i>	The DSP0274-defined MeasurementSize field of the measurement block.
<b>MeasurementSpecification</b> (v1.4+)	integer	<i>read-only (null)</i>	The DSP0274-defined MeasurementSpecification field of the measurement block.
}			
<b>RelatedItem</b> (v1.1+) [ {	array		The IDs of the Resources associated with this software inventory item.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>ReleaseDate</b> (v1.2+)	string (date-time)	<i>read-only (null)</i>	The release date of this software.
<b>ReleaseType</b> (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>
<b>SoftwareId</b> (v1.1+)	string	<i>read-only</i>	The implementation-specific label that identifies this software.
<b>Status</b> {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
<b>UefiDevicePaths</b> (v1.1+) [ ]	array (string, null)	<i>read-only</i>	The list of UEFI device paths of the components associated with this software inventory item.
<b>Updateable</b>	boolean	<i>read-only (null)</i>	An indication of whether the Update Service can update this software.
<b>Version</b>	string	<i>read-only (null)</i>	The version of this software.
<b>VersionScheme</b> (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>
<b>WriteProtected</b> (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_1.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 1.15.1

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	2022.1	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
<b>AutoVolumeCreate</b> (v1.15+)	string (enum)	<i>read-write</i> (null)	Indicates if this storage subsystem automatically creates new volumes for unassigned drives. <i>For the possible property values, see AutoVolumeCreate in Property details.</i>
<b>Connections</b> (v1.15+) {	object		The collection of links to the connections that this storage subsystem contains. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Connection</i> . See the Connection schema for details.
}			
<b>ConsistencyGroups</b> (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.
<b>Controllers</b> (v1.9+) {	object		The set of controllers instantiated by this storage subsystem. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>StorageController</i> . See the StorageController schema for details.
}			

Property	Type	Attributes	Notes
<b>Drives</b> [ {	array		The set of drives attached to the storage controllers that this resource represents.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>EncryptionMode</b> (v1.14+)	string (enum)	<i>read-write (null)</i>	The encryption mode of this storage subsystem. <i>For the possible property values, see EncryptionMode in Property details.</i>
<b>EndpointGroups</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>EndpointGroup</i> . See the <i>EndpointGroup</i> schema for details.
}			
<b>FileSystems</b> (v1.8+) { }	object		All file systems that are allocated by this storage subsystem.
<b>HotspareActivationPolicy</b> (v1.14+)	string (enum)	<i>read-write (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>
<b>Identifiers</b> (v1.9+) [ { } ]	array (object)		The durable names for the storage subsystem. For property details, see Identifier.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Enclosures</b> [ {	array		An array of links to the chassis to which this storage subsystem is attached.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
} ]			
<b>HostingStorageSystems</b> (v1.11+)	array		The storage systems that host this storage subsystem.
<b>@odata.id</b>	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
<b>NVMeoFDiscoverySubsystems</b> (v1.15+) [ {	array		An array of links to the discovery subsystems that discovered this subsystem in an NVMe-oF environment.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Storage resource.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>SimpleStorage</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SimpleStorage resource. See the Links section and the <i>SimpleStorage</i> schema for details.
}			
<b>StorageServices</b> (v1.9+) [ {	array		An array of links to the storage services that connect to this storage subsystem.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
}			
<b>LocalEncryptionKeyIdentifier</b> (v1.14+)	string	<i>read-only (null)</i>	The local encryption key identifier used by the storage subsystem.
<b>Redundancy</b> [ { } ]	array (object)		Redundancy information for the storage subsystem. For property details, see Redundancy.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>StorageControllers</b> (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>
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> (v1.2+) {}	object		The available actions for this resource.

Property	Type	Attributes	Notes
<b>Assembly</b> (v1.4+) {	object		The link to the assembly associated with this storage controller. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	<i>read-write (null)</i>	The user-assigned asset tag for this storage controller.
<b>CacheSummary</b> (v1.5+) {	object		The cache memory of the storage controller in general detail.
<b>PersistentCacheSizeMiB</b> (v1.5+)	integer (mebibytes)	<i>read-only (null)</i>	The portion of the cache memory that is persistent, measured in MiB.
<b>Status</b> (v1.5+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>TotalCacheSizeMiB</b> (v1.5+)	integer (mebibytes)	<i>read-only required (null)</i>	The total configured cache memory, measured in MiB.
}			
<b>Certificates</b> (v1.10+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the <i>Certificate</i> schema for details.
}			
<b>ControllerRates</b> (v1.7+) {	object		This property describes the various controller rates used for processes such as volume rebuild or consistency checks.
<b>ConsistencyCheckRatePercent</b> (v1.7+)	integer	<i>read-write (null)</i>	The percentage of controller resources used for performing a data consistency check on volumes.
<b>RebuildRatePercent</b> (v1.7+)	integer	<i>read-write (null)</i>	The percentage of controller resources used for rebuilding/repairing volumes.
<b>TransformationRatePercent</b> (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
<b>FirmwareVersion</b>	string	<i>read-only (null)</i>	The firmware version of this storage controller.
<b>Identifiers</b> [ { } ]	array (object)		The durable names for the storage controller. For property details, see Identifier.
<b>Links</b> (v1.1+) {	object		The links to other resources that are related to this resource.
<b>Endpoints</b> (v1.1+) [ {	array		An array of links to the endpoints that connect to this controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> (v1.7+) [ {	array		An array of links to the PCIe functions that the storage controller produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
<b>StorageServices</b> (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>
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
}			
<b>Location</b> (v1.4+) { }	object		The location of the storage controller. For property details, see Location.
<b>Manufacturer</b>	string	<i>read-only (null)</i>	The manufacturer of this storage controller.
<b>Measurements</b> (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
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>Model</b>	string	<i>read-only (null)</i>	The model number for the storage controller.
<b>Name</b> (v1.3+)	string	<i>read-only (null)</i>	The name of the storage controller.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this storage controller.
<b>PCIeInterface</b> (v1.5+) {	object		The PCIe interface details for this controller.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
<b>Ports</b> (v1.7+) {	object		The link to the collection of ports that exist on the storage controller. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this storage controller.

Property	Type	Attributes	Notes
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU for this storage controller.
<b>SpeedGbps</b>	number (Gbit/s)	<i>read-only (null)</i>	The maximum speed of the storage controller's device interface.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedControllerProtocols [ ]</b>	array (string (enum))	<i>read-only</i>	The supported set of protocols for communicating with this storage controller. <i>For the possible property values, see SupportedControllerProtocols in Property details.</i>
<b>SupportedDeviceProtocols [ ]</b>	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>
<b>SupportedRAIDTypes (v1.6+) [ ]</b>	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>
} ]			
<b>StorageGroups (v1.8+, deprecated v1.15) {}</b>	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>
<b>StoragePools (v1.8+) {}</b>	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.
<b>Volumes {}</b>	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)	required	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	optional	The current local encryption key on the storage subsystem.
EncryptionKey	string	required	The local encryption key to set on the storage subsystem.
EncryptionKeyIdentifier (v1.14+)	string	optional	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 creates 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 MaxPCleType

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 with 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_1.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 1.7.2

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.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Assembly resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>AssetTag</b>	string	<i>read-write (null)</i>	The user-assigned asset tag for this storage controller.
<b>CacheSummary</b> {	object		The cache memory of the storage controller in general detail.
<b>PersistentCacheSizeMiB</b>	integer (mebibytes)	<i>read-only (null)</i>	The portion of the cache memory that is persistent, measured in MiB.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TotalCacheSizeMiB</b>	integer (mebibytes)	<i>read-only required (null)</i>	The total configured cache memory, measured in MiB.
}			
<b>Certificates</b> (v1.1+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>ControllerRates</b> {	object		This property describes the various controller rates used for processes such as volume rebuild or consistency checks.
<b>ConsistencyCheckRatePercent</b>	integer (%)	<i>read-write (null)</i>	The percentage of controller resources used for performing a data consistency check on volumes.

Property	Type	Attributes	Notes
<b>RebuildRatePercent</b>	integer (%)	<i>read-write (null)</i>	The percentage of controller resources used for rebuilding/repairing volumes.
<b>TransformationRatePercent</b>	integer (%)	<i>read-write (null)</i>	The percentage of controller resources used for transforming volumes from one configuration to another.
}			
<b>EnvironmentMetrics</b> (v1.2+) {	object		The link to the environment metrics for this storage controller. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>FirmwareVersion</b>	string	<i>read-only (null)</i>	The firmware version of this storage controller.
<b>Identifiers</b> [ { } ]	array (object)		The durable names for the storage controller. For property details, see Identifier.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>AttachedVolumes</b> [ {	array		An array of links to volumes that are attached to this controller instance.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Batteries</b> (v1.6+) [ {	array		The batteries that provide power to this storage controller during a power-loss event.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Battery resource. See the Links section and the <i>Battery</i> schema for details.

Property	Type	Attributes	Notes
} ]			
<b>Endpoints</b> [ {	array		An array of links to the endpoints that connect to this controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>NetworkDeviceFunctions</b> (v1.3+) [ {	array		The network device functions that provide connectivity to this controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a NetworkDeviceFunction resource. See the Links section and the <i>NetworkDeviceFunction</i> schema for details.
} ]			
<b>NVMeDiscoveredSubsystems</b> (v1.7+) [ {	array		The NVMe subsystems discovered by this discovery controller.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleFunctions</b> [ {	array		An array of links to the PCIe functions that the storage controller produces.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeFunction resource. See the Links section and the <i>PCleFunction</i> schema for details.
} ]			
}			
<b>Location</b> {}	object		The location of the storage controller. For property details, see Location.

Property	Type	Attributes	Notes
<b>Manufacturer</b>	string	<i>read-only</i> ( <i>null</i> )	The manufacturer of this storage controller.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>Metrics</b> (v1.7+) {	object	( <i>null</i> )	The link to the metrics associated with this storage controller. See the <i>StorageControllerMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>StorageControllerMetrics</i> resource. See the Links section and the <i>StorageControllerMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only</i> ( <i>null</i> )	The model number for the storage controller.
<b>NVMeControllerProperties</b> {	object		The NVMe-related properties for this storage controller.
<b>AllocatedCompletionQueues</b> (v1.4+)	integer	<i>read-only</i> ( <i>null</i> )	The number of I/O completion queues allocated to this NVMe I/O controller.
<b>AllocatedSubmissionQueues</b> (v1.4+)	integer	<i>read-only</i> ( <i>null</i> )	The number of I/O submission queues allocated to this NVMe I/O controller.
<b>ANACaracteristics</b> [ {	array		The ANA characteristics and volume information.

Property	Type	Attributes	Notes
<b>AccessState</b>	string (enum)	<i>read-only (null)</i>	Reported ANA access state. <i>For the possible property values, see AccessState in Property details.</i>
<b>Volume {</b>	object		The specified volume.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
<b>}</b>			
<b>] }</b>			
<b>ControllerType</b>	string (enum)	<i>read-only (null)</i>	The type of NVMe controller. <i>For the possible property values, see ControllerType in Property details.</i>
<b>MaxQueueSize</b>	integer	<i>read-only (null)</i>	The maximum individual queue size that an NVMe I/O controller supports.
<b>NVMeControllerAttributes {</b>	object	<i>(null)</i>	The NVMe controller attributes.
<b>ReportsNamespaceGranularity</b>	boolean	<i>read-only (null)</i>	Indicates whether or not the controller supports reporting of Namespace Granularity.
<b>ReportsUUIDList</b>	boolean	<i>read-only (null)</i>	Indicates whether or not the controller supports reporting of a UUID list.
<b>Supports128BitHostId</b>	boolean	<i>read-only (null)</i>	Indicates whether or not the controller supports a 128-bit Host Identifier.
<b>SupportsEnduranceGroups</b>	boolean	<i>read-only (null)</i>	Indicates whether or not the controller supports Endurance Groups.
<b>SupportsExceedingPowerOfNonOperationalState</b>	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.
<b>SupportsNVMSets</b>	boolean	<i>read-only (null)</i>	Indicates whether or not the controller supports NVM Sets.

Property	Type	Attributes	Notes
<b>SupportsPredictableLatencyMode</b>	boolean	<i>read-only</i> (null)	Indicates whether or not the controller supports Predictable Latency Mode.
<b>SupportsReadRecoveryLevels</b>	boolean	<i>read-only</i> (null)	Indicates whether or not the controller supports Read Recovery Levels.
<b>SupportsReservations</b> (v1.2+)	boolean	<i>read-only</i> (null)	Indicates if the controller supports reservations.
<b>SupportsSQAssociations</b>	boolean	<i>read-only</i> (null)	Indicates whether or not the controller supports SQ Associations.
<b>SupportsTrafficBasedKeepAlive</b>	boolean	<i>read-only</i> (null)	Indicates whether or not the controller supports restarting the Keep Alive Timer if traffic is processed from an admin command or I/O during a Keep Alive Timeout interval.
}			
<b>NVMeSMARTCriticalWarnings</b> {	object	(null)	The NVMe SMART Critical Warnings for this storage controller. This property contains possible triggers for the predictive drive failure warning for the corresponding drive.
<b>MediaInReadOnly</b>	boolean	<i>read-only</i> (null)	Indicates the media has been placed in read-only mode.
<b>OverallSubsystemDegraded</b>	boolean	<i>read-only</i> (null)	Indicates that the NVM subsystem reliability has been compromised.
<b>PMRUnreliable</b>	boolean	<i>read-only</i> (null)	The Persistent Memory Region has become unreliable.
<b>PowerBackupFailed</b>	boolean	<i>read-only</i> (null)	Indicates that the volatile memory backup device has failed.
<b>SpareCapacityWornOut</b>	boolean	<i>read-only</i> (null)	Indicates that the available spare capacity has fallen below the threshold.
}			

Property	Type	Attributes	Notes
<b>NVMeVersion</b>	string	<i>read-only (null)</i>	The version of the NVMe Base Specification supported.
}			
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this storage controller.
<b>PCIeInterface</b> {	object		The PCIe interface details for this controller.
<b>LanesInUse</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes in use by this device.
<b>MaxLanes</b> (v1.3+)	integer	<i>read-only (null)</i>	The number of PCIe lanes supported by this device.
<b>MaxPCleType</b> (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>
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleType</b> (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>
}			
<b>Ports</b> {	object		The link to the collection of ports that exist on the storage controller. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this storage controller.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU for this storage controller.



Property	Type	Attributes	Notes
<b>SpeedGbps</b>	number (Gbit/s)	<i>read-only (null)</i>	The maximum speed of the storage controller's device interface.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedControllerProtocols [ ]</b>	array (string (enum))	<i>read-only</i>	The supported set of protocols for communicating with this storage controller. <i>For the possible property values, see SupportedControllerProtocols in Property details.</i>
<b>SupportedDeviceProtocols [ ]</b>	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>
<b>SupportedRAIDTypes [ ]</b>	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>

## 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
<b>Namespaces</b> [ {	array	<i>required</i>	The namespaces to attach to the storage controller.
<b>@odata.id</b> string (URI)		<i>read-only</i>	The unique identifier for a resource.
} ]			

### Response Payload

{			
<b>AttachedVolumes</b> (v1.7+) [ {	array	<i>required</i>	An array of links to volumes that are attached to this controller instance.
<b>@odata.id</b> 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
<b>Namespaces</b> [ {	array	required	The namespaces to detach from the storage controller.
<b>@odata.id</b>	string (URI)	read-only	The unique identifier for a resource.
} ]			

Response Payload

{			
<b>AttachedVolumes</b> (v1.7+) [ {	array	required	An array of links to volumes that are attached to this controller instance.
<b>@odata.id</b>	string (URI)	read-only	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"
    }
  ]
}
```

#### 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
<b>AllocationLength</b>	integer	<i>required</i>	Allocated size for received data.
<b>SecurityProtocol</b>	integer	<i>required</i>	The security protocol number.
<b>SecurityProtocolSpecific</b>	integer	<i>required</i>	The security protocol-specific parameter.

Response Payload

{			
<b>Data</b> (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
<b>Data</b>	string	required	The data to transfer.
<b>SecurityProtocol</b>	integer	required	The security protocol number.

Parameter Name	Type	Attributes	Notes
<b>SecurityProtocolSpecific</b>	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 I/O controller.

### 6.128.5.3 MaxPCleType

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 with 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_2.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 1.0.2

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
<b>CorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable errors for the lifetime of the memory of the storage controller.
<b>CorrectableParityErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable parity errors for the lifetime of the memory of the storage controller.
<b>NVMeSMART</b> {	object		The NVMe SMART metrics for this storage controller.
<b>AvailableSparePercent</b>	number (%)	<i>read-only</i> (null)	The normalized percentage of the remaining spare capacity available.
<b>AvailableSpareThresholdPercent</b>	number (%)	<i>read-only</i> (null)	The available spare threshold as a normalized percentage.
<b>CompositeTemperatureCelsius</b>	number (Celsius)	<i>read-only</i> (null)	The composite temperature (C).
<b>ControllerBusyTimeMinutes</b>	integer	<i>read-only</i> (null)	The total time the controller is busy with I/O commands in minutes.
<b>CriticalCompositeTempTimeMinutes</b>	integer	<i>read-only</i> (null)	The amount of time in minutes that the controller has been operational and that the composite temperature has been greater than or equal to the critical composite temperature threshold.
<b>CriticalWarnings</b> {	object		The NVMe SMART critical warnings. See the <i>StorageController</i> schema for details on this property.
<b>@odata.id</b>	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
<b>DataUnitsRead</b>	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.
<b>DataUnitsWritten</b>	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.
<b>EGCriticalWarningSummary {</b>	object		The Endurance Group critical warnings summary.
<b>NamespacesInReadOnlyMode</b>	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.
<b>ReliabilityDegraded</b>	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.
<b>SpareCapacityUnderThreshold</b>	boolean	<i>read-only</i> (null)	An indication of whether the available spare capacity of one or more Endurance Groups is below the threshold.
<b>}</b>			
<b>HostReadCommands</b>	integer	<i>read-only</i> (null)	The number of SMART Host Read Commands completed by the controller.
<b>HostWriteCommands</b>	integer	<i>read-only</i> (null)	The number of User Data Out Commands completed by the controller.
<b>MediaAndDataIntegrityErrors</b>	integer	<i>read-only</i> (null)	The number of occurrences where the controller detected an unrecovered data integrity error.
<b>NumberOfErrorInformationLogEntries</b>	integer	<i>read-only</i> (null)	The number of error information log entries over the life of the controller.
<b>PercentageUsed</b>	number (%)	<i>read-only</i> (null)	The percentage of the NVM subsystem life used.
<b>PowerCycles</b>	integer	<i>read-only</i> (null)	The number of power cycles.
<b>PowerOnHours</b>	number	<i>read-only</i> (null)	The number of power-on hours.

Property	Type	Attributes	Notes
<b>TemperatureSensorsCelsius</b> [ ]	array (Celsius) (number, null)	<i>read-only</i>	The temperature sensor readings in degree Celsius units for this storage controller.
<b>ThermalMgmtTemp1TotalTimeSeconds</b>	integer	<i>read-only</i> (null)	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.
<b>ThermalMgmtTemp1TransitionCount</b>	integer	<i>read-only</i> (null)	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.
<b>ThermalMgmtTemp2TotalTimeSeconds</b>	integer	<i>read-only</i> (null)	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.
<b>ThermalMgmtTemp2TransitionCount</b>	integer	<i>read-only</i> (null)	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.
<b>UnsafeShutdowns</b>	integer	<i>read-only</i> (null)	The number of unsafe shutdowns.
<b>WarningCompositeTempTimeMinutes</b>	integer	<i>read-only</i> (null)	The amount of time in minutes that the controller has been operational and that the composite temperature has been greater than or equal to the warning composite temperature threshold.
}			
<b>StateChangeCount</b>	integer	<i>read-only</i> (null)	The number of state changes for this storage controller.
<b>UncorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable errors for the lifetime of the memory of the storage controller.
<b>UncorrectableParityErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable parity errors for the lifetime of the memory of the storage controller.



### 6.129.4 Example response

```
{
  "@odata.type": "#StorageControllerMetrics.v1_0_2.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 1.9.2

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
<b>AssetTag</b>	string	<i>read-write</i> ( <i>null</i> )	The user-assigned asset tag for this switch.
<b>Certificates</b> (v1.5+) {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>CurrentBandwidthGbps</b> (v1.4+)	number (Gbit/s)	<i>read-only</i> ( <i>null</i> )	The current internal bandwidth of this switch.
<b>CXL</b> (v1.9+) {	object		CXL properties for this switch.
<b>MaxVCSsSupported</b> (v1.9+)	integer	<i>read-only</i>	The maximum number of Virtual CXL Switches (VCSs) supported in this switch.

Property	Type	Attributes	Notes
<b>TotalNumbervPPBs</b> (v1.9+)	integer	<i>read-only</i>	The total number of virtual PCI-to-PCI bridges (vPPBs) supported in this switch.
<b>VCS</b> (v1.9+) {	object		Virtual CXL Switch (VCS) properties for this switch.
<b>HDMDecoders</b> (v1.9+)	integer	<i>read-only</i>	The number of Host Device Memory (HDM) Decoders supported by this switch.
}			
}			
<b>DomainID</b>	integer	<i>read-only</i> (null)	The domain ID for this switch.
<b>Enabled</b> (v1.6+)	boolean	<i>read-write</i>	An indication of whether this switch is enabled.
<b>EnvironmentMetrics</b> (v1.6+) {	object		The link to the environment metrics for this switch. See the <i>EnvironmentMetrics</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a EnvironmentMetrics resource. See the Links section and the <i>EnvironmentMetrics</i> schema for details.
}			
<b>FirmwareVersion</b> (v1.2+)	string	<i>read-only</i> (null)	The firmware version of this switch.
<b>IndicatorLED</b> (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>
<b>IsManaged</b>	boolean	<i>read-write</i> (null)	An indication of whether the switch is in a managed or unmanaged state.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Chassis</b> {	object		The link to the chassis that contains this switch. See the <i>Chassis</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Chassis resource. See the Links section and the <i>Chassis</i> schema for details.
}			
<b>Endpoints</b> (v1.3+) [ {	array		An array of links to the endpoints that connect to this switch.
<b>@odata.id</b>	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
} ]			
<b>ManagedBy</b> [ {	array		An array of links to the managers that manage this switch.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Manager resource. See the Links section and the <i>Manager</i> schema for details.
} ]			
<b>Oem</b> { }	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice</b> (v1.4+) {	object	(null)	The link to the PCIe device providing this switch. See the <i>PCleDevice</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
}			
}			
<b>Location</b> (v1.1+) { }	object		The location of the switch. For property details, see Location.
<b>LocationIndicatorActive</b> (v1.4+)	boolean	<i>read-write</i> (null)	An indicator allowing an operator to physically locate this resource.
<b>LogServices</b> {	object		The link to the collection of log services associated with this switch. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>LogService</i> . See the LogService schema for details.
}			
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer of this switch.
<b>MaxBandwidthGbps</b> (v1.4+)	number (Gbit/s)	<i>read-only</i> (null)	The maximum internal bandwidth of this switch as currently configured.
<b>Measurements</b> (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>
<b>@odata.id</b>	string	<i>read-only</i>	Link to a MeasurementBlock resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
} ]			
<b>Metrics</b> (v1.7+) {	object		The link to the metrics associated with this switch. See the <i>SwitchMetrics</i> schema for details on this property.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string	<i>read-only</i>	Link to a SwitchMetrics resource. See the Links section and the <i>SwitchMetrics</i> schema for details.
}			
<b>Model</b>	string	<i>read-only (null)</i>	The product model number of this switch.
<b>PartNumber</b>	string	<i>read-only (null)</i>	The part number for this switch.
<b>Ports {</b>	object		The link to the collection ports for this switch. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
}			
<b>PowerState</b>	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>
<b>Redundancy [ { } ]</b>	array (object)		Redundancy information for the switches. For property details, see Redundancy.
<b>SerialNumber</b>	string	<i>read-only (null)</i>	The serial number for this switch.
<b>SKU</b>	string	<i>read-only (null)</i>	The SKU for this switch.
<b>Status { }</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedProtocols (v1.3+) [ ]</b>	array (string (enum))	<i>read-only</i>	The protocols this switch supports. <i>For the possible property values, see SupportedProtocols in Property details.</i>
<b>SwitchType</b>	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>
<b>TotalSwitchWidth</b>	integer	<i>read-only (null)</i>	The total number of lanes, phys, or other physical transport links that this switch contains.
<b>UUID (v1.3+)</b>	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
<b>ResetType</b>	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 unit.
GracefulRestart	Shut down gracefully and restart the unit.
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.

string	Description
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.



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.

### 6.130.5.5 SwitchType

The protocol being sent over this switch.

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.

### 6.130.6 Example response

```
{
  "@odata.type": "#Switch.v1_9_2.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 1.0.1

<b>Version</b>	v1.0
<b>Release</b>	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
<b>InternalMemoryMetrics</b> {	object		The memory metrics for a switch.
<b>CurrentPeriod</b> {	object		The memory metrics since the last reset for this switch.
<b>CorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable errors of memory since reset.
<b>UncorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable errors of memory since reset.
}			
<b>LifeTime</b> {	object		The memory metrics for the lifetime of this switch.
<b>CorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of correctable errors for the lifetime of the memory.
<b>UncorrectableECCErrorCount</b>	integer	<i>read-only</i> (null)	The number of uncorrectable errors for the lifetime of the memory.
}			
}			
<b>PCIErrors</b> {	object		The PCIe errors associated with this switch.
<b>CorrectableErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe correctable errors for this device.
<b>FatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe fatal errors for this device.
<b>L0ToRecoveryCount</b> (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.
<b>NAKReceivedCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by the receiver.

Property	Type	Attributes	Notes
<b>NAKSentCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of NAKs issued on the PCIe link by this device.
<b>NonFatalErrorCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe non-fatal errors for this device.
<b>ReplayCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replays issued by this device.
<b>ReplayRolloverCount</b> (v1.8+)	integer	<i>read-only</i> (null)	The total number of PCIe replay rollovers issued by this device.
<b>UnsupportedRequestCount</b> (v1.13+)	integer	<i>read-only</i> (null)	The total number of PCIe unsupported requests received 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_1.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 1.7.3

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)	read-only	The date and time when the task was completed. This property will only appear when the task is complete.

Property	Type	Attributes	Notes
<b>EstimatedDuration</b> (v1.6+)	string (duration)	<i>read-only</i> ( <i>null</i> )	The estimated total time required to complete the task.
<b>HidePayload</b> (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> .
<b>Links</b> (v1.7+) {	object		Contains references to other resources that are related to this resource.
<b>CreatedResources</b> (v1.7+) [ {	array		An array of URIs referencing the resources created as the result of the operation that produced this task.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>Messages</b> [ { } ]	array (object)		An array of messages associated with the task. For property details, see Message.
<b>Payload</b> (v1.3+) {	object		The HTTP and JSON request payload details for this task, unless they are hidden from view by the service.
<b>HttpHeaders</b> (v1.3+) [ ]	array (string)	<i>read-only</i>	An array of HTTP headers that this task includes.
<b>HttpOperation</b> (v1.3+)	string	<i>read-only</i>	The HTTP operation to perform to execute this task.
<b>JsonBody</b> (v1.3+)	string	<i>read-only</i>	The JSON payload to use in the execution of this task.
<b>TargetUri</b> (v1.3+)	string (URI)	<i>read-only</i>	The URI of the target for this task.
}			
<b>PercentComplete</b> (v1.4+)	integer (%)	<i>read-only</i> ( <i>null</i> )	The completion percentage of this task.
<b>StartTime</b>	string (date-time)	<i>read-only</i>	The date and time when the task was started.
<b>SubTasks</b> (v1.5+) {	object		The link to a collection of sub-tasks for this task. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of Task. See the Task schema for details.



Property	Type	Attributes	Notes
}			
<b>TaskMonitor</b> (v1.2+)	string (URI)	read-only	The URI of the Task Monitor for this task.
<b>TaskState</b>	string (enum)	read-only	The state of the task. <i>For the possible property values, see TaskState in Property details.</i>
<b>TaskStatus</b>	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_3.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
---------	------	------	------

<b>Release</b>	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
<b>CompletedTaskOverWritePolicy</b>	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>
<b>DateTime</b>	string (date-time)	<i>read-only (null)</i>	The current date and time, with UTC offset, setting that the task service uses.
<b>LifeCycleEventOnTaskStateChange</b>	boolean	<i>read-only</i>	An indication of whether a task state change sends an event.
<b>ServiceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this service is enabled.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TaskAutoDeleteTimeoutMinutes</b> (v1.2+)	integer	<i>read-write</i>	The number of minutes after which a completed task is deleted by the service.
<b>Tasks {</b>	object		The links to the collection of tasks. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of Task. See the Task schema for details.
<b>}</b>			

## 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 1.3.3

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 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
<b>LogService</b> {	object		The link to a log service that the telemetry service uses. This service can be a dedicated log service or a pointer to a log service under another resource, such as a manager. See the <i>LogService</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a LogService resource. See the Links section and the <i>LogService</i> schema for details.
}			
<b>MaxReports</b>	integer	<i>read-only</i> (null)	The maximum number of metric reports that this service supports.
<b>MetricDefinitions</b> {	object		The link to the collection of metric definitions. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MetricDefinition</i> . See the MetricDefinition schema for details.
}			
<b>MetricReportDefinitions</b> {	object		The link to the collection of metric report definitions. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MetricReportDefinition</i> . See the MetricReportDefinition schema for details.
}			
<b>MetricReports</b> {	object		The link to the collection of metric reports. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>MetricReport</i> . See the MetricReport schema for details.

Property	Type	Attributes	Notes
}			
<b>MinCollectionInterval</b>	string (duration)	<i>read-only</i> ( <i>null</i> )	The minimum time interval between gathering metric data that this service allows.
<b>ServiceEnabled</b> (v1.2+)	boolean	<i>read-write</i> ( <i>null</i> )	An indication of whether this service is enabled.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>SupportedCollectionFunctions</b> [ ]	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>
<b>Triggers</b> {	object		The link to the collection of triggers that apply to metrics. Contains a link to a resource.
<b>@odata.id</b>	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
<b>GeneratedMetricReportValues</b> (v1.1+) [ {	array	<i>required</i>	The contents of the MetricReportValues in the generated metric report.
<b>MetricDefinition</b> (v1.1+) {	object		The link to the metric definition for this metric. See the <i>MetricDefinition</i> schema for details on this property.
<b>@odata.id</b>	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
<b>MetricId</b> (v1.1+)	string	<i>read-only</i> (null)	The metric definitions identifier for this metric.
<b>MetricProperty</b> (v1.1+)	string (URI)	<i>read-only</i> (null)	The URI for the property from which this metric is derived.
<b>MetricValue</b> (v1.1+)	string	<i>read-only</i> (null)	The metric value, as a string.
<b>Timestamp</b> (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.
} ]			
<b>MetricReportName</b>	string	<i>required</i>	The name of the metric report in generated metric report.
<b>MetricReportValues</b> (deprecated v1.1)	string	<i>optional</i>	The contents of the 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_3.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 1.7.2 (deprecated)

Version	v1.7 Deprecated	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
<b>Fans</b> [ {	array		The set of fans for this chassis.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> (v1.3+) { }	object		The available actions for this resource.

Property	Type	Attributes	Notes
<b>Assembly</b> (v1.4+) {	object		The link to the assembly associated with this fan. See the <i>Assembly</i> schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>Assembly</i> resource. See the Links section and the <i>Assembly</i> schema for details.
}			
<b>FanName</b> (deprecated v1.1)	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>
<b>HotPluggable</b> (v1.4+)	boolean	<i>read-only (null)</i>	An indication of whether this device can be inserted or removed while the equipment is in operation.
<b>IndicatorLED</b> (v1.2+)	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>
<b>Location</b> (v1.4+) {}	object		The location of the fan. For property details, see Location.
<b>LowerThresholdCritical</b>	integer	<i>read-only (null)</i>	The value at which the reading is below normal range but not yet fatal.
<b>LowerThresholdFatal</b>	integer	<i>read-only (null)</i>	The value at which the reading is below normal range and fatal.
<b>LowerThresholdNonCritical</b>	integer	<i>read-only (null)</i>	The value at which the reading is below normal range.
<b>Manufacturer</b> (v1.2+)	string	<i>read-only (null)</i>	The manufacturer of this fan.
<b>MaxReadingRange</b>	integer	<i>read-only (null)</i>	Maximum value for this sensor.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.
<b>MinReadingRange</b>	integer	<i>read-only (null)</i>	Minimum value for this sensor.
<b>Model</b> (v1.2+)	string	<i>read-only (null)</i>	The model number for this fan.
<b>Name</b> (v1.1+)	string	<i>read-only (null)</i>	Name of the fan.

Property	Type	Attributes	Notes
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PartNumber</b> (v1.2+)	string	<i>read-only (null)</i>	The part number for this fan.
<b>PhysicalContext</b>	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>
<b>Reading</b>	integer	<i>read-only (null)</i>	The fan speed.
<b>ReadingUnits</b> (v1.0.1+)	string (enum)	<i>read-only (null)</i>	The units in which the fan reading and thresholds are measured. <i>For the possible property values, see ReadingUnits in Property details.</i>
<b>Redundancy</b> [ { } ]	array (object)		The set of redundancy groups for this fan. For property details, see Redundancy.
<b>RelatedItem</b> [ {	array		An array of links to resources or objects that this fan services.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>SensorNumber</b> (v1.5+)	integer	<i>read-only (null)</i>	The numerical identifier for this fan speed sensor.
<b>SerialNumber</b> (v1.2+)	string	<i>read-only (null)</i>	The serial number for this fan.
<b>SparePartNumber</b> (v1.2+)	string	<i>read-only (null)</i>	The spare part number for this fan.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UpperThresholdCritical</b>	integer	<i>read-only (null)</i>	The value at which the reading is above normal range but not yet fatal.
<b>UpperThresholdFatal</b>	integer	<i>read-only (null)</i>	The value at which the reading is above normal range and fatal.
<b>UpperThresholdNonCritical</b>	integer	<i>read-only (null)</i>	The value at which the reading is above normal range.
} ]			

Property	Type	Attributes	Notes
<b>Redundancy</b> [ { } ]	array (object)		The redundancy information for the set of fans in this chassis. For property details, see Redundancy.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>Temperatures</b> [ {	array		The set of temperature sensors for this chassis.
<b>@odata.id</b>	string (URI)	<i>read-only required</i>	The unique identifier for a resource.
<b>Actions</b> (v1.3+) { }	object		The available actions for this resource.
<b>AdjustedMaxAllowableOperatingValue</b> (v1.4+)	integer (Celsius)	<i>read-only (null)</i>	Adjusted maximum allowable operating temperature for this equipment based on the current environmental conditions present.
<b>AdjustedMinAllowableOperatingValue</b> (v1.4+)	integer (Celsius)	<i>read-only (null)</i>	Adjusted minimum allowable operating temperature for this equipment based on the current environmental conditions present.
<b>DeltaPhysicalContext</b> (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>
<b>DeltaReadingCelsius</b> (v1.4+)	number (Celsius)	<i>read-only (null)</i>	The delta temperature reading.
<b>LowerThresholdCritical</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is below normal range but not yet fatal.
<b>LowerThresholdFatal</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is below normal range and fatal.
<b>LowerThresholdNonCritical</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is below normal range.
<b>LowerThresholdUser</b> (v1.6+)	integer (Celsius)	<i>read-write (null)</i>	The value at which the reading is below the user-defined range.
<b>MaxAllowableOperatingValue</b> (v1.4+)	integer (Celsius)	<i>read-only (null)</i>	Maximum allowable operating temperature for this equipment.
<b>MaxReadingRangeTemp</b>	number (Celsius)	<i>read-only (null)</i>	Maximum value for this sensor.
<b>MemberId</b>	string	<i>read-only required</i>	The unique identifier for the member within an array.

Property	Type	Attributes	Notes
<b>MinAllowableOperatingValue</b> (v1.4+)	integer (Celsius)	<i>read-only (null)</i>	Minimum allowable operating temperature for this equipment.
<b>MinReadingRangeTemp</b>	number (Celsius)	<i>read-only (null)</i>	Minimum value for this sensor.
<b>Name</b>	string	<i>read-only (null)</i>	The temperature sensor name.
<b>Oem {}</b>	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PhysicalContext</b>	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>
<b>ReadingCelsius</b>	number (Celsius)	<i>read-only (null)</i>	The temperature (C).
<b>RelatedItem</b> [ {	array		An array of links to resources or objects that represent areas or devices to which this temperature applies.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>SensorNumber</b>	integer	<i>read-only (null)</i>	The numerical identifier of the temperature sensor.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>UpperThresholdCritical</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is above normal range but not yet fatal.
<b>UpperThresholdFatal</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is above normal range and fatal.
<b>UpperThresholdNonCritical</b>	number (Celsius)	<i>read-only (null)</i>	The value at which the reading is above normal range.
<b>UpperThresholdUser</b> (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_2.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 1.1.1

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
<b>CDUs</b> {	object		A link to a collection of coolant distribution units. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details.
}			
<b>CoolingLoopRedundancy</b> (v1.1+) [ { } ]	array (object)		The redundancy information for cooling loops attached to this equipment. For property details, see RedundantGroup.
<b>CoolingLoops</b> {	object		A link to a collection of cooling loops. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolingLoop</i> . See the CoolingLoop schema for details.
}			
<b>HeatExchangers</b> {	object		A link to a collection of heat exchanger units. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details.
}			
<b>ImmersionUnits</b> {	object		A link to a collection of immersion cooling units. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>CoolingUnit</i> . See the CoolingUnit schema for details.
}			
<b>Status</b> {}	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_1.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 1.3.1

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
<b>AirFlowCubicMetersPerMinute</b> (v1.2+) {}	object		The air flow through the chassis (m <sup>3</sup> /min). For more information about this property, see SensorExcerpt in Property Details.



Property	Type	Attributes	Notes
<b>DeltaPressurekPa</b> (v1.2+) {}	object		The differential pressure (kPa). For more information about this property, see SensorExcerpt in Property Details.
<b>EnergykWh</b> (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.
<b>ApparentkVAh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> ( <i>null</i> )	Apparent energy (kVAh).
<b>DataSourceUri</b>	string (URI)	<i>read-only</i> ( <i>null</i> )	The link to the resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	<i>read-only</i> ( <i>null</i> )	The total accumulation value for this sensor.
<b>ReactivekVARh</b> (v1.5+)	number (kV.A.h)	<i>read-only</i> ( <i>null</i> )	Reactive energy (kVARh).
<b>Reading</b>	number	<i>read-only</i> ( <i>null</i> )	The sensor value.
<b>SensorResetTime</b>	string (date-time)	<i>read-only</i> ( <i>null</i> )	The date and time when the time-based properties were last reset.
}			
<b>HeaterSummary</b> (v1.1+) {	object	( <i>null</i> )	The summary of heater metrics for this chassis.
<b>TotalPrePowerOnHeatingTimeSeconds</b> (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.
<b>TotalRuntimeHeatingTimeSeconds</b> (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.
}			
<b>PowerWatts</b> (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.
<b>ApparentVA</b>	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
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>PhaseAngleDegrees</b> (v1.5+)	number	<i>read-only (null)</i>	The phase angle (degrees) between the current and voltage waveforms.
<b>PowerFactor</b>	number	<i>read-only (null)</i>	The power factor for this sensor.
<b>ReactiveVAR</b>	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.
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
}			
<b>TemperatureReadingsCelsius</b> [ {	array (excerpt)		The temperatures (in degree Celsius units) from all related sensors for this device. This object is an excerpt of the <i>Sensor</i> resource located at the URI shown in DataSourceUri.
<b>DataSourceUri</b>	string (URI)	<i>read-only (null)</i>	The link to the resource that provides the data for this sensor.
<b>DeviceName</b> (v1.2+)	string	<i>read-only (null)</i>	The name of the device.
<b>PhysicalContext</b>	string (enum)	<i>read-only (null)</i>	The area or device to which this sensor measurement applies. <i>For the possible property values, see PhysicalContext in Property details.</i>
<b>PhysicalSubContext</b>	string (enum)	<i>read-only (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>
<b>Reading</b>	number	<i>read-only (null)</i>	The sensor value.
} ]			
<b>TemperatureSummaryCelsius</b> {	object	<i>(null)</i>	The summary temperature readings for this chassis.
<b>Ambient</b> {}	object		The ambient temperature (in degree Celsius units) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.

Property	Type	Attributes	Notes
<b>Exhaust {}</b>	object		The exhaust temperature (in degree Celsius units) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
<b>Intake {}</b>	object		The intake temperature (in degree Celsius units) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
<b>Internal {}</b>	object		The internal temperature (in degree Celsius units) 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.

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

### 6.137.6 Example response

```
{
  "@odata.type": "#ThermalMetrics.v1_3_1.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 1.3.1

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
<b>CoolantConnectorRedundancy</b> (v1.3+) [ { } ]	array (object)		The redundancy information for the coolant connectors in this subsystem. For property details, see RedundantGroup.
<b>CoolantConnectors</b> (v1.2+) {	object		A link to the 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.
}			
<b>FanRedundancy</b> [ { } ]	array (object)		The redundancy information for the groups of fans in this subsystem. For property details, see RedundantGroup.
<b>Fans</b> {	object		The link to the collection of fans within this subsystem. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>Fan</i> . See the Fan schema for details.
}			
<b>Heaters</b> (v1.1+) {	object		The link to the collection of heaters within this subsystem. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of <i>Heater</i> . See the Heater schema for details.
}			
<b>LeakDetection</b> (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	read-only	Link to a LeakDetection resource. See the Links section and the <i>LeakDetection</i> schema for details.
}			
<b>Pumps</b> (v1.3+) {	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.
}			



Property	Type	Attributes	Notes
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>ThermalMetrics</b> {	object		The link to the summary of thermal metrics for this subsystem. See the <i>ThermalMetrics</i> schema for details on this property.
<b>@odata.id</b>	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_1.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)	read-only (null)	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
<b>DwellTime</b>	string (duration)	<i>read-write</i> ( <i>null</i> )	The amount of time that a trigger event persists before the metric action is performed.
<b>Name</b>	string	<i>read-only</i> ( <i>null</i> )	The name of trigger.
<b>Severity</b>	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>
<b>Value</b>	string	<i>read-write</i> ( <i>null</i> )	The discrete metric value that constitutes a trigger event.
} ]			
<b>EventTriggers</b> (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.
<b>HysteresisDuration</b> (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.
<b>HysteresisReading</b> (v1.3+)	number	<i>read-write</i> ( <i>null</i> )	The reading offset from the threshold value required to clear the threshold.
<b>Links</b> (v1.1+) {	object		The links to other resources that are related to this resource.
<b>MetricReportDefinitions</b> (v1.1+) [ {	array		The metric report definitions that generate new metric reports when a trigger condition is met and when the TriggerActions property contains <code>RedfishMetricReport</code> .
<b>@odata.id</b>	string	<i>read-write</i>	Link to a MetricReportDefinition resource. See the Links section and the <i>MetricReportDefinition</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			
<b>MetricIds</b> (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.
<b>MetricProperties</b> [ ]	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.
<b>MetricType</b>	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
<b>NumericThresholds</b> {	object		The thresholds when a numeric metric triggers.
<b>LowerCritical</b> {}	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.
<b>LowerWarning</b> {}	object		The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details.
<b>UpperCritical</b> {}	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.
<b>UpperWarning</b> {}	object		The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TriggerActions</b> [ ]	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>
<b>Wildcards</b> [ {	array		The wildcards and their substitution values for the entries in the MetricProperties array property.
<b>Name</b>	string	<i>read-only (null)</i>	The wildcard.
<b>Values</b> [ ]	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.

<b>Activation</b>	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>
<b>DwellTime</b>	string (duration)	<i>read- write (null)</i>	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b>	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 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2023.3	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	read-only	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
FirmwareVersion	string	read-only (null)	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
<b>ActiveSoftwareImage</b> {	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.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a <i>SoftwareInventory</i> resource. See the Links section and the <i>SoftwareInventory</i> schema for details.
}			
<b>ComponentIntegrity</b> [ {	array		An array of links to <i>ComponentIntegrity</i> resources for which the trusted component is responsible.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a <i>ComponentIntegrity</i> resource. See the Links section and the <i>ComponentIntegrity</i> schema for details.
} ]			
<b>ComponentsProtected</b> [ {	array		An array of links to resources that the target component protects.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>IntegratedInto</b> {	object		A link to a resource to which this trusted component is integrated.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>Oem</b> {}	object		See the <i>Oem</i> object definition in the <a href="#">Common properties</a> section.
<b>Owner</b> (v1.2+) {	object		A link to the resource that owns this trusted component.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
}			
<b>SoftwareImages</b> [ {	array		The images that are associated with this trusted component.
<b>@odata.id</b>	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
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer of this trusted component.
<b>Model</b>	string	<i>read-only</i> (null)	The model number of the trusted component.
<b>PartNumber</b>	string	<i>read-only</i> (null)	The part number of the trusted component.
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number of the trusted component.
<b>SKU</b>	string	<i>read-only</i> (null)	The SKU of the trusted component.
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TPM</b> (v1.1+) {	object		TPM-specific information for this trusted component.
<b>CapabilitiesVendorID</b> (v1.1+)	string	<i>read-only</i> (null)	The capabilities vendor ID for this trusted component.
<b>HardwareInterfaceVendorID</b> (v1.1+)	string	<i>read-only</i> (null)	The hardware interface vendor ID for this trusted component.
}			
<b>TrustedComponentType</b>	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>
<b>UUID</b>	string (uuid)	<i>read-only</i> (null)	The UUID for this trusted component.

## 6.140.4 Actions

### 6.140.4.1 TPMGetEventLog (v1.3+)

#### Description

This action retrieves the event log for TPM 2.0 devices.

#### Action URI

{Base URI of target resource}/Actions/TrustedComponent.TPMGetEventLog

### Action parameters

This action takes no parameters.

### Response Payload

{			
<b>EventLog</b> (v1.3+)	string	<i>read-only required</i>	The Base64-encoded event log for the TPM.
<b>Oem</b> (v1.3+) {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
}			

### Response Example

```
{
  "@odata.type": "#TrustedComponent.v1_0_0.TPMGetEventLog",
  "EventLog": "EeAlkj89JWv9CbeGdm1PaARrrMw... TRUNCATED (TYPICALLY KB or MB)"
}
```

## 6.140.5 Property details

### 6.140.5.1 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.

### 6.140.6 Example response

```
{
  "@odata.type": "#TrustedComponent.v1_3_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 1.13.0

Version	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	...
Release	2023.3	2023.2	2021.4	2021.2	2021.1	2019.4	2019.3	2019.2	2019.1	2018.3	2018.2	...

### 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
<b>ClientCertificates</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>FirmwareInventory</b> {	object		An inventory of firmware. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>SoftwareInventory</i> . See the SoftwareInventory schema for details.
}			
<b>HttpPushUri</b> (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.
<b>HttpPushUriOptions</b> (v1.4+) {	object		The options for HttpPushUri-provided software updates.
<b>ForceUpdate</b> (v1.11+)	boolean	<i>read-write</i>	An indication of whether the service should bypass update policies when applying the HttpPushUri-provided image.
<b>HttpPushUriApplyTime</b> (v1.4+) {	object		The settings for when to apply HttpPushUri-provided firmware.
<b>ApplyTime</b> (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>
<b>MaintenanceWindowDurationInSeconds</b> (v1.4+)	integer (seconds)	<i>read-write</i>	The expiry time, in seconds, of the maintenance window.
<b>MaintenanceWindowStartTime</b> (v1.4+)	string (date-time)	<i>read-write</i>	The start time of a maintenance window.
}			
}			

Property	Type	Attributes	Notes
<b>HttpPushUriOptionsBusy</b> (v1.4+)	boolean	<i>read-write</i> (null)	An indication of whether a client has reserved the HttpPushUriOptions properties for software updates.
<b>HttpPushUriTargets</b> (v1.2+) [ ]	array (URI) (string, null)	<i>read-write</i>	An array of URIs that indicate where to apply the update image.
<b>HttpPushUriTargetsBusy</b> (v1.2+)	boolean	<i>read-write</i> (null)	An indication of whether any client has reserved the HttpPushUriTargets property.
<b>MaxImageSizeBytes</b> (v1.5+)	integer (bytes)	<i>read-only</i> (null)	The maximum size in bytes of the software update image that this service supports.
<b>MultipartHttpPushUri</b> (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.
<b>PublicIdentitySSHKey</b> (v1.13+) {	object		A link to the public key that is used with the SimpleUpdate action for the key-based authentication. The GenerateSSHIdentityKeyPair and RemoveSSHIdentityKeyPair are used to update the key for the SimpleUpdate action. See the Key schema for details on this property.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Key resource. See the Links section and the Key schema for details.
}			
<b>RemoteServerCertificates</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Certificate</i> . See the Certificate schema for details.
}			
<b>RemoteServerSSHKeys</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Key</i> . See the Key schema for details.

Property	Type	Attributes	Notes
}			
<b>ServiceEnabled</b>	boolean	<i>read-write (null)</i>	An indication of whether this service is enabled.
<b>SoftwareInventory</b> {	object		An inventory of software. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>SoftwareInventory</i> . See the <i>SoftwareInventory</i> schema for details.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see <i>Status</i> .
<b>SupportedUpdateImageFormats</b> (v1.13+) [ ]	array (string (enum))	<i>read-only (null)</i>	The image format types supported by the service. <i>For the possible property values, see SupportedUpdateImageFormats in Property details.</i>
<b>VerifyRemoteServerCertificate</b> (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.
<b>VerifyRemoteServerSSHKey</b> (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 GenerateSSHIdentityKeyPair (v1.13+)

#### Description

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

#### Action URI

*{Base URI of target resource}*/Actions/UpdateService.GenerateSSHIdentityKeyPair

#### Action parameters

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

Request Example

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

6.141.4.2 RemoveSSHIdentityKeyPair (v1.13+)

Description

This action removes the SSH identity key-pair used with the UpdateService resource.

Action URI

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

Action parameters

This action takes no parameters.

Request Example

```
{}
```

6.141.4.3 SimpleUpdate

Description

This action updates software components.

Action URI

{Base URI of target resource}/Actions/UpdateService.SimpleUpdate

Action parameters

Parameter Name	Type	Attributes	Notes
<b>ForceUpdate</b> (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> .
<b>ImageURI</b>	string (URI)	<i>required</i>	The URI of the software image to install.
<b>Password</b> (v1.4+)	string	<i>optional</i>	The password to access the URI specified by the ImageURI parameter.
<b>Targets</b> (v1.2+) [ ]	array (URI) (string)	<i>optional</i>	An array of URIs that indicate where to apply the update image.
<b>TransferProtocol</b>	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>
<b>Username</b> (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"
}
```

6.141.4.4 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 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.
NISTP224	NIST P-224.
NISTP256	NIST P-256.
NISTP384	NIST P-384.
NISTP521	NIST P-521.

string	Description
NIST571	NIST T-571.

#### 6.141.5.3 KeyType

The type of SSH key.

string	Description
DSA	DSA.
ECDSA	ECDSA.
Ed25519	Ed25519.
RSA	RSA.

#### 6.141.5.4 SupportedUpdateImageFormats

The image format types supported by the service.

string	Description
PLDMv1_0	A PLDM for Firmware Update Specification v1.0 image.
PLDMv1_1	A PLDM for Firmware Update Specification v1.1 image.
PLDMv1_2	A PLDM for Firmware Update Specification v1.2 image.
PLDMv1_3	A PLDM for Firmware Update Specification v1.3 image.
UEFICapsule	The image conforms to the capsule format described in the UEFI Specification.
VendorDefined	A vendor-defined image.

#### 6.141.5.5 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 ( <i>deprecated v1.3</i> )	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_13_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

<b>Version</b>	<i>v1.0</i>
<b>Release</b>	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
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>PCleDevice</b> {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a PCIeDevice resource. See the Links section and the <i>PCleDevice</i> schema for details.
}			
<b>Processors</b> [ {	array		An array of links to the processors that can utilize this USB controller.
<b>@odata.id</b>	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
<b>Manufacturer</b>	string	<i>read-only</i> (null)	The manufacturer of this USB controller.
<b>Model</b>	string	<i>read-only</i> (null)	The product model number of this USB controller.
<b>PartNumber</b>	string	<i>read-only</i> (null)	The part number for this USB controller.
<b>Ports {</b>	object		The ports of the USB controller. Contains a link to a resource.
<b>@odata.id</b>	string	<i>read-only</i>	Link to Collection of <i>Port</i> . See the Port schema for details.
<b>}</b>			
<b>SerialNumber</b>	string	<i>read-only</i> (null)	The serial number for this USB controller.
<b>SKU</b>	string	<i>read-only</i> (null)	The SKU for this USB controller.
<b>SparePartNumber</b>	string	<i>read-only</i> (null)	The spare part number of the USB controller.
<b>Status {}</b>	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 1.0.2

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}/VCAT/{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/VCAT/{VCATEntryId}  
 /redfish/v1/Fabrics/{FabricId}/Switches/{SwitchId}/Ports/{PortId}/VCAT/{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}/VCAT/{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
<b>RawEntryHex</b>	string	<i>read-write</i> (null)	The hexadecimal value of the Virtual Channel Action Table entries.
<b>VCEntries</b> [ {	array		An array of entries of the Virtual Channel Action Table.
<b>Threshold</b>	string	<i>read-write</i> (null)	The configured threshold.
<b>VCMask</b>	string	<i>read-write</i> (null)	The bits corresponding to the supported Virtual Channel.
} ]			

### 6.143.4 Example response

```
{
  "@odata.type": "#VCATEntry.v1_0_2.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 1.6.3

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
<b>Certificates</b> (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.
}			
<b>ClientCertificates</b> (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.



Property	Type	Attributes	Notes
}			
<b>ConnectedVia</b>	string (enum)	<i>read-only (null)</i>	The current virtual media connection method. <i>For the possible property values, see ConnectedVia in Property details.</i>
<b>EjectPolicy</b> (v1.6+)	string (enum)	<i>read-write (null)</i>	The ejection policy for the virtual media. <i>For the possible property values, see EjectPolicy in Property details.</i>
<b>EjectTimeout</b> (v1.6+)	string (duration)	<i>read-write (null)</i>	Timeout value before the virtual media is automatically ejected.
<b>Image</b>	string (URI)	<i>read-write (null)</i>	The URI of the location of the selected image.
<b>ImageName</b>	string	<i>read-only (null)</i>	The current image name.
<b>Inserted</b>	boolean	<i>read-write (null)</i>	An indication of whether virtual media is inserted into the virtual device.
<b>MediaTypes</b> [ ]	array (string (enum))	<i>read-only</i>	The media types supported as virtual media. <i>For the possible property values, see MediaTypes in Property details.</i>
<b>Password</b> (v1.3+)	string	<i>read-write (null)</i>	The password to access the Image parameter-specified URI. This property is <code>null</code> in responses.
<b>Status</b> (v1.4+) {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>TransferMethod</b> (v1.3+)	string (enum)	<i>read-write (null)</i>	The transfer method to use with the Image. <i>For the possible property values, see TransferMethod in Property details.</i>
<b>TransferProtocolType</b> (v1.3+)	string (enum)	<i>read-write (null)</i>	The network protocol to use with the image. <i>For the possible property values, see TransferProtocolType in Property details.</i>
<b>UserName</b> (v1.3+)	string	<i>read-write (null)</i>	The user name to access the Image parameter-specified URI.
<b>VerifyCertificate</b> (v1.4+)	boolean	<i>read-write (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.
<b>WriteProtected</b>	boolean	<i>read-write (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
<b>Image</b>	string	<i>required</i>	The URI of the media to attach to the virtual media.
<b>Inserted</b>	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> .
<b>Password</b> (v1.3+)	string	<i>optional</i>	The password to access the URI specified by the Image parameter.
<b>TransferMethod</b> (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>
<b>TransferProtocolType</b> (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>
<b>UserName</b> (v1.3+)	string	<i>optional</i>	The username to access the URI specified by the Image parameter.

Parameter Name	Type	Attributes	Notes
WriteProtected	boolean	optional	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.

string	Description
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).

string	Description
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_3.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	v1.3 Deprecated	v1.2	v1.1	v1.0
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
<b>VLANEnable</b>	boolean	<i>read-write required on create (null)</i>	An indication of whether this VLAN is enabled for this interface.
<b>VLANId</b>	integer	<i>read-write required on create (null)</i>	The ID for this VLAN.
<b>VLANPriority</b> (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/{VolumeId}
/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
<b>AccessCapabilities</b> (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>
<b>AllocatedPools</b> (v1.1+) {}	object		An array of references to StoragePools allocated from this Volume.
<b>BlockSizeBytes</b>	integer (bytes)	<i>read-only (null)</i>	The size of the smallest addressable unit (Block) of this volume in bytes.
<b>Capacity</b> (v1.1+) {}	object		Capacity utilization. For property details, see Capacity v1.0.0).
<b>CapacityBytes</b>	integer (bytes)	<i>read-write (null)</i>	The size in bytes of this Volume.
<b>CapacitySources</b> (v1.1+) [ {	array		An array of space allocations to this volume.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Compressed</b> (v1.4+)	boolean	<i>read-write (null)</i>	Indicator of whether or not the Volume has compression enabled.
<b>Connections</b> (v1.9+) [ {	array		An array of references to Connections that includes this volume.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Connection resource. See the Links section and the <i>Connection</i> schema for details.
} ]			
<b>Deduplicated</b> (v1.4+)	boolean	<i>read-write (null)</i>	Indicator of whether or not the Volume has deduplication enabled.
<b>DisplayName</b> (v1.4+)	string	<i>read-write (null)</i>	A user-configurable string to name the volume.
<b>Encrypted</b>	boolean	<i>read-write (null)</i>	Is this Volume encrypted.



Property	Type	Attributes	Notes
<b>EncryptionTypes</b> [ ]	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>
<b>Identifiers</b> [ { } ]	array (object)		The Durable names for the volume. For property details, see Identifier.
<b>InitializeMethod</b> (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>
<b>IOPerfModeEnabled</b> (v1.5+)	boolean	<i>read-write (null)</i>	Indicates the IO performance mode setting for the volume.
<b>IOStatistics</b> (v1.2+) { }	object		Statistics for this volume. For property details, see IOStatistics v1.0.1).
<b>IsBootCapable</b> (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.
<b>Links</b> {	object		Contains references to other resources that are related to this resource.
<b>CacheDataVolumes</b> (v1.6+) [ {	array		A pointer to the data volumes this volume serves as a cache volume.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>CacheVolumeSource</b> (v1.6+) { }	object	<i>(null)</i>	A pointer to the cache volume source for this volume.
<b>ClassOfService</b> (v1.1+) { }	object		The ClassOfService that this storage volume conforms to.
<b>ClientEndpoints</b> (v1.4+) [ {	array		An array of references to the client Endpoints associated with this volume.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>ConsistencyGroups</b> (v1.4+) [ {	array		An array of references to the ConsistencyGroups associated with this volume.

Property	Type	Attributes	Notes
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>Controllers</b> (v1.9+) [ {	array		An array of the Controllers associated with this volume.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a StorageController resource. See the Links section and the <i>StorageController</i> schema for details.
} ]			
<b>DedicatedSpareDrives</b> (v1.2+) [ {	array		An array of references to the drives which are dedicated spares for this volume.
<b>@odata.id</b>	string	<i>read-write</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>Drives</b> [ {	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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>JournalingMedia</b> (v1.5+) {}	object	(null)	A pointer to the Resource that serves as a journaling media for this volume.
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>OwningStorageResource</b> (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.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Storage resource. See the Links section and the <i>Storage</i> schema for details.
}			
<b>OwningStorageService</b> (v1.4+) {}	object		A pointer to the StorageService that owns or contains this volume.

Property	Type	Attributes	Notes
<b>ServerEndpoints</b> (v1.4+) [ {	array		An array of references to the server Endpoints associated with this volume.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
} ]			
<b>SpareResourceSets</b> (v1.3+) [ {	array		An array of references to SpareResourceSets.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>StorageGroups</b> (v1.4+) [ {	array		An array of references to the StorageGroups associated with this volume.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
}			
<b>LogicalUnitNumber</b> (v1.4+)	integer	<i>read-only (null)</i>	Indicates the host-visible LogicalUnitNumber assigned to this Volume.
<b>LowSpaceWarningThresholdPercents</b> (v1.1+) [ ]	array (%) (integer, null)	<i>read-write</i>	Low space warning.
<b>Manufacturer</b> (v1.1+)	string	<i>read-only (null)</i>	The manufacturer or OEM of this storage volume.
<b>MaxBlockSizeBytes</b> (v1.1+)	integer (bytes)	<i>read-only (null)</i>	Max Block size in bytes.
<b>MediaSpanCount</b> (v1.4+)	integer	<i>read-only (null)</i>	Indicates the number of media elements used per span in the secondary RAID for a hierarchical RAID type.
<b>Metrics</b> (v1.9+) {}	object		The link to the metrics for this volume.
<b>Model</b> (v1.1+)	string	<i>read-only (null)</i>	The model number for this storage volume.
<b>NVMeNamespaceProperties</b> (v1.5+) {	object	<i>(null)</i>	This property contains properties to use when Volume is used to describe an NVMe Namespace.

Property	Type	Attributes	Notes
<b>FormattedLBASize</b> (v1.5+)	string	<i>read-only</i> (null)	The LBA data size and metadata size combination that the namespace has been formatted with.
<b>IsShareable</b> (v1.5+)	boolean	<i>read-write</i> (null)	Indicates the namespace is shareable.
<b>LBAFormat</b> (v1.9+) {	object	(null)	Describes the current LBA format ID and detailed properties.
<b>LBADataSizeBytes</b> (v1.9+)	integer	<i>read-only</i> (null)	The LBA data size in bytes.
<b>LBAFormatType</b> (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>
<b>LBAMetadataSizeBytes</b> (v1.9+)	integer	<i>read-only</i> (null)	The LBA metadata size in bytes.
<b>RelativePerformance</b> (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>
}			
<b>LBAFormats</b> (v1.9+) [ {	array		Describes the LBA format IDs and detailed properties.
<b>LBADataSizeBytes</b> (v1.9+)	integer	<i>read-only</i> (null)	The LBA data size in bytes.
<b>LBAFormatType</b> (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>
<b>LBAMetadataSizeBytes</b> (v1.9+)	integer	<i>read-only</i> (null)	The LBA metadata size in bytes.
<b>RelativePerformance</b> (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>
} ]			
<b>LBAFormatsSupported</b> (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>

Property	Type	Attributes	Notes
<b>MetadataTransferredAtEndOfDataLBA</b> (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.
<b>NamespaceFeatures</b> (v1.5+) {	object	(null)	This property contains a set of Namespace Features.
<b>SupportsAtomicTransactionSize</b> (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.
<b>SupportsDeallocatedOrUnwrittenLBAError</b> (v1.5+)	boolean	<i>read-only</i> (null)	This property indicates that the controller supports deallocated or unwritten logical block error for this namespace.
<b>SupportsIOPerformanceHints</b> (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.
<b>SupportsNGUIDReuse</b> (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.
<b>SupportsThinProvisioning</b> (v1.5+)	boolean	<i>read-only</i> (null)	This property indicates whether or not the NVMe Namespace supports thin provisioning.
}			
<b>NamespaceId</b> (v1.5+)	string	<i>read-only</i> (null)	The NVMe Namespace Identifier for this namespace.
<b>NamespaceType</b> (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>
<b>NumberLBAFormats</b> (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.

Property	Type	Attributes	Notes
<b>NVMeVersion</b> (v1.5+)	string	<i>read-only (null)</i>	The version of the NVMe Base Specification supported.
<b>Type</b> (v1.8+)	string (enum)	<i>read-only (null)</i>	Identifies the type of namespace. <i>For the possible property values, see Type in Property details.</i>
}			
<b>Operations</b> [ {	array		The operations currently running on the Volume.
<b>AssociatedFeaturesRegistry</b> {}	object		A reference to the task associated with the operation if any.
<b>Operation</b> (v1.9+)	string (enum)	<i>read-only (null)</i>	The type of the operation. <i>For the possible property values, see Operation in Property details.</i>
<b>OperationName</b> (deprecated v1.9)	string	<i>read-only (null)</i>	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>
<b>PercentageComplete</b>	integer	<i>read-only (null)</i>	The percentage of the operation that has been completed.
} ]			
<b>OptimumIOSizeBytes</b>	integer (bytes)	<i>read-only (null)</i>	The size in bytes of this Volume's optimum IO size.
<b>ProvisioningPolicy</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	This property specifies the volume's storage allocation, or provisioning policy. <i>For the possible property values, see ProvisioningPolicy in Property details.</i>
<b>RAIDType</b> (v1.3.1+)	string (enum)	<i>read-only (null)</i>	The RAID type of this volume. <i>For the possible property values, see RAIDType in Property details.</i>
<b>ReadCachePolicy</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	Indicates the read cache policy setting for the Volume. <i>For the possible property values, see ReadCachePolicy in Property details.</i>
<b>RecoverableCapacitySourceCount</b> (v1.3+)	integer	<i>read-write (null)</i>	Current number of capacity source resources that are available as replacements.
<b>RemainingCapacityPercent</b> (v1.2+)	integer	<i>read-only (null)</i>	The percentage of the capacity remaining in the Volume.

Property	Type	Attributes	Notes
<b>RemoteReplicaTargets</b> (v1.8+) [ ]	array (string, null)	<i>read-only</i>	URIs to the resources that are remote target replicas of this source.
<b>ReplicaInfo</b> (v1.1+) {}	object		Describes this storage volume in its role as a target replica. For property details, see ReplicaInfo v1.4.0).
<b>ReplicaTargets</b> (v1.3+) [ {	array		The resources that are target replicas of this source.
<b>@odata.id</b>	string (URI)	<i>read-only</i>	The unique identifier for a resource.
} ]			
<b>ReplicationEnabled</b> (v1.9+)	boolean	<i>read-write (null)</i>	Indicates whether or not replication is enabled on the volume.
<b>Status</b> {}	object		The property contains the status of the Volume. For property details, see Status.
<b>StorageGroups</b> (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>
<b>StripSizeBytes</b> (v1.4+)	integer (bytes)	<i>read-write (null)</i>	The number of blocks (bytes) in a strip in a disk array that uses striped data mapping.
<b>VolumeType</b>	string (enum)	<i>read-only (null)</i>	The type of this volume. <i>For the possible property values, see VolumeType in Property details.</i>
<b>VolumeUsage</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	Indicates the Volume usage type setting for the Volume. <i>For the possible property values, see VolumeUsage in Property details.</i>
<b>WriteCachePolicy</b> (v1.4+)	string (enum)	<i>read-write (null)</i>	Indicates the write cache policy setting for the Volume. <i>For the possible property values, see WriteCachePolicy in Property details.</i>
<b>WriteCacheState</b> (v1.4+)	string (enum)	<i>read-only (null)</i>	Indicates the WriteCacheState policy setting for the Volume. <i>For the possible property values, see WriteCacheState in Property details.</i>
<b>WriteHoleProtectionPolicy</b> (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)	required	The type of replica relationship to be created. <i>For the possible property values, see ReplicaType in Property details.</i>
ReplicaUpdateMode	string (enum)	required	The replica update mode (synchronous vs asynchronous). <i>For the possible property values, see ReplicaUpdateMode in Property details.</i>
TargetVolume	string	required	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
<b>Drives</b> [ {	array	<i>optional</i>	An array of the drives to be used by the volume.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Drive resource. See the Links section and the <i>Drive</i> schema for details.
} ]			
<b>MediaSpanCount</b>	integer	<i>optional</i>	The requested number of media elements used per span in the secondary RAID for a hierarchical RAID type.
<b>RAIDType</b>	string (enum)	<i>optional</i>	The requested RAID type for the volume. <i>For the possible property values, see RAIDType in Property details.</i>
<b>StripSizeBytes</b>	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)	required	The type of replica relationship to be created. <i>For the possible property values, see ReplicaType in Property details.</i>
ReplicaUpdateMode	string (enum)	required	The replica update mode (synchronous vs asynchronous). <i>For the possible property values, see ReplicaUpdateMode in Property details.</i>
TargetStoragePool	string	required	The Uri to the existing target Storage Pool.
VolumeName	string	optional	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
<b>InitializeMethod</b>	string (enum)	<i>optional</i>	The type of initialization to be performed. <i>For the possible property values, see InitializeMethod in Property details.</i>
<b>InitializeType</b>	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
<b>DeleteTargetVolume</b>	boolean	<i>optional</i>	Indicate whether or not to delete the target volume as part of the operation.
<b>TargetVolume</b>	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
<b>TargetVolume</b>	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	required	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	required	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.
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.

string	Description
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.
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.

string	Description
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.
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.

string	Description
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.

string	Description
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
<b>DefaultRoutingEnabled</b> (v1.4+)	boolean	<i>read-write</i> (null)	This property indicates whether routing within this zone is enabled.
<b>ExternalAccessibility</b> (v1.3+)	string (enum)	<i>read-write</i> (null)	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>
<b>Identifiers</b> (v1.2+) [ { } ]	array (object)		The durable names for the zone. For property details, see Identifier.
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>AddressPools</b> (v1.4+) [ {	array		An array of links to the address pools associated with this zone.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a AddressPool resource. See the Links section and the AddressPool schema for details.
} ]			
<b>ContainedByZones</b> (v1.4+) [ {	array		An array of links to the zone that contain this zone.
<b>@odata.id</b>	string	<i>read-only</i>	Link to another Zone resource.
} ]			
<b>ContainsZones</b> (v1.4+) [ {	array		An array of links to the zones that are contained by this zone.
<b>@odata.id</b>	string	<i>read-write</i>	Link to another Zone resource.
} ]			
<b>Endpoints</b> [ {	array		The links to the endpoints that this zone contains.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Endpoint resource. See the Links section and the Endpoint schema for details.
} ]			

Property	Type	Attributes	Notes
<b>InvolvedSwitches</b> [ {	array		The links to the collection of switches in this zone.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a Switch resource. See the Links section and the <i>Switch</i> schema for details.
} ]			
<b>Oem</b> {}	object		See the Oem object definition in the <a href="#">Common properties</a> section.
<b>ResourceBlocks</b> (v1.1+) [ {	array		The links to the resource blocks with which this zone is associated.
<b>@odata.id</b>	string	<i>read-only</i>	Link to a ResourceBlock resource. See the Links section and the <i>ResourceBlock</i> schema for details.
} ]			
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
<b>ZoneType</b> (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
<b>Endpoint</b> {	object	<i>required</i>	The endpoint to add to the zone. See the <i>Endpoint</i> schema for details on this property.

Parameter Name	Type	Attributes	Notes
@odata.id	string	read-only	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
}			
EndpointETag	string	optional	The current ETag of the endpoint to add to the zone.
ZoneETag	string	optional	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	required	The endpoint to remove from the zone. See the <i>Endpoint</i> schema for details on this property.
@odata.id	string	read-only	Link to a Endpoint resource. See the Links section and the <i>Endpoint</i> schema for details.
}			
EndpointETag	string	optional	The current ETag of the endpoint to remove from the system.

Parameter Name	Type	Attributes	Notes
<b>ZoneETag</b>	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.
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.

string	Description
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
2023.3	2023-11-30	Release built from Redfish schemas released in DSP8010 version 2023.3.
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.

Version	Date	Description
2019.1	2019-05-03	Release built from Redfish schemas released in DSP8010 version 2019.1.
		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.