Redfish Release 2023.1

DMTF Redfish Forum
May 2023
Redfish Release 2023.1

• Redfish Specification v1.18.0
  - Adds URI segment annotation clause to allow schemas to describe URIs that do not match applicable naming rules

• Redfish Specification v1.17.1 (errata release)
  - Improved M-SEARCH example response
  - Updated authentication requirements to state that services can optionally reject requests to unauthenticated resources if the provided credentials are invalid
  - Added guidance for finding the schema for an Action response
  - Made Access-Control-Allow-Origin an optional response header

• Redpath Specification v1.1.0
  - NEW Additional query parameters added to the syntax

• Redfish Schema Bundle 2023.1
  - DSP8010 contains all released Redfish schemas

• Redfish Message Registry Bundle 2023.1
  - DSP8011 contains all released Redfish registries
  - NEW Environment, Power, and Platform message registries
  - Added TestMessage to ResourceEvent message registry

• 11 new schemas
  - ThermalEquipment, CoolingUnit, CoolingLoop, CoolantConnector, Filter, Pump, Reservoir, LeakDetection, LeakDetector
  - DriveMetrics and StorageControllerMetrics

• 28 updated schemas (highlights)
  - Added AttachNamespaces, DetachNamespaces, SecuritySend, and SecurityReceive actions to StorageController
  - Added PartLocationContext to Location
  - See release notes in DSP8010 for errata details

• Download all published material at: http://www.dmtf.org/standards/redfish
Schema and Registry Guide documents

- **Redfish Data Model Specification (DSP0268)**
  - Document was previous titled “Redfish Schema Supplement”
  - Now includes normative statements (“LongDescription”) and informative description details from schema in a single document
  - Intended for both Redfish Service and client-side developers

  - Presents schema (data model) contents in a more friendly format for end users
  - Includes example payloads for each resource type

- **Redfish Message Registry Guide (DSP2065)**
  - Presents message registry definitions in a more human-readable format
  - Includes summary table and individual message details

- **Redfish Property Guide (DSP2053)**
  - Provides an alphabetical list of all properties defined in Redfish schema
  - Useful for schema writers to locate existing definitions or properties
  - Helps avoid re-defining property names already in use
Available Redfish conformance testing tools

- DMTF Redfish Forum provides open source tools for service developers to validate their conformance with the Redfish protocol, data model, and profiles

  - **Redfish Protocol Validator**
    - Tests a live service for conformance to the Redfish HTTP protocol, including response headers and status codes
    - [https://github.com/DMTF/Redfish-Protocol-Validator](https://github.com/DMTF/Redfish-Protocol-Validator)

  - **Redfish Service Validator**
    - Tests a live service for conformance with Redfish schemas, ensuring the returned JSON payloads validate against the standard data models
    - Recommend that developers run this tool first, as errors in payload are more likely to cause issues for end users and interoperability
    - [https://github.com/DMTF/Redfish-Service-Validator](https://github.com/DMTF/Redfish-Service-Validator)

  - **Redfish Interop Validator**
    - Tests a service against a Redfish interoperability profile
    - [https://github.com/DMTF/Redfish-Interop-Validator](https://github.com/DMTF/Redfish-Interop-Validator)
NEW Redfish for Cooling Distribution Units

- Extending Redfish data model to incorporate liquid cooling units
  - Cooling Distribution Units (CDUs)
  - Immersion cooling units and systems
  - Rear-door and in-rack heat exchangers
- **ThermalEquipment** resource located off ServiceRoot
  - Used primarily for discovery of managed equipment
- **CoolingUnit** schema provides bulk of the equipment details
  - Includes subsystem schemas for Pump, Reservoir, and Filter collections
- **CoolingLoop** describes coolant pathways at chassis or facility level
- **CoolantConnector** describes connectivity and telemetry
  - Pressure, temperature, and liquid flow rates on supply and return
  - New Sensor definitions for “delta” values
- **LeakDetection** and **LeakDetector** support this critical subsystem
Cooling Unit Model

- Redfish Service Root
  - Chassis collection
    - "Rack CDU #7" Chassis
  - Cooling Loop Collection
    - "Rack #7" Cooling Loop
- Thermal Equipment
  - CDU Collection
- Leak Detection
  - "1" Reservoir
  - Pump Collection
  - "1" Pump
  - "Primary" Filter
  - "Secondary" Filter
- Coolant Connector Collection
  - "Facility" Coolant Connector
  - Primary Coolant Connector Collection
  - "Facility" Cooling Loop
- Environment Metrics
  - "Overflow" LeakDetector
  - LeakDetector Collection
  - Reservoir Collection
- Filter Collection
- Reservoir
  - "Facility"
- Leak Detector
  - "Overflow" LeakDetector
- "Rack CDU #7" Cooling Unit

Copyright 2023 © DMTF

www.dmtf.org
The heat exchanger is modeled as a **Chassis** with a **ThermalSubsystem** that describes the Fans.

**ThermalMetrics** has new sensor excerpts to describe airflow and delta pressure.

If the **CDU primary CoolantConnector** attaches to the facility cooling loop and its *secondary CoolantConnector* connects to a technology loop, which in turn connects to the heat exchanger via **CoolantConnector**.

OR the heat exchanger directly connects to the facility loop via a **CoolantConnector**.
Drive and Storage Controller Updates

- **NEW DriveMetrics** and **StorageControllerMetrics** resources
  - Reports usage and health statistics for drives and storage controllers
  - Error counters, I/O statistics, NVMe SMART/Health Information log page
- **NEW StorageController** actions
  - AttachNamespaces and DetachNamespaces actions allow users to assign NVMe namespaces to NVMe I/O controllers
  - SecuritySend and SecurityReceive actions allow users to send and receive SPC5-defined security payloads for on-boarding enablement of storage devices
Message Registry additions

- **NEW Platform v1.0.0**
  - Messages related to computer “platform” events, such as OS crashes, memory errors, or processor faults
- **NEW Power v1.0.0**
  - Messages related to electrical measurements, such as voltage, current or power threshold violations
  - Messages related to power-handling devices or systems, such as power supplies, circuits, or power distribution units
- **NEW Environmental v1.0.0**
  - Messages related to environmental conditions or measurements, such as humidity or temperature threshold violation
- **ResourceEvent v1.3.0**
  - Added “TestMessage” to provide standardized response for the new TestEventSubscription action
- **Base v1.16.0**
  - Added “StringValueTooShort”, “ArraySizeTooLong”, “ArraySizeTooShort”, and “LicenseRequired” messages
Redfish Schema Minor Revisions (1 of 6)

- **AccountService v1.13.0**
  - Added `Retries` and `TimeoutSeconds` to `ExternalAccountProvider`
  - Added `AuthorizationService` and `Oem` to `TACACSplus`
- **Certificate v1.7.0**
  - Added `AlternativeNames` to `Subject`
- **Chassis v1.23.0**
  - Added `CoolingUnits` and `ConnectedCoolingLoops` to `Links`
  - Added `ImmersionTank` and `HeatExchanger` to `ChassisType`
- **Connection v1.2.0**
  - Added `LUN` to `VolumeInfo`
  - Added `CHAP` and `DHCHAP` to `ConnectionKeys`
- **Control v1.3.0**
  - Added `DefaultSetPoint`
  - Added “PressurekPa” and “Valve” to `ControlType`
  - Deprecated the “Pressure” in `ControlType` in favor of “PressurekPa”
Redfish Schema Minor Revisions (2 of 6)

- **Drive v1.17.0**
  - Added `FirmwareVersion` and `Metrics`
  - Added `OperationType` to `Operations`
  - Deprecated `OperationName` in favor of `OperationType` in `Operations`

- **EthernetInterface v1.10.0**
  - Added `AffiliatedInterfaces` to `Links`

- **Event v1.8.0**
  - Added `CPER`, `DiagnosticData`, `DiagnosticDataType`, `AdditionalDataSizeBytes`, and `AdditionalDataURI`

- **EventService v1.10.0**
  - Added `TestEventSubscription` action
  - Added `MessageSeverity` parameter to the `SubmitTestEvent` action

- **ExternalAccountProvider v1.6.0**
  - Added `Retries` and `TimeoutSeconds`
  - Added `AuthorizationService` and `Oem` to `TACACSplus`
Redfish Schema Minor Revisions (3 of 6)

- Facility v1.4.0
  - Added CDUs, ImmersionUnits, and CoolingLoops to Links
- Fan v1.4.0
  - Added FanDiameterMm
- LogEntry v1.15.0
  - Added CPER and DiagnosticData
- Manager v1.18.0
  - Added SelectedNetworkPort to Links
- MemoryMetrics v1.7.0
  - Added CapacityUtilizationPercent
- PowerSupplyMetrics v1.1.0
  - Added FanSpeedsPercent to support multiple fans within a power supply
  - Deprecated FanSpeedPercent in favor of FanSpeedsPercent
Redfish Schema Minor Revisions (4 of 6)

- **Processor v1.18.0**
  - Added “ManagementDetectedFault” to *ThrottleCauses*
- **RegisteredClient v1.1.0**
  - Added *Context* and *SubContext*
- **Resource v1.15.0**
  - Added *PartLocationContext* to *Location*
- **Sensor v1.7.0**
  - Added *ReadingBasis*
  - Added *HysteresisReading* and *HysteresisDuration* to the threshold properties
  - Added “PressurePa” and “Heat” to *SensorType*
  - Added “Disabled” to *Activation*
  - Deprecated “Pressure” for *SensorType* in favor of “PressurePa”
  - Deprecated “AirFlow” for *SensorType* in favor of “AirFlowCMM”
  - Deprecated “LiquidFlow” for *SensorType* in favor of “LiquidFlowLPM”
Redfish Schema Minor Revisions (5 of 6)

- **ServiceRoot v1.16.0**
  - Added `ThermalEquipment`
- **Storage v1.15.0**
  - Added `Connections` and `AutoVolumeCreate`
  - Added `NVMeoFDiscoverySubsysystems` to `Links`
  - Deprecated `StorageGroups` in favor of `Connections`
- **StorageController v1.7.0**
  - Added `AttachNamespaces`, `DetachNamespaces`, `SecuritySend`, and `SecurityReceive` actions
  - Added `Metrics`
  - Added `NVMeDiscoveredSubsystems` to `Links`
- **ThermalMetrics v1.2.0**
  - Added `DeltaPressurekPa` and `AirFlowCubicMetersPerMinute`
- **ThermalSubsystem v1.2.0**
  - Added `CoolantConnectors`
Redfish Schema Minor Revisions (6 of 6)

- Triggers v1.3.0
  - Added HysteresisReading and HysteresisDuration to threshold properties
  - Added Disabled to Activation
- TrustedComponent v1.1.0
  - Added TPM
Redfish Schema Errata Revisions (1 of 3)

- **AggregationService v1.x.x**
  - Removed the additional properties term in the root of the resource, which was incorrectly set to “true”

- **Cable v1.x.x**
  - Removed the additional properties term in the root of the resource, which was incorrectly set to “true”

- **Chassis v1.x.x**
  - Corrected the description for the Reset action to allow for contained devices to all be reset depending on the provided ResetType value

- **ComponentIntegrity v1.x.x**
  - Clarified the description for the ComponentIntegrityTypeVersion property to explain the expected value when security protocols are disabled

- **Drive v1.x.x**
  - Clarified the usage of Revision when it's necessary to distinguish hardware and firmware versions
Redfish Schema Errata Revisions (2 of 3)

- **EventService v1.x.x**
  - Clarified the descriptions for the parameters to the `SubmitTestEvent` action to explain expected behavior when a parameter is not specified

- **LogEntry v1.x.x**
  - Clarified `Severity` can be overridden by service if the entry maps to a Redfish event
  - Updated descriptions for `DiagnosticDataType`, `AdditionalDataSizeBytes`, and `AdditionalDataURI` properties to align with the new `DiagnosticData` property

- **Processor v1.x.x**
  - Clarified format of properties in `ProcessorId` when representing raw registers
  - Clarified that `TotalMemorySizeMiB` also contains non-volatile memory
  - Clarified the usage of `ProcessorMemory` to show it can be used to represent any memory connected to the processor

- **Sensor v1.x.x**
  - Clarified the usage of the user threshold properties
Redfish Schema Errata Revisions (3 of 3)

- TelemetryService v1.x.x
  - Corrected the permissions of `SupportedCollectionFunctions` to show it's read-only

- UpdateService v1.x.x
  - Clarified the usage of `Targets` for the various update operations to describe behavior for different resource types

- (various files) v1.x.x
  - Updated resource descriptions for various device-related resources to explain the usage of the Absent value for State to show an empty slot
  - Regenerated JSON Schema and OpenAPI files to correct the regular expression pattern for duration properties
  - Added text to properties that might be shared across multiple resources that modifying one property could affect others