



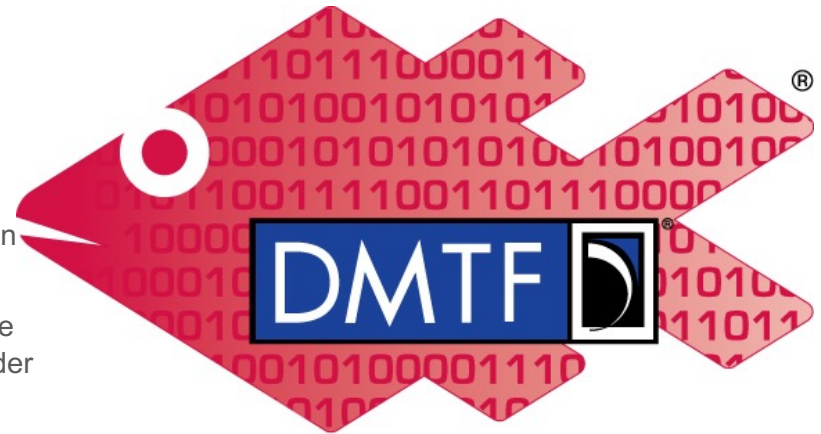
Redfish Release 2023.1

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>



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
- **Redfish Resource and Schema Guide (DSP2046)**
 - 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>
- **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>
- **Redfish Interop Validator**
 - Tests a service against a Redfish interoperability profile
 - <https://github.com/DMTF/Redfish-Interop-Validator>

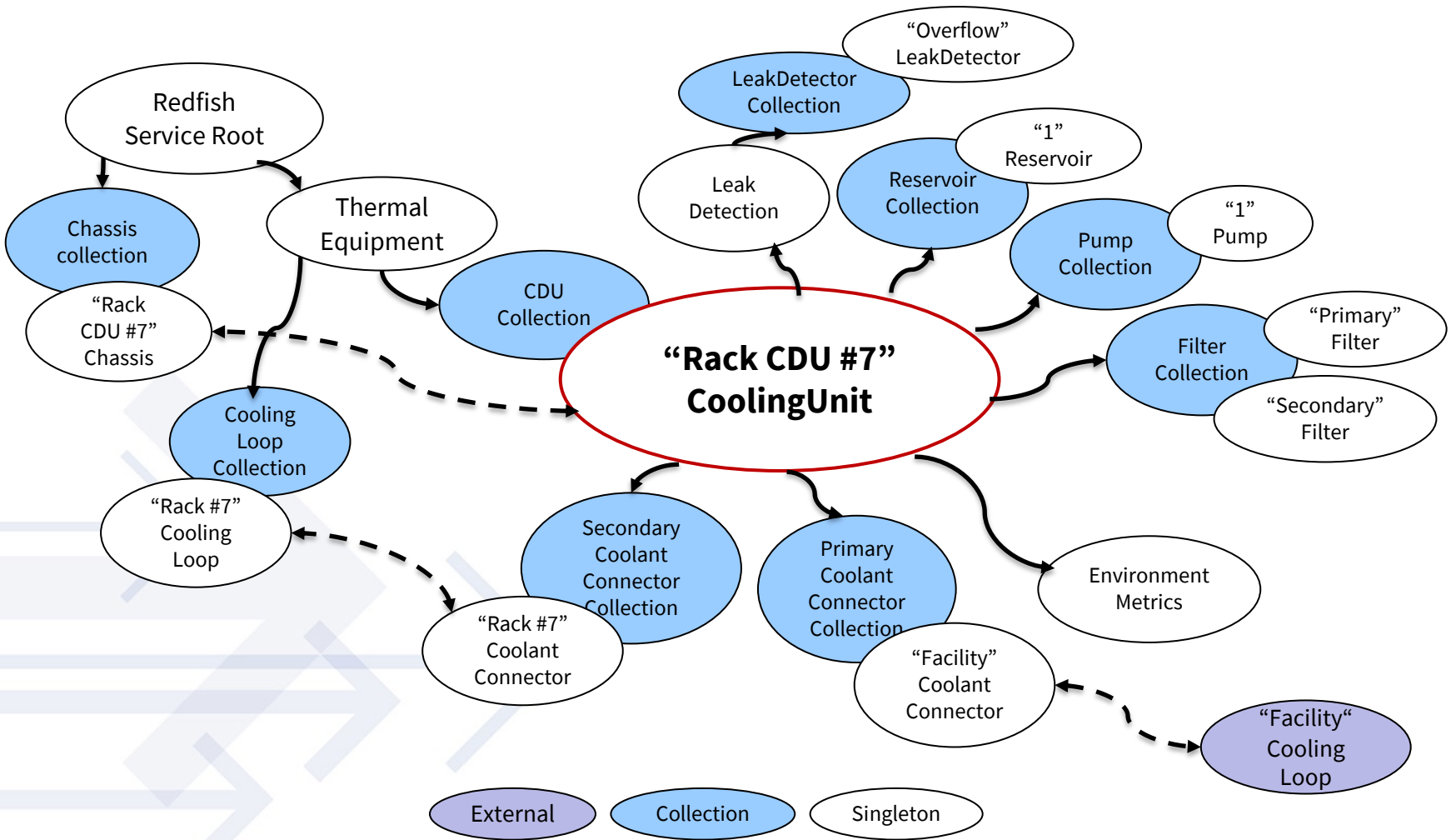


NEW Redfish for Cooling Distribution Units

- 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

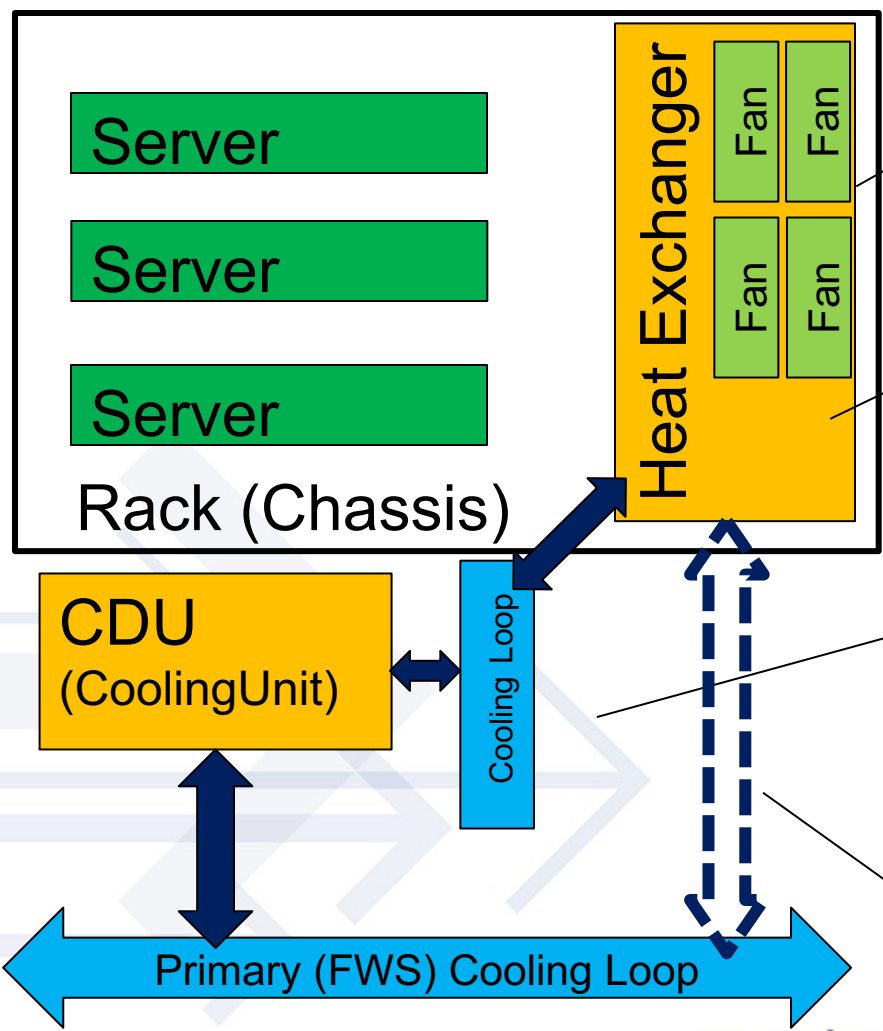


Cooling Unit Model





Example: Rear Door Heat Exchanger and CDU



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

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 *CPEP* 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 *NVMeoFDiscoverySubsystems* 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



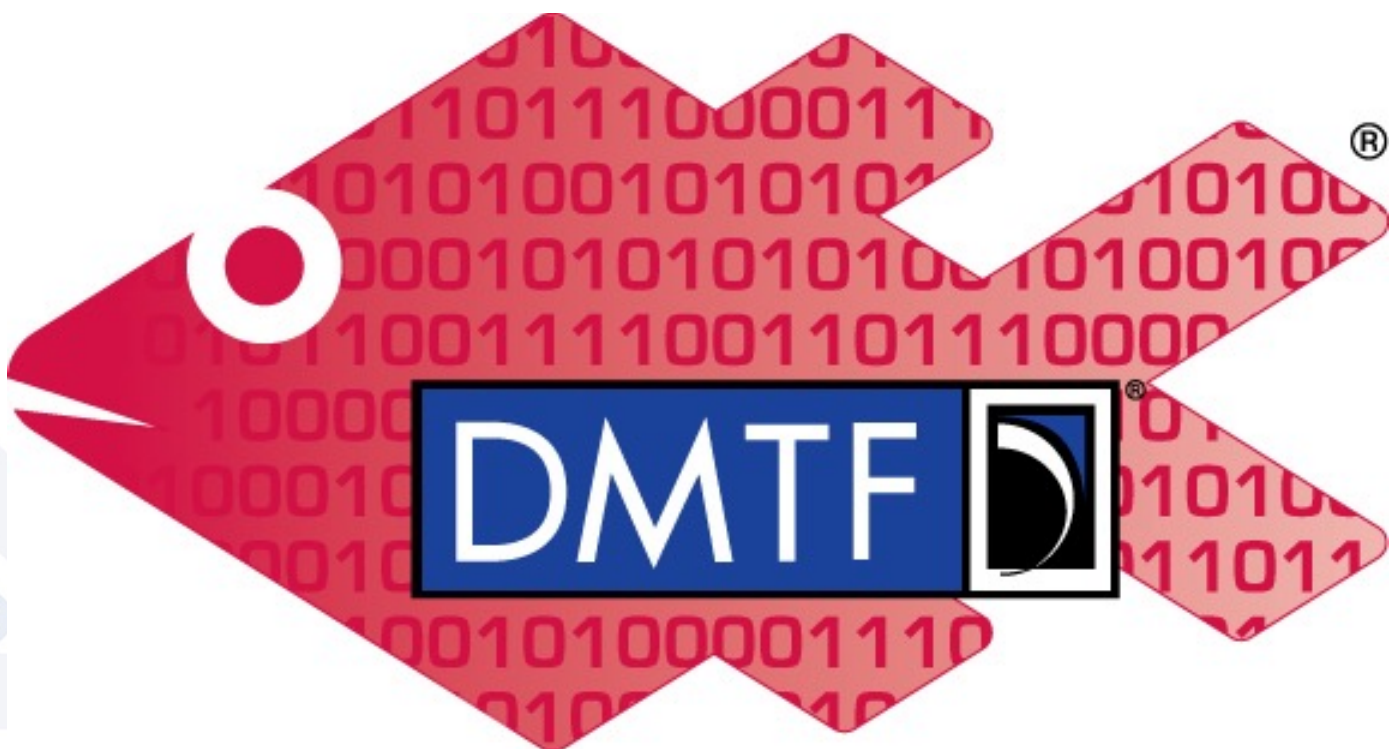
Redfish Schema Errata Revisions (2 of 3)

- **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



Redfish