



Redfish Release History

DMTF Scalable Platforms Management Forum



Releases

- 2017.1 – May 2017
- 2016.3 – December 2016
- 2016.2 – September 2016
- 2016.1 – May 2016
- 1.0.0 – August 2015





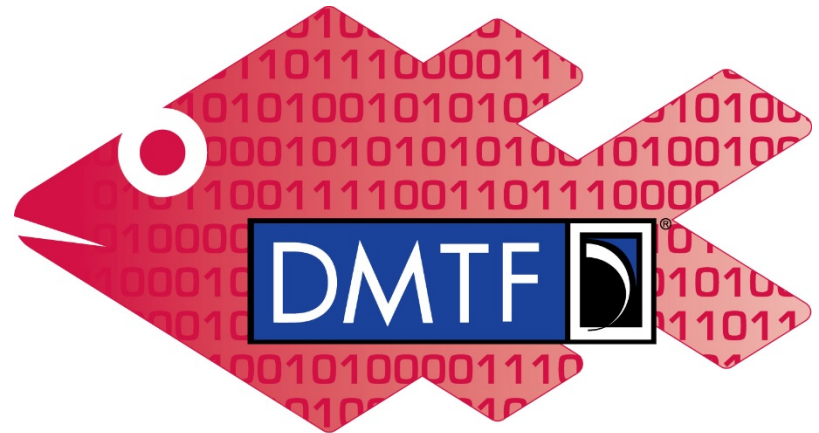
Redfish 2017 Release 1

DMTF Scalable Platforms Management Forum
May 2017



Redfish 2017 Release 1

- Redfish Specification v1.2.0
 - Adds Composability support
- Redfish Schema Bundle 2017.1
 - DSP8010_2017.1.ZIP
 - Contains current versions of all Redfish schema
- **NEW** Schemas v1.0.0
 - Composition Service
 - Resource Blocks for system composition
- Schema minor updates
 - Updates to provide support for system composition with new links between resources
 - Additions to UpdateService to support multiple targets for updates
 - Enhanced support for allocating memory regions
 - Numerous errata and description clarifications throughout the schema
- Base Message Registry Update v1.1.0
 - Added new “ResourceInStandby” message
- New mockups
 - Composability (perhaps two examples)



Redfish



Redfish Specification v1.2.0

- Minor release of the Specification (DSP0266)
 - Adds Composability to the standard
 - Numerous clarifications and corrections, detailed in the Change Log
- Composability support
 - Standardizes how services implement the Composition Service
 - Defines the types of composition requests a service is allowed to support
 - Defines the supporting resources required for each type of composition request
 - Defines baseline expectations a client can make when using the different composition requests



New Redfish v1.0.0 Schemas

- **CollectionCapabilities**
 - Allows for a service to provide an inline annotation for what a client is allowed to provide in the POST request for a Resource Collection
 - The underlying object is of the same type as the members of the collection and contains annotations for each property in terms of what's allowed in the POST request
- **CompositionService**
 - Entry point for the composition service
 - Contains sets of Resource Blocks and Resource Zones to express what's available to a client to compose
- **ResourceBlock**
 - Container object to express the building blocks available for compositions
 - Contains the composition status of the block in addition to the inventory of components that are within the block



Redfish Schema Minor Revisions (1 of 2)

- Most schemas were updated to add Actions and OemActions objects to allow for OEM extensions
- Chassis v1.5.0
 - Links entry for new ResourceBlock resources
- ComputerSystem v1.4.0
 - Links entry for new ResourceBlock resources
 - Added TotalSystemPersistentMemoryGiB to MemorySummary
- Drive v1.2.0, EthernetInterface v1.3.0
 - Links entry for Chassis resource
- Memory v1.2.0
 - Added properties for describing and allocating memory regions
- PhysicalContext v1.1.0
 - Added “Memory” as an enumeration value



Redfish Schema Minor Revisions (2 of 2)

- Resource v1.4.0
 - Added “PowerCycle” as an enumeration value for ResetType
 - Modified descriptions of ResetType to remove system-centric text
- ServiceRoot v1.2.0
 - Added CompositionService link
- Storage v1.2.0
 - Added “FCP” and “FICON” as enumeration values for Protocol
- UpdateService v1.2.0
 - Added HttpPushUriTargets and HttpPushUriTargetsBusy properties
 - Added Targets optional parameter for SimpleUpdate action



Errata Schema Revisions

- Corrected integer type properties in CSDL schemas to Int64 (from Int16 or Int32) for consistency in many schemas
- Added missing descriptions in Complex Type definitions in many schemas
- Corrected Links and Members properties (Collection schemas) in all schemas to be non-nullable in many schemas
- Removed unreferenced inclusions in many schema files
- Endpoint v1.0.2, PCIeFunction v1.0.2
 - Corrected validation pattern on PCI ID-related properties
- EventDestination v1.1.3, v1.0.4
 - Marked Context property as Required instead of RequiredOnCreate
 - Service is required to provide the Context (may be NULL), but clients are not required to specify a context when creating a new Event Destination



New Mockups

- New mockups to support Composability
- Composability
 - Shows a service with various sets of disaggregated hardware as resources
 - Provides an example composed system utilizing some of the disaggregated hardware
 - Shows how Resource Zones can provide information about binding restrictions
- Bladed Partitions
 - Shows a service with a set of ComputerSystems as their own resource blocks
 - Contains example composed systems that are created from other ComputerSystems



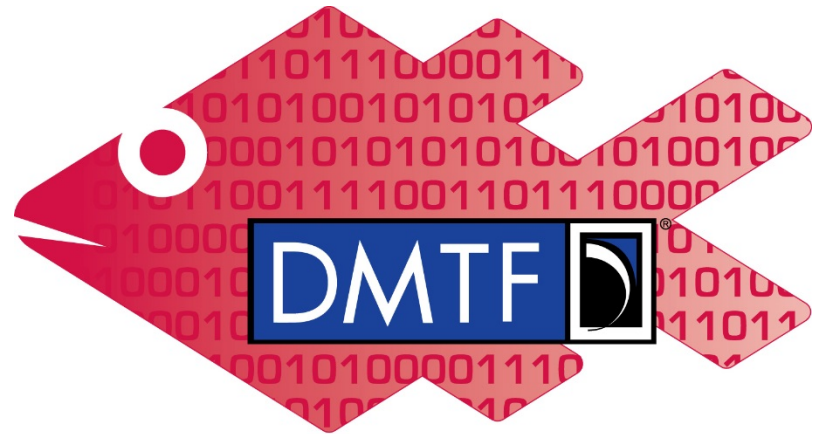
Redfish 2016 Release 3

DMTF Scalable Platforms Management Forum
December 2016



Redfish 2016 Release 3

- Redfish Specification v1.0.5
 - Errata release with numerous clarifications
- Redfish Specification v1.1.0
 - Adds Privilege Mapping
 - Adds Host Interface
- **NEW** Redfish Host Interface Specification
 - Describes IP / NIC-based host (OS) interface
- **NEW** Schemas v1.0.0
 - HostInterface, NetworkAdapter, NetworkInterface, NetworkDeviceFunction, NetworkPort, (collections of all the above), PrivilegeRegistry
- Schema minor updates
 - AccountService, Chassis, ComputerSystem, EthernetInterface, Manager, ManagerNetworkProtocol, Memory, MemoryDomain, Resource, SoftwareInventory, Thermal, UpdateService.
 - Numerous errata and description clarifications throughout the schema
- New mockups
 - Storage related mockups: Local Storage and SAS Fabric



Redfish



Redfish Specification v1.0.5

- Errata release of the Specification (DSP0266)
 - No new features or functionality in this release (errata only)
 - Numerous clarifications and corrections, detailed in the Change Log
- Various terminology clarifications for “Resource Collection” and “Members” so that the specification is consistent in their usage
 - Helps differentiate the general OData Collection from the Redfish Resource Collection



Redfish Specification v1.1.0

- Minor release of the Specification (DSP0266)
 - Adds Privilege Mapping to the standard
 - Adds the Host Interface to the standard
- Privilege Mapping
 - Defines a registry format for describing privileges for each type of entity, such as ComputerSystem
 - For each entity type, it maps the different roles for the different HTTP methods
 - Each entity type can also have override conditions for when to apply special sets of privileges, such as for a particular URI
- Host Interface
 - References new Host Interface specification for details



Redfish Host Interface Specification v1.0.0

- New specification (DSP0270)
- Defines an interface between a Host and its Redfish Service
 - This is to allow for local management operations similar to how a Host could collect information via IPMI over KCS
- Currently defines a network based interface
 - Extensions can be added later for different protocols as needs arise in the industry
- SMBIOS Type 42 (Management Controller Host Interface) has been expanded to add a new Interface Type (Network Host Interface)
 - The expanded type definition provides a way for the Host to find the address and credentials for its Redfish Service



New Redfish v1.0.0 Schemas

- **HostInterface**
 - Contains properties for describing and configuring a Redfish Host Interface
- **NetworkAdapter**
 - Describes general-purpose network adapters
- **NetworkInterface**
 - Provides linkages between NetworkAdapter, NetworkPort, and NetworkDeviceFunction instances
- **NetworkDeviceFunction**
 - Describes a logical interface exposed by a NetworkAdapter
- **NetworkPort**
 - Describes a discrete physical port capable of connecting to a network
- **PrivilegeRegistry**
 - Schema for definition of HTTP Operation to Privilege mapping



Redfish Schema Minor Revisions (1 of 3)

- **Chassis v1.4.0**
 - Added “RackGroup” to ChassisType enumeration
 - Added links to NetworkAdapters and PCleDevices
 - Added HeightMm, WidthMm, DepthMm, and WeightKg properties
- **ComputerSystem v1.3.0**
 - Added link to NetworkDevices
 - Added FirmwareVersion2 and InterfaceTypeSelection to TrustedModules
- **EthernetInterface v1.2.0**
 - Added link to HostInterface to support Redfish Host Interface specification
- **Manager v1.3.0**
 - Added link to HostInterfaces resource collection
- **ManagerNetworkProtocol v1.1.0**
 - Added DHCP protocol object



Redfish Schema Minor Revisions (2 of 3)

- Memory v1.1.0
 - Added Status object
- MemoryDomain v1.1.0
 - Added AllowsMirroring and AllowsSparing properties
- Resource v1.3.0
 - Added PostalAddress and Placement objects to Location, each containing numerous properties for detailed location information
- SoftwareInventory v1.1.0
 - Added SoftwareId, LowestSupportedVersion, UefiDevicePaths, and RelatedItem properties
- Thermal v1.2.0
 - Added Manufacturer, Model, SerialNumber, PartNumber, SparePartNumber, and IndicatorLED to Fan object



Redfish Schema Minor Revisions (3 of 3)

- UpdateService v1.1.0
 - Added HttpPushUri property



Errata Schema Revisions (1 of 2)

- Added explicit permissions annotations to all properties to clearly show which properties are read-write vs. read-only
- Corrected Permission annotation with invalid enumeration references
- Removed permissions annotation from embedded objects (permissions now on every property)
- Removed permission annotations from CSDL Type definitions to avoid conflicts with property definitions
- Corrected all property descriptions to always end with a period
- Corrected Reference URI links to OData v4 (errata 3)
- Added Capabilities annotations to CSDL files
- ComputerSystem v1.0.4, v1.1.2, v1.2.1
 - Corrected CSDL Type of TotalSystemMemoryGiB from Int64 to Decimal



Errata Schema Revisions (2 of 2)

- Port v1.0.1
 - Corrected CSDL Type of CurrentSpeedGbps and MaxSpeedGbps from Int64 to Decimal
- Power v1.0.3, v1.1.1, v1.2.1
 - Corrected descriptions for voltage-related properties and changed sensor descriptions to avoid use of term “current”, instead referring to “present value”
- ServiceRoot v1.1.1
 - Added missing EntityContainer for ServiceContainer in CSDL schema



New Mockups

- New mockups to show storage models
- Local Storage
 - Shows a typical 1U or 2U server with local RAID Storage
 - Uses the new “Storage” model rather than “SimpleStorage”
 - Shows a set of Drives and Volumes behind on a single Storage sub-system
- SAS Fabric
 - Represents a drive array without a ComputerSystem
 - Shows a managed SAS fabric with redundant switches
 - Shows how Switches, Ports, and Endpoints map together



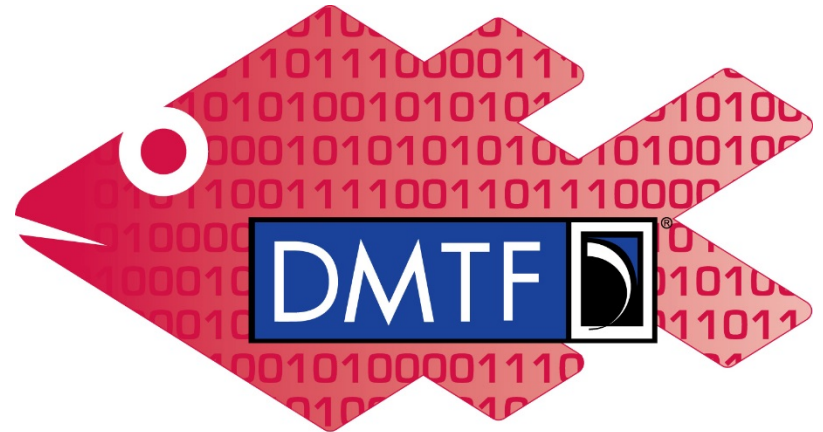
Redfish 2016 Release 2

DMTF Scalable Platforms Management Forum
September 2016



Redfish 2016 Release 2

- Redfish Specification v1.0.3 and v1.0.4 (errata)
- **NEW** Schemas v1.0.0
 - ActionInfo, Endpoint, Fabric, MemoryChunks, MemoryDomain, PCIeDevice, PCIeFunction, Port, SoftwareInventory, Switch, UpdateService, Zone
- Schema minor updates
 - Chassis, ComputerSystem, Drive, EthernetInterface, EventDestination, LogEntry, Manager, MemoryMetrics, Power, Redundancy, Resource, ServiceRoot, SessionService, Storage
- New mockups
 - Bladed System and Proposed OCP Profile



Redfish



Redfish Specification v1.0.3 and v1.0.4

- Errata release of the Specification (DSP0266)
 - No new features or functionality in this release (errata only)
 - Numerous clarifications and corrections, detailed in the Change Log



New Redfish v1.0.0 Schemas (1 of 3)

- **ActionInfo**
 - Describes the parameters and other information necessary to perform a Redfish Action to a particular Action target
- **Endpoint**
 - An entity that sends or receives protocol defined messages over a transport
- **Fabric**
 - Consists of one or more Switches and may include Endpoints and Zones
 - Used to describe topologies
- **MemoryChunks**
 - Describes a chunk of memory and its associated interleave sets



New Redfish v1.0.0 Schemas (2 of 3)

- **MemoryDomain**
 - Used to indicate to the client which Memory (DIMMs) can be grouped together in Memory Chunks to form interleave sets or otherwise grouped together
- **PCIeDevice**
 - Describes a PCI-e Device attached to a system
- **PCIeFunction**
 - Describes a PCI-e Function
- **Port**
 - Describes a Port of a Switch
 - Connects to Switches, Endpoints, or other Ports
- **SoftwareInventory**
 - Describes an inventory of software components



New Redfish v1.0.0 Schemas (3 of 3)

- **Switch**
 - Describes a simple fabric Switch
 - Contains a set of Ports
- **UpdateService**
 - Describes the Redfish Update Service
 - Contains update actions and sets of Software Inventory entities
- **Zone**
 - Describes a simple fabric Zone
 - Used to map associated Endpoints and Switches into different partitions



Redfish Schema Minor Revisions (1 of 3)

- Chassis v1.3.0
 - Added “IPBasedDrive” to ChassisType enumerations
- ComputerSystem v1.2.0
 - Added HostedServices and HostingRoles properties
 - Added MemoryDomains, PCleDevices, PCleFunctions, and Endpoints links
 - Added “RemoteDrive” enumeration to BootSourceOverrideTarget
- Drive v1.1.0
 - Added Operations property and Endpoints link
- EthernetInterface v1.1.0
 - Added LinkStatus property and Endpoints link
- EventDestination v1.1.0
 - Added OriginResources and MessageIds properties



Redfish Schema Minor Revisions (2 of 3)

- LogEntry v1.1.0
 - Added EventType, EventId, and EventTimeStamp properties
- Manager v1.2.0
 - Added PowerState property
- MemoryMetrics v1.1.0
 - Added PredictedMediaLifeLeftPercent property to the HealthData object
- Power v1.2.0
 - Added IndicatorLED property to PowerSupply object
- Redundancy v1.1.0
 - Added RedundancyEnabled property
- Resource v1.2.0
 - Added “Deferring”, “Quiesced”, and “Updating” to State enumerations



Redfish Schema Minor Revisions (3 of 3)

- **ServiceRoot v1.1.0**
 - Added links to Fabrics, StorageSystems, StorageServices and UpdateService
- **SessionService v1.1.0**
 - Added OEM Action capabilities
- **Storage v1.1.0**
 - Added Links object and Endpoints link



Errata Schema Revisions (1 of 2)

- **ComputerSystem v1.1.1, v1.0.3**
 - Clarified description of ComputerSystem and the UUID property
- **Drive v1.0.1**
 - Added “Unencrypted” enumeration to EncryptionStatus and deprecated misspelled enumeration
- **Event v1.1.1, v1.0.3**
 - Deprecated Context property in favor of the Event-specific Context contained within each Event
- **IPAddresses v1.0.3**
 - Corrected validation patterns for IPv4Address and SubnetMask
 - Added validation pattern for Gateway
- **Message v1.0.3**
 - Corrected MessageId to mark it as a required property



Errata Schema Revisions (2 of 2)

- Resource v1.1.1
 - Removed errant ReferenceableMember entity type
- ServiceRoot v1.0.3
 - Corrected validation pattern annotation for RedfishVersion
- Storage v1.0.1
 - Corrected type definition of the Volumes link
- Volume v1.0.1
 - Corrected description of VolumeType



New Mockups

- New mockups to a bladed system and a proposed OCP profile definition
- Bladed System
 - Shows an enclosure that contains a set of four blades
 - Shows how a Chassis instance can contain subordinate Chassis instances with the Contains/ContainedBy relationship
 - Each Chassis instance that represents a blade has its own ComputerSystem
- Proposed OCP Profile
 - An example that shows how Redfish can be adapted to meet the Open Compute Project's Hardware Management requirements
 - Contains a single system instance with a minimal set of properties required to support OCP



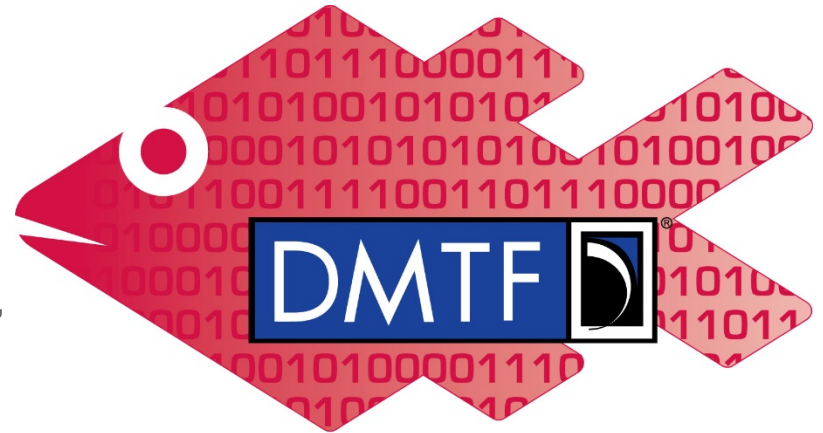
Redfish 2016 Release 1

DMTF Scalable Platforms Management Forum
May 2016



Redfish 2016 Release 1

- Redfish Specification v1.0.2 (errata)
- **NEW** Schemas v1.0.0
 - AttributeRegistry, Bios, Drive, Memory, MemoryCollection, MemoryMetrics, SecureBoot, Storage, StorageCollection, Volume
- Schemas v1.1.0 or v1.2.0 (minor revs)
 - Chassis, ComputerSystem, Event, Manager, Power, Resource, SimpleStorage, Thermal
- Schemas v1.x.2 (errata)



Redfish

Schema Release Bundles (posted at <http://www.dmtf.org/standards/redfish>)

DSP8010_2016.1: All new, minor, and errata 2016.1 schemas

Individual file contents also posted on <http://redfish.dmtf.org/schemas>

DSP8010_2016.0.9a: Work in Progress

New schemas under development within SPMF



Redfish Specification v1.0.2

- Errata release of the Specification (DSP0266)
 - No new features or functionality in this release (errata only)
 - Numerous clarifications and corrections, detailed in the Change Log
- Schema namespace rules were corrected
 - Schema versioning method conflicted with OData namespace definitions
 - Old: <schema name>.<major>.<minor>.<errata>
 - New: <schema name>.v<major>_<minor>_<errata>
 - Example: Chassis.v1_0_2 instead of Chassis.1.0.2
- OEM company-level property naming corrected
 - Use of colon ':' in JSON property names is problematic for some languages
 - Dot '.' separator also creates additional work for Javascript
 - Solution is to use underscore "_" instead for both of these cases
 - For compatibility, the colon and dot are allowed (but future use is discouraged)



New Redfish v1.0.0 Schemas (1 of 2)

- **Bios**
 - Allows viewing and changing System BIOS settings
 - Uses an AttributeRegistry to perform these functions
- **AttributeRegistry**
 - Adds ability to describe a large quantity of platform/vendor-specific properties (“attributes”)
 - Can describe usage and menu structures for user interface displays
- **SecureBoot**
 - Properties for managing the UEFI Secure Boot functionality of a system
- **Memory / MemoryCollection**
 - Adds detailed DIMM Inventory and status
- **Memory Metrics**
 - Statistics and performance metrics for individual memory modules



New Redfish v1.0.0 Schemas (2 of 2)

- **Storage / StorageCollection**
 - This schema defines a storage subsystem and its respective properties
 - Includes storage controller / subsystem properties and links to the resources such as volumes that can be accessed from that subsystem
- **Drive**
 - Detailed hard drive and SSD inventory and status
- **Volume**
 - Contains properties used to describe a volume, virtual disk, LUN, or other logical storage entity for any system



Redfish Schema Minor Revisions (1 of 3)

- **Chassis v1.2.0**

- Links entries for new Drive and Storage resources
- Links entry for ManagersInChassis
 - Provides reference to the Manager(s) physically located in the chassis

- **ComputerSystem v1.1.0**

- Links entries for new Bios, Memory, Storage and SecureBoot resources
- MemoryMirroring in MemorySummary object
 - Reports system-level “memory mirroring” functionality
- TrustedModule object
 - Reports status and configuration of a Trusted Platform Module (TPM)
- BootSourceOverrideMode in Boot object
 - Allows switching between UEFI and “legacy” BIOS boot modes
- New “*SDCard*” and “*UefiHttp*” enumerations to BootSourceOverrideTarget
 - Boot from SD Memory Card or use the UEFI boot from HTTP function



Redfish Schema Minor Revisions (2 of 3)

- **Event v1.1.0**

- Context property
 - Information provided by the subscriber to be included with Event payloads

- **Manager v1.1.0**

- Links entry for ManagerInChassis
 - Provides reference to the Chassis which physically contains the Manager

- **Power v1.1.0**

- InputRanges, Manufacturer in PowerSupplies[]
 - Describes the range of input voltage(s) supported by the power supply
 - Manufacturer of the power supply
- Improved enumerations in LineInputVoltageType in PowerSupplies
 - New values describe 'generic' input voltage ranges in place of terminology which was used inconsistently among vendors.
 - Enumerations with inconsistently-used terminology have been deprecated



Redfish Schema Minor Revisions (3 of 3)

- **Resource v1.1.0**

- Identifier, Location, and IndicatorLED objects
 - Common functionality to apply across the data model
 - Allows specifying a standards-based device identification method
 - Provides structure for reporting physical location
 - Common functionality for a simple LED indicator light
- “UnavailableOffline” enumeration added to State in Status
 - Shows a device in an invalid or incompatible configuration

- **SimpleStorage v1.1.0**

- CapacityBytes added to Device
 - Reports the capacity of a storage device - missing from the v1.0.0 release

- **Thermal v1.1.0**

- Name replaces FanName in Fan
 - Made usage of the “Name” property consistent with the data model



Errata Schema releases (1 of 2)

- All schemas revised to v1.x.2 for namespace convention corrections
 - CSDL (XML) files now follow <schema>_v1.xml filename format
 - json-schema files now follow <schema>.v1_x_x.json filename format
- All existing v1.x.x schemas were also re-published using the new json-schema filename structure. *Previously released schemas remain available and valid.*
- **Chassis v1.1.2**
 - Deprecates the “Unknown” value for IndicatorLED
- **ComputerSystem v1.0.2**
 - Deprecates the “Unknown” value for IndicatorLED
- **EventService v1.0.2**
 - Corrected Unit annotation(s) to match UCUM unit definitions
- **Manager v1.0.2**
 - Corrected description for ServiceEntryPointUUID to match intent

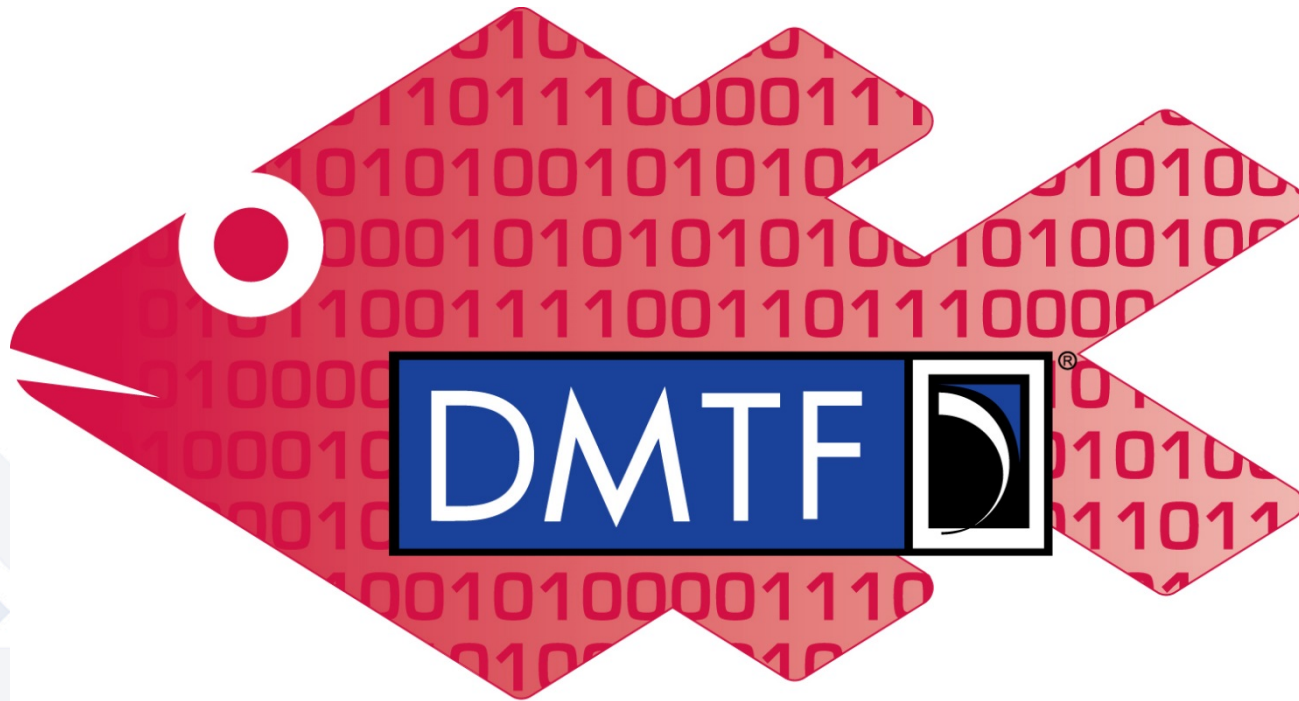


Errata Schema releases (2 of 2)

- **ManagerNetworkProtocol v1.0.2**
 - Corrected (confusing) read-write permissions on embedded objects
 - Corrected Unit annotation(s) to match UCUM unit definitions
- **Power v1.0.2**
 - Corrected (confusing) read-write permissions on embedded objects
 - Corrected Unit annotation(s) to match UCUM unit definitions
- **Resource v1.0.2**
 - Corrected missing Required annotation on 'Id' property.
 - Added 'Pattern' Redfish annotation for 'Oem' property names.
- **SessionService v1.0.2**
 - Added missing Unit annotation(s) to match UCUM unit definitions
- **SimpleStorage v1.0.2**
 - Corrected Unit annotation(s) to match UCUM unit definitions
- **Thermal v1.0.2**
 - Corrected (confusing) read-write permissions on embedded objects
 - Corrected Unit annotation(s) to match UCUM unit definitions



Q&A & Discussion



Redfish