Redfish Release History

DMTF Scalable Platforms Management Forum
Releases

- 2017.2 – September 2017
- 2017.1 – May 2017
- 2016.3 – December 2016
- 2016.2 – September 2016
- 2016.1 – May 2016
- 1.0.0 – August 2015
Redfish 2017 Release 2

DMTF Scalable Platforms Management Forum
September 2017
Redfish 2017 Release 2

• Redfish Specification v1.3.0
  • Adds “Apply Time” concept to Settings objects
  • Improves ETag support to avoid race conditions
  • Numerous clarifications
  • Also releasing v1.2.1 errata release

• Redfish Schema Bundle 2017.2
  • DSP8010_2017.2.ZIP
  • Contains current versions of all Redfish schema

• Schema minor updates
  • Expanded “Location” object definition to include physical locations at the building, room and intra-chassis levels.
  • Added "SupportedApplyTimes" to allow control over the application of Settings to a resource. This includes support for specifying maintenance windows.
  • Numerous errata and description clarifications throughout the schema

• Base Message Registry v1.2.0
  • Added new 'ResourceNotFound', 'ResourceExhaustion', 'StringValueTooLong' and 'EmptyJSON' messages.
Redfish Specification v1.3.0

• Minor release of the Specification (DSP0266)
  • Service may optionally reject a PATCH or PUT operation if the If-Match or If-Match-None HTTP header is required
    • Allows Service to avoid race conditions from multiple clients performing PATCH or PUT operations, or clients using stale data from previous GETs
    • Returns HTTP 428 response code
  • Added support for a Service to describe the “Apply Time” for Settings
    • “SupportedApplyTimes” array in the “@Redfish.Settings” annotation
      • Reports available options for applying settings to that resource
      • Maintenance Window parameters available to schedule Settings
    • Clients use "@Redfish.PreferredApplyTime" annotation in request body
      • “ApplyTime” parameter describes options to apply settings
        • “Immediate”, “OnReset”, and several Maintenance Window options
  • Numerous clarifications and corrections, detailed in the Change Log
• Errata release v1.2.1 includes same clarifications and corrections
Redfish Schema Minor Revisions (1 of 2)

- **Memory v1.3.0**
  - Added memory module-centric identification properties:
    - "ModuleManufacturerID“, "ModuleProductID“, "MemorySubsystemControllerManufacturerID“, "MemorySubsystemControllerProductID"
  - Deprecated "FunctionClasses“
    - Duplicative, unstructured string data
  - Deprecated the PCIe-centric identification properties:
    - "VendorID", "DeviceID", "SubsystemVendorID", and "SubsystemDeviceID"

- **PhysicalContext v1.2.0**
  - Added "Chassis" and "Fan" as enumerations

- **Power v1.4.0**
  - Added "PhysicalContext" to "PowerControl" object
Redfish Schema Minor Revisions (2 of 2)

- **Resource v1.5.0**
  - Expanded the “Location” object with new sub-objects to cover in-room and intra-chassis location identification
  - Deprecated “Info” and “InfoFormat” properties in favor of these sub-objects
- **Role v1.2.0**
  - Added "RoleId" property to enable references from ManagerAccount
- **Settings v1.1.0**
  - Added "SupportedApplyTimes" to allow control over the application of Settings to a resource. This includes support for specifying maintenance windows.
- **Storage v1.2.0**
  - Added common "Name" property to "StorageController" object
Errata Schema Revisions

- Clarified usage of the “IndicatorLED” and “ServiceEnabled” enumerations throughout the data model
- Removed errant auto-expand annotations within “Redundancy”
- EventDestination v1.x.x
  - Added clarifications to "OriginResources" and "MessageId" usage
- EventService v1.x.x
  - Added clarifications to "DeliveryRetryAttempts" usage
- Manager v1.x.x
  - Corrected enumeration descriptions for "CommandShell"
- ManagerAccount v1.x.x
  - Added clarifications to "RoleId" usage.
- SerialIinterface v1.x.x
  - Removed errant periods in enumeration strings

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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)

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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

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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

- 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
  - Numerous errata and description clarifications throughout the schema
- New mockups
  - Storage related mockups: Local Storage and SAS Fabric

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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 PCIeDevices
  • 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

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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

- 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 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, PCIeDevices, PCIeFunctions, 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

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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)

**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

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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 LineInput_VOLTAGE_TYPE 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.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

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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