Releases

• 2018.1 – April 2018
• 2017.3 – December 2017
• 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 2018 Release 1

- Redfish Specification v1.5.0
  - NEW Server-sent Eventing (SSE) Support
  - OperationApplyTime annotation
    - Behavior of Create, Delete or Action (POST) operations

- Redfish Specification v1.4.1
  - Errata release with numerous clarifications

- Redfish Schema Bundle 2018.1
  - DSP8010_2018.1.ZIP - contains current versions

- NEW Schemas v1.0.0
  - ExternalAccountProvider – LDAP / ActiveDirectory support

- Updated schemas (highlights)
  - AccountService – LDAP / ActiveDirectory support for Redfish
  - EventService & EventDestination – Server-sent Eventing support
  - Processor – Added “SubProcessor” information for Cores and Threads
  - Settings – Added “OperationApplyTime” and “MaintenanceWindow” support

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Redfish Specification v1.5.0 and v1.4.1

• Minor release of the Redfish Specification (DSP0266) v1.5.0
  • Adds support for Server Sent-Eventing (SSE)
    • Enables streaming events to web-based GUIs and other clients
  • OperationApplyTime annotation
    • Provides mechanism for specifying deterministic behavior for the application of Create, Delete or Action (POST) operations
  • Includes all errata from v1.4.1

• Errata release of the Specification (DSP0266) v1.4.1
  • Numerous clarifications and corrections, detailed in the Change Log
New Redfish Schemas for 2018.1

- **ExternalAccountProvider v1.0.0**
  - Single LDAP or ActiveDirectory instances are supported within updated AccountService resource
  - A Collection of “ExternalAccountProviders” describes additional providers, or allows for multiple LDAP/AD trees if Service supports their usage
    - Uses same properties and definitions as the single-instance LDAP and ActiveDirectory objects within AccountService
Redfish Schema Minor Revisions (1 of 3)

- **AccountService v1.3.0**
  - Added support for LDAP and Active Directory external account providers.
    - Provide configuration parameters to enable Redfish Services to utilize network-based authentication instead of requiring individual (local) accounts.
    - Removes need to maintain separate credentials for each Redfish Service.
  - Added link to additional *ExternalAccountProviders*.

- **Assembly v1.1.0**
  - Added *Status* to *AssemblyData*.

- **AttributeRegistry v1.2.0**
  - Added *ResetRequired*, *UefiDevicePath*, *UefiKeywordName*, and *UefiNamespaceId* attributes to registry entries.

- **Chassis v1.7.0**
  - Added *UUID* property.
  - Added *Switches* resource link.

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Redfish Schema Minor Revisions (2 of 3)

- Drive v1.4.0
  - Deprecated Location array in favor of singular PhysicalLocation
- EventDestination v1.3.0
  - Added SubscriptionType to allow for Server-Sent Eventing support
- EventService v1.1.0
  - Added ServerSentEventUri to support Server-Sent Eventing (SSE)
- Manager v1.4.0
  - Added AutoDSTEnabled property
  - Added Switches resource link
- Memory v1.5.0
  - Deprecated poorly-named PassphraseState in Regions object and added PassphraseEnabled to replace it.
Redfish Schema Minor Revisions (3 of 3)

- PCIeFunction v1.2.0
  - Added `NetworkDeviceFunction` resource link
- Processor v1.4.0
  - Added `SubProcessors` collection to provide details on ‘cores’ and ‘threads’
  - Added ‘Core’ and ‘Thread’ to `ProcessorType`
- ResourceBlock v1.1.0
  - Added properties to support sharing capabilities
- Settings v1.2.0
  - Added `OperationApplyTimeSupport` and `MaintenanceWindow` objects to provide deterministic behavior for the application of Settings-based data
- SoftwareInventory v1.2.0
  - Added `Manufacturer` and `ReleaseDate` properties
- Task v1.2.0
  - Added `TaskMonitor` property
Errata Schema Revisions

- Description clarifications in numerous schemas
- AttributeRegistry v1.x.x
  - Corrected regex patterns for various properties
- EventService v1.0.7
  - Fixed permissions on DeliveryRetryAttempts and DeliveryRetryIntervalSeconds properties.
- ManagerAccount v1.x.x
  - Clarified the RoleId property description by stating its relation to RoleId in the Role resource.
- UpdateService v1.x.x
  - Regenerated JSON schema to pick up action parameters added in previous release
- Complete errata details shown in the Change Log within DSP8010

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Redfish 2017 Release 3

- Redfish Specification v1.4.0
  - NEW query parameters: $expand, $filter, $select
  - Clarified usage of HTTP response codes
  - Clarified HTTP header usage and requirements
  - Numerous other clarifications
- **NEW** Redfish Interoperability Profiles
  - New specification DSP0272 v1.0.0
  - New profile bundle DSP8013 v2017.1
  - Allows creation of property-level support checklist
- Redfish Schema Bundle 2017.3
  - DSP8010_2017.3.ZIP - contains current versions of all Redfish schema
- **NEW** Schemas v1.0.0
  - Assembly (manufacturing details), Boot Option (configure boot order)
- Updated schemas
  - Added multiple objects to EthernetInterface allowing complete DHCP configuration
  - Added properties to Power and Thermal to address feedback from ASHRAE and TGG
  - Numerous minor additions, errata and description clarifications throughout the schema

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Redfish Specification v1.4.0

- Minor release of the Specification (DSP0266)
  - Numerous clarifications and corrections, detailed in the Change Log
- Adds support for query parameters on GET requests
  - $expand – Includes data from subordinate resources (especially collections) to allow highly-efficient data retrieval
  - $select – Include only specified properties
  - $filter – Include only members of a collection that match an expression
- Clarifications to HTTP header requirements and Status Code usage
  - Clarified HTTP status and payload responses after successful processing of data modification (POST, PATCH or PUT) requests
  - Added HTTP status code entries for 428 and 507 to clarify the proper response to certain error conditions
  - Detailed client’s and service’s HTTP header requirements and usage
Redfish Interoperability Profile Specification v1.0.0

- An “Interoperability Profile” provides a common ground for Service implementers, client software developers, and users
  - A profile applies to a particular category or class of product (e.g. “Front-end web server”, “NAS”, “Enterprise-class database server”)
  - It specifies Redfish implementation requirements, but *is not* intended to mandate underlying hardware/software features of a product
  - Provides a target for implementers to meet customer requirements and a baseline of schema and property-level support for software developers utilizing Redfish
  - Enable customers to easily specify Redfish functionality / conformance in RFQs
- Specification (DSP0272) defines a machine-readable Profile definition
  - JSON document designed to be human-readable and easy to create
- Profiles will be created by DMTF, partner organizations, and others
  - DMTF will provide re-publication via the Redfish Developer Hub
  - Published profiles will be included in a bundle for download (DSP8013)
- DMTF open source utility available to test conformance to a Profile
  - [https://github.com/DMTF/Redfish-Interop-Validator](https://github.com/DMTF/Redfish-Interop-Validator)

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New Redfish Schemas

• **BootOption v1.0.0**
  - Describes a single, bootable target device for a Computer System
  - The BootOption Collection allows for configuration of boot order
  - Does not replace the temporary *BootSourceOverride* function
    - Boot Option describes the permanent boot order
    - Override is used for temporary (usually one-time) changes to the boot order

• **Assembly v1.0.0**
  - Describes manufacturing data useful for service personnel
  - Data usually stored in EEPROMs and heavily binary-encoded
  - Does not replace product identification properties (part #, serial #, etc.)
  - Single resource allows for multiple assembly descriptions
  - Adds mechanism to extract a binary image for service/support analysis

• **Protocol**
  - Supporting schema file to contain the common *Protocol* property

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Redfish Schema Minor Revisions (1 of 6)

• Chassis v1.6.0
  • Added Assembly resource link
  • Added StorageEnclosure enumeration to ChassisType

• ComputerSystem v1.5.0
  • Added BootOrder and Assembly resource links
  • New SetDefaultBootOrder Action
  • Added links to ConsumingComputerSystems and SupplyingComputerSystems for describing aggregated systems
  • Added SubModel to describe product model variations
  • Added LogicalProcessorCount to ProcessorSummary

• Drive v1.3.0
  • Added Assembly resource link

• Endpoint v1.1.0
  • Added IPTransportDetails object
EthernetInterface v1.4.0
- New objects to allow for full configuration of DHCP and SLAAC support
  - Configuration objects to support both DHCPv4 and DHCPv6 added
  - Separate StatelessAddressAutoConfig object added
- New objects create a consistent configuration pattern
  - Separate objects or properties for the desired configuration vs. actual “in use”
  - New IPv4StaticAddresses allows for Static IP address configuration regardless of DHCP configuration or usage
  - New IPv6StaticDefaultGateways and StaticNameServers arrays

LogEntry v1.3.0
- Added OemLogEntryCode and OemSensorType properties to allow for legacy IPMI OEM definitions

LogService v1.1.0
- Added LogEntryType to describe the content type of a log
Redfish Schema Minor Revisions (3 of 6)

- Memory v1.4.0
  - Added VolatileSizeMib, NonVolatileSizeMiB, CacheSizeMiB, LogicalSizeMiB properties to provide discrete memory size for each type
  - Added Location object
- MemoryChunks v1.2.0
  - Added Status object
- NetworkAdapter v1.1.0
  - Added Assembly resource link
  - Added Location object to Controllers object
- NetworkDeviceFunction v1.2.0
  - Added Endpoints resource link
- PCIeDevice v1.2.0
  - Added Assembly resource link
Redfish Schema Minor Revisions (4 of 6)

- PhysicalContext v1.3.0
  - Added additional enumerations to PhysicalContext
- Port v1.1.0
  - Added Location object
- Power v1.5.0
  - Several additions to PowerSupplies object array
    - Based on feedback from ASHRAE and The Green Grid industry groups
    - PowerInputWatts, PowerOutputWatts, and EfficiencyPercent properties
    - Assembly resource link
    - Location object
- Processor v1.2.0
  - Added Assembly resource link
- Redundancy v1.3.0
  - Added NotRedundant enumeration to Mode (now a read-write property)
Redfish Schema Minor Revisions (5 of 6)

- **Resource v1.6.0**
  - Added *Latitude, Longitude* and *AltitudeMeters* to *Location* object
- **ServiceRoot v1.3.0**
  - Added *Product* property for general product identification
  - Added ProtocolFeaturesSupported object to allow for discovery of supported optional Redfish protocol features
- **Storage v1.4.0**
  - Added *Assembly* resource link
- **Switch v1.1.0**
  - Added *Location* object
Redfish Schema Minor Revisions (6 of 6)

• Thermal v1.4.0
  • Added Assembly resource link to Fan object
  • Several additions to Temperatures object array
    • Based on feedback from ASHRAE and The Green Grid industry groups
    • DeltaReadingCelsius and DeltaPhysicalContext for describing a temperature change rather than an absolute temperature reading
    • MaxAllowableOperatingValue, MinAllowableOperatingValue, AdjustedMaxAllowableOperatingValue, and AdjustedMinAllowableOperatingValue for reporting the range of allowable operating temperatures for a given piece of equipment

• VirtualMedia v1.2.0
  • New InsertMedia and EjectMedia Actions to control virtual media usage
  • Image, Inserted and WriteProtected are now read-write properties

• Zone v1.2.0
  • Added Identifiers property
Errata Schema Revisions

- Added or corrected parameter descriptions in Action definitions throughout the schema
- Action Parameters are now described in JSON schema
- Changed internal schema location several properties to allow those commonly-defined properties to be referenced externally
- IPAddresses v1.0.6
  - Corrected PrefixLength in IPv6StaticAddresses to be a read-write property
- Memory v1.x.x
  - Corrected description of OperatingSpeedMHz to reflect changes in memory device reporting (value may be in MHz or MT/s, but will match published specifications in either case)

- Complete errata details shown in the Change Log within DSP8010
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
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.
- SerialInterface v1.x.x
  - Removed errant periods in enumeration strings
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

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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

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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

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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
  - 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
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

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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 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 interleaved sets or otherwise grouped together

- **PCleDevice**
  - Describes a PCI-e Device attached to a system

- **PCleFunction**
  - 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

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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)

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.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

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