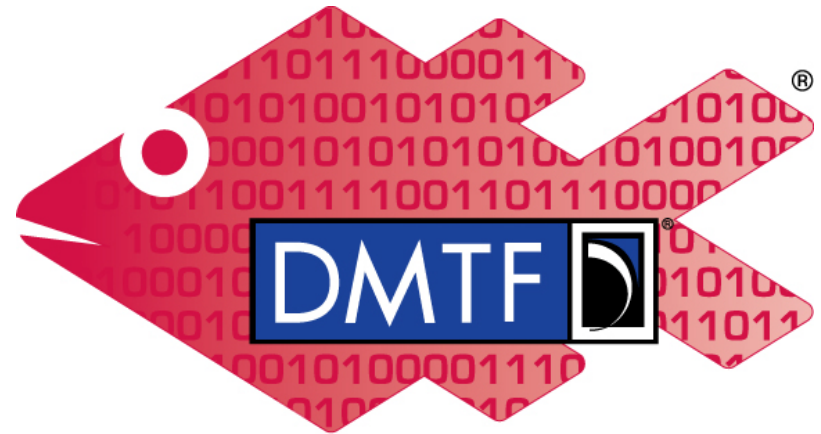# Redfish Release 2021.1

DMTF Redfish Forum

May 2021

Redfish Release 2021.1

- Redfish Specification v1.13.0
  - Adds composability support via Compose action
  - Adds multi-client support to the composition model
- Redfish Specification v1.12.1
  - Errata release
- Redfish Schema Bundle 2021.1
  - DSP8010 contains all released Redfish schemas
- Redfish Message Registry Bundle 2021.1
  - DSP8011 contains all released Redfish registries
  - NEW Update message registry for monitoring and reporting the firmware / software update workflow
  - Updated Composition and Base message registries
- 6 NEW Schemas, 37 updated schemas
  - Addition of CompositionReservation, GraphicsController, Manifest, NetworkAdapterMetrics, NetworkDeviceFunctionMetrics, and USBController
  - Added EnvironmentMetrics link to numerous device-centric resources
  - Added support for determining LLDP connectivity information to Port
  - See release notes in DSP8010 for errata details
- Download all published material at: http://www.dmtf.org/standards/redfish

Schema Guide, Property Guide, and Schema Supplement

- Guide documents are updated for each schema (DSP8010) release
  - Description text for properties taken directly from schema files
  - DMTF documentation generator creates these guide documents
- Redfish Resource and Schema Guide (DSP2046)
  - Presents schema definition contents in a more human-readable format
  - Includes example payloads for each schema
- 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
- Redfish Schema Supplement (DSP0268)
  - Presents normative ("LongDescription") schema definition contents
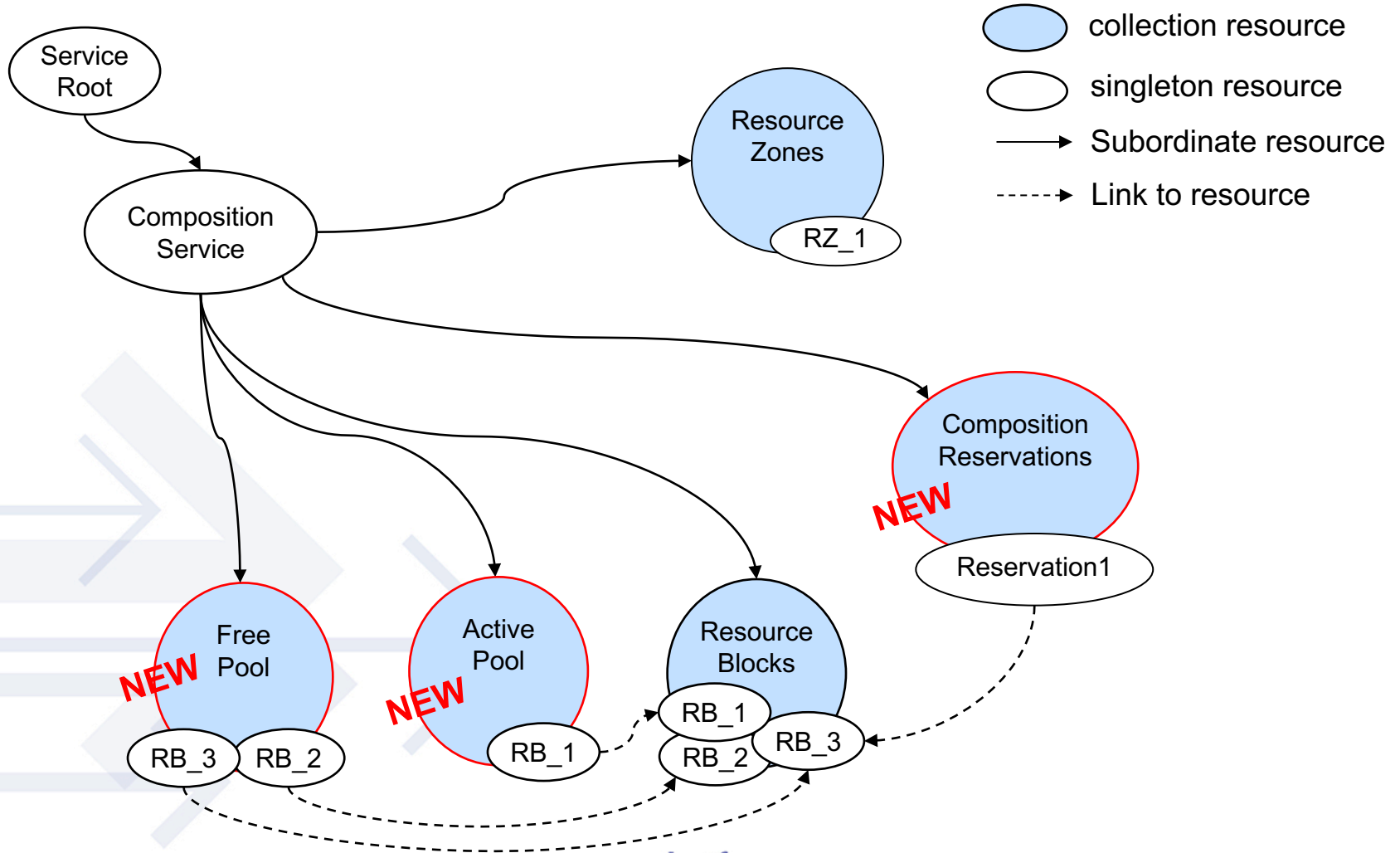 - Useful for Redfish Service developers to ensure conformance

Redfish Composability Enhancements

- Addition to assign resource blocks to a client and to active/free pools
  - Supports multi-tenancy: collections are filtered by the service based on who is performing the request
  - Allows clients to easily determine resource consumption
- Ability to perform compositions with an outcome-based **Manifest**
  - *Compose* action added to the composition service
  - Client provides the manifest as part of the action request, along with a control option for how to process the manifest
    - Preview: Service responds with what the outcome will be
    - PreviewReserve: Service responds with what the outcome will be and reserves the resources to be applied later
    - Apply: Service applies the manifest or enacts it based on a reservation
  - A manifest document is structured as a set of stanzas, where each stanza is a desired outcome to be fulfilled
    - Processing the manifest is an atomic transaction

Redfish Composability Enhancements - Model

Legend:
- collection resource
- singleton resource
- Subordinate resource
- Link to resource

Nodes: Service Root, Composition Service, Resource Zones (RZ_1), Composition Reservations (Reservation1) **NEW**, Free Pool (RB_3, RB_2) **NEW**, Active Pool (RB_1) **NEW**, Resource Blocks (RB_1, RB_2, RB_3)

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Composability Enhancements – Manifest POST Example

POST /redfish/v1/CompositionService/Actions/CompositionService.Compose

```
{
  "RequestFormat": "Manifest",
  "RequestType": "Apply",
  "Manifest": {
    "Stanzas": [
      {
        "StanzaType": "ComposeSystem",
        "StanzaId": "Compute1",
        "Request": {
         "Links": {
           "ResourceBlocks": [
             { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1" },
             { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1" },
             { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1" }
           ]
         }
        }
      },
      ...
    ]
  }
}
```

Redfish Composability Enhancements - Manifest

```json
{
  "RequestFormat": "Manifest",
  "RequestType": "Apply",
  "Manifest": {
    "Stanzas": [
      {
        "StanzaType": "ComposeSystem",
        "StanzaId": "Compute1",
        "Request": { ... },
        "Response": {
          "@odata.id": "/redfish/v1/Systems/ComposedCompute1",
          "@odata.type": "#ComputerSystem.v1_14_0.ComputerSystem",
          "Id": "ComposedCompute1",
          "Name": "Computer system composed from Compute1",
          "Processors": { ... },
          "Memory": { ... },
          "NetworkInterfaces": { ... },
          "Storage": { ... },
          "Links": {
            "ResourceBlocks": [
              { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1" },
              { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1" },
              { "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1" }
            ]
          }
        }
      },...
    ]
  }
}
```

Enhancements for Networking

- **NEW** Networking Metrics Resources
    - **NetworkAdapterMetrics**: 14 metrics for networking
    - **NetworkDeviceFunctionMetrics**: 16 metrics for networking, Ethernet
    - Updated **PortMetrics**: 43 metrics for networking, transceivers, and storage
- **NEW** LLDP Support
    - Enabled at the adapter level via **NetworkAdapter** or on each **Port**
    - Includes ChassisID, ManagementVLANID, ManagementAddress, PortID
    - Model supports values transmitted to / received from link partner

NEW USB Controller and Graphics Controller Schemas

- **USBController** schema
  - Provides mapping of USB Port to **PCIeDevice** or **Processor** resources
  - Collection can appear under **ComputerSystem** resource
- **GraphicsController** schema
  - Provides adapter-level information for graphics / display subsystem
  - **Port** instances can show display connections
- Resource Collections for both schemas appear in the resource tree as subordinate to an instance of a **ComputerSystem** resource

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Redfish Schema Minor Revisions (1 of 6)

- AccountService v1.9.0
  - Added *PasswordExpirationDays* property
- Bios v1.2.0
  - Added *ResetBiosToDefaultsPending* property
- Certificate v1.3.0
  - Added *SerialNumber, Fingerprint, FingerprintHashAlgorithm,* and *SignatureAlgorithm* properties
- Chassis v1.15.0
  - Added *SparePartNumber* property
- CollectionCapabilities v1.3.0
  - Added *ResourceBlockComposition* and *ResourceBlockConstrainedComposition* to *UseCase*
- CompositionService v1.2.0
  - Added *ActivePool, FreePool, CompositionReservations, and ReservationDuration* properties
  - Added *Compose* action

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- ComputerSystem v1.14.0
  - Added *PowerMode, GraphicsControllers,* and *USBControllers* properties
  - Added *SetupEntered* to *LastState* within *BootProgress*
  - Added *StopBootOnFault* to *Boot*
  - Added *ThreadingEnabled* to *ProcessorSummary*
- Connection v1.1.0
  - Added *MemoryChunkInfo* and *ConnectionKeys* properties
- Endpoint v1.6.0
  - Added *StorageSubsystem* to EntityType
  - Added *Zones* to *Links*
  - Deprecated *AccessKey* and *RegionKey* in favor of new properties in **Connection**
- Fan v1.1.0
  - Added *PowerWatts* property
- LogEntry v1.9.0
  - Added *ServiceProviderNotified* and *Resolution* properties

Redfish Schema Minor Revisions (3 of 6)

- Manager v1.12.0
  - Added *USBPorts* property
- ManagerAccount v1.8.0
  - Added *AccountExpiration* and *HostBootstrapAccount* properties
- MediaController v1.2.0
  - Added *EnvironmentMetrics* property
- Memory v1.12.0
  - Added *Enabled* property
- MetricDefinition v1.2.0
  - Added *String* to *MetricType*
- NetworkAdapter v1.7.0
  - Added *Metrics*, *EnvironmentMetrics*, and *LLDPEnabled* properties
- NetworkDeviceFunction v1.6.0
  - Added *Metrics* property

Redfish Schema Minor Revisions (4 of 6)

- PCIeDevice v1.7.0
  - Added *ReadyToRemove* and *EnvironmentMetrics* properties
- PCIeFunction v1.3.0
  - Added *Enabled* property
- Port v1.4.0
  - Added *FunctionMinBandwidth*, *FunctionMaxBandwidth*, *SFP*, and *EnvironmentMetrics* properties
  - Added *AssociatedMACAddresses*, *LLDPEnabled*, *LLDPTransmit*, and *LLDPReceive* properties to *Ethernet*
  - Added *AssociatedWorldWideNames* to *FibreChannel*
- PortMetrics v1.1.0
  - Added *RXBytes, TXBytes, RXErrors, TXErrors, Networking, Transceivers*, and *SAS* properties
- PowerDistributionMetrics v1.2.0
  - Added *TemperatureCelsius* and *HumidityPercent* properties

Redfish Schema Minor Revisions (5 of 6)

- PowerSupply v1.1.0
  - Added *Version* and *ProductionDate* properties
- Processor v1.12.0
  - Added *Enabled* property
  - Added *GraphicsController* to *Links*
- Resource v1.12.0
  - Deprecated *NSID* in favor of *NGUID* within *DurableNameFormat*
- ResourceBlock v1.4.0
  - Added *Pool* and *Client* properties
  - Added *IndependentResource* to *ResourceBlockType*
  - Added *ConsumingResourceBlocks* and *SupplyingResourceBlocks* to *Links*
- Sensor v1.3.0
  - Added *Links* property

Redfish Schema Minor Revisions (6 of 6)

- ServiceRoot v1.10.0
  - Added *NVMeDomains* property
- StorageController v1.2.0
  - Added *EnvironmentMetrics* property
  - Added *SupportsReservations* to *NVMecontrollerAttributes*
- Switch v1.6.0
  - Added *Enabled* and *EnvironmentMetrics* properties
- TaskService v1.2.0
  - Added *TaskAutoDeleteTimeoutMinutes* property
- UpdateService v1.9.0
  - Added *RemoteServerCertificate* and *VerifyRemoteServerCertificate* properties
- VirtualMedia v1.4.0
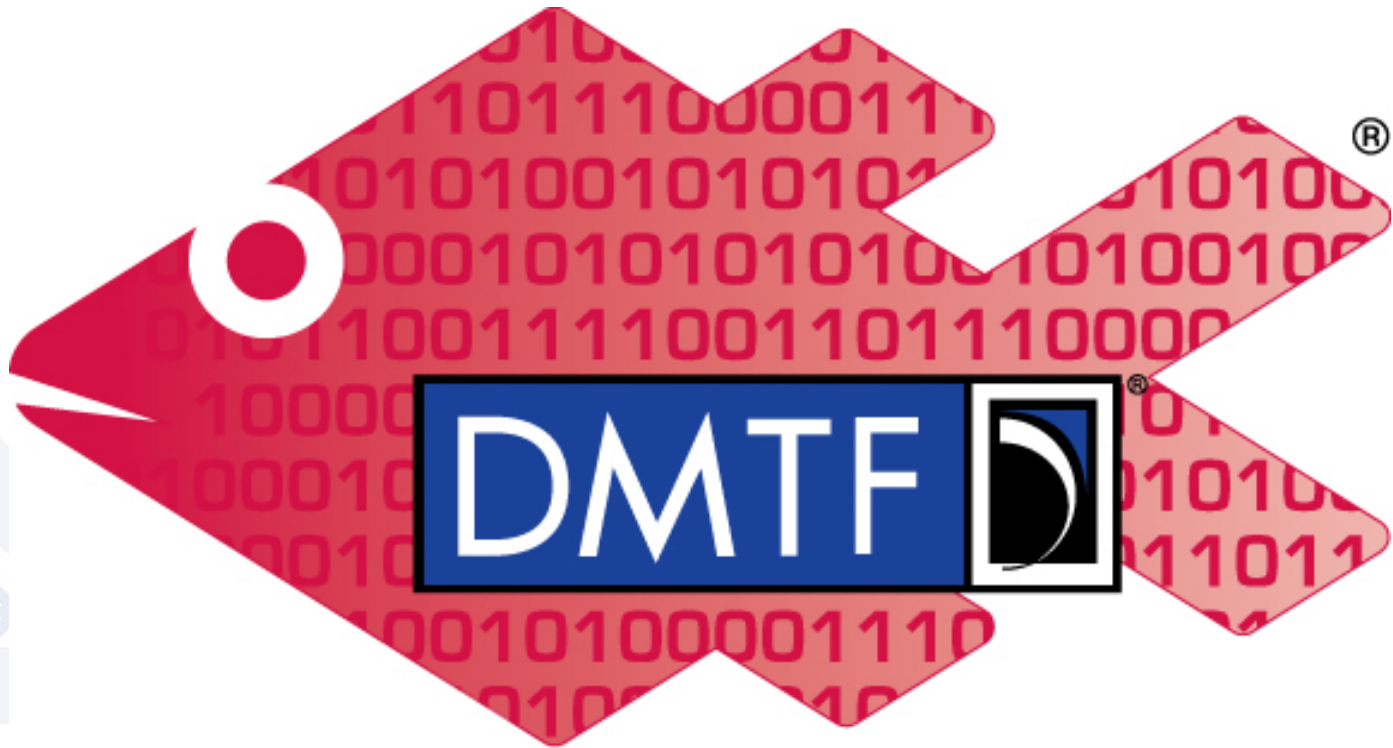 - Added *Status*, *Certificate*, and *VerifyCertificate* properties

Errata Schema Revisions (1 of 2)

- Bios v1.x.x
  - Clarified that *ResetBios* action might clear pending values
- Certificate v1.2.3
  - Clarified that UefiSignatureOwner applies to all UEFI-managed certificates
- ComputerSystem v1.x.x
  - Clarified the behavior of *AliasBootOrder* with regards to handling multiple boot devices that map to the same alias
  - Clarified behavior of *BootSourceOverrideTarget* and *AliasBootOrder* for virtual devices
- Endpoint v1.x.x
  - Updated descriptions for the *EntityType* values to contain normative language consistent with other enumerations
- Manager v1.x.x
  - Clarified that *RemoteAccountService* is for any type of remote manager
- NetworkDeviceFunction v1.x.x
  - Added missing patterns for WWN properties

Errata Schema Revisions (2 of 2)

- Port v1.x.x
  - Clarified that speed properties also include protocol overhead
  - Added missing patterns for WWN properties
- PowerDistributionMetrics v1.0.1
  - Updated descriptions for *PowerWatts* and *EnergykWh* for consistency
- Resource
  - Added patterns to descriptions for *DurableNameFormat*
  - Clarified descriptions in *PartLocation*
- SecureBootDatabase v1.0.1
  - Corrected capitalization of *PKDefault* in the description for *DatabaseId*
- Triggers v1.1.4
  - Clarified that *MetricType* is not used for event-based triggers
- (various schemas and versions)
  - Reverted change using "might" in favor of "may" in normative text where "may" is the appropriate term to use