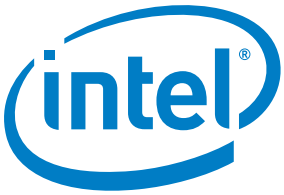


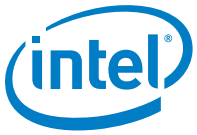
Intel® Rack Scale Design (RSD) Pooled System Management Engine (PSME) Representational State Transfer (REST)

API Specification
Software v2.4

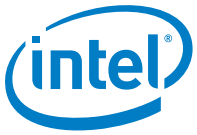
April 2019

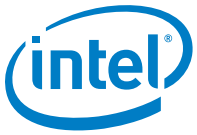
Revision 001

Document Number: 608496-001



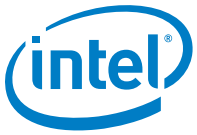
Contents

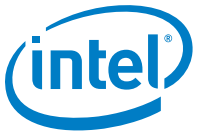


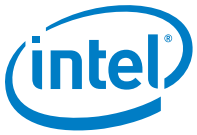


Figures

Tables







Revision History

Revision	Description	Date
001	Initial release for Intel® RSD software v2.4	April 2019

§

1.0 Introduction

This specification defines the interface to the Pooled System Management Engine (PSME) module to support Intel® Rack Scale Design (RSD) drawers, which cover the functionality designed and implemented in Intel® Rack Scale Design Software v2.4.

1.1 Scope

The interface is based on the Distributed Management Task Force's (DMTF*) Redfish* Interface Specification v1.5.0*, and *Redfish* v2018.1* (refer to Table 2). The exceptions are as follows:

- The interface for the FPGA is based on a *Redfish* Extensions for FPGAs* (refer to Table 2).
- The interface for Manager and Memory resources is based on *Redfish* Schema v2018.2*.
- The interface for Telemetry is based on a *Redfish* Telemetry White Paper* (refer to Table 2).
- The interfaces for various resources are enhanced with Intel® Rack Scale Design extensions.

For the location and titles of documents mentioned, refer to Table 2.

1.2 Intended Audience

The intended audience for this document includes:

- Software vendors (for example, independent software vendors (ISV's) of POD management applications that make use of the PSME API to discover, compose, and manage Intel® RSD drawers (regardless of the hardware vendor).
- Hardware vendors (for example, OEMs) of PSME firmware that implements PSME firmware for Intel® RSD compliant systems.

1.3 Conventions

The key words/phrases "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in *Keywords for Use in RFCs to Indicate Requirement Levels* (refer to Table 2).

1.4 Notes and Symbol Convention

Symbol and note convention are similar to typographical conventions used in the *Cloud Infrastructure Management Interface (CIMI) Model and Representational State Transfer (REST) HTTP-based Protocol Specifications* (refer to Table 2).

The notation used in JSON* serialization description:

- Mandatory in italics indicate data types instead of literal Mandatory.
- Characters are appended to items to indicate cardinality:
  - "?" (0 or 1)
  - "" (0 or more)
  - "+" (1 or more)
- Vertical bars, "|", denote choice. For example, "a|b" means a choice between "a" and "b".

- Parentheses, "(" and ")", are used to indicate the scope of the operators "?", "", "+" and "|".
- Ellipses (for example, "...") indicate points of extensibility.

Note: The lack of eclipses does not mean no extensibility point exists; rather it is just not explicitly called out.

1.5 Terminology

Table 1. Terminology

Term	Definition
ACL	Access Control List
API	Application Program Interface
BMC	Baseboard Management controller
CIMI	Cloud Infrastructure Management Interface
DCB	Data Center Bridging
DIMM	Dual Inline Memory Module
DST	Daylight Savings Time
ETS	Enhanced Transmission Selection
HTTP	Hypertext Transfer Protocol
Intel® RSD	Intel® Rack Scale Design
ISV	Independent Software Vendor
JSON*	JavaScript object notation*
KVM	Keyboard, Video, Mouse
NIC	Network interface card
NVMe*	Non-Volatile Memory express*
OData*	Open Data Protocol
OEM	Original Equipment Manufacturer
PDU	Protocol Data Unit
PFC	Priority Flow Control
PNC	Pooled Node Controller
PODM	POD Manager
PSMe*	Pooled System Management engine*
PXE	Preboot Execution
REST	Representational state transfer
SKU	Stock Keeping Unit
SMFP	Scalable Platforms Management Forum
TPM	Trusted Platform Module
URI	Uniform resource identifier
UUID	Universally unique identifier
ISV	Software Vendors
VLAN	Virtual Local Area Network

1.6 References and Resources

Table 2. Reference Documents and Resources

Doc ID	Title	Location
608487	*Intel® Rack Scale Design (Intel® RSD) Conformance and Software Reference Kit Getting Started Guide v2.4*	*Note: https://www.intel.com/content/www/us/en/architecture-and-technology/rack-scale-design/rack-scale-design-resources.html*
608488	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Release Notes Software v2.4*	
608489	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) User Guide Software v2.4*	
608490	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management (PSME) Release Notes Software v2.4*	
608491	Intel® Rack Scale Design Storage Services API Specification Software v2.4	
608492	*Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.4*	
608493	Intel® Rack Scale Design (Intel® RSD) Pod Manager (PODM) Representational State Transfer (REST) API Specification Software v2.4	
608494	Intel® Rack Scale Design (Intel® RSD) Rack Management Module (RMM) Representatinal State Transfer (REST) API Specification Software v2.4	
608495	*Intel® Rack Scale Design (Intel® RSD) Generic Assets Management Interface (GAMI) API Specification v2.4*	
608496	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) REST API Specification Software v2.4*	
608497	*Intel® Rack Scale Design (Intel® RSD) Conformance Test Suite (CTS) Release Notes*	
608298	Field Programmable Gate Array (FPGA) over Fabric Protocol Architecture Specification	*https://cdrdv2.intel.com/v1/dl/getContent/608298*
596167	Intel® Rack Scale Design (Intel® RSD) for Cascade Lake Platform Firmware Extension Specification	*https://cdrdv2.intel.com/v1/dl/getContent/596167*
DSP0263	*Cloud Infrastructure Management Interface (CIMI) specification*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0263_1.0.1.pdf*
DSP0266	*Redfish* Scalable Platforms Management API Specification v1.5.0*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.5.0.pdf*
DSP8010	*Redfish* Schema v2018.1*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.1.zip*
DSP8010	*Redfish* Schema v2018.2*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.2.zip*
DSP2051	*Redfish* Telemetry White Paper*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP2051_0.1.0a.zip*
DSP-IS0007	*Redfish* Extensions for FPGAs*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP-IS0007_0.9a.zip*
RFC2119	*Key Words for Use in RFCs to Indicate Requirement Levels, March 1997*	*https://ietf.org/rfc/rfc2119*
RFC2616	*Hypertext Transfer Protocol - HTTP/1.1*	*https://tools.ietf.org/html/rfc2616*
RFC3270	*Internet Small Computer Systems Interface (iSCSI)*	*https://tools.ietf.org/html/rfc3270*

Doc ID	Title	Location
RFC3271	*Internet Small Computer Systems Interface (iSCSI) Naming and Discovery*	*https://tools.ietf.org/html/rfc3271*
RFC5646	*Tags for Identifying Languages*	*https://tools.ietf.org/html/rfc5646*
RFC5789	*PATCH Method for HTTP*	*https://www.ietf.org/mail-archive/web/ietf-announce/current/msg07238.html*
T11/16-291v0	*Fibre Channel Framing and Signaling - 4 (FC-FS-4)*	*https://standards.incits.org/apps/group_public/download.php/81969/T11-2016-291v0.pdf*
N/A	*IANA Assigned Internet Protocol Numbers*	*https://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml*
N/A	*Redfish Bug Tracker*	See Note
N/A	*Redfish Base Registry v1.0.0*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8011_1.0.0a.json*

Note: Documents referenced in this table which have a Document ID, but cannot be accessed, can be obtained by calling 1-800-548-4725 or by visiting *www.intel.com/design/literature.htm* obtain a copy.

§

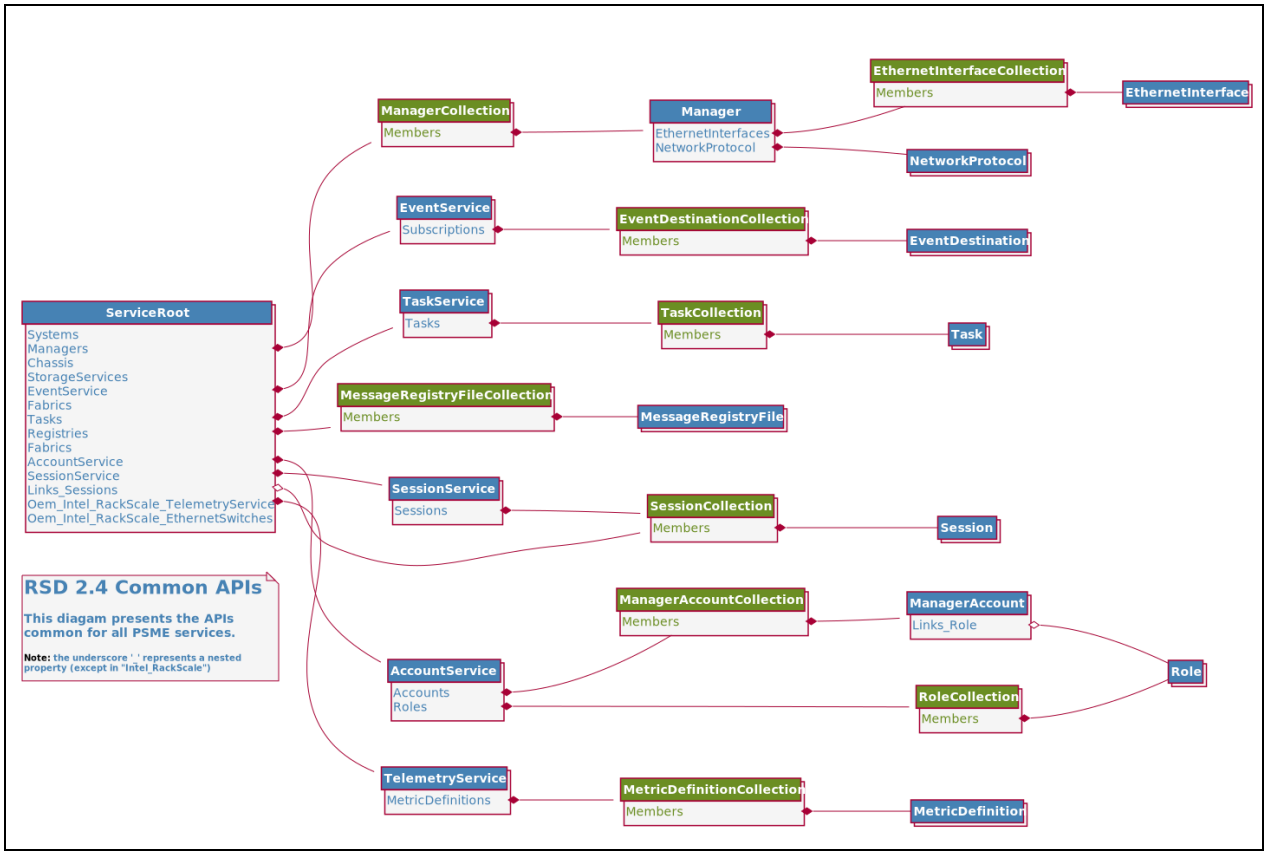
2.0 PSME API

2.1 PSME API Structure and Relations

The PSME REST API provides the REST-based interface that allows full management of the PSME, including asset discovery and configuration.

Figure 1 shows the hierarchy of resources shared between RSD PSME Services.

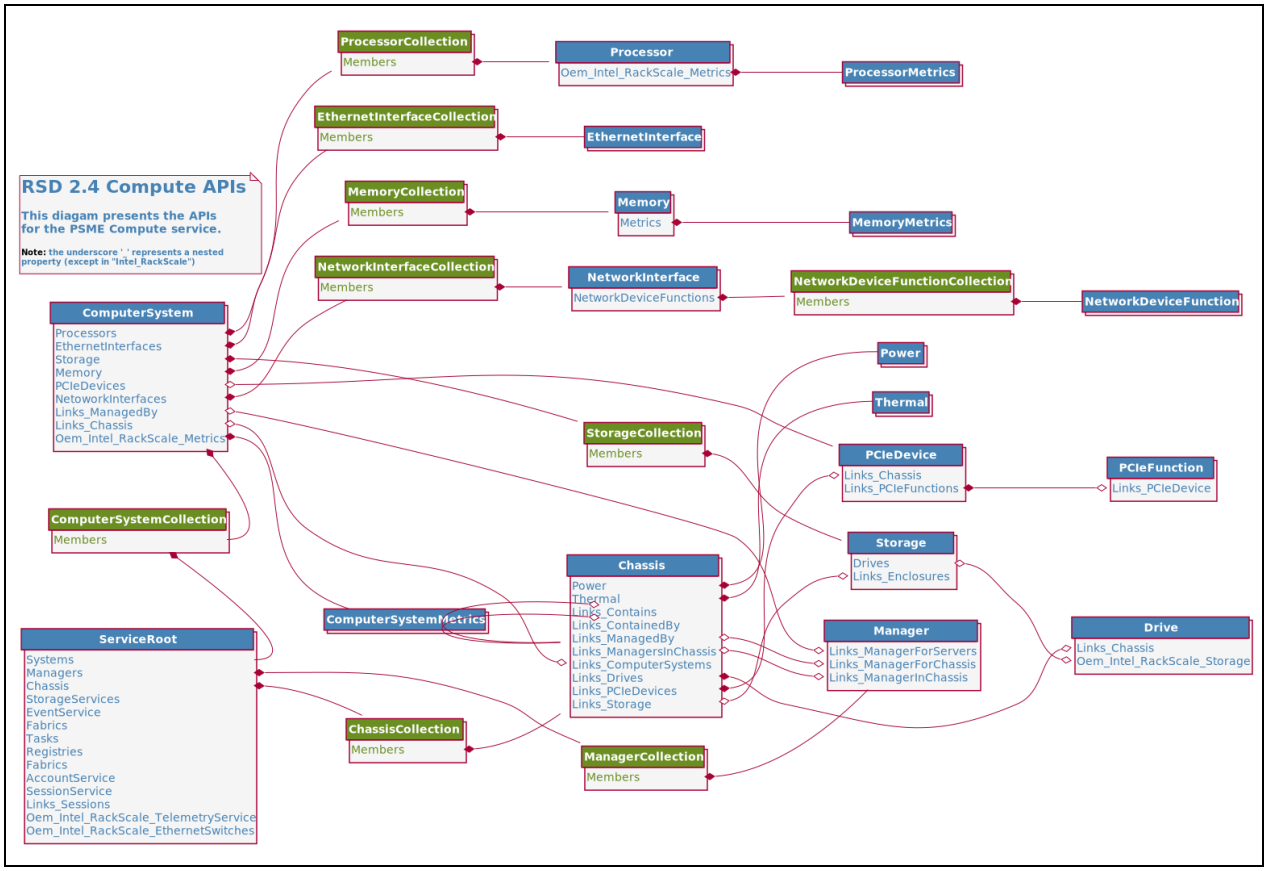
Figure 1. Common Resource Hierarchy



2.1.1 PSME Compute API Resource Hierarchy

Figure 2 represents the hierarchy of the PSME Compute resources.

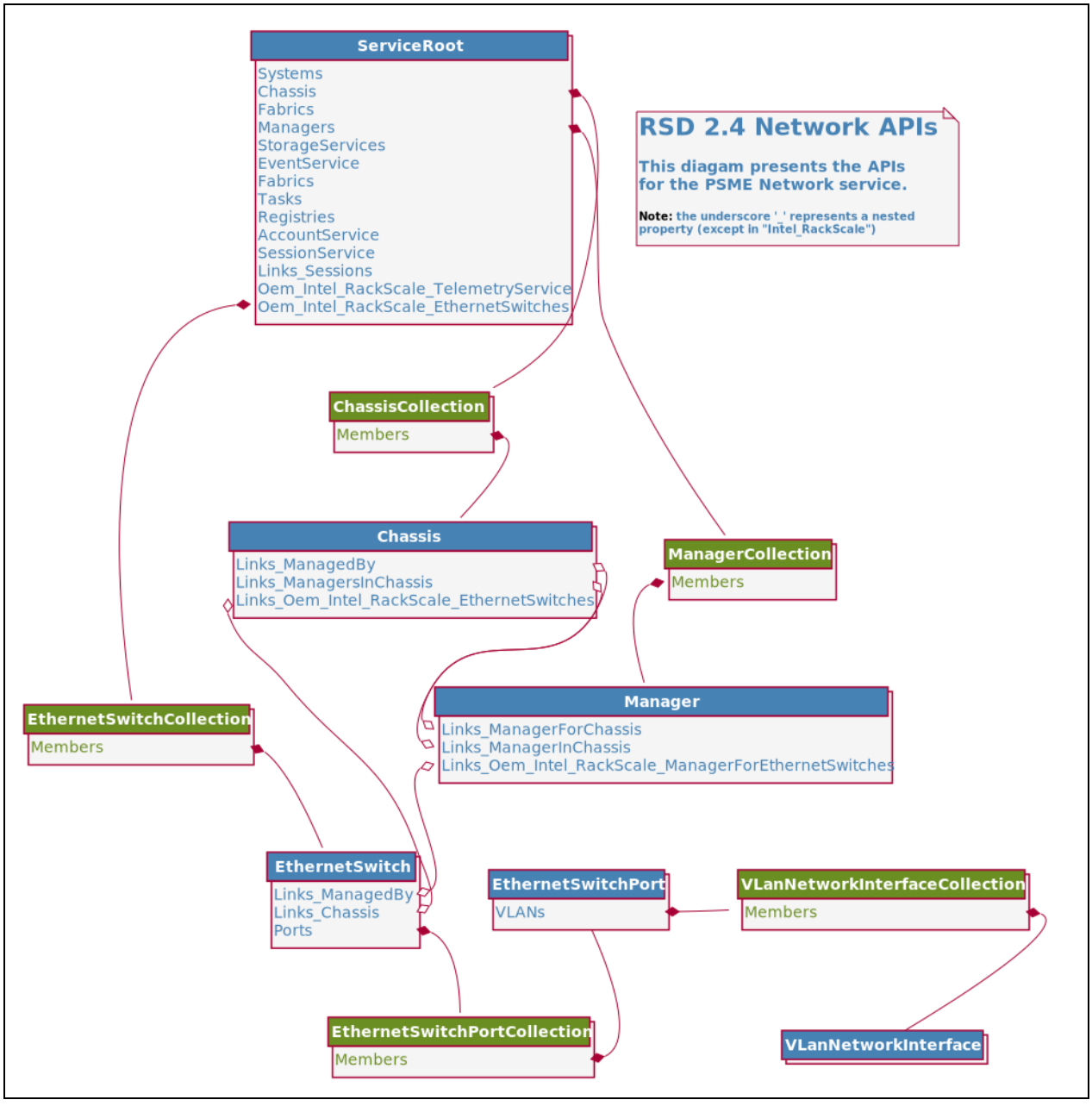
Figure 2. PSME REST API Hierarchy for PSME Compute Resources



2.1.2 PSME Network API Resource Hierarchy

Figure 3 represents the hierarchy of the PSME Network resources.

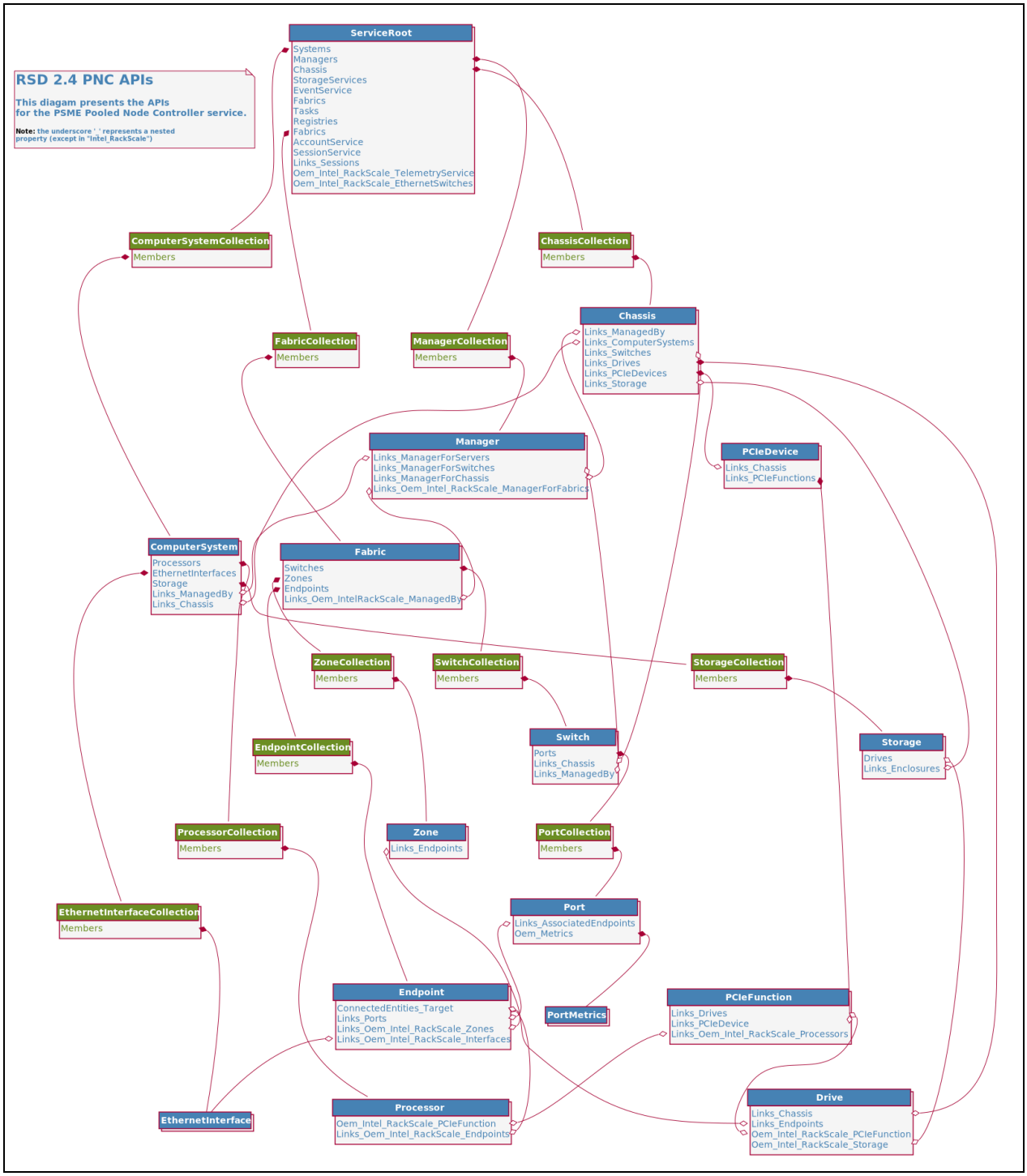
Figure 3. PSME REST API Hierarchy for PSME Network Resources



2.1.3 PSME PNC API Resource Hierarchy

Figure 4represents the hierarchy of PSME PNC resources.

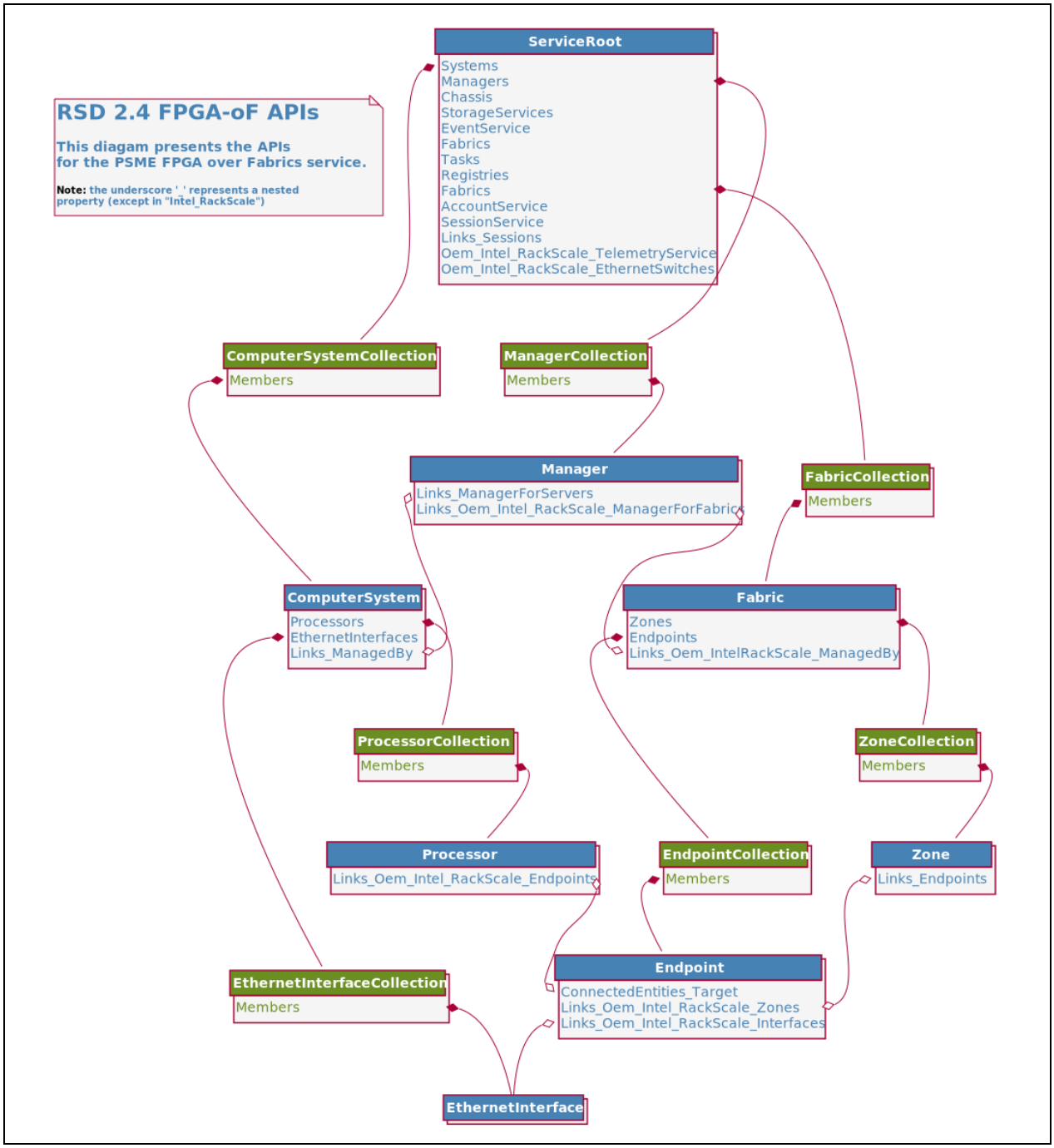
Figure 4. PSME REST API hierarchy for PSME PNC resources



2.1.4 PSME FPGA-Over-Fabrics (oF) API Resource Hierarchy

Figure 5 represents the hierarchy of PSME FPGA-oF resources.

Figure 5. PSME REST API hierarchy for PSME FPGA-oF resources



2.2 Resources and URIs

Table 3. Resources and Uniform Resource Identifiers (URIs)

Resource	Schema version	OEM Extended?	URI
Service Root	v1_1_1	Yes	/redfish/v1
Chassis Collection		No	/redfish/v1/Chassis
Chassis	V1_3_0	Yes	/redfish/v1/Chassis/{chassisID}
Computer System Collection		No	/redfish/v1/Systems
Computer System	V1_2_0	Yes	/redfish/v1/Systems/{systemID}
Computer System Metrics	Oem v1_0_0		/redfish/v1/Systems/{systemID}/Metrics
Processors Collection		No	/redfish/v1/Systems/{systemID}/Processors
Processor	V1_0_0	Yes	/redfish/v1/Systems/{systemID}/Processors/{processorID}
Processor Metrics	Oem v1_0_0		/redfish/v1/Systems/{systemID}/Processors/{processorID}/Oem/Intel_RackScale/Metrics
Memory Collection			/redfish/v1/Systems/{systemID}/Memory
Memory	V1_1_0	Yes	/redfish/v1/Systems/{systemID}/Memory/{memoryID}
Memory Metrics	V1_0_0	Yes	/redfish/v1/Systems/{systemID}/Memory/{memoryID}/Metrics
Storage Subsystem Collection			/redfish/v1/Systems/{systemID}/Storage
Storage Subsystem	V1_0_0	No	/redfish/v1/Systems/{systemID}/Storage/{storageID}
Drives	V1_1_1	Yes	/redfish/v1/Chassis/{chassisID}/Drives/{driveID}
Manager Collection			/redfish/v1/Managers
Manager	V1_2_0	No	/redfish/v1/Managers/{managerID}
Network Protocol	V1_0_0	No	/redfish/v1/Managers/{managerID}/NetworkProtocol
Ethernet Interface Collection			/redfish/v1/Systems/{systemID}/EthernetInterfaces /redfish/v1/Managers/{managerID}/EthernetInterfaces
Ethernet Interface	V1_1_0	Yes	/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}
Ethernet Switch Collection			/redfish/v1/EthernetSwitches
Ethernet Switch	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}
Ethernet Switch Metrics	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Metrics
Ethernet Switch Port Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports
Ethernet Switch Port	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}
Ethernet Switch Port Metrics	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/Metrics
Ethernet Switch Port StaticMAC Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/StaticMACs
Ethernet Switch Port Static MAC	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/StaticMACs/{macID}

Resource	Schema version	OEM Extended?	URI
Ethernet Switch ACL collection			/redfish/v1/EthernetSwitches/{switchID}/ACLs
Ethernet Switch ACL	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}
Ethernet Switch ACL rule collection			/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules
Ethernet Switch ACL rule	Oem v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules/{ruleID}
VLAN Network Interface Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs
VLAN Network Interface	V1_0_1	Yes	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs/{vlanID} /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs/{vlanID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs/{vlanID}
EventService	V1_0_0	No	/redfish/v1/EventService
Event Subscription Collection			/redfish/v1/EventService/Subscriptions
Event Subscription	V1_1_1	No	/redfish/v1/EventService/Subscriptions/{subscriptionID}
Fabrics collection			/redfish/v1/Fabrics
Fabric	V1_0_0	No	/redfish/v1/Fabrics/{fabricID}
Fabric Switch collection			/redfish/v1/Fabrics/{fabricID}/Switches
Fabric Switch	V1_0_0	No	/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}
Fabric Switch Port collection			/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports
Fabric Switch Port	V1_0_0	Yes	/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}
Fabric Switch Port Metrics	Oem v1_0_0		/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}/Metrics
Fabric Zone collection			/redfish/v1/Fabrics/{fabricID}/Zones
Fabric Zone	V1_0_0	No	/redfish/v1/Fabrics/{fabricID}/Zones/{zoneID}
Endpoint Collection			/redfish/v1/Fabrics/{fabricID}/Endpoints
Endpoint	V1_0_0	No	/redfish/v1/Fabrics/{fabricID}/Endpoints/{endpointID}
PCIeDevice	V1_0_0	No	/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}
PCIe Device Function	V1_0_0	No	/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}/Functions/{functionID}
TelemetryService	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService
Metric Definition Collection	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions
Metric Definition	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/{metricDefinitionId}
Metric Report Definition Collection	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions

Resource	Schema version	OEM Extended?	URI
Metric Report Definition	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/{metricReportDefinitionId}
Triggers Collection	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Triggers	Oem (WIP)		/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/{triggerId}
Network Interface collection			/redfish/v1/Systems/{systemID}/NetworkInterfaces
Network Interface	V1_0_0	No	/redfish/v1/Systems/{systemID}/NetworkInterfaces/{interfaceID}
Network Device Function collection			/redfish/v1/Systems/{systemID}/NetworkInterfaces/{interfaceID}/NetworkDeviceFunctions
Network Device Function	V1_0_0	No	/redfish/v1/Systems/{systemID}/NetworkInterfaces/{interfaceID}/NetworkDeviceFunctions/{functionID}
Task Service	V1_0_0	No	/redfish/v1/TaskService
Task Collection			/redfish/v1//TaskService/Tasks
Task	V1_0_0	No	/redfish/v1//TaskService/Tasks/{taskID}
Power	V1_1_0	No	/redfish/v1/Chassis/{chassisID}/Power
Thermal	V1_1_0	No	/redfish/v1/Chassis/{chassisID}/Thermal
Update Service	V1_1_0	No	/redfish/v1/UpdateService
Action Info	V1_0_0	No	/redfish/v1/UpdateService/SimpleUpdateActionInfo
Account Service	V1_3_0	No	/redfish/v1/AccountService
Manager Account	V1_1_2	No	/redfish/v1/AccountService/Accounts/{accountID}
Manager Account Collection		No	/redfish/v1/AccountService/Accounts
Role	V1_2_1	No	/redfish/v1/AccountService/Roles/{roleID}
Role Collection		No	/redfish/v1/AccountService/Roles
Session Service	v1_1_3	No	/redfish/v1/SessionService
Session	v1_1_0	No	/redfish/v1/SessionService/Sessions/{sessionID}
Session Collection		No	/redfish/v1/SessionService/Sessions

§

3.0 REST API Error Codes

This section contains descriptions of all error codes that may be returned by the REST calls implemented in the PSME REST API of the Intel® RSD v2.4 release.

3.1 API Error Responses

In case of an error, the PSME REST API responds with a status code, as defined by the *HTTP 1.1 Specification* (refer to Table 2) and constrained by additional requirements defined in this specification. HTTP response status codes often do not provide enough information to enable deterministic error semantics. PSME REST API returns extended error information as a JSON* object with a single property named “error”. The value of the property shall be a JSON object with the properties shown in Table 4.

Table 4. API Error Response Attributes

Attribute	Description
`Code`	A string indicating a specific `MessageId` from the message registry. "Base.1.0.GeneralError" should be used only when no other message is better.
`Message`	A human-readable error message corresponding to the message in the message registry.
`@Message.ExtendedInfo`	An array of message objects describing one or more error message(s).

3.1.1 Message Object

Message objects provide additional information about an object, property, or error response. Messages are represented as JSON* objects with the properties shown in Table 5.

Table 5. Message Object Attributes

Attribute	Description
`MessageId`	A string indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.
`Message`	A human-readable error message indicating the semantics associated with the error. This is the complete message and does not rely on substitution variables.
`MessageArgs`	An optional array of strings representing the substitution parameter values for the message. This is included in the response if a `MessageId` is specified for a parameterized message.
`Severity`	An optional string representing the severity of an error.
`Resolution`	An optional string describing recommended action(s) to take to resolve an error.
`RelatedProperties`	An optional array of JSON pointers defining the specific properties in a JSON payload described by the message.

3.1.2 Error Message Definitions

The messages returned by a Redfish* service are defined in Message Registries. In the current implementation, the PSME REST API responds with messages from two registries:

- The Redfish Base Registry v1.0.0, refer to Table 2.
- The Intel RackScale Registry, presented in the next section.

  The URIs of the registries may also be obtained from the service by querying the Message Registry File API at `/redfish/v1/Registries`.

3.1.3 Intel RackScale Message Registry

The registry contains two RSD-specific error messages.

Request:

```
GET /registries/Intel_RackScale
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#MessageRegistry.v1_0_0.MessageRegistry",
  "Id": "Intel_RackScale.1.0.0",
  "Name": "Intel RackScale Message Registry",
  "Language": "en",
  "Description": "This registry defines messages specific to Intel RackScale",
  "RegistryPrefix": "Intel_RackScale",
  "RegistryVersion": "1.0.0",
  "OwningEntity": "Intel Corporation",
  "Messages": {
    "PropertyNotModifiable": {
      "Description": "Indicates that a property cannot be modified even though the
metadata specifies it as writable",
      "Message": "The service is unable to modify the property %1 even though metadata
specifies it as writeable.",
      "Severity": "Warning",
      "NumberOfArgs": 1,
      "ParamTypes": [
        "string"
      ],
      "Resolution": "Remove the unmodifiable property from the request body and
resubmit the request."
    },
    "PropertyValueRestricted": {
      "Description": "Indicates that the value given for a property is not within
restrictions imposed by the Service (even though it may be correct according to
metadata)",
      "Message": "The value %1 for property %2 is not within restrictions imposed by
the Service.",
      "Severity": "Warning",
      "NumberOfArgs": 1,
      "ParamTypes": [
        "string",
        "string"
      ],
      "Resolution": "Correct the value for the property in the request body and
resubmit the request."
    }
  }
}
```

3.1.4 Example Error JSON Object

```
{
    "error": {
        "code": "Base.1.0.GeneralError",
        "message": "A general error has occurred. See ExtendedInfo for more
information.",
        "@Message.ExtendedInfo": [
            {
```

```
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_5.Message",
                "MessageId": "Base.1.0.MalformedJSON",
                "Message": "The request body submitted was malformed JSON and could
not be parsed by the receiving service",
                "Severity": "Error"
            },
            {
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_5.Message",
                "MessageId": "Base.1.0.PropertyNotWriteable",
                "RelatedProperties": [
                    "#/Name"
                ],
                "Message": "The property Name is a read only property and cannot be
assigned a value",
                "MessageArgs": [
                    "Name"
                ],
                "Severity": "Warning",
                "Resolution": "Remove the property from the request body and resubmit
the request if the operation failed"
            }
        ]
    }
}
```

3.2 API Error Codes

If an error is not described in Table 6, it is to be mapped into HTTP 500 Internal Error code.

3.2.1 General Error Codes

For a detailed list of error codes, review the *Redfish* Scalable Platforms Management API Specification*, Section 6.5.2 (refer to Table 2). The client should be prepared to handle the error codes shown in Table 6:

Table 6. HTTP Error Status Code

HTTP Status Code	Description
400 Bad Request	The request could not be processed because it contains missing or invalid information (such as validation error on an input field, a missing required value, or other invalid information). An extended error shall be returned in the response body.
401 Unauthorized	The authentication credentials included with this request are missing or invalid.
404 Not Found	The request specified a URI of a resource that does not exist.
405 Method Not Allowed	The HTTP verb specified in the request (for example `DELETE`, `GET`, `HEAD`, `POST`, `PUT`, `PATCH`) is not supported for the request URI. The response includes an Allow header, which provides a list of methods supported by the resource, identified by the request URI.
409 Conflict	A creation or update request could not be completed, because it would cause a conflict in the current state of the resources supported by the platform. For example, an attempt to set multiple attributes that work in a linked manner using incompatible values would return this status code.
500 Internal Server Error	The server encountered an unexpected condition that prevented it from fulfilling the request. An extended error shall be returned in the response body
501 Not Implemented	The server does not (currently) support the functionality required to fulfill the request. This is the appropriate response when the server does not recognize the request method and is not capable of supporting it for any resource.
503 Service Unavailable	The server is currently unable to handle the request due to temporary overloading or maintenance of the server.

3.2.2 PATCH Method Error Codes

For the `PATCH` method error codes, the Intel® RSD service conforms to the IETF RFC 5789 standard (refer to Table 2). The service responds with the following error codes in the cases listed:

- **400 Bad Request:** Malformed JSON in the request (such as values not in range, an unknown property, and so on). The code, message, and extended information within the error response explain why a request was rejected.

  Of special concern are the RSD-specific messages from the Intel_RackScale registry. `PropertyNotModifiable` is returned when a `PATCH` request was sent for a property which, while writable according to metadata, is read-only on the PSME REST API. `PropertyValueRestricted` is returned when a PATCH request contains a value for a property which is compliant with metadata, but the service has additional restrictions on the acceptable values for that property which were not met by the request.

- **405 Method Note Allowed:** Resource does not support the `PATCH` method.
- **409 Conflict:** Update cannot be executed at this moment. The user might be able to resolve the conflict and resubmit the request.
- **501 Not Implemented:** Resource supports `PATCH` method, but current implementation does not (for example, underlying hardware does not support the functionality).
- **500 Internal Server Error:** All other situations in which the previous codes do not fit (for example, underlying hardware does not allow executing a particular request).

§

4.0 PSME REST API Definition

Important Note: The JSON* example in this document are informative, not normative. Metadata files that are referenced by this specification are normative.

4.1 Odata* Support

Intel® Rack Scale Design (Intel® RSD) supports the Open Data Protocol (OData) v4.0 as it is defined in *Redfish* Scalable Platforms Management API Specification* (refer to Table 2).

All resources within this REST API are identified by a unique identifier property named "`@odata.id`". Resource Identifiers are represented in JSON* payloads as URI paths relative to the Redfish* Schema portion of the URI. For example, the URIs always start with `/redfish/`. The resource identifier is the canonical URI for the resource and can be used to retrieve or edit the resource as appropriate.

4.2 Asynchronous Operations

While the majority of operations in this architecture are synchronous in nature, some operations can take a long time to execute, more time than a client typically wants to wait. For this reason, some operations can be asynchronous at the discretion of the service. The request portion of an asynchronous operation is no different from the request portion of a synchronous operation.

The use of HTTP response codes enables a client to determine if the operation was completed synchronously or asynchronously. Clients must be prepared to handle both synchronous and asynchronous responses for requests using HTTP `DELETE`, `POST`, `PATCH` and `PUT` methods.

For details, refer to Table 2, *Redfish Scalable Platforms Management API Specification*, Section 8.2, Asynchronous operations.

4.3 Protocol Version

The protocol version is separate from the version of the resources or the version of the Redfish* Schema supported by them.

Each version of the Redfish* protocol is strongly typed. This is accomplished using the URI of the Redfish service in combination with the resource obtained at that URI, called the `ServiceRoot`.

The root URI for this version of the Redfish protocol shall be `/redfish/v1/`.

While the major version of the protocol is represented in the URI, the major version, minor version, and errata version of the protocol are represented in the Version property of the `ServiceRoot` resource, as defined in the Redfish Schema for that resource. The protocol version is a string of the form:

`MajorVersion.MinorVersion.Errata`

Where:

- *MajorVersion* = integer: something in the class was changed in a way that broke backwards compatibility.
- *MinorVersion* = integer: a minor update. New functionality may have been added but nothing removed. The compatibility will be preserved with previous minor versions.
- *Errata* = integer: something in the prior version was broken and needed fixing.

Any resource discovered through links found by accessing the root service, any service, or resource referenced using references from the root service, shall conform to the same version of the protocol supported by the root service.

4.3.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.3.1.1 GET

Request:

```
GET /redfish
Content-Type: application/json
```

Response:

```
{
  "v1": "/redfish/v1/"
}
```

4.4 OData* Service Document

This OData Service Document provides a standard format for enumerating the resources exposed by the service, enabling generic hypermedia-driven OData clients to navigate to the resources of the service.

4.4.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.4.1.1.1 GET

Request:

```
GET /redfish/v1/odata
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata",
  "value": [
    {
      "name": "Service",
      "kind": "Singleton",
      "url": "/redfish/v1/"
    },
    {
      "name": "Systems",
      "kind": "Singleton",
      "url": "/redfish/v1/Systems"
```


```
    },
    {
      "name": "Chassis",
      "kind": "Singleton",
      "url": "/redfish/v1/Chassis"
    },
    {
      "name": "Managers",
      "kind": "Singleton",
      "url": "/redfish/v1/Managers"
    },
    {
      "name": "Services",
      "kind": "Singleton",
      "url": "/redfish/v1/Services"
    },
    {
      "name": "EthernetSwitches",
      "kind": "Singleton",
      "url": "/redfish/v1/EthernetSwitches"
    },
    {
      "name": "EventService",
      "kind": "Singleton",
      "url": "/redfish/v1/EventService"
    },
    {
      "name": "Tasks",
      "kind": "Singleton",
      "url": "/redfish/v1/TaskService"
    },
    {
      "name": "Registries",
      "kind": "Singleton",
      "url": "/redfish/v1/Registries"
    },
    {
      "name": "Fabrics",
      "kind": "Singleton",
      "url": "/redfish/v1/Fabrics"
    },
    {
      "name": "UpdateService",
      "kind": "Singleton",
      "url": "/redfish/v1/UpdateService"
    },
    {
      "name": "AccountService",
      "kind": "Singleton",
      "url": "/redfish/v1/AccountService"
    },
    {
      "name": "SessionService",
      "kind": "Singleton",
      "url": "/redfish/v1/SessionService"
    },
    {
      "name": "TelemetryService",
      "kind": "Singleton",
      "url": "/redfish/v1/Oem/Intel_RackScale/TelemetryService"
    }
```

```
  ]
}
```

4.5 Intel® Rackscale Design OEM Extensions

All Intel® Rackscale Design OEM extensions to all defined resources in this document shall be supported.

4.6 Service Root

Service root resource - entry point.

Properties details are available in `ServiceRoot_v1.xml` metadata file. OEM extensions details are available in `IntelRackScaleOem_v1.xml`. Table Table 7 shows the ServiceRoot attributes. Table Table 8 shows the ServiceRoot OEM extensions.

Table 7. ServiceRoot Attributes

Attribute	Type	Nullable	Description
`RedfishVersion`	`Edm.String`	False	The value of this string shall represent the version of the Redfish* service. The format of this string shall be of the format `majorversion.minorversion.errata` in compliance with Protocol Version section of the Redfish specification.
`UUID`	`Resource.UUID`	True	The value of this string shall represent the id of the Redfish service instance. The format of this string shall be a 32-byte value in the form 8-4-4-4-12. If SSDP is used, this value shall be an exact match of the UUID value returned in a 200 OK from an SSDP M-SEARCH request during discovery. A Universally Unique IDentifier (UUID) URN Namespace, RFC4122, Table 2 describes methods that can be used to create a UUID value. The value should be considered to be opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID.
`Links`	`ServiceRoot.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

Attribute	Type	Nullable	Description
Systems	ComputerSystemCollection.ComputerSystemCollection	False	This object shall only contain a reference to a collection of resources that comply with the Systems schema.
Chassis	ChassisCollection.ChassisCollection	False	This object shall only contain a reference to a collection of resources that comply with the Chassis schema.
Managers	ManagerCollection.ManagerCollection	False	This object shall only contain a reference to a collection of resources that comply with the Managers schema.
Tasks	TaskService.TaskService	False	The classes structure shall only contain a reference to a resource that complies to the TaskService schema.
SessionService	SessionService.SessionService	False	The classes structure shall only contain a reference to a resource that complies to the SessionService schema.
AccountService	AccountService.AccountService	False	The classes structure shall only contain a reference to a resource that complies to the AccountService schema.
EventService	EventService.EventService	False	The classes structure shall only contain a reference to a resource that complies to the EventService schema.
Registries	MessageRegistryFileCollection.MessageRegistryFileCollection	False	This object shall contain a reference to Message Registry.
JsonSchemas	JsonSchemaFileCollection.JsonSchemaFileCollection	False	This object shall only contain a reference to a collection of resources that comply with the SchemaFile schema where the files are Json-Schema files.
StorageSystems	StorageSystemCollection.StorageSystemCollection	False	The referenced collection shall contain computer systems that act as storage servers. The HostingRoles attribute of each such computer system shall have an entry for StorageServer.
StorageServices	StorageServiceCollection.StorageServiceCollection	False	The referenced collection shall contain references to all StorageService instances.
Fabrics	FabricCollection.FabricCollection	False	The referenced collection shall contain references to all Fabric instances.
UpdateService	UpdateService.UpdateService	False	The classes structure shall only contain a reference to a resource that complies to the UpdateService schema.

Attribute	Type	Nullable	Description
CompositionService	CompositionService.CompositionService	False	The classes structure shall only contain a reference to a resource that complies to the CompositionService schema.
Product	Edm.String	False	The value of this string shall include the name of the product represented by this Redfish service.
ProtocolFeaturesSupported	ServiceRoot.v1_3_0.ProtocolFeaturesSupported	False	This type contains information about protocol features supported by the service.

Intel® RSD OEM extensions:

Table 8. ServiceRoot Attributes

Attribute	Type	Nullable	Description
ApiVersion	Edm.String	False	The version of Intel® RSD API exposed by this service.
EthernetSwitches	EthernetSwitchCollection.EthernetSwitchCollection	True	The classes structure shall only contain a reference to a resource that complies to the EthernetSwitch schema.
Nodes	ComposedNodeCollection.ComposedNodeCollection	True	This object shall only contain a reference to a collection of resources that comply with the Nodes schema.
TelemetryService	Intel_RackScale.TelemetryService.TelemetryService	True	The classes structure shall only contain a reference to a resource that complies to the TelemetryService schema.

4.6.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.6.1.1 GET

Request:

```
GET /redfish/v1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ServiceRoot.ServiceRoot",
  "@odata.id": "/redfish/v1/",
  "@odata.type": "#ServiceRoot.v1_3_1.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "Description": "description-as-string",
  "RedfishVersion": "1.5.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Systems": {
```


```
    "@odata.id": "/redfish/v1/Systems"
  },
  "Chassis": {
    "@odata.id": "/redfish/v1/Chassis"
  },
  "Managers": {
    "@odata.id": "/redfish/v1/Managers"
  },
  "StorageServices": {
    "@odata.id": "/redfish/v1/StorageServices"
  },
  "EventService": {
    "@odata.id": "/redfish/v1/EventService"
  },
  "Fabrics": {
    "@odata.id": "/redfish/v1/Fabrics"
  },
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService"
  },
  "Registries": {
    "@odata.id": "/redfish/v1/Registries"
  },
  "AccountService": {
    "@odata.id": "/redfish/v1/AccountService"
  },
  "SessionService": {
    "@odata.id": "/redfish/v1/SessionService"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ServiceRoot",
      "ApiVersion": "2.4.0",
      "EthernetSwitches": {
        "@odata.id": "/redfish/v1/EthernetSwitches"
      },
      "TelemetryService": {
        "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService"
      }
    }
  },
  "UpdateService": {
    "@odata.id": "/redfish/v1/UpdateService"
  },
  "Links": {}
}
```


4.6.1.2 PUT

Operation is not allowed on this resource.

4.6.1.3 PATCH

Operation is not allowed on this resource.

4.6.1.4 POST

Operation is not allowed on this resource.

4.6.1.5 DELETE

Operation is not allowed on this resource.

4.7 Chassis Collection

This section describes the chassis collection resource.

Table 9. ChassisCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Chassis.Chassis)	True	Contains the members of this collection.

4.7.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.7.1.1 GET

Request:

```
GET /redfish/v1/Chassis
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis",
  "@odata.id": "/redfish/v1/Chassis",
  "@odata.type": "#ChassisCollection.ChassisCollection",
  "Name": "Chassis Collection",
  "Description": "description-as-string",
  "Members@odata.count": 7,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/Pod"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Blade1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitchChassis"
    }
  ]
}
```

4.7.1.2 PUT

Operation is not allowed on this resource.

4.7.1.3 PATCH

Operation is not allowed on this resource.

4.7.1.4 POST

Operation is not allowed on this resource.

4.7.1.5 DELETE

Operation is not allowed on this resource.

4.8 Chassis

This is the schema definition for the `Chassis` resource. It represents the properties of physical components for any system. This resource is intended to represent racks, rackmount servers, blades, standalone, modular systems, enclosures, and all other containers. The non-CPU/device centric parts of the schema are all accessed either directly or indirectly through this resource.

Details of this resource are described in the `Chassis_v1.xml` metadata file. OEM extension details are available in `IntelRackScaleOem_v1.xml`.

Table 10 describes the Chassis attributes. Table 11 describes the `Location` attributes, Table 12 shows the `Link` attribute, Table 13 shows the `ChassisLinks` attribute, and Table 14 shows the `ChassisType` attributes. For the Intel® RSD OEM extensions, Table 15 describes the `Chassis` attribute and shows the `Location` attributes.

Table 10. Chassis Attributes

Attribute	Type	Nullable	Description
`ChassisType`	`Chassis.v1_0_0.ChassisType`	False	`ChassisType` shall indicate the physical form factor for the type of chassis.
`Manufacturer`	`Edm.String`	True	The value of this property shall be the name of the organization responsible for producing the chassis. This organization might be the entity from whom the chassis is purchased, but this is not necessarily true.
`Model`	`Edm.String`	True	The value of this property shall be the name by which the manufacturer generally refers to the chassis.
`SKU`	`Edm.String`	True	The value of this property shall be the stock-keeping unit number for this chassis.
`SerialNumber`	`Edm.String`	True	The value of this property shall be a manufacturer-allocated number used to identify the chassis.

Attribute	Type	Nullable	Description
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the chassis.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the chassis for inventory purposes.
IndicatorLED	Chassis.v1_0_0.IndicatorLED	True	This value of this property shall contain the indicator light state for the indicator light associated with this system.
Links	Chassis.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Chassis.v1_0_0.Actions	False	The Actions property contains the available actions for this resource.
Status	Resource.Status	False	-
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall be a link to a collection of type LogServiceCollection.
Thermal	Thermal.Thermal	False	The value of this property is a reference to the resource that represents the thermal characteristics of this chassis and shall be a Thermal type.
Power	Power.Power	False	The value of this property is a reference to the resource that represents the power characteristics of this chassis and shall be of type Power.
PowerState	Chassis.v1_0_1.PowerState	True	The value of this property shall contain the power state of the chassis.
PhysicalSecurity	Chassis.v1_1_0.PhysicalSecurity	False	This value of this property shall contain the sensor state of physical security.
Location	Resource.Location	False	-
HeightMm	Edm.Decimal	True	The value of this property shall represent the height of the chassis (in millimeters) as specified by the manufacturer.
WidthMm	Edm.Decimal	True	The value of this property shall represent the width of the chassis (in millimeters) as specified by the manufacturer.

Attribute	Type	Nullable	Description
DepthMm	Edm.Decimal	True	The value of this property shall represent the depth (length) of the chassis (in millimeters) as specified by the manufacturer.
WeightKg	Edm.Decimal	True	The value of this property shall represent the published mass (commonly referred to as weight) of the chassis (in kilograms).
NetworkAdapters	NetworkAdapterCollection.NetworkAdapterCollection	False	The value of this property shall be a link to a collection of type NetworkAdapterCollection.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.
UUID	Resource.UUID	True	The value of this property shall contain the universal unique identifier number for the chassis.

Table 11. Location Attributes

Attribute	Type	Nullable	Description
Oem	Resource.Oem	False	-

Table 12. Chassis Type Attributes

Member	Description
Rack	An equipment rack, typically a 19-inch wide freestanding unit.
Blade	An enclosed or semi-enclosed, typically vertically-oriented, system chassis which must be plugged into a multi-system chassis to function normally.
Enclosure	A generic term for a chassis that does not fit any other description.
StandAlone	A single, free-standing system, commonly called a tower or desktop chassis.
RackMount	A single system chassis designed specifically for mounting in an equipment rack.
Card	A loose device or circuit board intended to be installed in a system or other enclosure.
Cartridge	A small self-contained system intended to be plugged into a multi-system chassis.
Row	A collection of equipment racks.
Pod	A collection of equipment racks in a large, likely transportable, container.
Expansion	A chassis which expands the capabilities or capacity of another chassis.
Sidecar	A chassis that mates mechanically with another chassis to expand its capabilities or capacity.
Zone	A logical division or the portion of a physical chassis that contains multiple devices or systems that cannot be physically separated.
Sled	An enclosed or semi-enclosed, system chassis which must be plugged into a multi-system chassis to function normally similar to a blade type chassis.
Shelf	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which must be plugged into a multi-system chassis to function normally.
Drawer	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which may be slid into a multi-system chassis.
Module	A small, typically removable, chassis or card which contains devices for a particular subsystem or function.
Component	A small chassis, card, or device which contains devices for a particular subsystem or function.

Member	Description
IPBasedDrive	A chassis in a drive form factor with IP-based network connections.
RackGroup	A group of racks which form a single entity or share infrastructure.
StorageEnclosure	A chassis which encloses storage.
Other	A chassis that does not fit any of these definitions.

Table 13. Links Attributes

Attribute	Type	Nullable	Description
ComputerSystems	Collection(ComputerSystem.ComputerSystem)	True	The value of this property shall be a reference to the resource. This physical container is associated with and shall reference a resource of type ComputerSystem. If a ComputerSystem is also referenced in a Chassis that is referenced in a Contains link from this resource, that ComputerSystem shall not be referenced in this Chassis.
ManagedBy	Collection(Manager.Manager)	True	The value of this property shall be a reference to the resource that manages this chassis and shall reference a resource of type Manager.
ContainedBy	Chassis.Chassis	False	The value of this property shall be a reference to the resource that represents the chassis that contains this chassis and shall be of type Chassis.
Contains	Collection(Chassis.Chassis)	True	The value of this property shall be a reference to the resource that represents the chassis that this chassis contains and shall be of type Chassis.
PoweredBy	Collection(Resource.Item)	True	The value of this property shall be an array of IDs, containing pointers consistent with JSON* pointer syntax to the resource that powers this chassis.
CooledBy	Collection(Resource.Item)	True	The value of this property shall be an array of IDs, containing pointers consistent with JSON pointer syntax, to the resource that cools this chassis.
ManagersInChassis	Collection(Manager.Manager)	True	The value of this property shall reference one or more Manager type resources that are in this Chassis.

Attribute	Type	Nullable	Description
Drives	Collection(Drive.Drive)	True	The value of this property shall reference one or more Drive type resources that are in this Chassis.
Storage	Collection(Storage.Storage)	True	The value of this property shall reference one or more Storage type resources that are connected to or contained inside this Chassis.
PCIeDevices	Collection(PCIeDevice.PCIeDevice)	True	The value of this property shall reference one or more PCIeDevices type resources.

Table 14. Intel® RSD OEM extensions: ChassisLinks Attributes

Attribute	Type	Nullable	Description
EthernetSwitches	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	The value of this property shall reference one or more EthernetSwitch type resources that are in this Chassis.

Table 15. Chassis Attributes

Attribute	Type	Nullable	Description
Location	Intel.Oem.Location	True	Chassis location in relation to its parent.

4.8.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.8.1.1 GET

```
GET /redfish/v1/Chassis/Blade1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis/Members/$entity",
  "@odata.id": "/redfish/v1/Chassis/Blade1",
  "@odata.type": "#Chassis.v1_7_0.Chassis",
  "Id": "Blade1",
  "ChassisType": "Blade",
  "Name": "name-as-string",
  "Description": "description-as-string",
  "Manufacturer": "Intel Corporation",
  "Model": "model-as-string",
  "SKU": "sku-as-string",
  "SerialNumber": "serial-number-as-string",
  "PartNumber": "part-number-as-string",
  "AssetTag": null,
  "IndicatorLED": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
```

```
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Chassis",
      "Location": {
        "Id": "Blade1",
        "ParentId": "Sled1"
      }
    }
  },
  "Links": {
    "@odata.type": "#Chassis.v1_7_0.Links",
    "Contains": [],
    "Switches": [],
    "ContainedBy": {
      "@odata.id": "/redfish/v1/Chassis/Sled1"
    },
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/System1"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/VirtualBMC1"
      }
    ],
    "ManagersInChassis": [
      {}
    ],
    "Storage": [
      {
        "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA"
      }
    ],
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
      }
    ],
    "PCIeDevices": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
      }
    ],
    "Oem": {
      "Intel_Rackscale": {
        "EthernetSwitches": []
      }
    }
  },
  "UUID": null
}
```


4.8.1.2 PUT

Operation is not allowed on this resource.

4.8.1.3 PATCH

Request:

```
PATCH /redfish/v1/Chassis/1
Content-Type: application/json
{
  "AssetTag": "Chassis1",
  "Oem": {
    "Intel_RackScale": {
      "Location": {
        "Id": "Blade1"
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.8.1.4 POST

Operation is not allowed on this resource.

4.8.1.5 DELETE

Operation is not allowed on this resource.

4.9 Computer System Collection

The Computer System Collection resource provides a collection of all computer systems managed by this service.

Table 16. ComputerSystemCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(ComputerSystem.ComputerSystem)	True	Contains the members of this collection.

4.9.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.9.1.1 GET

Request:

```
GET /redfish/v1/Systems
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems",
  "@odata.id": "/redfish/v1/Systems",
  "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
  "Name": "Computer System Collection",
  "Description": "description-as-string",
```

```
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1"
    }
  ]
}
```

4.9.1.2 PUT

Operation is not allowed on this resource.

4.9.1.3 PATCH

Operation is not allowed on this resource.

4.9.1.4 POST

Operation is not allowed on this resource.

4.9.1.5 DELETE

Operation is not allowed on this resource.

4.10 Computer Systems

This schema defines a computer system and its respective properties. A computer system represents a machine (physical or virtual) and the local resources such as memory, CPU, and other devices that can be accessed from that machine.

Details of this resource are described in the metadata file: `ComputerSystem_v1.xml`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 17. Computer System Attributes

Attribute	Type	Nullable	Description
`SystemType`	`ComputerSystem.v1_0_0.SystemType`	False	An enumeration that indicates the kind of system this resource represents.
`Links`	`ComputerSystem.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`AssetTag`	`Edm.String`	True	The value of this property contains the value of the asset tag of the system.
`Manufacturer`	`Edm.String`	True	The value of this property contains a value that represents the manufacturer of the system.

Attribute	Type	Nullable	Description
Model	Edm.String	True	The value of this property contains information about how the manufacturer references this system. This is typically the product name, without the manufacturer name.
SKU	Edm.String	True	The value of this property contains the Stock Keeping Unit (SKU) for the system.
SerialNumber	Edm.String	True	The value of this property contains the serial number for the system.
PartNumber	Edm.String	True	The value of this property contains the part number for the system (defined by the manufacturer).
UUID	Resource.UUID	True	The value of this property is used to contain a universal unique identifier number for the system. RFC4122 describes methods that can be used to create the value. The value should be considered opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID. If the system supports SMBIOS, the value of the property should be formed by following the SMBIOS 2.6+ recommendation for converting the SMBIOS 16-byte UUID structure into the Redfish canonical xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx string format so that the property value matches the byte order presented by current OS APIs such as WMI and dmidecode.
HostName	Edm.String	True	The value of this property shall be the host name for this system, as reported by the operating system or hypervisor. This value is typically provided to the Manager by a service running in the host operating system.
IndicatorLED	ComputerSystem.v1_0_0.IndicatorLED	True	The value of this property shall contain the indicator light state for the indicator light associated with this system.
PowerState	ComputerSystem.v1_0_0.PowerState	True	The value of this property shall contain the power state of the system.

Attribute	Type	Nullable	Description
Boot	ComputerSystem.v1_0_0.Boot	False	This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.
BiosVersion	Edm.String	True	The value of this property shall be the version string of the currently installed and running BIOS (for x86 systems). For other systems, the value may contain a version string representing the primary system firmware.
ProcessorSummary	ComputerSystem.v1_0_0.ProcessorSummary	False	This object shall contain properties which describe the central processors for the current resource.
MemorySummary	ComputerSystem.v1_0_0.MemorySummary	False	This object shall contain properties which describe the central memory for the current resource.
Actions	ComputerSystem.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	
Processors	ProcessorCollection.ProcessorCollection	False	The value of this property shall be a link to a collection of type ProcessorCollection.
EthernetInterfaces	EthernetInterfaceCollection.EthernetInterfaceCollection	False	The value of this property shall be a link to a collection of type EthernetInterfaceCollection.
SimpleStorage	SimpleStorageCollection.SimpleStorageCollection	False	The value of this property shall be a link to a collection of type SimpleStorageCollection.
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall be a link to a collection of type LogServiceCollection.
TrustedModules	Collection(ComputerSystem.v1_1_0.TrustedModules)	False	This object shall contain an array of objects with properties which describe the trusted modules for the current resource.
SecureBoot	SecureBoot.SecureBoot	False	The value of this property shall be a link to a resource of type SecureBoot.
Bios	Bios.Bios	False	The value of this property shall be a link to a resource of type Bios that lists the BIOS settings for this system.
Memory	MemoryCollection.MemoryCollection	False	The value of this property shall be a link to a collection of type MemoryCollection.
Storage	StorageCollection.StorageCollection	False	The value of this property shall be a link to a collection of type StorageCollection.

Attribute	Type	Nullable	Description
HostingRoles	Collection(ComputerSystem.v1_2_0.HostingRole)	False	The values of this collection shall be the hosting roles supported by this computer system.
HostedServices	ComputerSystem.v1_2_0.HostedServices	False	The values of this collection shall describe services supported by this computer system.
PCIeDevices	Collection(PCIeDevice.PCIeDevice)	True	The value of this property shall be an array of references of type PCIeDevice.
PCIeFunctions	Collection(PCIeFunction.PCIeFunction)	True	The value of this property shall be an array of references of type PCIeFunction.
MemoryDomains	MemoryDomainCollection.MemoryDomainCollection	True	The value of this property shall be a link to a collection of type MemoryDomainCollection.
NetworkInterfaces	NetworkInterfaceCollection.NetworkInterfaceCollection	False	The value of this property shall be a link to a collection of type NetworkInterfaceCollection.
HostWatchdogTimer	ComputerSystem.v1_5_0.WatchdogTimer	False	This object shall contain properties which describe the host watchdog timer functionality for this ComputerSystem.
SubModel	Edm.String	True	The value of this property shall contain the information about the sub-model (or configuration) of the system. This shall not include the model/product name or the manufacturer name.
Redundancy	Collection(Redundancy.Redundancy)	True	If present, each entry shall reference a redundancy entity that specifies a kind and level of redundancy and a collection (RedundancySet) of other ComputerSystems that provide the specified redundancy to this ComputerSystem.

Refer to Table 18 for Intel® RSD OEM extensions:

Table 18. ComputerSystem Attributes

Attribute	Type	Nullable	Description
PCIeConnectionId	Collection(Edm.String)	True	This property shall contain an array of the string identifying cable(s) connected to this port. This is crucial for topology discovery.
PciDevices	Collection(Intel.Oem.PciDevice)	False	This indicates array of the PCI devices present in computer system

Attribute	Type	Nullable	Description
ProcessorSockets	Edm.Int64	True	This indicates number of memory sockets available in the system
MemorySockets	Edm.Int64	True	This indicates number of memory sockets available in the system
UserModeEnabled	Edm.Boolean	True	This property shall represent current platform mode. When enabled update of FW components should be blocked on in-band interfaces.
InitiatorConfiguration	Intel.Oem.InitiatorConfiguration	True	This property contains information for NVMe-oF* initiator software and FPGA-oF initiator software running on the computer system, such as the network address of the Discovery Service.
TrustedExecutionTechnologyEnabled	Edm.Boolean	True	This property shall represent current Intel® Trusted Execution Technology state.
PerformanceConfiguration	Intel.Oem.SystemCpuPerformanceConfiguration	True	This property shall be used to manage the current and available performance configurations.
Metrics	ComputerSystemMetrics.ComputerSystemMetrics	False	A reference to the Metrics associated with this ComputerSystem.

4.10.1.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.10.1.1.1 GET (PSME Compute)

Request:

```
GET /redfish/v1/Systems/System1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.id": "/redfish/v1/Systems/System1",
  "@odata.type": "#ComputerSystem.v1_5_0.ComputerSystem",
  "Id": "System1",
  "Name": "My Computer System",
  "Description": "Description of server",
  "SystemType": "Physical",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "2M220100SL",
  "PartNumber": "Computer1",
  "UUID": "00000000-0000-0000-0000-000000000000",
```


```
  "HostName": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "IndicatorLED": "Off",
  "PowerState": "On",
  "Boot": {
    "@odata.type": "#ComputerSystem.v1_1_0.Boot",
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Pxe",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None",
      "Pxe",
      "Hdd",
      "RemoteDrive"
    ],
    "BootSourceOverrideMode": "Legacy",
    "BootSourceOverrideMode@Redfish.AllowableValues": [
      "Legacy",
      "UEFI"
    ]
  },
  "BiosVersion": "P79 v1.00 (09/20/2013)",
  "ProcessorSummary": {
    "Count": 8,
    "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    }
  },
  "MemorySummary": {
    "TotalSystemMemoryGiB": 16.0,
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    }
  },
  "Processors": {
    "@odata.id": "/redfish/v1/Systems/System1/Processors"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces"
  },
  "Storage": {
    "@odata.id": "/redfish/v1/Systems/System1/Storage"
  },
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory"
  },
  "PCIeDevices": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
    }
  ],
  "PCIeFunctions": [],
  "TrustedModules": [
```

```
    {
      "@odata.type": "#ComputerSystem.v1_3_0.TrustedModules",
      "FirmwareVersion": "0.001",
      "InterfaceType": "TPM2_0",
      "Status": {
        "State": "Enabled",
        "Health": null,
        "HealthRollup": null
      },
      "Oem": {},
      "FirmwareVersion2": null,
      "InterfaceTypeSelection": "OemMethod"
    }
  ],
  "Links": {
    "@odata.type": "#ComputerSystem.v1_2_0.Links",
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/4"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "Endpoints": [],
    "Oem": {}
  },
  "Actions": {
    "#ComputerSystem.Reset": {
      "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
      "ResetType@Redfish.AllowableValues": [
        "On",
        "ForceOff",
        "GracefulShutdown",
        "ForceRestart",
        "Nmi",
        "GracefulRestart",
        "ForceOn",
        "PushPowerButton"
      ]
    },
    "Oem": {
      "#Intel.Oem.ChangeTPMState": {
        "target": "/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState",
        "InterfaceType@Redfish.AllowableValues": [
          "TPM1_2",
          "TPM2_0"
        ]
      },
      "#Intel.Oem.EraseOptaneDCPersistentMemory": {
        "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.EraseOptaneDCPersistentMemory"
      }
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ComputerSystem",
      "PciDevices": [
```


```
        {
          "VendorId": "0x8086",
          "DeviceId": "0x1234"
        }
      ],
      "ProcessorSockets": 8,
      "MemorySockets": 8,
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "UserModeEnabled": false,
      "TrustedExecutionTechnologyEnabled": false,
      "Metrics": {
        "@odata.id": "/redfish/v1/Systems/System1/Metrics"
      },
      "PerformanceConfiguration": {
        "CurrentConfigurationId": 1,
        "Configurations": [
          {
            "@odata.type": "Intel.Oem.SpeedSelectConfiguration",
            "ConfigurationId": 0,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "ActiveCoresPerCpu": 18,
            "BaseCoreFrequency": 1600
          },
          {
            "@odata.type": "Intel.Oem.SpeedSelectConfiguration",
            "ConfigurationId": 1,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "ActiveCoresPerCpu": 14,
            "BaseCoreFrequency": 2800
          },
          {
            "@odata.type": "Intel.Oem.PrioritizedBaseFrequency",
            "ConfigurationId": 2,
            "Type": "PrioritizedBaseFrequency",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "HighPriorityCoreCountPerCpu": 4,
            "HighPriorityBaseCoreFrequency": 2600,
            "LowPriorityCoreCountPerCpu": 14,
            "LowPriorityBaseCoreFrequency": 1800
          }
        ]
      }
    }
  },
  "NetworkInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces"
  }
}
```


4.10.1.2 GET (PSME PCIe* Fabric)

This resource represents a logical system containing PCIe* devices (no CPU or memory).

Request:

```
GET /redfish/v1/Systems/System2
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.id": "/redfish/v1/Systems/System2",
  "@odata.type": "#ComputerSystem.v1_5_0.ComputerSystem",
  "Id": "System2",
  "Name": "My Computer System",
  "Description": "Description of server",
  "SystemType": "Physical",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "2M220100SL",
  "PartNumber": "Computer1",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "HostName": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "IndicatorLED": null,
  "PowerState": "On",
  "Boot": {
    "@odata.type": "#ComputerSystem.v1_1_0.Boot",
    "BootSourceOverrideEnabled": "Disabled",
    "BootSourceOverrideTarget": "None",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None"
    ],
    "BootSourceOverrideMode": null,
    "BootSourceOverrideMode@Redfish.AllowableValues": []
  },
  "BiosVersion": null,
  "ProcessorSummary": {
    "Count": null,
    "Model": null,
    "Status": {
      "State": null,
      "Health": null,
      "HealthRollup": null
    }
  },
  "MemorySummary": {
    "TotalSystemMemoryGiB": null,
    "Status": {
      "State": null,
      "Health": null,
      "HealthRollup": null
    }
  },
  "Processors": {
    "@odata.id": "/redfish/v1/Systems/System2/Processors"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System2/EthernetInterfaces"
```


```
  },
  "Storage": {
    "@odata.id": "/redfish/v1/Systems/System2/Storage"
  },
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory"
  },
  "PCIeDevices": [
    {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/PCIeDevices/Device1"
    }
  ],
  "PCIeFunctions": [],
  "TrustedModules": [],
  "Links": {
    "@odata.type": "#ComputerSystem.v1_2_0.Links",
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/4"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "Endpoints": [],
    "Oem": {}
  },
  "Actions": {
    "#ComputerSystem.Reset": {
      "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
      "ResetType@Redfish.AllowableValues": [
        "On",
        "ForceOff",
        "GracefulShutdown",
        "ForceRestart",
        "Nmi",
        "GracefulRestart",
        "ForceOn",
        "PushPowerButton"
      ]
    },
    "Oem": {
      "#Intel.Oem.ChangeTPMState": {
        "target": "/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState",
        "InterfaceType@Redfish.AllowableValues": [
          "TPM1_2",
          "TPM2_0"
        ]
      }
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ComputerSystem",
      "PciDevices": [],
      "ProcessorSockets": null,
      "MemorySockets": null,
      "PCIeConnectionId": [],
      "UserModeEnabled": false,
```

```
      "TrustedExecutionTechnologyEnabled": false,
      "Metrics": {
        "@odata.id": "/redfish/v1/Systems/System2/Metrics"
      },
      "PerformanceConfiguration": null
    }
  }
}
```

4.10.1.3 PUT

Operation is not allowed on this resource.

4.10.1.4 PATCH

Following properties can be updated by the `PATCH` operation:

Table 19. ComputerSystem Attributes

Attribute	Type	Nullable	Description
`Boot`	`ComputerSystem.v1_0_0.Boot`	False	This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.
`AssetTag`	`Edm.String`	True	The value of this property shall contain the value of the asset tag of the system.

The OEM object properties in Table 20 describe the attributes of the Computer System Attributes.

Table 20. ComputerSystem Attributes

Attribute	Type	Nullable	Description
`PerformanceConfiguration`	`Intel.Oem.SystemCpuPerformanceConfiguration`	True	This property shall be used to manage the current and available performance configurations.
`UserModeEnabled`	`Edm.Boolean`	True	This property shall represent current platform mode. When enabled update of FW components should be blocked on in-band interfaces.

Table 21 describes "`Boot`" properties that can be patched.

Table 21. Boot Attributes

Attribute	Type	Nullable	Description
`BootSourceOverrideEnabled`	`ComputerSystem.v1_0_0.BootSourceOverrideEnabled`	True	The value of this property shall be **`Once`** if this is a one-time boot override and **`Continuous`** if this selection should remain active until cancelled. If the property value is set to **`Once`**, the value will be reset back to Disabled after the `BootSourceOverrideTarget` actions have been completed.

Attribute	Type	Nullable	Description
BootSourceOverrideTarget	ComputerSystem.BootSource	True	The value of this property shall contain the source to boot the system from, overriding the normal boot order. The valid values for this property are specified through the Redfish.AllowableValues annotation. Pxe indicates to PXE boot from the primary NIC; Floppy, Cd, Usb, Hdd indicates to boot from their devices respectively. BiosSetup indicates to boot into the native BIOS screen setup. Utilities and Diags indicate to boot from the local utilities or diags partitions. UefiTarget indicates to boot from the UEFI device path found in UefiTargetBootSourceOverride. UefiBootNext indicates to boot from the UEFI BootOptionReference found in BootNext.
BootSourceOverrideMode	ComputerSystem.v1_1_0.BootSourceOverrideMode	True	The value of this property shall be Legacy for non-UEFI BIOS boot or UEFI for UEFI boot from boot source specified in BootSourceOverrideTarget property.

Table 22 describes "PerformanceConfiguration" properties that can be patched:

Table 22. SystemCpuPerformanceConfiguration Attributes

Attribute	Type	Nullable	Description
CurrentConfigurationId	Edm.Int64	True	This property shall match the ConfigurationId of the configuration which is currently active.

Note: Using PATCH with the CurrentConfigurationID attribute triggers a reboot of ComputerSystem.

Request:

```
PATCH /redfish/v1/Systems/System1
Content-Type: application/json
{
  "Boot": {
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Pxe",
    "BootSourceOverrideMode": "UEFI"
  },
  "AssetTag": "Storage System",
  "Oem": {
    "Intel_RackScale": {
      "UserModeEnabled": true,
      "PerformanceConfiguration": {
        "CurrentConfigurationId": 0
      }
```

```
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.10.1.5 POST

The following sections specify the HTTP methods available on this endpoint.

4.10.1.5.1 Reset Computer System

Request:

```
POST /redfish/v1/Systems/System1/Actions/ComputerSystem.Reset
Content-Type: application/json
{
  "ResetType": "On"
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.10.1.5.2 Change TPM State and/or Version

Table 23 contains the parameters of this action.

Note: Triggering this action causes the system to reboot.

Table 23. Attributes of Action for changing TPM State

Attribute	Type	Required	Description
DeviceEnabled	Boolean	Yes	This defines the Trust Platform Module (TPM) device state as a result of triggering this action.
InterfaceType	String (enum)	No	Required interface type of the Trusted Module. Allowed values are defined in metadata ComputerSystem_v1.xml Please refer to Redfish@AllowableValues for service supported types.
ClearOwnership	Boolean	No	This indicates if TPM ownership should be cleared.

Request:

```
POST /redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState
Content-Type: application/json
{
  "DeviceEnabled": true,
  "InterfaceType": "TPM2_0",
  "ClearOwnership": true
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.10.1.5.3 Erase Intel® Optane™ DC Memory Modules

This action applies to all Intel® Optane™ memory modules on the system. Table 24 contains the parameters of the Erase operation. If any of the parameters is not specifying or is false, its corresponding action will not be performed. If there are no Optane memory modules in the system, the service will return 400 Bad Request with an appropriate error message.

Note: Triggering this action with any type of erasure (with any of the parameters set to true) causes the system to reboot.

Table 24. Attributes of Action for Clearing Optane Memory Modules

Attribute	Type	Required	Description
ResetConfiguration	Boolean	No	Indicates that the Platform Configuration Data should be overwritten.
EraseConfigurationKeys	Boolean	No	Indicates that the configuration keys should be securely erased.

Request:

```
POST /redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.EraseOptaneDCPersistentMemory
Content-Type: application/json
{
  "ResetConfiguration": true,
  "EraseConfigurationKeys": false
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.10.1.6 DELETE

Operation is not allowed on this resource.

4.11 ComputerSystemMetrics

Properties details are available in ComputerSystemMetrics_v1.xml metadata file.

Table 25. ComputerSystemMetrics Attributes

Attribute	Type	Nullable	Description
ProcessorBandwidthPercent	Edm.Decimal	True	The value of this property shall be CPU Utilization on all the available CPUs in Percent. This metric is aggregate of all Processor sockets of this Computer System.

Attribute	Type	Nullable	Description
MemoryBandwidthPercent	Edm.Decimal	True	The value of this property shall be Memory Utilization on all the available Memory channels in Percent. This metric is aggregate of all memory controllers on all Processor sockets of this Computer System.
MemoryThrottledCyclesPercent	Edm.Decimal	True	The value of this property shall be the percentage of memory cycles that were throttled due to power limiting. This metric is aggregate of all memory controllers on all Processor sockets of this Computer System.
ProcessorPowerWatt	Edm.Decimal	True	The value of this property shall be global power for CPU domain (all packages) in Watts.
MemoryPowerWatt	Edm.Decimal	True	The value of this property shall be global power for Memory domain (all packages and channels) in Watts.
IOBandwidthGBps	Edm.Decimal	True	The value of this property shall be IO Bandwidth rate in ComputerSystem resource based on PCIe and DMI data transmission rate in GB/s.
Health	Collection(Edm.String)	True	The value of this property shall be Computer System Health as a discrete sensor reading.

4.11.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.11.1.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/ComputerSystem/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Metrics",
  "@odata.type": "#ComputerSystemMetrics.v1_0_0.ComputerSystemMetrics",
  "Name": "Computer System Metrics for System1",
  "Description": "description-as-string",
  "Id": "Metrics for System1",
  "ProcessorBandwidthPercent": 17,
  "MemoryBandwidthPercent": 23,
  "MemoryThrottledCyclesPercent": 13,
  "ProcessorPowerWatt": 120,
  "MemoryPowerWatt": 48,
```

```
  "IOBandwidthGBps": 4,
  "Health": [
    "OK"
  ]
}
```

4.11.1.2 PUT

Operation is not allowed on this resource.

4.11.1.3 PATCH

Operation is not allowed on this resource.

4.11.1.4 POST

Operation is not allowed on this resource.

4.11.1.5 DELETE

Operation is not allowed on this resource.

4.12 Processor Collection

Processor collection resource provides collection of all processors available in a blade.

Table 26. ProcessorCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Processor.Processor)	True	Contains the members of this collection.

4.12.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.12.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Processors/#entity",
  "@odata.id": "/redfish/v1/Systems/System1/Processors",
  "@odata.type": "#ProcessorCollection.ProcessorCollection",
  "Name": "Processors Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1"
    },
    {
```

```
      "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
    }
  ]
}
```

4.12.1.2 PUT

Operation is not allowed on this resource.

4.12.1.3 PATCH

Operation is not allowed on this resource.

4.12.1.4 POST

Operation is not allowed on this resource.

4.12.1.5 DELETE

Operation is not allowed on this resource.

4.13 Processor

The Processor resource provides detailed information about a single processor identified by `{ProcessorID}`.

Properties' details available in `Processor_v1.xml` metadata file. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 27. Processor Attributes

Attribute	Type	Nullable	Description
`Socket`	`Edm.String`	True	This property shall contain the string which identifies the physical location or socket of the processor.
`ProcessorType`	`Processor.v1_0_0.ProcessorType`	True	This property shall contain the string which identifies the type of processor contained in this Socket.
`ProcessorArchitecture`	`Processor.v1_0_0.ProcessorArchitecture`	True	This property shall contain the string which identifies the architecture of the processor contained in this socket.
`InstructionSet`	`Processor.v1_0_0.InstructionSet`	True	This property shall contain the string which identifies the instruction set of the processor contained in this socket.
`ProcessorId`	`Processor.v1_0_0.ProcessorId`	False	This object shall contain identification information for this processor.
`Status`	`Resource.Status`	False	-
`Manufacturer`	`Edm.String`	True	This property shall contain a string which identifies the manufacturer of the processor.

Attribute	Type	Nullable	Description
Model	Edm.String	True	This property shall indicate the model information as provided by the manufacturer of this processor.
MaxSpeedMHz	Edm.Int64	True	This property shall indicate the maximum rated clock speed of the processor in MHz.
TotalCores	Edm.Int64	True	This property shall indicate the total count of independent processor cores contained within this processor.
TotalThreads	Edm.Int64	True	This property shall indicate the total count of independent execution threads supported by this processor.
Links	Processor.v1_1_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Processor.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
Location	Resource.Location	False	-
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.
SubProcessors	ProcessorCollection.ProcessorCollection	False	The value of this property shall be a link to a collection of type ProcessorCollection.

Table 28. Links Attributes

Attribute	Type	Nullable	Description
Chassis	Chassis.Chassis	False	The value of this property shall be a reference to a resource of type Chassis that represent the physical container associated with this processor.

Table 29. Processor Attributes

Attribute	Type	Nullable	Description
Brand	Intel.Oem.ProcessorBrand	True	This property shall represent the brand of processor.
Capabilities	Collection(Edm.String)	True	This property shall represent array of processor capabilities (like reported in /proc/cpuinfo flags)
IntegratedMemory	Collection(Intel.Oem.ProcessorMemory)	True	The value of this property shall be a reference to the resources that this processor is associated with and shall reference a resource of type Endpoint.

Attribute	Type	Nullable	Description
ThermalDesignPowerWatt	Edm.Decimal	True	Thermal Design Power (TDP) of this processor.
FPGA	Intel.Oem.FPGA	True	For FPGA ProcessorType, this property will expose FPGA-specific data.
ExtendedIdentificationRegisters	Intel.Oem.ExtendedIdentificationRegister	True	This property shall include the extended raw CPUID* instruction output for (that is for all possible combinations of input registers) as provided by the manufacturer of this processor.
Metrics	ProcessorMetrics.ProcessorMetrics	False	A reference to the Metrics associated with this Processor.
PCIeFunction	PCIeFunction.PCIeFunction	True	A reference to the PCIe* function that provides this processor functionality.

4.13.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.13.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors/CPU1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Processor.Processor",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1",
  "@odata.type": "#Processor.v1_3_0.Processor",
  "Description": "description-as-string",
  "Name": "Processor",
  "Id": "CPU1",
  "Socket": "CPU 1",
  "ProcessorType": "CPU",
  "ProcessorArchitecture": "x86",
  "InstructionSet": "x86-64",
  "Manufacturer": "Intel(R) Corporation",
  "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
  "ProcessorId": {
    "VendorId": "GenuineIntel",
    "IdentificationRegisters": "0x34AC34DC8901274A",
    "EffectiveFamily": "0x42",
    "EffectiveModel": "0x61",
    "Step": "0x1",
    "MicrocodeInfo": "0x429943"
  },
  "MaxSpeedMHz": 3700,
  "TotalCores": 8,
  "TotalThreads": 16,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
```

```
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Processor",
      "Brand": "E5",
      "Capabilities": [
        "sse",
        "sse2",
        "sse3"
      ],
      "Metrics": {
        "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics"
      },
      "ExtendedIdentificationRegisters": {
        "EAX_00h": "0x0429943FFFFFFFFF",
        "EAX_01h": "0x0429943FFFFFFFFF",
        "EAX_02h": "0x0429943FFFFFFFFF",
        "EAX_03h": "0x0429943FFFFFFFFF",
        "EAX_04h": "0x0429943FFFFFFFFF",
        "EAX_05h": "0x0429943FFFFFFFFF",
        "EAX_07h": "0x0429943FFFFFFFFF",
        "EAX_80000000h": "0x0429943FFFFFFFFF",
        "EAX_80000001h": "0x0429943FFFFFFFFF",
        "EAX_80000002h": "0x0429943FFFFFFFFF",
        "EAX_80000003h": "0x0429943FFFFFFFFF",
        "EAX_80000004h": "0x0429943FFFFFFFFF",
        "EAX_80000005h": "0x0429943FFFFFFFFF",
        "EAX_80000006h": "0x0429943FFFFFFFFF",
        "EAX_80000007h": "0x0429943FFFFFFFFF",
        "EAX_80000008h": "0x0429943FFFFFFFFF"
      }
    }
  }
}
```


4.13.1.2 GET (FPGA)

Request:

```
GET /redfish/v1/Systems/System1/Processors/FPGA1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Processor.Processor",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1",
  "@odata.type": "#Processor.v1_3_0.Processor",
  "Description": "description-as-string",
  "Name": "Accelerator",
  "Id": "FPGA1",
  "Socket": "PCIe1",
  "ProcessorType": "FPGA",
  "ProcessorArchitecture": "OEM",
  "InstructionSet": "OEM",
  "Manufacturer": "Intel(R) Corporation",
  "Model": "Arria10",
```

```
  "MaxSpeedMHz": null,
  "TotalCores": null,
  "TotalThreads": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "MaxTDPWatts": 150,
  "Links": {
    "Oem": {
      "Intel_Rackscale": {
        "@odata.type": "#Intel.Oem.ProcessorLinks",
        "Endpoints": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGAoF/Endpoints/1"
          }
        ],
        "ConnectedProcessors": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/Processors/1"
          }
        ]
      }
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Processor",
      "Brand": null,
      "Capabilities": [],
      "PCIeFunction": {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Devices/1/Functions/1"
      },
      "FPGA": {
        "Type": "Discrete",
        "Model": "Stratix10",
        "FwId": "0x6400002fc614bb9",
        "FwManufacturer": "Intel(R) Corporation",
        "FwVersion": "Blue v.1.00.86",
        "HostInterface": "8xPCIe-4",
        "ExternalInterfaces": [
          "4x10G"
        ],
        "SidebandInterface": "I2C",
        "PCIeVirtualFunctions": 1,
        "ProgrammableFromHost": true,
        "ReconfigurationSlots": 1,
        "ReconfigurationSlotsDetails": [
          {
            "SlotId": "AFU0",
            "UUID": "00000000-0000-0000-0000-000000000000",
            "ProgrammableFromHost": true
          }
        ],
        "Erased" : true
      },
      "Metrics": {
        "@odata.id":
"/redfish/v1/Systems/System1/Processors/FPGA1/Oem/Intel_RackScale/Metrics"
      },
```

```
      "OnPackageMemory": [
        {
          "MemoryType": "HBM2",
          "CapacityMiB": 512,
          "SpeedMHz": 1066
        }
      ]
    }
  }
}
```

4.13.1.3 PUT

Operation is not allowed on this resource.

4.13.1.4 PATCH

The following property of the FPGA OEM object properties can be patched:

Table 30. FPGA Attributes

Attribute	Type	Nullable	Description
Erased	EDM Boolean	True	This property shall represent the erase state of an FPGA.

Request:

```
PATCH /redfish/v1/Systems/System1/Processors/FPGA1
Content-Type: application/json
{
  "Oem": {
    "Intel_RackScale": {
      "FPGA": {
        "Erased": false
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.13.1.5 POST

The `POST` action is used to `SecureErase` an FPGA processor. This action works only on FPGAs currently not assigned to any zones. When the action is complete, the FPGA's Erased property will change to `true`.

Request:

```
POST /redfish/v1/Systems/System1/Processors/FPGA1/Actions/Oem/Intel.Oem.SecureErase
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.13.1.6 DELETE

Operation is not allowed on this resource.

4.14 Processor Metrics

Properties details available in `ProcessorMetrics_v1.xml` metadata file.

Table 31. ProcessorMetrics Attributes

Attribute	Type	Nullable	Description
`BandwidthPercent`	`Edm.Decimal`	True	The value of this property shall be CPU Utilization on specific CPU in %.
`AverageFrequencyMHz`	`Edm.Decimal`	True	The value of this property shall be average frequency across all enabled cores in MHz.
`ThrottlingCelsius`	`Edm.Decimal`	True	The value of this property shall be CPU margin to throttle based on an offset between max temperature resource can operate and its current temperature.
`TemperatureCelsius`	`Edm.Decimal`	True	The value of this property shall be temperature of the Processor resource in Celsius.
`ConsumedPowerWatt`	`Edm.Decimal`	True	The value of this property shall be power for specific CPU domain in Watts.

Attribute	Type	Nullable	Description
Health	Collection(Edm.String)	True	The value of this property shall be Processor Health as a discrete sensor reading.
FrequencyRatio	Edm.Decimal	True	The value of this property shall be Frequency relative to nominal CPU frequency of the Processor resource.
L3Miss	Edm.Decimal	True	The value of this property shall be L3 cache line misses of the Processor resource in millions.
L3HitRatio	Edm.Decimal	True	The value of this property shall be L3 cache hit ratio of the Processor resource.
L3Mpi	Edm.Decimal	True	The value of this property shall be L3 cache misses per instruction of the Processor resource.
LlcOccupancyBytes	Edm.Int64	True	The value of this property shall be total last level cache occupancy of the Processor resource in bytes.
LlcOccupancyPercent	Edm.Decimal	True	The value of this property shall be total last level cache occupancy percentage of the Processor resource.
MblBytes	Edm.Int64	True	The value of this property shall be local memory bandwidth usage of the Processor resource in bytes.
MbrBytes	Edm.Int64	True	The value of this property shall be remote memory bandwidth usage of the Processor resource in bytes.
KernelPercent	Edm.Decimal	True	The value of this property shall be total percentage of time the processor spend in kernel mode.
UserPercent	Edm.Decimal	True	The value of this property shall be total percentage of time the processor spend in user mode.
CoreMetrics	Collection(ProcessorMetrics.v1_0_0.CoreMetrics)	True	This type shall contain properties that describe this Core of the Processor resource.
Actions	ProcessorMetrics.v1_0_0.Actions	false	The Actions property shall contain the available actions for this resource.

4.14.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.14.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics
Content-Type: application/json
```

Response:

```
GET /redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics
Content-Type: application/json
Response:
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.ProcessorMetrics.ProcessorMetrics",
  "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics",
  "@odata.type": "#Intel_RackScale.ProcessorMetrics.v1_0_0.ProcessorMetrics",
  "Name": "ProcessorMetrics for CPU1",
  "Description": "description-as-string",
  "Id": "Metrics for CPU1",
  "AverageFrequencyMHz": 3014,
  "ThrottlingCelsius": 19,
  "TemperatureCelsius": 73,
  "ConsumedPowerWatt": 153,
  "Health": [
    "FRB1 BIST Failure",
    "Processor Throttled"
  ]
}
```

4.14.1.2 PUT

Operation is not allowed on this resource.

4.14.1.3 PATCH

Operation is not allowed on this resource.

4.14.1.4 POST

Operation is not allowed on this resource.

4.14.1.5 DELETE

Operation is not allowed on this resource.

4.15 Memory Collection

The Memory collection resource provides collection of all memory modules installed in a computer system.

Table 32. MemoryCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Memory.Memory)`	True	Contains the members of this collection.

4.15.1.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.15.1.2 GET

Request:

```
GET /redfish/v1/Systems/System1/Memory
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.type": "#MemoryCollection.MemoryCollection",
  "@odata.id": "/redfish/v1/Systems/System1/Memory",
  "Name": "Memory Collection",
  "Description": "description-as-string",
  "Members@odata.count": 4,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm4"
    }
  ],
  "Oem": {}
}
```

4.15.1.3 PUT

Operation is not allowed on this resource.

4.15.1.4 PATCH

Operation is not allowed on this resource.

4.15.1.5 POST

Operation is not allowed on this resource.

4.15.1.6 DELETE

Operation is not allowed on this resource.

4.16 Memory

Memory resource - provides detailed information about a single memory module identified by `{memoryID}`.

Properties' details available in *`Memory_v1.xml`* metadata file. OEM extensions details available in *`IntelRackScaleOem_v1.xml`*.

Table 33 describes the `Memory` attributes:

Table 33. Memory Attributes

Attribute	Type	Nullable	Description
MemoryType	Memory.v1_0_0.MemoryType	True	The value of this property shall be the type of Memory represented by this resource.
MemoryDeviceType	Memory.v1_0_0.MemoryDeviceType	True	The value of this property shall be the Memory Device Type as defined by SMBIOS.
BaseModuleType	Memory.v1_0_0.BaseModuleType	True	The value of this property shall be the base module type of Memory.
MemoryMedia	Collection(Memory.v1_0_0.MemoryMedia)	False	The value of this property shall be the media types of this Memory.
CapacityMiB	Edm.Int64	True	The value of this property shall be the Memory capacity in MiB.
DataWidthBits	Edm.Int64	True	The value of this property shall be the data width in bits.
BusWidthBits	Edm.Int64	True	The value of this property shall be the bus width in bits.
Manufacturer	Edm.String	True	This property shall contain a string which identifies the manufacturer of the Memory.
SerialNumber	Edm.String	True	This property shall indicate the serial number as provided by the manufacturer of this Memory.
PartNumber	Edm.String	True	This property shall indicate the part number as provided by the manufacturer of this Memory.
AllowedSpeedsMHz	Collection(Edm.Int64)	False	The value of this property shall be the speed supported by this Memory.
FirmwareRevision	Edm.String	True	The value of this property shall be the revision of firmware on the Memory controller.
FirmwareApiVersion	Edm.String	True	The value of this property shall be the version of API supported by the firmware.
MaxTDPMilliWatts	Collection(Edm.Int64)	False	The value of this property shall be the maximum power budgets supported by the Memory in milliwatts.
SecurityCapabilities	Memory.v1_0_0.SecurityCapabilities	False	This object shall contain properties which describe the security capabilities of the Memory.
SpareDeviceCount	Edm.Int64	True	The value of this property shall be the number of unused spare devices available in the Memory. If memory devices fails, the spare device could be used.

Attribute	Type	Nullable	Description
RankCount	Edm.Int64	True	The value of this property shall be number of ranks available in the Memory. The ranks could be used for spare or interleave.
DeviceLocator	Edm.String	True	The value of this property shall be location of the Memory in the platform, typically marked in the silk screen.
MemoryLocation	Memory.v1_0_0.MemoryLocation	False	This object shall contain properties which describe the Memory connection information to sockets and memory controllers.
ErrorCorrection	Memory.v1_0_0.ErrorCorrection	True	The value of this property shall be the error correction scheme supported for this memory.
OperatingSpeedMhz	Edm.Int64	True	The value of this property shall be the operating speed of Memory in MHz or MT/s (mega-transfers per second) as reported by the memory device. Memory devices which operate at their bus speed shall report the operating speed in MHz (bus speed), while memory device which transfer data faster than their bus speed (for example, DDR memory) shall report the operating speed in MT/s (mega-transfers/second). In any case, the reported value shall match the conventionally reported values for the technology utilized by the memory device.
VolatileRegionSizeLimitMiB	Edm.Int64	True	The value of this property shall be the total size of volatile regions in MiB.
PersistentRegionSizeLimitMiB	Edm.Int64	True	The value of this property shall be the total size of persistent regions in MiB.
Regions	Collection(Memory.v1_0_0.RegionSet)	False	The value of this property shall be the memory region information within the Memory.
OperatingMemoryModes	Collection(Memory.v1_0_0.OperatingMemoryModes)	False	The value of this property shall be the memory modes supported by the Memory.
PowerManagementPolicy	Memory.v1_0_0.PowerManagementPolicy	False	This object shall contain properties which describe the power management policy for the current resource.
IsSpareDeviceEnabled	Edm.Boolean	True	The value of this property shall be true if a spare device is enabled for this Memory.

Attribute	Type	Nullable	Description
IsRankSpareEnabled	Edm.Boolean	True	The value of this property shall be true if a rank spare is enabled for this Memory.
Actions	Memory.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Metrics	MemoryMetrics.MemoryMetrics	False	A reference to the Metrics associated with this Memory.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
VolatileRegionNumberLimit	Edm.Int64	True	The value of this property shall be the total number of volatile regions this Memory can support.
PersistentRegionNumberLimit	Edm.Int64	True	The value of this property shall be the total number of persistent regions this Memory can support.
VolatileRegionSizeMaxMiB	Edm.Int64	True	The value of this property shall be the maximum size of a single volatile regions in MiB.
PersistentRegionSizeMaxMiB	Edm.Int64	True	The value of this property shall be the maximum size of a single persistent regions in MiB.
AllocationIncrementMiB	Edm.Int64	True	The value of this property shall be the allocation increment for regions, measured in MiB.
AllocationAlignmentMiB	Edm.Int64	True	The value of this property shall be the alignment boundary on which memory regions are allocated, measured in MiB.
Links	Memory.v1_2_0.Links	False	The Links property, as described by the Redfish* Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
ModuleManufacturerID	Edm.String	True	The value of this property shall be the two byte manufacturer ID of this memory module as defined by JEDEC in JEP-106.
ModuleProductID	Edm.String	True	The value of this property shall be the two byte product ID of this memory module as defined by the manufacturer.
MemorySubsystemControllerManufacturerID	Edm.String	True	The value of this property shall be the two byte manufacturer ID of the memory subsystem controller of this memory module as defined by JEDEC in JEP-106.

Attribute	Type	Nullable	Description
MemorySubsystemControllerProductID	Edm.String	True	The value of this property shall be the two byte product ID of the memory subsystem controller of this memory module as defined by the manufacturer.
VolatileSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the volatile portion memory in MiB.
NonVolatileSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the non-volatile portion memory in MiB.
CacheSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the cache portion memory in MiB.
LogicalSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the logical memory in MiB.
Location	Resource.Location	False	This property shall contain location information of the associated memory.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.

Table 34 shows the RegionSet attributes:

Table 34. MemoryLocation Attributes

Attribute	Type	Nullable	Description
Socket	Edm.Int64	True	Socket number in which Memory is connected.
MemoryController	Edm.Int64	True	Memory controller number in which Memory is connected.
Channel	Edm.Int64	True	Channel number in which Memory is connected.
Slot	Edm.Int64	True	Slot number in which Memory is connected.

Table 35 shows the PowerManagementPolicy attribute:

Table 35. RegionSet Attributes

Attribute	Type	Nullable	Description
RegionId	Edm.String	True	Unique region ID representing a specific region within the Memory.
MemoryClassification	Memory.v1_0_0.MemoryClassification	True	Classification of memory occupied by the given memory region.
OffsetMiB	Edm.Int64	True	Offset with in the Memory that corresponds to the starting of this memory region in MiB.
SizeMiB	Edm.Int64	True	Size of this memory region in MiB.

Table 35 shows the PowerManagementPolicy attributes:

Table 36. PowerManagementPolicy Attributes

Attribute	Type	Nullable	Description
PolicyEnabled	Edm.Boolean	True	Power management policy enabled status.
MaxTDPMilliWatts	Edm.Int64	True	Maximum TDP in milli watts.
PeakPowerBudgetMilliWatts	Edm.Int64	True	Peak power budget in milli watts.
AveragePowerBudgetMilliWatts	Edm.Int64	True	Average power budget in milli watts.

Table 37 shows the SecurityCapabilities attributes:

Table 37. SecurityCapabilities Attributes

Attribute	Type	Nullable	Description
PassphraseCapable	Edm.Boolean	True	Memory passphrase set capability.
MaxPassphraseCount	Edm.Int64	True	Maximum number of passphrases supported for this Memory.
SecurityStates	Collection(Memory.v1_0_0.SecurityStates)	False	Security states supported by the Memory.

For the Intel® RSD OEM extensions, Table 38 describes the Memory attributes.

Table 38. Memory Attributes

Attribute	Type	Nullable	Description
VoltageVolt	Edm.Decimal	True	This property shall represent current voltage of memory module

4.16.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.16.1.1 GET (Legacy DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
  "@odata.type": "#Memory.v1_6_0.Memory",
  "Name": "DRAM",
  "Description": "DDR SDRAM",
  "Id": "Dimm1",
  "MemoryType": "DRAM",
  "MemoryDeviceType": "DDR4",
  "BaseModuleType": "LRMemory",
  "MemoryMedia": [
    "DRAM"
```

```
  ],
```

4.16.1.2 GET (Intel® Optane™ DC DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm2
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2",
  "@odata.type": "#Memory.v1_6_0.Memory",
  "Name": "DCPMM",
  "Description": "Intel(R) Optane DC Persistent Memory Module",
  "Id": "Dimm2",
  "MemoryType": "IntelOptane",
  "MemoryDeviceType": "DDR4",
  "BaseModuleType": "LRDIMM",
  "MemoryMedia": [
    "Proprietary"
  ],
  "CapacityMiB": 131072,
  "DataWidthBits": 64,
  "BusWidthBits": 72,
  "Manufacturer": "Intel",
  "SerialNumber": "000003c5",
  "PartNumber": "8089A21751000003C5",
  "AllowedSpeedsMHz": [
    2133,
    2400,
    2667
  ],
  "FirmwareRevision": "01.00.00.4847",
  "FirmwareApiVersion": "01.09",
  "ModuleManufacturerID": "0x8086",
  "ModuleProductID": "0x097a",
  "MemorySubsystemControllerManufacturerID": "SubsystemVendorID",
  "MemorySubsystemControllerProductID": "SubsystemDeviceID",
  "MaxTDPMilliWatts": [
    240
  ],
  "SecurityCapabilities": {
    "PassphraseCapable": true,
    "MaxPassphraseCount": 3,
    "SecurityStates": [
      "Enabled",
      "Locked"
    ]
  },
  "SpareDeviceCount": 2,
  "RankCount": 1,
  "DeviceLocator": "PROC 1 DIMM A1",
  "MemoryLocation": {
    "Socket": 1,
    "MemoryController": 1,
    "Channel": 1,
    "Slot": 2
  },
```


```
  "ErrorCorrection": "MultiBitECC",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "OperatingSpeedMhz": 2400,
  "VolatileRegionSizeLimitMiB": 98304,
  "PersistentRegionSizeLimitMiB": 32768,
  "Regions": [
    {
      "RegionId": "1",
      "MemoryClassification": "Volatile",
      "OffsetMiB": 0,
      "SizeMiB": 32768
    },
    {
      "RegionId": "2",
      "MemoryClassification": "ByteAccessiblePersistent",
      "OffsetMiB": 32768,
      "SizeMiB": 32768
    },
    {
      "RegionId": "3",
      "MemoryClassification": "Block",
      "OffsetMiB": 65536,
      "SizeMiB": 32768
    },
    {
      "RegionId": "4",
      "MemoryClassification": "Block",
      "OffsetMiB": 98304,
      "SizeMiB": 32768
    }
  ],
  "OperatingMemoryModes": [
    "Volatile",
    "PMEM",
    "Block"
  ],
  "PowerManagementPolicy": {
    "PolicyEnabled": true,
    "MaxTDPMilliWatts": 5000,
    "PeakPowerBudgetMilliWatts": 3400,
    "AveragePowerBudgetMilliWatts": 1983
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2/Metrics"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "Intel.Oem.Memory",
      "VoltageVolt": 1.35
    }
  }
}
```


4.16.1.3 PUT

Operation is not allowed on this resource.

4.16.1.4 PATCH

Operation is not allowed on this resource.

4.16.1.5 POST

Operation is not allowed on this resource.

4.16.1.6 DELETE

Operation is not allowed on this resource.

4.17 Memory Metrics

Properties details available in `MemoryMetrics_v1.xml` metadata file for official Redfish* Memory Metrics and `IntelRackScaleOem_v1.xml` file for Intel® RSD extensions for Memory Metrics.

Note: Current version of RSD implements a subset of all memory metrics. Third Party PSME implementations may choose bigger memory metric set for implementation based on capabilities on underlying hardware/firmware.

Table 39. MemoryMetrics Attributes

Attribute	Type	Nullable	Description
`BlockSizeBytes`	`Edm.Int64`	True	The value of this property shall be the block size in bytes of all structure elements.
`CurrentPeriod`	`MemoryMetrics.v1_0_0.CurrentPeriod`	False	This object shall contain properties which describe the `CurrentPeriod` metrics for the current resource.
`LifeTime`	`MemoryMetrics.v1_0_0.LifeTime`	False	This object shall contain properties which describe the `LifeTime` metrics for the current resource.
`HealthData`	`MemoryMetrics.v1_0_0.HealthData`	False	This object shall contain properties which describe the `HealthData` metrics for the current resource.
`Actions`	`MemoryMetrics.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Table 40. CurrentPeriod Attributes

Attribute	Type	Nullable	Description
`BlocksRead`	`Edm.Int64`	True	The value of this property shall be number of blocks read since reset.
`BlocksWritten`	`Edm.Int64`	True	The value of this property shall be member of blocks written since reset.

Table 41. LifeTime Attributes

Attribute	Type	Nullable	Description
BlocksRead	Edm.Int64	True	The value of this property shall be number of blocks read for the lifetime of the Memory.
BlocksWritten	Edm.Int64	True	The value of this property shall be number of blocks written for the lifetime of the Memory.

Table 42. HealthData Attributes

Attribute	Type	Nullable	Description
RemainingSpareBlockPercentage	Edm.Decimal	True	The value of this property shall be the remaining spare blocks in percentage.
LastShutdownSuccess	Edm.Boolean	True	The value of this property shall be the status of the last shutdown, with true indicating success.
DataLossDetected	Edm.Boolean	True	The value of this property shall be data loss detection status, with true indicating data loss detected.
PerformanceDegraded	Edm.Boolean	True	The value of this property shall be performance degraded mode status, with true indicating performance degraded.
AlarmTrips	MemoryMetrics.v1_0_0.AlarmTrips	False	This object shall contain properties describe the types of alarms that have been raised by the memory.

Intel® RSD OEM extensions:

Table 43. MemoryMetrics Attributes

Attribute	Type	Nullable	Description
TemperatureCelsius	Edm.Decimal	True	The value of this property shall be temperature of the Memory resource in Celsius.
ControllerTemperatureCelsius	Edm.Decimal	True	The value of this property shall be temperature of the Memory controller in Celsius.
BandwidthPercent	Edm.Decimal	True	The value of this property shall be Memory Utilization on specific Memory module in Percent.
ThrottledCyclesPercent	Edm.Decimal	True	The value of this property shall be the percentage of memory cycles that were throttled due to power limiting.
ConsumedPowerWatt	Edm.Decimal	True	The value of this property shall be global power for specific Memory module (for example, DIMM) in Watts.

Attribute	Type	Nullable	Description
ThermalMarginCelsius	Edm.Decimal	True	The value of this property shall be a difference between current memory module temperature and optimal temperature for the module in degree Celsius.
Health	Collection(Edm.String)	True	The value of this property shall be Memory module Health as a discrete sensor reading.
CurrentPeriod	Intel.Oem.MemoryMetricsCurrentPeriod	False	This object shall contain properties which describe the CurrentPeriod metrics for the current resource.
LifeTime	Intel.Oem.MemoryMetricsLifeTime	False	This object shall contain properties which describe the LifeTime metrics for the current resource.

Table 44. MemoryMetricsCurrentPeriod Attributes

Attribute	Type	Nullable	Description
UptimeSeconds	Edm.Decimal	True	The value of this property shall be the current uptime of the Memory module for the current power cycle in seconds.
HostReadRequests	Edm.Decimal	True	The value of this property shall be the number of read requests the Memory module has serviced for the current power cycle.
HostWriteRequests	Edm.Decimal	True	The value of this property shall be the number of write requests the Memory module has serviced for the current power cycle.
ECCCorrectedErrors	Edm.Decimal	True	The value of this property shall be a number of Corrected ECC Errors found on this Memory module.

Table 45. MemoryMetricsLifeTime Attributes

Attribute	Type	Nullable	Description
UnsafeShutdownCount	Edm.Int64	True	This property shall be a number of times the Memory module has undergone unsafe shutdown.
PowerCycles	Edm.Decimal	True	The value of this property shall be number of power cycles over the lifetime of the Memory module.
PowerOnTimeSeconds	Edm.Decimal	True	The value of this property shall be the amount of time the Memory module was powered on during its lifetime in seconds.

Attribute	Type	Nullable	Description
HostReadRequests	Edm.Decimal	True	The value of this property shall be the number of read requests the Memory module has serviced over its lifetime.
HostWriteRequests	Edm.Decimal	True	The value of this property shall be the number of write requests the Memory module has serviced over its lifetime.
WriteCountMax	Edm.Decimal	True	The value of this property shall be the largest number of data writes to a single block across the Memory module.
WriteCountAvg	Edm.Decimal	True	The value of this property shall be the average number of data writes to all blocks across the Memory module.
MediaECCCorrectedErrors	Edm.Decimal	True	The value of this property shall be a number of corrected ECC Errors found on Media of this Memory module.
MediaECCUncorrectableErrors	Edm.Int64	True	The value of this property shall be a number of Uncorrectable ECC Errors found on Media of this Memory module.
ECCUncorrectableErrors	Edm.Decimal	True	The value of this property shall be a number of ECC Errors found on this Memory module.

4.17.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.17.1.1 GET (Legacy DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/3/Memory/Dimm1/Metrics",
  "@odata.type": "#MemoryMetrics.v1_0_0.MemoryMetrics",
  "Name": "Memory Metrics for DIMM1",
  "Description": "description-as-string",
  "Id": "Metrics for DIMM1",
  "HealthData": {
    "AlarmTrips": {
      "Temperature": false,
      "UncorrectableECCError": false,
      "CorrectableECCError": true
    }
  },
  "Oem": {
    "Intel_RackScale": {
```

```
      "TemperatureCelsius": 46,
      "ThermalMarginCelsius": 32,
      "Health": [
        "OK"
      ]
    }
```

4.17.1.2 GET (Intel® Optane™ DC DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm2/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/3/Memory/Dimm2/Metrics",
  "@odata.type": "#MemoryMetrics.v1_1_3.MemoryMetrics",
  "Name": "Memory Metrics for DIMM2",
  "Description": "Optane DC Persistent Memory Metrics",
  "Id": "Metrics for DIMM2",
  "BlockSizeBytes": 64,
  "CurrentPeriod": {
    "BlocksRead": 1406,
    "BlocksWritten": 12
  },
  "LifeTime": {
    "BlocksRead": 1452306,
    "BlocksWritten": 1212
  },
  "HealthData": {
    "DataLossDetected": false,
    "LastShutdownsSuccess": true,
    "PerformanceDegraded": false,
    "PredictedMediaLifeLeftPercent": 98,
    "RemainingSpareBlockPercentage": 75,
    "AlarmTrips": {
      "Temperature": false,
      "SpareBlock": true,
      "AddressParityError": false,
      "UncorrectableECCError": false,
      "CorrectableECCError": false
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "TemperatureCelsius": 46,
      "ControllerTemperatureCelsius": 49,
      "ThermalMarginCelsius": 32,
      "BandwidthPercent": 10,
      "ConsumedPowerWatt": 52,
      "ThrottledCyclesPercent": 0,
      "Health": [
        "NonCritical"
      ],
      "CurrentPeriod": {
        "UptimeSeconds": 550800,
        "HostReadRequests": 5276,
        "HostWriteRequests": 235,
```

```
        "ECCCorrectedErrors": 4
      },
      "LifeTime": {
        "UnsafeShutdownCount": 565,
        "PowerCycles": 3091,
        "PowerOnTimeSeconds": 190330568712445,
        "HostReadRequests": 5023256,
        "HostWriteRequests": 239400442,
        "WriteCountMax": 2703818,
        "WriteCountAvg": 4679,
        "MediaECCCorrectedErrors": 47023,
        "MediaECCUncorrectableErrors": 2,
        "ECCUncorrectableErrors": 7
      }
    }
  }
}
```

4.17.1.3 PUT

Operation is not allowed on this resource.

4.17.2 PATCH

Operation is not allowed on this resource.

4.17.3 POST

Operation is not allowed on this resource.

4.17.4 DELETE

Operation is not allowed on this resource.

4.18 Storage Subsystem Collection

The Storage subsystem collection resource provides collection of all storage subsystems available in a computer system.

Details of this resource are described in metadata file: `StorageCollection_v1.xml`

Table 46. Storage Collection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Storage.Storage)`	True	Contains the members of this collection.

4.18.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.18.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#StorageCollection.StorageCollection",
  "@odata.id": "/redfish/v1/Systems/1/Storage",
  "@odata.type": "#StorageCollection.StorageCollection",
  "Name": "Storage Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/3/Storage/SATA"
    }
  ]
}
```

4.18.1.2 PUT

Operation is not allowed on this resource.

4.18.1.3 PATCH

Operation is not allowed on this resource.

4.18.1.4 POST

Operation is not allowed on this resource.

4.18.1.5 DELETE

Operation is not allowed on this resource.

4.19 Storage Subsystem

The Storage subsystem resource provides detailed information about a single storage subsystem identified by `{storageID}`.

Details of this resource are described in metadata file: `Storage_v1.xml`

Table 47. Storage Attributes

Attribute	Type	Nullable	Description
`Links`	`Storage.v1_0_0.Links`	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`Actions`	`Storage.v1_0_0.Actions`	False	The Actions property shall contain the available actions for this resource.
`Status`	`Resource.Status`	False	-

Attribute	Type	Nullable	Description
StorageControllers	Collection(Storage.StorageController)	True	A collection that indicates all the storage controllers that this resource represents.
Drives	Collection(Drive.Drive)	True	A collection that indicates all the drives attached to the storage controllers that this resource represents.
Volumes	VolumeCollection.VolumeCollection	False	A collection that indicates all the volumes produced by the storage controllers that this resource represents.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the storage subsystem.

4.19.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.19.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage/SATA
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Storage/Members/$entity",
  "@odata.id": "/redfish/v1/Systems/1/Storage/SATA",
  "@odata.type": "#Storage.v1_1_0.Storage",
  "Id": "1",
  "Name": "SATA Storage System",
  "Description": "System SATA",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "StorageControllers": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/SATA#/StorageControllers/0",
      "@odata.type": "#Storage.v1_0_0.StorageController",
      "Id": "0",
      "Name": "System SATA",
      "Description": "System SATA (Embedded)",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Manufacturer": "ManufacturerName",
      "Model": "ProductModelName",
      "SKU": "",
      "SerialNumber": "2M220100SL",
      "PartNumber": "",
      "AssetTag": "CustomerWritableThingy",
      "SpeedGbps": 6,
      "FirmwareVersion": null,
```

```
      "SupportedControllerProtocols": [
        "PCIe"
      ],
      "SupportedDeviceProtocols": [
        "SATA"
      ],
      "Identifiers": [
        {
          "@odata.type": "#Resource.v1_1_0.Identifier",
          "DurableName": "123e4567-e89b-12d3-a456-426655440000",
          "DurableNameFormat": "UUID"
        }
      ]
    }
  ],
  "Drives": [
    {
      "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
    }
  ],
  "Volumes": {
    "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA/Volumes"
  },
  "Links": {
    "Enclosures": [
      {
        "@odata.id": "/redfish/v1/Chassis/Blade1"
      }
    ]
  },
  "Actions": {}
}
```


4.19.1.2 PUT

Operation is not allowed on this resource.

4.19.1.3 PATCH

Operation is not allowed on this resource.

4.19.1.4 POST

Operation is not allowed on this resource.

4.19.1.5 DELETE

Operation is not allowed on this resource.

4.20 Volume Collection

The resource Volume Collection provides collection of all storage volumes available in a storage subsystem.

Details of this resource are described in metadata file: `VolumeCollection_v1.xml`

Table 48 VolumeCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Volume.Volume)	True	The value of each member entry shall reference a Volume resource.

4.20.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.20.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage/SATA/Volumes
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#VolumeCollection.VolumeCollection",
  "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA/Volumes",
  "@odata.type": "#VolumeCollection.VolumeCollection",
  "Name": "Storage Volume Collection",
  "Description": "Storage Volume Collection",
  "Members@odata.count": 0,
  "Members": [],
  "Oem": {}
}
```

4.20.1.2 PUT

Operation is not allowed on this resource.

4.20.1.3 PATCH

Operation is not allowed on this resource.

4.20.1.4 POST

Operation is not allowed on this resource.

4.20.1.5 DELETE

Operation is not allowed on this resource.

4.21 Drive

Drive contains properties describing a single physical disk drive for any system.

Details of this resource are described in metadata file: Drive_v1.xml OEM extensions details available in IntelRackScaleOem_v1.xml.

Table 49. Drive Attributes

Attribute	Type	Nullable	Description
StatusIndicator	Drive.v1_0_0.StatusIndicator	True	The value of this property shall contain the status indicator state for the status indicator associated with this drive. The valid values for this property are specified through the Redfish*.AllowableValues annotation.
IndicatorLED	Resource.IndicatorLED	True	This value of this property shall contain the indicator light state for the indicator light associated with this drive.
Model	Edm.String	True	The value of this property shall be the name by which the manufacturer generally refers to the drive.
Revision	Edm.String	True	This property shall contain the revision as defined by the manufacturer for the associated drive.
Status	Resource.Status	False	
CapacityBytes	Edm.Int64	True	This property shall contain the raw size in bytes of the associated drive.
FailurePredicted	Edm.Boolean	True	This property shall contain failure information as defined by the manufacturer for the associated drive.
Protocol	Protocol.Protocol	True	This property shall contain the protocol which the associated drive is using to communicate to the storage controller for this system.
MediaType	Drive.v1_0_0.MediaType	True	This property shall contain the type of media contained in the associated drive.
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the drive. This organization might be the entity from whom the drive is purchased, but this is not necessarily true.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this drive.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer allocated number used to identify the drive.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the drive.

Attribute	Type	Nullable	Description
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.
Identifiers	Collection(Resource.Identifier)	False	This property shall contain a list of all known durable names for the associated drive.
HotspareType	Drive.v1_0_0.HotspareType	True	This property shall contain the hot spare type for the associated drive. If the drive is currently serving as a hot spare its Status.State field shall be StandbySpare and Enabled when it is being used as part of a Volume.
EncryptionAbility	Drive.v1_0_0.EncryptionAbility	True	This property shall contain the encryption ability for the associated drive.
EncryptionStatus	Drive.v1_0_0.EncryptionStatus	True	This property shall contain the encryption status for the associated drive.
RotationSpeedRPM	Edm.Decimal	True	This property shall contain rotation speed of the associated drive.
BlockSizeBytes	Edm.Int64	True	This property shall contain size of the smallest addressable unit of the associated drive.
CapableSpeedGbs	Edm.Decimal	True	This property shall contain fastest capable bus speed of the associated drive.
NegotiatedSpeedGbs	Edm.Decimal	True	This property shall contain current bus speed of the associated drive.
PredictedMediaLifeLeftPercent	Edm.Decimal	True	This property shall contain an indicator of the percentage of life remaining in the Drive's media.
Links	Drive.v1_0_0.Links	False	The Links property, as described by the Redfish* Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Drive.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Operations	Collection(Drive.v1_1_0.Operations)	False	This property shall contain a list of all operations currently running on the Drive.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to an Assembly type resource.
PhysicalLocation	Resource.Location	False	This property shall contain location information of the associated drive.

4.21.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.21.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Blade1/Drives/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Drive.Drive",
  "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/1",
  "@odata.type": "#Drive.v1_4_0.Drive",
  "Id": "1",
  "Name": "Drive",
  "Description": "Drive description string",
  "IndicatorLED": "Lit",
  "Model": "Drive Model string",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "CapacityBytes": 899527000000,
  "Protocol": "SATA",
  "MediaType": "SSD",
  "Manufacturer": "Intel",
  "SerialNumber": "72D0A037FRD27",
  "PartNumber": "SG0GP8811253178M02GJA00",
  "SKU": "SKU version",
  "StatusIndicator": "OK",
  "Revision": "revision string",
  "FailurePredicted": false,
  "AssetTag": null,
  "CapableSpeedGbs": 6,
  "NegotiatedSpeedGbs": 6,
  "Identifiers": [
    {
      "@odata.type": #Resource.v1_1_0.identifier",
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "HotspareType": null,
  "EncryptionAbility": null,
  "EncryptionStatus": null,
  "RotationSpeedRPM": null,
  "BlockSizeBytes": null,
  "PredictedMediaLifeLeftPercent": null,
  "Links": {
    "Volumes": [],
    "Endpoints": []
  },
  "Actions": {
    "#Drive.SecureErase": {
      "target": "/redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.SecureErase"
    }
```

```
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Drive",
      "DriveErased": false,
      "FirmwareVersion": "1.17",
      "Storage": null,
      "UsedBy": [],
      "PCIeFunction": null,
      "Metrics": {}
    }
  }
}
```

4.21.1.2 PUT

Operation is not allowed on this resource.

4.21.1.3 PATCH

The following properties can be updated by the `PATCH` operation.

Table 50. Drive Attributes

Attribute	Type	Nullable	Description
`AssetTag`	`Edm.String`	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.

The following OEM object properties can be patched.

Table 51. Drive Attributes

Attribute	Type	Nullable	Description
`DriveErased`	`Edm.Boolean`	False	This property shall represent the erase state of drive.

Request:

```
PATCH /redfish/v1/Chassis/Blade1/Drives/1
Content-Type: application/json
{
  "AssetTag": "TemporaryStorage",
  "Oem": {
    "Intel_RackScale": {
      "DriveErased": false
    }
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 200 OK
((updated resource body as in 4.21.1.1))
```

4.21.1.4 POST

The `POST` action is used to the `SecureErase` drive. If this operation is not immediate, the `Status->State` of the resource should be changed to "**`Starting`**". This action works only on drives currently not assigned to any zone. When the action is complete, the drive's `DriveErased` property will change to "**`true`**".

Request:

```
POST /redfish/v1/Chassis/Blade1/Drives/1
Content-Type: application/json
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.21.1.5 DELETE

Operation is not allowed on this resource.

4.22 System Network Interface

The Blade Network Interface resource provides detailed information about a network interface identified by `{nicID}`.

Details of this resource are described in the metadata file: `EthernetInterface_v1.xml`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 52. Storage Collection Attributes

Attribute	Type	Nullable	Description
`UefiDevicePath`	`Edm.String`	True	The value of this property shall be the UEFI device path to the device which implements this interface (port).
`Status`	`Resource.Status`	True	
`InterfaceEnabled`	`Edm.Boolean`	True	The value of this property shall be a boolean indicating whether this interface is enabled.

Attribute	Type	Nullable	Description
PermanentMACAddress	EthernetInterface.v1_0_0.MACAddress	True	The value of this property shall be the Permanent MAC Address of this interface (port). This value is typically programmed during the manufacturing time. This address is not assignable.
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	The value of this property shall be the effective current MAC Address of this interface. If an assignable MAC address is not supported, this is a read only alias of the PermanentMACAddress.
SpeedMbps	Edm.Int64	True	The value of this property shall be the link speed of the interface in Mbps.
AutoNeg	Edm.Boolean	True	The value of this property shall be true if auto negotiation of speed and duplex is enabled on this interface and false if it is disabled.
FullDuplex	Edm.Boolean	True	The value of this property shall represent the duplex status of the Ethernet connection on this interface.
MTUSize	Edm.Int64	True	The value of this property shall be the size in bytes of largest Protocol Data Unit (PDU) that can be passed in an Ethernet (MAC) frame on this interface.
HostName	Edm.String	True	The value of this property shall be host name for this interface.
FQDN	Edm.String	True	The value of this property shall be the fully qualified domain name for this interface.

Attribute	Type	Nullable	Description
MaxIPv6StaticAddresses	Edm.Int64	True	The value of this property shall indicate the number of array items supported by IPv6StaticAddresses.
VLAN	VLanNetworkInterface.VLAN	True	The value of this property shall be the VLAN for this interface. If this interface supports more than one VLAN, the VLAN property shall not be present and the VLANS collection link shall be present instead.
IPv4Addresses	Collection(IPAddresses.IPv4Address)	False	The value of this property shall be an array of objects used to represent the IPv4 connection characteristics for this interface. It is recommended that this propety be regarded as read-only, with configuration of static addresses performed by updating the values within IPv4StaticAddesssses. Services may reject updates to this array for this reason.
IPv6AddressPolicyTable	Collection(EthernetInterface.v1_0_0.IPv6AddressPolicyEntry)	False	The value of this property shall be an array of objects used to represent the Address Selection Policy Table as defined in RFC 6724.
IPv6Addresses	Collection(IPAddresses.IPv6Address)	False	The value of this property shall be an array of objects used to represent the IPv6 connection characteristics for this interface.
IPv6StaticAddresses	Collection(IPAddresses.IPv6StaticAddress)	False	The value of this property shall be an array of objects used to represent the IPv6 static connection characteristics for this interface.

Attribute	Type	Nullable	Description
IPv6DefaultGateway	Edm.String	True	The value of this property shall be the current IPv6 default gateway address that is in use on this interface.
NameServers	Collection(Edm.String)	False	The value of this property shall be the DNS name servers used on this interface.
VLANs	VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection	False	The value of this property shall reference a collection of VLAN resources. If this property is used, the VLANEnabled and VLANId property shall not be used.
LinkStatus	EthernetInterface.v1_1_0.LinkStatus	True	The value of this property shall be the link status of this interface (port).
Links	EthernetInterface.v1_1_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	EthernetInterface.v1_3_0.Actions	False	The Actions property shall contain the available actions for this resource.
DHCPv4	EthernetInterface.v1_4_0.DHCPv4Configuration	True	This property shall contain the configuration of DHCP v4.
DHCPv6	EthernetInterface.v1_4_0.DHCPv6Configuration	True	This property shall contain the configuration of DHCP v6.
StatelessAddressAutoConfig	EthernetInterface.v1_4_0.StatelessAddressAutoConfiguration	True	This object shall contain the IPv4 and IPv6 Stateless Address Automatic Configuration (SLAAC) properties for this interface.
IPv6StaticDefaultGateways	Collection(IPAddresses.IPv6StaticAddress)	False	The values in this array shall represent the IPv6 static default gateway addresses for this interface.

Attribute	Type	Nullable	Description
StaticNameServers	Collection(Edm.String)	False	A statically defined set of DNS server IP addresses to be used when DHCP provisioning is not in enabled for name server configuration. As an implementation option they may also be used in addition to DHCP provided addresses, or in cases where the DHCP server provides no DNS assigments.
IPv4StaticAddresses	Collection(IPAddresses.IPv4Address)	False	The value of this property shall be an array of objects used to represent all IPv4 static addresses assigned (but not necessarily in use) to this interface. Addresses in use by this interface shall also appear in the IPv4Addresses property.

4.22.1 Intel® RSD OEM Extenstions

Table 53. EthernetInterface Attributes

Attribute	Type	Nullable	Description
SupportedProtocols	Collection(Protocol.Protocol)	True	This property shall represent an array of supported protocol types by the Ethernet interface.

4.22.2 Intel® RSD OEM Links extensions

Table 54. EthernetInterfaceLinks Attributes

Attribute	Type	Nullable	Description
NeighborPort	EthernetSwitchPort.EthernetSwitchPort	True	This property shall represent the URI of ethernet port connected to this interface

4.22.3 Operations

The following sections specify the HTTP methods available on this endpoint.

4.22.3.1 GET

Note: The `NeighborPort` link will not be filled by PSME. If PODM is able to match the MAC address of an interface with a NeighborMAC of an `EthernetSwitchPort` resource, it will fill this property with a link to the Port.

Request:

```
GET /redfish/v1/Systems/System1/EthernetInterfaces/LAN1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
  "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1",
  "@odata.type": "#EthernetInterface.v1_3_0.EthernetInterface",
  "Id": "LAN1",
  "Name": "Ethernet Interface",
  "Description": "System NIC 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "InterfaceEnabled": true,
  "PermanentMACAddress": "AA:BB:CC:DD:EE:FF",
  "MACAddress": "AA:BB:CC:DD:EE:FF",
  "SpeedMbps": 100,
  "AutoNeg": true,
  "FullDuplex": true,
  "MTUSize": 1500,
  "HostName": "web483",
  "FQDN": "web483.redfishspecification.org",
  "IPv6DefaultGateway": "fe80::3ed9:2bff:fe34:600",
  "MaxIPv6StaticAddresses": null,
  "NameServers": [
    "names.redfishspecification.org"
  ],
  "IPv4Addresses": [
    {
      "@odata.type": "#IPAddresses.v1_0_0.IPv4Address",
      "Address": "192.168.0.10",
      "SubnetMask": "255.255.252.0",
      "AddressOrigin": "Static",
      "Gateway": "192.168.0.1"
    }
  ],
  "IPv4StaticAddresses": [],
  "IPv6Addresses": [
    {
      "@odata.type": "#IPAddresses.v1_0_0.IPv6Address",
      "Address": "fe80::1ec1:deff:fe6f:1e24",
      "PrefixLength": 64,
      "AddressOrigin": "Static",
      "AddressState": "Preferred"
    }
  ],
  "IPv6StaticAddresses": [],
  "IPv6StaticDefaultGateways": [],
```

```
  "StaticNameServers": [],
  "VLAN": null,
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.EthernetInterface",
      "SupportedProtocols": [
        "RoCEv2"
      ]
    }
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EthernetInterfaceLinks",
        "NeighborPort": {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
        }
      }
    }
  },
  "Actions": {
    "Oem": {}
  }
}
```


4.22.3.2 PUT

Operation is not allowed on this resource.

4.22.3.3 PATCH

Operation is not allowed on this resource.

4.22.3.4 POST

Operation is not allowed on this resource.

4.22.3.5 DELETE

Operation is not allowed on this resource.

4.23 Manager Collection

The Manager Collection resource provides collection of all managers available in a drawer.

Detailed info about this resource properties can be obtained from metadata file: `Manager_v1.xml`. OEM extensions details are available in `IntelRackScaleOem_v1.xml`.

Table 55. ManagerCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Manager.Manager)`	True	Contains the members of this collection.

4.23.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.23.1.1 GET

Request:

```
GET /redfish/v1/Managers
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerCollection.ManagerCollection",
  "@odata.id": "/redfish/v1/Managers",
  "@odata.type": "#ManagerCollection.ManagerCollection",
  "Name": "Manager Collection",
  "Description": "description-as-string",
  "Members@odata.count": 3,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/BMC1"
    },
    {
      "@odata.id": "/redfish/v1/Managers/PSME"
    },
    {
      "@odata.id": "/redfish/v1/Managers/PCIeManager1"
    }
  ]
}
```

4.23.1.2 PUT

Operation is not allowed on this resource.

4.23.1.3 PATCH

Operation is not allowed on this resource.

4.23.1.4 POST

Operation is not allowed on this resource.

4.23.1.5 DELETE

Operation is not allowed on this resource.

4.24 Manager

The Manager Resource provides detailed information about a manager identified by `{managerID}`.

Table 56. Manager Attributes

Attribute	Type	Nullable	Description
ManagerType	Manager.v1_0_0.ManagerType	False	The value of this property shall describe the function of this manager. The value EnclosureManager shall be used if this manager controls one or more services through aggregation. The value BMC shall be used if this manager represents a traditional server management controller. The value ManagementController shall be used if none of the other enumerations apply.
Links	Manager.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
ServiceEntryPointUUID	Resource.UUID	True	This property shall contain the UUID of the Redfish* Service provided by this manager. Each Manager providing an Entry Point to the same Redfish Service shall report the same UUID value (even though the name of the property may imply otherwise). This property shall not be present if this manager does not provide a Redfish Service Entry Point.
UUID	Resource.UUID	True	The value of this property shall contain the universal unique identifier number for the manager.
Model	Edm.String	True	The value of this property shall contain the information about how the manufacturer references this manager.
DateTime	Edm.DateTimeOffset	True	The value of this property shall represent the current DateTime value for the manager, with offset from UTC, in Redfish Timestamp format.
DateTimeLocalOffset	Edm.String	True	The value is property shall represent the offset from UTC time that the current value of DataTime property contains.

Attribute	Type	Nullable	Description
FirmwareVersion	Edm.String	True	This property shall contain the firmware version as defined by the manufacturer for the associated manager.
SerialConsole	Manager.v1_0_0.SerialConsole	False	The value of this property shall contain information about the Serial Console service of this manager.
CommandShell	Manager.v1_0_0.CommandShell	False	The value of this property shall contain information about the Command Shell service of this manager.
GraphicalConsole	Manager.v1_0_0.GraphicalConsole	False	The value of this property shall contain the information about the Graphical Console (KVM-IP) service of this manager.
Actions	Manager.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
EthernetInterfaces	EthernetInterfaceCollection.EthernetInterfaceCollection	False	The value of this property shall be a link to a collection of type EthernetInterfaceCollection.
SerialInterfaces	SerialInterfaceCollection.SerialInterfaceCollection	False	The value of this property shall be a link to a collection of type SerialInterfaceCollection which are for the use of this manager.
NetworkProtocol	ManagerNetworkProtocol.ManagerNetworkProtocol	False	The value of this property shall contain a reference to a resource of type ManagerNetworkProtocol which represents the network services for this manager.
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall contain a reference to a collection of type LogServiceCollection which are for the use of this manager.
VirtualMedia	VirtualMediaCollection.VirtualMediaCollection	False	The value of this property shall contain a reference to a collection of type VirtualMediaCollection which are for the use of this manager.

Attribute	Type	Nullable	Description
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show how this manager is grouped with other managers for form redundancy sets.
PowerState	Resource.PowerState	True	The value of this property shall contain the power state of the Manager.
HostInterfaces	HostInterfaceCollection.HostInterfaceCollection	False	The value of this property shall be a link to a collection of type HostInterfaceCollection.
AutoDSTEnabled	Edm.Boolean	False	The value of this property shall contain the enabled status of the automatic Daylight Saving Time (DST) adjustment of the manager's DateTime. If Automatic DST adjustment is **enabled**, it shall be true. Otherwise, if **disabled**, it is false.
RemoteRedfishServiceUri	Edm.String	True	This property shall contain the URI of the Redfish Service Root for the remote Manager represented by this resource. This property shall only be present when providing aggregation of Redfish services.
RemoteAccountService	AccountService.AccountService	False	This property shall contain a reference to the AccountService resource for the remote Manager represented by this resource. This property shall only be present when providing aggregation of Redfish services.

Table 57. Links Attributes

Attribute	Type	Nullable	Description
ManagerForServers	Collection(ComputerSystem.ComputerSystem)	True	This property shall contain an array of references to ComputerSystem resources of which this Manager instance has control.
ManagerForChassis	Collection(Chassis.Chassis)	True	This property shall contain an array of references to Chassis resources of which this Manager instance has control.
ManagerInChassis	Chassis.Chassis	False	This property shall contain a reference to the chassis that this manager is located in.

4.24.1 Intel® RSD OEM extensions

Table 58. ManagerLinks Attributes

Attribute	Type	Nullable	Description
ManagerForServices	Collection(StorageService.StorageService)	True	This property is an array of references to services that this manager has control over.
ManagerForEthernetSwitches	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	This property is an array of references to ethernet switches that this manager has control over.
ManagerForFabrics	Collection(Fabric.Fabric)	True	This property is an array of references to fabrics that this manager has control over.

4.24.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.24.2.1 GET

Request:

```
GET /redfish/v1/Managers/PSME
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.id": "/redfish/v1/Managers/PSME",
  "@odata.type": "#Manager.v1_4_0.Manager",
  "Id": "1",
  "Name": "Manager",
  "ManagerType": "BMC",
  "Description": "BMC",
  "ServiceEntryPointUUID": "92384634-2938-2342-8820-489239905423",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "Model": "Joo Janta 200",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "AutoDSTEnabled": false,
  "GraphicalConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 2,
    "ConnectTypesSupported": [
      "KVMIP"
    ]
  },
  "HostInterfaces": [],
  "SerialConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 1,
```

```
    "ConnectTypesSupported": [
      "Telnet",
      "SSH",
      "IPMI"
    ]
  },
  "CommandShell": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 4,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH"
    ]
  },
  "FirmwareVersion": "1.00",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces"
  },
  "Links": {
    "@odata.type": "#Manager.v1_4_0.Links",
    "ManagerForServers": [],
    "ManagerForChassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/FabricModule1"
      }
    ],
    "ManagerInChassis": {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    "ManagerForSwitches": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.ManagerLinks",
        "ManagerForServices": [
          {
            "@odata.id": "/redfish/v1/StorageServices/NVMeoE1"
          }
        ],
        "ManagerForFabrics": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe"
          }
        ],
        "ManagerForEthernetSwitches": [
          {
            "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
          }
        ]
      }
    }
  },
  "Actions": {
    "#Manager.Reset": {
      "target": "/redfish/v1/Managers/PSME/Actions/Manager.Reset"
```

```
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.24.2.2 PUT

Operation is not allowed on this resource.

4.24.2.3 PATCH

Operation is not allowed on this resource.

4.24.2.4 POST

Operation is not allowed on this resource.

4.24.2.5 DELETE

Operation is not allowed on this resource.

4.25 Ethernet Switch Collection

The Ethernet Switch collection resource provides collection of all switches available in a fabric module.

Table 59. EthernetSwitchCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	Contains the members of this collection.

4.25.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.25.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches",
  "@odata.id": "/redfish/v1/EthernetSwitches",
  "@odata.type": "#EthernetSwitchCollection.EthernetSwitchCollection",
  "Name": "Ethernet  Switches Collection",
  "Description": "Network Switches Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
    }
  ]
```

```
}
```

4.25.1.2 PUT

Operation is not allowed on this resource.

4.25.1.3 PATCH

Operation is not allowed on this resource.

4.25.1.4 POST

Operation is not allowed on this resource.

4.25.1.5 DELETE

Operation is not allowed on this resource.

4.26 Ethernet Switch

The Ethernet Switch resource provides detailed information about a switch identified by `{switchID}`.

Detailed info about this resource's properties can be obtained from metadata file: `EthernetSwitch_v1.xml`.

Table 60. EthernetSwitch Attributes

Attribute	Type	Nullable	Description
SwitchId	Edm.String	True	Unique switch Id (within drawer) used to identify in switch hierarchy discovery.
Manufacturer	Edm.String	True	Switch manufacturer name.
Model	Edm.String	True	Switch model.
ManufacturingDate	Edm.String	True	Manufacturing date.
SerialNumber	Edm.String	True	Switch serial number.
PartNumber	Edm.String	True	Switch part number.
FirmwareName	Edm.String	True	Switch firmware name.
FirmwareVersion	Edm.String	True	Switch firmware version.
Role	Edm.String	True	Role of switch.
MaxACLNumber	Edm.Int32	True	Maximum quantity of Access Control Lists.
Status	Resource.Status	True	-
Links	EthernetSwitch.v1_0_0.Links	False	-
Ports	EthernetSwitchPortCollection.EthernetSwitchPortCollection	True	Collection of switch ports.
ACLs	EthernetSwitchACLCollection.EthernetSwitchACLCollection	True	Collection of switch access control list.

Attribute	Type	Nullable	Description
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch.
ETSEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Enhanced Transmission Selection (ETS) defined in IEEE 802.1Qaz is enabled on this switch.
DCBXEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch.
PFCEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch.
DCBXSharedConfiguration	EthernetSwitch.v1_1_0.DCBXConfig	True	This object shall contain Data Center Bridging Extensions capabilities and configuration conveyed between neighbors to ensure consistent configuration across the network. This protocol leverages functionality provided by IEEE 802.1AB (LLDP).
Metrics	EthernetSwitchMetrics.EthernetSwitchMetrics	False	A reference to the Metrics associated with this EthernetSwitch.

Table 61. DCBXConfig Attributes

Attribute	Type	Nullable	Description
ApplicationProtocol	Collection(EthernetSwitch.v1_1_0.ApplicationProtocolType)	True	This object allows Data Center Bridging (DCB) node to announce upper layer protocols and associated priority map over DCB link.

Attribute	Type	Nullable	Description
PriorityToPriorityGroupMapping	Collection(EthernetSwitch.v1_1_0.PriorityClassMapping)	True	This property shall provide configuration of priority to priority group mapping for this switch.
BandwidthAllocation	Collection(EthernetSwitch.v1_1_0.BandwidthMapping)	True	This property shall provide configuration of bandwidth allocation on converged links in end stations and switches in a DCB environment.

Table 62. ApplicationProtocolType Attributes

Attribute	Type	Nullable	Description
Priority	Edm.Int64	True	The value of this property shall indicate priority for PFC.
Protocol	EthernetSwitch.v1_1_0.ProtocolType	True	The value of this property shall indicate DCB node supported protocol.
Port	Edm.Int64	True	The value of this property shall be a socket number for Protocol set to UDP and TCP or EtherType for Protocol set to L2.

Table 63. ProtocolType Attributes

Member	Description
TCP	TCP.
UDP	UDP.
L2	L2 EtherType.

Table 64. PriorityClassMapping Attributes

Attribute	Type	Nullable	Description
PriorityGroup	Edm.Int64	True	The value of this property shall be a Priority Group ID.
Priority	Edm.Int64	True	The value of this property shall be a numeric value of PFC priority ID.

Table 65 BandwidthMapping Attributes

Attribute	Type	Nullable	Description
PriorityGroup	Edm.Int64	True	The value of this property shall be a Priority Group ID.

Attribute	Type	Nullable	Description
BandwidthPercent	Edm.Int64	True	The value of this property shall be a percentage of guaranteed bandwidth.

4.26.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.26.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1",
  "@odata.type": "#EthernetSwitch.v1_1_0.EthernetSwitch",
  "Id": "Switch1",
  "SwitchId": "unique switch id",
  "Name": "Switch1",
  "Description": "description-as-string",
  "Manufacturer": "Quanta",
  "Model": "ly8_rangley",
  "ManufacturingDate": "02/21/2015 00:00:00",
  "SerialNumber": "2M220100SL",
  "PartNumber": "1LY8UZZ0007",
  "FirmwareName": "ONIE",
  "FirmwareVersion": "1.1",
  "Role": "TOR",
  "MaxACLNumber": 4,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {},
  "Ports": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports"
  },
  "ACLs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs"
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/PSME"
      }
    ],
    "Oem": {}
  },
  "LLDPEnabled": true,
```

```
  "ETSEnabled": true,
  "DCBXEnabled": true,
  "DCBXSharedConfiguration": {
    "ApplicationProtocol": [
      {
        "Priority": 1,
        "Protocol": "UDP",
        "Port": 4791
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 860
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 3260
      }
    ],
    "PriorityToPriorityGroupMapping": [
      {
        "PriorityGroup": 1,
        "Priority": 5
      },
      {
        "PriorityGroup": 2,
        "Priority": 5
      }
    ],
    "BandwidthAllocation": [
      {
        "PriorityGroup": 1,
        "BandwidthPercent": 60
      },
      {
        "PriorityGroup": 2,
        "BandwidthPercent": 30
      }
    ]
  },
  "PFCEnabled": true
}
```


4.26.1.2 PUT

Operation is not allowed on this resource.

4.26.1.3 PATCH

Table 66. EthernetSwitch Attributes

Attribute	Type	Nullable	Description
DCBXSharedConfiguration	EthernetSwitch.v1_1_0.DCBXConfig	True	This object shall contain Data Center Bridging Extensions capabilities and configuration conveyed between neighbors to ensure consistent configuration across the network. This protocol leverages functionality provided by IEEE 802.1AB (LLDP).
PFCEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch.
DCBXEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch.
ETSEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Enhanced Transmission Selection (ETS) defined in IEEE 802.1Qaz is enabled on this switch.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch.

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1
Content-Type: application/json
{
  "LLDPEnabled": true,
  "ETSEnabled": true,
  "DCBXEnabled": true,
  "DCBXSharedConfiguration": {
    "ApplicationProtocol": [
      {
        "Priority": 1,
```

```
        "Protocol": "UDP",
        "Port": 4791
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 860
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 3260
      }
    ],
    "PriorityGroupToPriorityMapping": [
      {
        "PriorityGroup": 1,
        "Priority": 5
      },
      {
        "PriorityGroup": 2,
        "Priority": 5
      }
    ],
    "BandwidthAllocation": [
      {
        "PriorityGroup": 1,
        "BandwidthPercent": 60
      },
      {
        "PriorityGroup": 2,
        "BandwidthPercent": 30
      }
    ]
  },
  "PFCEnabled": true
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.26.1.4 POST

Operation is not allowed on this resource.

4.26.1.5 DELETE

Operation is not allowed on this resource.

4.27 Ethernet Switch Metrics

Properties details available in `EthernetSwitchMetrics_v1.xml` metadata file.

Note: Current version of RSD doesn't implement Ethernet switch metrics.

Table 67. EthernetSwitchMetrics Attributes

Attribute	Type	Nullable	Description
Health	Edm.String	True	The value of this property shall be Health of EthernetSwitch as a discrete sensor reading.

4.27.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.27.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchMetrics.EthernetSwitchMetrics",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Metrics",
  "@odata.type": "#EthernetSwitchMetrics.v1_0_0.EthernetSwitchMetrics",
  "Name": "EthernetSwitch Metrics for Switch1",
  "Description": "description-as-string",
  "Id": "Metrics for Switch1",
  "Health": "OK"
}
```

4.27.1.2 PUT

Operation is not allowed on this resource.

4.27.1.3 PATCH

Operation is not allowed on this resource.

4.27.1.4 POST

Operation is not allowed on this resource.

4.27.1.5 DELETE

Operation is not allowed on this resource.

4.28 Ethernet Switch Port Collection

The Ethernet Switch Port Collection resource provides collection of all switch port available in a switch.

Table 68. EthernetSwitchPortCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitchPort.v1_0_0.EthernetSwitchPort)	True	Contains the members of this collection.

4.28.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.28.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports",
  "@odata.type": "#EthernetSwitchPortCollection.EthernetSwitchPortCollection",
  "Name": "Ethernet  Switch Port Collection",
  "Description": "Switch Port Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    }
  ]
}
```

4.28.1.2 PUT

Operation is not allowed on this resource.

4.28.1.3 PATCH

Operation is not allowed on this resource.

4.28.1.4 POST

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
{
  "PortId": "Lag1",
  "PortMode": "LinkAggregationStatic",
  "Links": {
    "PortMembers": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port10"
      },
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port11"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Lag1
((created resource body))
```

4.28.1.5 DELETE

Operation is not allowed on this resource.

4.29 Ethernet Switch Port

The Ethernet Switch port resource provides detailed information about a switch port identified by `{portID}`.

Detailed info about this resource properties can be obtained from metadata file: `EthernetSwitchPort_v1.xml`.

Table 69. EthernetSwitchPort Attributes

Attribute	Type	Nullable	Description
PortId	Edm.String	True	Switch port unique identifier.
LinkType	EthernetSwitchPort.v1_0_0.LinkType	True	Type of port link.
OperationalState	EthernetSwitchPort.v1_0_0.OperationalState	True	Port link operational state.
AdministrativeState	EthernetSwitchPort.v1_0_0.AdministrativeState	True	Port link state forced by user.
LinkSpeedMbps	Edm.Int64	True	Port speed.
NeighborInfo	EthernetSwitchPort.v1_0_0.NeighborInfo	True	For Upstream port type this property provide information about neighbor switch (and switch port if available) connected to this port
NeighborMAC	EthernetInterface.v1_0_0.MACAddress	True	For Downstream port type this property provide MAC address of NIC connected to this port.
FrameSize	Edm.Int64	True	MAC frame size in bytes.
Autosense	Edm.Boolean	True	Indicates if the speed and duplex is automatically configured by the NIC
FullDuplex	Edm.Boolean	True	Indicates if port is in Full Duplex mode or not.
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address of port.
IPv4Addresses	Collection(IPAddresses.v1_0_0.IPv4Address)	False	Array of following IPv4 address.
IPv6Addresses	Collection(IPAddresses.v1_0_0.IPv6Address)	False	Array of following IPv6 address.
PortClass	EthernetSwitchPort.v1_0_0.PortClass	True	Port class.
PortMode	EthernetSwitchPort.v1_0_0.PortMode	True	Port working mode. The value shall correspond to the port class (especially to the logical port definition).
PortType	EthernetSwitchPort.v1_0_0.PortType	True	PortType.
Status	Resource.Status	True	-
Links	EthernetSwitchPort.v1_0_0.Links	False	-
VLANs	VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection	True	-
StaticMACs	EthernetSwitchStaticMACCollection.EthernetSwitchStaticMACCollection	True	-
PriorityFlowControl	EthernetSwitchPort.v1_1_0.PFC	True	This property shall provide configuration of Priority Flow Control for this switch port.

Attribute	Type	Nullable	Description
DCBXState	EthernetSwitchPort.v1_1_0.DCBXStateType	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch port.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch port.
Metrics	EthernetSwitchPortMetrics.EthernetSwitchPortMetrics	False	A reference to the Metrics associated with this EthernetSwitchPort.
NeighborInterface	EthernetInterface.EthernetInterface	True	A reference to the Metrics associated with this EthernetSwitchPort.

Table 70. OperationalState Attributes

Member	Description
Up	Port link operational state is up.
Down	Port link operational state is down.

Table 71. AdministrativeState Attributes

Member	Description
Up	Port link state forced by user is up.
Down	Port link state forced by user is down.

Table 72. PortClass Attributes

Member	Description
Physical	Port class is physical.
Logical	Port class is logical.
Reserved	Port class is reserved.

Table 73. PortMode Attributes

Member	Description
LinkAggregationStatic	Port working mode is Link Aggregation Static.
LinkAggregationDynamic	Port working mode is Link Aggregation Dynamic.
Unknown	Port working mode is unknown.

Table 74. PFC Attributes

Attribute	Type	Nullable	Description
Enabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch port.
EnabledPriorities	Collection(Edm.Int64)	True	This property shall provide a list of priorities that should be treated by switch as lossless - for those priorities switch will send PAUSE frame.

Table 75. DCBXStateType Attributes

Member	Description
Disabled	TCP.
EnabledIEEE	DCBX messages will be sent in IEEE defined format.
EnabledCEE	DCBX messages will be sent in CEE defined format.

4.29.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.29.1.1 GET

Note: The NeighborInterface property will not be filled by PSME. If PODM is able to match the MAC address of an EthernetInterface with the NeighborMAC property of the Ethernet Port, it will fill this property with a link to the interface.

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1",
  "@odata.type": "#EthernetSwitchPort.v1_1_0.EthernetSwitchPort",
  "Id": "Port1",
  "Name": "RSD Switch Port",
  "Description": "description-as-string",
  "PortId": "sw0p10",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "LinkType": "Ethernet",
  "OperationalState": "Up",
  "AdministrativeState": "Up",
  "LinkSpeedMbps": 10000,
  "NeighborInfo": {
    "SwitchId": "unique switch id",
    "PortId": "11",
    "CableId": "CustomerWritableThing"
  },
  "NeighborMAC": "00:11:22:33:44:55",
  "FrameSize": 1520,
  "Autosense": true,
  "FullDuplex": true,
  "MACAddress": "2c:60:0c:72:e6:33",
  "IPv4Addresses": [
    {
      "Address": "192.168.0.10",
      "SubnetMask": "255.255.252.0",
      "AddressOrigin": "Static",
      "Gateway": "192.168.0.1"
```

```
    }
  ],
  "IPv6Addresses": [
    {
      "Address": "fe80::1ec1:deff:fe6f:1e24",
      "PrefixLength": 64,
      "AddressOrigin": "Static",
      "AddressState": "Preferred"
    }
  ],
  "PortClass": "Logical",
  "PortMode": "LinkAggregationStatic",
  "PortType": "Upstream",
  "Oem": {},
  "VLANs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs"
  },
  "StaticMACs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs"
  },
  "Links": {
    "PrimaryVLAN": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    },
    "Switch": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
    },
    "MemberOfPort": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/LAG1"
    },
    "PortMembers": [],
    "ActiveACLs": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
      }
    ]
  },
  "DCBXState": "Disabled",
  "LLDPEnabled": true,
  "PriorityFlowControl": {
    "Enabled": true,
    "EnabledPriorities": [
      0,
      1,
      6,
      7
    ]
  },
  "NeighborInterface": {
    "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
  }
```


4.29.1.2 PUT

Operation is not allowed on this resource.

4.29.1.3 PATCH

Table 76. EthernetSwitchPort Attributes

Attribute	Type	Nullable	Description
LinkSpeedMbps	Edm.Int64	True	Port speed.
DCBXState	EthernetSwitchPort.v1_1_0.DCBXStateType	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch port.
FullDuplex	Edm.Boolean	True	Indicates if port is in Full Duplex mode or not.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch port.
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address of port.
PriorityFlowControl	EthernetSwitchPort.v1_1_0.PFC	True	This property shall provide configuration of Priority Flow Control for this switch port.
FrameSize	Edm.Int64	True	MAC frame size in bytes.
AdministrativeState	EthernetSwitchPort.v1_0_0.AdministrativeState	True	Port link state forced by user.
Links	EthernetSwitchPort.v1_0_0.Links	False	-
Autosense	Edm.Boolean	True	Indicates if the speed and duplex is automatically configured by the NIC

Table 77. EthernetSwitchPort Link attributes

Attribute	Type	Nullable	Description
PrimaryVLAN	VLanNetworkInterface.v1_0_0.VLanNetworkInterface	True	-

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1
Content-Type: application/json
{
  "AdministrativeState": "Up",
  "LinkSpeedMbps": 1000,
  "FrameSize": 1500,
  "Autosense": false,
  "Links": {
    "PrimaryVLAN": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    }
  },
  "DCBXState": "Disabled",
  "LLDPEnabled": true,
  "PriorityFlowControl": {
    "Enabled": true,
    "EnabledPriorities": [
      0,
```

```
      1,
      6,
      7
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 204 No Content202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.29.1.4 POST

Operation is not allowed on this resource.

4.29.1.5 DELETE

Note: In current PSME implementation deleting Ethernet Switch Ports will always fail. This functionality is reserved for LAG ports, which are no longer supported.

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.30 Ethernet Switch Port Metrics

Properties details available in `EthernetSwitchPortMetrics_v1.xml` metadata file.

Note: Current version of RSD doesn't implement Ethernet switch port metrics.

Table 78. EthernetSwitchPortMetrics Attributes

Attribute	Type	Nullable	Description
`Received`	`EthernetSwitchPortMetrics.v1_0_0.Metrics`	True	This property shall represent port receive metrics.
`Transmitted`	`EthernetSwitchPortMetrics.v1_0_0.Metrics`	True	This property shall represent port transmit metrics.
`Collisions`	`Edm.Int64`	True	The value of this property shall be Port collisions counter.

4.30.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.30.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchPortMetrics.EthernetSwitchPortMetrics",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics",
  "@odata.type": "#EthernetSwitchPortMetrics.v1_0_0.EthernetSwitchPortMetrics",
  "Name": "Ethernet Switch Port Metrics",
  "Id": "Metrics",
  "Received": {
    "Packets": 8,
    "DroppedPackets": 0,
    "ErrorPackets": 0,
    "BroadcastPackets": 0,
    "MulticastPackets": 0,
    "Errors": 0,
    "Bytes": 64
  },
  "Transmitted": {
    "Packets": 128,
    "DroppedPackets": 0,
    "ErrorPackets": 0,
    "BroadcastPackets": 0,
    "MulticastPackets": 0,
    "Errors": 0,
    "Bytes": 512
  },
  "Collisions": 0,
  "Oem": {}
}
```

4.30.1.2 PUT

Operation is not allowed on this resource.

4.30.1.3 PATCH

Operation is not allowed on this resource.

4.30.1.4 POST

Operation is not allowed on this resource.

4.30.1.5 DELETE

Operation is not allowed on this resource.

4.31 Ethernet Switch ACL Collection

The Ethernet Switch Access Control List (ACL) collection resource provides collection of resources of type `EthernetSwitchACL` defined on switch.

Note: Note: In current PSME implementation ACL Collection will allways be empty. No ACL can be created as this functionality is no longer supported.

Detailed info about this resource properties can be obtained from metadata file:
`EthernetSwitchACLCollection_v1.xml`

Table 79. EthernetSwitchACLCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetSwitchACL.v1_0_0.EthernetSwitchACL)`	True	Contains the Members of this collection.

4.31.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.31.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs",
  "@odata.type": "#EthernetSwitchACLCollection.EthernetSwitchACLCollection",
  "Name": "Ethernet  Switch Access Control List Collection",
  "Description": "Switch Access Control List. Each ACL entry can be bind to any switch
port",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
    }
```

```
  ]
}
```

4.31.1.2 PUT

Operation is not allowed on this resource.

4.31.1.3 PATCH

Operation is not allowed on this resource.

4.31.1.4 POST

The `POST` action is used to create new clean ACL without any rules and bound port. Because of that JSON* used in this post operation shall not contain any properties.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
((created resource body))
```

4.31.1.5 DELETE

Operation is not allowed on this resource.

4.32 Ethernet Switch ACL

The Ethernet Switch ACL resource provides detailed information about a switch ACL defined on a switch.

Detailed info about this resource properties can be obtained from metadata file: `EthernetSwitchACL_v1.xml`.

Table 80. EthernetSwitchACL Attributes

Attribute	Type	Nullable	Description
`Links`	`EthernetSwitchACL.v1_0_0.Links`	False	The `links` object contains the links to other resources that are related to this resource.
`Actions`	`EthernetSwitchACL.v1_0_0.Actions`	False	The `Actions` object contains the available custom actions on this resource.
`Rules`	`EthernetSwitchACLRuleCollection.EthernetSwitchACLRuleCollection`	True	Rules for switch ACL. Each Rule defines single action and at least one condition.

4.32.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.32.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1",
  "@odata.type": "#EthernetSwitchACL.v1_0_0.EthernetSwitchACL",
  "Id": "ACL1",
  "Name": "Example ACL",
  "Description": "User defined description of ACL",
  "Oem": {},
  "Rules": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules"
  },
  "Links": {
    "BoundPorts": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"
      }
    ],
    "Oem": {}
  },
  "Actions": {
    "#EthernetSwitchACL.Bind": {
      "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bind",
      "Port@Redfish.AllowableValues": [
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"
        },
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p3"
        }
      ]
    },
    "#EthernetSwitchACL.Unbind": {
      "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Unbind",
      "Port@Redfish.AllowableValues": [
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"
        }
      ]
    }
  }
}
```

4.32.1.2 PUT

Operation is not allowed on this resource.

4.32.1.3 PATCH

Operation is not allowed on this resource.

4.32.1.4 POST

`POST` action is used to execute one of supported actions:

1. `Bind` - action binds given port to ACL
2. `Unbind` - action will remove given port from ACL

Table 81. Ethernet Switch ACL POST Attributes

Attribute	Type	Required	Description
`Port`	`Link object`	Yes	Provides URI of switch port that should be bind to current ACL. Port should be located on the same switch as ACL is.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bind
Content-Type: application/json
{
  "Port": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.32.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

Note: Switch may contain some pre-defined ACLs that can't be deleted. In case of attempt to delete such rule, "HTTP 400 BadRequest" will be returned along with the extended error info indicating that ACL is persistent.

4.33 Ethernet Switch ACL Rule Collection

The Ethernet Switch ACL Rule Collection resource provides collection of all rules for ACL defined on switch.

Detailed info about this resource properties can be obtained from metadata file:
`EthernetSwitchACLRuleCollection_v1.xml`

Table 82. EthernetSwitchACLRuleCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule)`	True	Contains the members of this collection.

4.33.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.33.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/Rules",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules",
  "@odata.type": "#EthernetSwitchACLRuleCollection.EthernetSwitchACLRuleCollection",
  "Name": "Ethernet  Switch Access Control List Rules Collection",
  "Description": "Rules for switch Access Control List. Each Rule defines single
action and at least one condition",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1"
    }
  ]
}
```

4.33.1.2 PUT

Operation is not allowed on this resource.

4.33.1.3 PATCH

Operation is not allowed on this resource.

4.33.1.4 POST

Attributes of `POST` action can create new ACL rule (refer to Table 83).

Table 83. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
Action	EthernetSwitchACLRule.v1_0_0.ActionType	True	Action that will be executed when rule condition will be met.
ForwardMirrorInterface	EthernetSwitchPort.EthernetSwitchPort	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
MirrorPortRegion	Collection(EthernetSwitchPort.EthernetSwitchPort)	True	Group of interfaces (ports) which should be mirrored.
MirrorType	EthernetSwitchACLRule.v1_0_0.MirrorType	True	Type of mirroring that should be use for Mirror action.
RuleId	Edm.Int64	True	This is ACL rule ID which determines rule priority. If not provided during creation, service will assign default next free Id
Condition	EthernetSwitchACLRule.v1_0_0.ConditionType	True	Property contain set of conditions that should be met to trigger Rule action.

Table 84. ConditionType Attributes

Attribute	Type	Nullable	Description
IPSource	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet source IPv4 address.
IPDestination	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet destination IPv4 address.
MACSource	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet source MAC address.
MACDestination	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet destination MAC address.
VLANId	EthernetSwitchACLRule.v1_0_0.VlanIdConditionType	True	Provides packet VLAN tag ID.
L4SourcePort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 source port.
L4DestinationPort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 destination port.
L4Protocol	Edm.Int64	True	IP layer 4 protocol number as defined in *Protocol Numbers* (refer to Table 2)..

4.33.1.5 DELETE

Operation is not allowed on this resource.

4.34 Ethernet Switch ACL Rule

The Ethernet Switch ACL Rule resource provides detailed information about a switch ACL rule defined identified by `{ruleID}`.

Detailed info about this resource properties can be obtained from metadata file:
`EthernetSwitchACLRule_v1.xml`

Table 85. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
Action	EthernetSwitchACLRule.v1_0_0.ActionType	True	Action that will be executed when rule condition will be met.
ForwardMirrorInterface	EthernetSwitchPort.EthernetSwitchPort	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
MirrorPortRegion	Collection(EthernetSwitchPort.EthernetSwitchPort)	True	Group of interfaces (ports) which should be mirrored.
MirrorType	EthernetSwitchACLRule.v1_0_0.MirrorType	True	Type of mirroring that should be use for the Mirror action.
RuleId	Edm.Int64	True	ACL rule ID which determines rule priority. If not provided during creation, service will assign default next free Id
Condition	EthernetSwitchACLRule.v1_0_0.ConditionType	True	Property contain set of conditions that should be met to trigger Rule action.
RuleId	Edm.Int64	True	ACL rule ID which determines rule priority. If not provided during creation, service will assign default next free Id
Action	EthernetSwitchACLRule.v1_0_0.ActionType	True	Action that will be executed when rule condition will be met.
MirrorType	EthernetSwitchACLRule.v1_0_0.MirrorType	True	Type of mirroring that should be use for the Mirror action.
Condition	EthernetSwitchACLRule.v1_0_0.ConditionType	True	Property contain set of conditions that should be met to trigger the Rule action.
Links	EthernetSwitchACLRule.v1_0_0.Links	False	Contains links to other resources that are related to this resource.
ForwardMirrorInterface	EthernetSwitchPort.EthernetSwitchPort	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
MirrorPortRegion	Collection(EthernetSwitchPort.EthernetSwitchPort)	True	Group of interfaces (ports) which should be mirrored.

4.34.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.34.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1
Content-Type: application/json
```

Response:


```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/Rules/Members/$en
tity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1",
  "@odata.type": "#EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule",
  "Id": "Rule1",
  "Name": "Example Rule",
  "Description": "User defined rule for ACL",
  "RuleId": 1,
  "Action": "Mirror",
  "ForwardMirrorInterface": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port9"
  },
  "MirrorPortRegion": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    },
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port2"
    }
  ],
  "MirrorType": "Bidirectional",
  "Condition": {
    "IPSource": {
      "IPv4Address": "192.168.1.0",
      "Mask": "0.0.0.255"
    },
    "IPDestination": null,
    "MACSource": {
      "Address": "00:11:22:33:44:55",
      "Mask": null
    },
    "MACDestination": null,
    "VLANId": {
      "Id": 1088,
      "Mask": 4095
    },
    "L4SourcePort": {
      "Port": 22,
      "Mask": 255
    },
    "L4DestinationPort": null,
    "L4Protocol": null
  },
  "Oem": {},
  "Links": {}
}
```


4.34.1.2 PUT

Operation is not allowed on this resource.

4.34.1.3 PATCH

Attributes of ACL Rule can be modified by the `PATCH` method (refer to Table 86).

Table 86. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
Action	EthernetSwitchACLRule.v1_0_0.ActionType	True	Action that will be executed when rule condition will be met.
ForwardMirrorInterface	EthernetSwitchPort.EthernetSwitchPort	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
MirrorPortRegion	Collection(EthernetSwitchPort.EthernetSwitchPort)	True	Group of interfaces (ports) which should be mirrored.
MirrorType	EthernetSwitchACLRule.v1_0_0.MirrorType	True	Type of mirroring that should be use for the Mirror action.
RuleId	Edm.Int64	True	This is ACL rule ID which determine rule priority. If not provided during creation, service will assign default next free Id
Condition	EthernetSwitchACLRule.v1_0_0.ConditionType	True	Property contain set of conditions that should be met to trigger the Rule action.

Table 87. ConditionType Attributes

Attribute	Type	Nullable	Description
IPSource	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet source IPv4 address.
IPDestination	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet destination IPv4 address.
MACSource	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet source MAC address.
MACDestination	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet destination MAC address.
VLANId	EthernetSwitchACLRule.v1_0_0.VlanIdConditionType	True	Provides packet VLAN tag ID.
L4SourcePort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 source port.
L4DestinationPort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 destination port.
L4Protocol	Edm.Int64	True	IP layer 4 protocol number as defined in *Protocol Numbers* (refer to Table 2).

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
Content-Type: application/json
{
  "RuleId": 1,
  "Action": "Permit",
  "ForwardMirrorInterface": null,
  "MirrorPortRegion": [],
  "MirrorType": null,
  "Condition": {
    "IPSource": {
      "IPv4Address": "192.168.6.0",
```

```
      "Mask": "0.0.0.255"
    },
    "IPDestination": null,
    "MACSource": null,
    "MACDestination": null,
    "VLANId": null,
    "L4SourcePort": null,
    "L4DestinationPort": null,
    "L4Protocol": null
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.34.1.4 POST

Operation is not allowed on this resource.

4.34.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.35 Ethernet Switch Port Static MAC Collection

The Ethernet Switch Port Static MAC Collection resource provides collection of all static MAC forwarding table entries.

Note: In the current PSME implementation, ACL Collection will allways be empty. No `StaticMAC` can be created as this functionality is no longer supported.

Detailed info about this resource properties can be obtained from metadata file:
`EthernetSwitchACLRuleCollection_v1.xml`

Table 88. EthernetSwitchACLRuleCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule)	True	Contains the members of this collection.

4.35.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.35.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticMACs",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs",
  "@odata.type": "#StaticMACCollection.StaticMACCollection",
  "Name": "Static MAC Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1"
    }
  ]
}
```

4.35.1.2 PUT

Operation is not allowed on this resource.

4.35.1.3 PATCH

Operation is not allowed on this resource.

4.35.1.4 POST

Table 89. Attributes of POST action to create new static MAC entry

Attribute	Type	Required	Description
MACaddress	EthernetInterface.v1_0_0.MACAddress	Yes	MAC address that should be forwarded to this port.
VLANId	Edm.Int32	No	Defines which packets tagged with specific VLAN Id, should be forwarded to this port.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs
Content-Type: application/json
{
```

```
  "MACAddress": "00:11:22:33:44:55",
  "VLANId": 69
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
((created resource body))
```

4.35.1.5 DELETE

Operation is not allowed on this resource.

4.36 Ethernet Switch Port Static MAC

The Ethernet Switch port static MAC resource provides detailed information about a static MAC address forward table entry.

Detailed info about this resource properties can be obtained from metadata file: `EthernetSwitchStaticMAC_v1.xml`.

Table 90. EthernetSwitchStaticMAC Attributes

Attribute	Type	Nullable	Description
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address that should be forwarded to this port.
VLANId	Edm.Int32	True	Defines which packets tagged with specific VLANId should be forwarded to this port.

4.36.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.36.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticMACs/Membe
rs/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1",
  "@odata.type": "#StaticMAC.v1_0_0.StaticMAC",
  "Id": "1",
  "Name": "StaticMAC",
  "Description": "description-as-string",
  "MACAddress": "00:11:22:33:44:55",
  "VLANId": 112,
  "Oem": {}
}
```

4.36.1.2 PUT

Operation is not allowed on this resource.

4.36.1.3 PATCH

Attributes of static MAC that can be modified by the `PATCH` method:

Table 91. StaticMac Attributes

Attribute	Type	Required	Description
`MACaddress`	`String`	Yes	MAC address that should be forwarded to this port
`VLANId`	`Number, null`	No	This if specified defines which packets tagged with specific VLANId should be forwarded to this port.

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
Content-Type: application/json
{
  "MACAddress": "AA:11:22:33:44:55",
  "VLANId": 697
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.36.1.4 POST

Operation is not allowed on this resource.

4.36.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.37 Network Protocol

The Network protocol resource provides detailed information about all network services supported by a manager identified by `{managerID}`.

Table 92. ManagerNetworkProtocol Attributes

Attribute	Type	Nullable	Description
`HostName`	`Edm.String`	True	The value of this property shall contain the host name without any domain information.
`FQDN`	`Edm.String`	True	The value of this property shall contain the fully qualified domain name for the manager.
`HTTP`	`ManagerNetworkProtocol.v1_0_0.Protocol`	False	This object shall contain information for the HTTP protocol settings for the manager. The default value of the Port property should be 80 for compatibility with established client implementations.
`HTTPS`	`ManagerNetworkProtocol.v1_0_0.Protocol`	False	This object shall contain information for the HTTPS/SSL protocol settings for this manager. The default value of the Port property should be “443” for compatibility with established client implementations.
`SNMP`	`ManagerNetworkProtocol.v1_0_0.Protocol`	False	This object shall contain information for the SNMP protocol settings for this manager. The default value of the Port property should be “161” for compatibility with established client implementations.
`VirtualMedia`	`ManagerNetworkProtocol.v1_0_0.Protocol`	False	This object shall contain information for the Virtual Media protocol settings for this manager. The value of the Port property shall contain the TCP port assigned for Virtual Media usage.

Attribute	Type	Nullable	Description
Telnet	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the Telnet protocol settings for this manager. The default value of the Port property should be “23” for compatibility with established client implementations.
SSDP	ManagerNetworkProtocol.v1_0_0.SSDProtocol	False	This object shall contain information for the SSDP protocol settings for this manager. Simple Service Discovery Protocol (SSDP) is for network discovery of devices supporting the Redfish* service. The default value of the Port property should be “1900” for compatibility with established client implementations.
IPMI	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the IPMI over LAN protocol settings for the manager. The default value of the Port property should be “623” for compatibility with established client implementations.
SSH	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the SSH protocol settings for the manager. The default value of the Port property should be “22” for compatibility with established client implementations.
KVMIP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the KVM-IP (Keyboard, Video, Mouse) protocol settings for the manager.
Status	Resource.Status	False	-
DHCP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the DHCP protocol settings for the manager.
NTP	ManagerNetworkProtocol.v1_2_0.NTPProtocol	False	This object shall contain information for the NTP protocol settings for the manager.

Attribute	Type	Nullable	Description
Actions	ManagerNetworkProtocol.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.37.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.37.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/NetworkProtocol
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#ManagerNetworkProtocol.ManagerNetworkProtocol",
  "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol",
  "@odata.type": "#ManagerNetworkProtocol.v1_2_0.ManagerNetworkProtocol",
  "Id": "NetworkProtocol",
  "Name": "Manager Network Protocol",
  "Description": "Manager Network Service Status",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "HostName": "mymanager",
  "FQDN": "mymanager.mydomain.com",
  "HTTP": {
    "ProtocolEnabled": true,
    "Port": 8888
  },
  "HTTPS": {
    "ProtocolEnabled": true,
    "Port": 8443
  },
  "DHCP": {
    "ProtocolEnabled": false
  },
  "IPMI": {
    "ProtocolEnabled": false
  },
  "SSH": {
    "ProtocolEnabled": true,
    "Port": 22
  },
  "SNMP": {
    "ProtocolEnabled": false
  },
  "VirtualMedia": {
    "ProtocolEnabled": false
  },
  "SSDP": {
    "ProtocolEnabled": true,
    "Port": 1900,
```

```
    "NotifyMulticastIntervalSeconds": 600,
    "NotifyTTL": 5,
    "NotifyIPv6Scope": "Site"
  },
  "Telnet": {
    "ProtocolEnabled": false
  },
  "KVMIP": {
    "ProtocolEnabled": false
  },
  "NTP": {
    "ProtocolEnabled": false
  },
  "Actions": {
    "Oem": {}
  },
  "Oem": {}
}
```

4.37.1.2 PUT

Operation is not allowed on this resource.

4.37.1.3 PATCH

Operation is not allowed on this resource.

4.37.1.4 POST

Operation is not allowed on this resource.

4.37.1.5 DELETE

Operation is not allowed on this resource.

4.38 Ethernet Interface Collection

The Ethernet Interface Collection resource provides collection of all Ethernet interfaces supported by a manager identified by `{managerID}` or included in a blade identified by `{bladeID}`.

Table 93. EthernetInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetInterface.EthernetInterface)`	True	Contains the members of this collection.

4.38.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.38.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/EthernetInterfaces
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces",
  "@odata.type": "#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "Name": "Ethernet Network Interface Collection",
  "Description": "Collection of EthernetInterfaces for this Manager",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces/LAN1"
    }
  ]
}
```

4.38.1.2 PUT

Operation is not allowed on this resource.

4.38.1.3 PATCH

Operation is not allowed on this resource.

4.38.1.4 POST

Operation is not allowed on this resource.

4.38.1.5 DELETE

Operation is not allowed on this resource.

4.39 Ethernet Interface

The Ethernet Interface resource provides detailed information about an Ethernet interface identified by `{nicID}`.

For the current API version, this resource is identical with the one described in Section 4.22, System Network Interface.

4.40 VLAN Network Interface Collection

The VLAN Network Interface Collection resource provides collection of all VLAN Network Interfaces existing on a switch port identified by `{portID}` or network interface identified by `{nicID}`.

Table 94. VLanNetworkInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(VLanNetworkInterface.VLanNetworkInterface)`	True	Contains the members of this collection.

4.40.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.40.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs",
  "@odata.type": "#VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection",
  "Name": "VLAN Network Interface Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    }
  ]
}
```

4.40.1.2 PUT

Operation is not allowed on this resource.

4.40.1.3 PATCH

Operation is not allowed on this resource.

4.40.1.4 POST

Table 95. Attributes of POST Action to Create VLAN Network Interface

Attribute	Type	Required	Description
Oem	Object	Yes	OEM defined object “Intel_RackScale” extensions: "Tagged" attribute of type Boolean - Indicates if VLAN is tagged (as defined in IEEE 802.1Q) – required property.
VLANEnable	Boolean	Yes	Indicates if this VLAN is enabled
VLANId	Number	Yes	VLAN identifier for this NIC

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs
Content-Type: application/json
{
  "VLANId": 101,
  "VLANEnable": true,
  "Oem": {
    "Intel_RackScale": {
```

```
      "Tagged": false
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2
((created resource body))
```

4.40.1.5 DELETE

Operation is not allowed on this resource.

4.41 VLAN Network Interface

The VLAN Network Interface resource provides detailed information about a VLAN network interface identified by `{vlanID}`.

Details of this resource are described in metadata file: `VLanNetworkInterface_v1.xml`, OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 96. VLANNetworkInterface Attributes

Attribute	Type	Nullable	Description
`VLANEnable`	`Edm.Boolean`	True	The value of this property shall be used to indicate if this VLAN is enabled for this interface.
`VLANId`	`VLanNetworkInterface.v1_0_0.VLANId`	True	The value of this property shall be used to indicate the VLAN identifier for this VLAN.
`Actions`	`VLanNetworkInterface.v1_1_0.Actions`	False	The Actions property shall contain the available actions for this resource.

4.41.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.41.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1
Content-Type: application/json
```

Response:

```
Response:
{
  "@odata.context": "/redfish/v1/$metadata#VLanNetworkInterface.VLanNetworkInterface",
```

```
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1",
  "@odata.type": "#VLanNetworkInterface.v1_0_0.VLanNetworkInterface",
  "Id": "VLAN1",
  "Name": "VLAN Network Interface",
  "Description": "Switch Port NIC 1 VLAN",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "VLANEnable": true,
  "VLANId": 101,
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.VLanNetworkInterface",
      "Tagged": false
    }
  }
}
```

4.41.1.2 PUT

Operation is not allowed on this resource.

4.41.1.3 PATCH

Following properties can be updated by `PATCH` operation:

Attribute	Type	Required	Description
`VLANId`	Number	No	VLAN identifier for this VLAN. ***Note***: Ability to write this property value is implementation specific. May not work, or work on only some types of VLANs (for example, only untagged VLANs).

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1
Content-Type: application/json
{
  "VLANId": 202
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
Or (when task is created):
HTTP/1.1 204 No Content202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
```

```
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.41.1.4 POST

Operation is not allowed on this resource.

4.41.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.42 Event Service

The event service resource is responsible for sending events to subscribers. Table 97 shows the `EventService` attributes.

Table 97. EventService Attributes

Attribute	Type	Nullable	Description
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled.

Attribute	Type	Nullable	Description
DeliveryRetryAttempts	Edm.Int64	False	The value of this property shall be the number of retrys attempted for any given event to the subscription destination before the subscription is terminated. This retry is at the service level, meaning the HTTP POST to the Event Destination was returned by the HTTP operation as unsuccessful (4xx or 5xx return code) or an HTTP timeout occurred this many times before the Event Destination subscription is terminated.
DeliveryRetryIntervalSeconds	Edm.Int64	False	The value of this property shall be the interval in seconds between the retry attempts for any given event to the subscription destination.
EventTypesForSubscription	Collection(Event.EventType)	False	The value of this property shall be the types of events that subscriptions can subscribe to. The semantics associated with the enumerations values are defined in the Redfish specification.
Actions	EventService.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	-
Subscriptions	EventDestinationCollection.EventDestinationCollection	False	The value of this property shall contain the link to a collection of type EventDestinationCollection.
ServerSentEventUri	Edm.String	False	The value of this property shall be a URI that specifies an HTML5 Server-Sent Event conformant endpoint.

4.42.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.42.1.1 GET

Request:

```
GET /redfish/v1/EventService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventService.EventService",
  "@odata.id": "/redfish/v1/EventService",
  "@odata.type": "#EventService.v1_1_0.EventService",
  "Id": "EventService",
  "Name": "Event Service",
  "Description": "Event Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "ServiceEnabled": true,
  "DeliveryRetryAttempts": 3,
  "DeliveryRetryIntervalSeconds": 60,
  "EventTypesForSubscription": [
    "StatusChange",
    "ResourceUpdated",
    "ResourceAdded",
    "ResourceRemoved",
    "Alert"
  ],
  "Subscriptions": {
    "@odata.id": "/redfish/v1/EventService/Subscriptions"
  },
  "Actions": {
    "#EventService.SendTestEvent": {
      "target": "/redfish/v1/EventService/Actions/EventService.SendTestEvent",
      "EventType@Redfish.AllowableValues": [
        "StatusChange",
        "ResourceUpdated",
        "ResourceAdded",
        "ResourceRemoved",
        "Alert"
      ]
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.42.1.2 PUT

The `PUT` operation is not allowed on the event service resource.

4.42.1.3 PATCH

The `PATCH` operation is not allowed on the event service resource.

4.42.1.4 POST

The `POST` operation is not allowed on the event service resource.

4.42.1.5 DELETE

The `DELETE` operation is not allowed on the event service resource.

4.43 Event Subscription Collection

The event subscription collection is a collection of event destination resources. Table 98 shows the `EventDestinationCollection` attributes.

Table 98. EventDestinationCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EventDestination.EventDestination)`	True	Contains the members of this collection.

4.43.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.43.1.1 GET

Request:

```
GET /redfish/v1/EventService/Subscriptions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EventDestinationCollection.EventDestinationCollection",
  "@odata.type": "#EventDestinationCollection.EventDestinationCollection",
  "@odata.id": "/redfish/v1/EventService/Subscriptions",
  "Name": "Event Subscriptions Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EventService/Subscriptions/1"
    }
  ]
}
```

4.43.1.2 PUT

The `PUT` operation is not allowed on the event subscription collection of resources.

4.43.1.3 PATCH

The `PATCH` operation is not allowed on the event subscription collection of resources.

4.43.1.4 POST

Request:

```
POST /redfish/v1/EventService/Subscriptions
Content-Type: application/json
{
  "Name": "EventSubscription 2",
  "Destination": "http://10.0.0.1/Destination1",
  "EventTypes": [
    "ResourceAdded",
    "ResourceRemoved"
  ],
  "Context": "HotSwap events",
  "Protocol": "Redfish",
  "SubscriptionType": "RedfishEvent"
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/EventService/Subscriptions/2
((created resource body))
```

4.43.1.5 DELETE

The `DELETE` operation is not allowed on the event subscription collection of resources.

4.44 Event Subscription

The event subscription contains information about the types of events a user subscribed for and should be sent. Table 99 describes the `EventDestination` attributes.

Table 99. EventDestination Attributes

Attribute	Type	Nullable	Description
`Destination`	`Edm.String`	False	This property shall contain a URI to the destination where the events will be sent.
`EventTypes`	`Collection(Event.EventType)`	False	This property shall contain the types of events that shall be sent to the destination.
`Context`	`Edm.String`	True	This property shall contain a client supplied context that will remain with the connection through the connections lifetime.

Attribute	Type	Nullable	Description
Protocol	EventDestination.v1_0_0.EventDestinationProtocol	False	This property shall contain the protocol type that the event will use for sending the event to the destination. A value of Redfish* shall be used to indicate that the event type shall adhere to that defined in the Redfish specification.
HttpHeaders	Collection(EventDestination.v1_0_0.HttpHeaderProperty)	False	This property shall contain an object consisting of the names and values of HTTP header to be included with every event POST to the Event Destination. This property shall be null on a GET.
MessageIds	Collection(Edm.String)	True	The value of this property shall specify an array of MessageIds that are the only allowable values for the MessageId property within an EventRecord sent to the subscriber. Events with MessageIds not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events with any MessageId to the subscriber.

Attribute	Type	Nullable	Description
OriginResources	Collection(Resource.ItemOrCollection)	True	The value of this property shall specify an array of Resources, Resource Collections, or Referenceable Members that are the only allowable values for the OriginOfCondition property within an EventRecord sent to the subscriber. Events originating from Resources, Resource Collections, or Referenceable Members not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events originating from any Resource, Resource Collection, or Referenceable Member to the subscriber.
Actions	EventDestination.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
SubscriptionType	EventDestination.v1_3_0.SubscriptionType	True	The value of this property shall indicate the type of subscription for events. If this property is not present, the SubscriptionType shall be assumed to be RedfishEvent.

Table 100. EventType Attributes

Member	Description
StatusChange	The status of this resource has changed.
ResourceUpdated	The value of this resource has been updated.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
Alert	A condition exists which requires attention.

4.44.1 Metadata

The definition of the resource is available in the *http://redfish.dmtf.org/schemas/EventDestination_v1.xml* metadata file.

4.44.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.44.2.1 GET

Request:

```
GET /redfish/v1/EventService/Subscriptions/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventDestination.EventDestination",
  "@odata.id": "/redfish/v1/EventService/Subscriptions/1",
  "@odata.type": "#EventDestination.v1_3_0.EventDestination",
  "Id": "1",
  "Name": "EventSubscription 1",
  "Description": "description-as-string",
  "Destination": "http://www.dnsname.com/Destination1",
  "EventTypes": [
    "Alert"
  ],
  "Context": "ABCDEFGHJLKJ",
  "Protocol": "Redfish",
  "SubscriptionType": "RedfishEvent",
  "Actions": {
    "Oem": {}
  }
}
```

4.44.2.2 PUT

The operation is not allowed on the event subscription resource.

4.44.2.3 PATCH

The operation is not allowed on the event subscription resource.

4.44.2.4 POST

The operation is not allowed on the event subscription resource.

4.44.2.5 DELETE

Request:

```
DELETE redfish/v1/EventService/Subscriptions/1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
```

```
  "TaskStatus": "OK",
  "Messages": []
}
```

4.45 Event Array

This resource represents the collection of events that are sent by the Event Service to active subscribers. It represents the properties for the events themselves and not subscriptions or other resources. Each event in the array has a set of properties that describe the event. Because this is an array, more than one event can be sent simultaneously. Table 101 describes the `Event` attributes.

Table 101. Event Attributes

Attribute	Type	Nullable	Description
`Events`	`Collection(Event.v1_0_0.EventRecord)`	True	The value of this resource shall be an array of Event objects used to represent the occurrence of one or more events.
`Context`	`Edm.String`	False	This property shall contain a client supplied context for the Event Destination to which this event is being sent.
`Actions`	`Event.v1_2_0.Actions`	False	The Actions property shall contain the available actions for this resource.

4.45.1 Metadata

The definition of the resource is available in the *http://redfish.dmtf.org/schemas/Event_v1.xml* metadata file.

4.45.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.45.2.1 GET

The `GET` operation is not allowed on the event array resource.

4.45.2.2 PUT

The `PUT` operation is not allowed on the event array resource.

4.45.2.3 PATCH

The `PATCH` operation is not allowed on the event array resource.

4.45.2.4 POST

Request:

```
POST http://192.168.1.1/Destination1
Content-Type: application/json
{
```

```
  "@odata.context": "/redfish/v1/$metadata#EventService/Members/Events/1",
  "@odata.id": "/redfish/v1/EventService/Events/1",
  "@odata.type": "#Event.v1_2_0.Event",
  "Id": "1",
  "Name": "Event Array",
  "Description": "Events",
  "Events": [
  {
  "EventType": "ResourceRemoved",
  "EventId": "ABC132489713478812346",
  "Severity": "Ok",
  "EventTimestamp": "2015-02-23T14:44:44+00:00",
  "Message": "The Blade was removed",
  "MessageId": "Base.1.0.Success",
  "MessageArgs": [],
    "OriginOfCondition": {
      "@odata.id": "/redfish/v1/Systems/System1"
  },
    "Context": "HotSwap event"
  }
  ]

}
```

Response:

```
HTTP/1.1 204 No Content
```

4.45.2.5 DELETE

The `DELETE` operation is not allowed on the event array resource.

4.46 Fabric Collection

Properties details available in `FabricCollection_v1.xml` metadata file.

Table 102. FabricCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Fabric.Fabric)`	True	Contains the members of this collection.

4.46.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.46.1.1 GET

Request:

```
GET /redfish/v1/Fabrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#FabricCollection.FabricCollection",
  "@odata.id": "/redfish/v1/Fabrics",
  "@odata.type": "#FabricCollection.FabricCollection",
```

```
  "Description": "Fabric Collection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/FPGA-oF"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Fabric Collection"
}
```

4.46.1.2 PUT

Operation is not allowed on this resource.

4.46.1.3 PATCH

Operation is not allowed on this resource.

4.46.1.4 POST

Operation is not allowed on this resource.

4.46.1.5 DELETE

Operation is not allowed on this resource.

4.47 Fabric

Properties details available in the `Fabric_v1.xml` metadata file.

Table 103. Fabric Attributes

Attribute	Type	Nullable	Description
`FabricType`	`Protocol.Protocol`	True	The value of this property shall contain the type of fabric being represented by this simple fabric.
`Status`	`Resource.Status`	False	-
`MaxZones`	`Edm.Int64`	True	The value of this property shall contain the maximum number of zones the switch can currently configure. This value can change based on changes in the logical or physical configuration of the system.
`Links`	`Fabric.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

Attribute	Type	Nullable	Description
Actions	Fabric.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Zones	ZoneCollection.ZoneCollection	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Zone type.
Endpoints	EndpointCollection.EndpointCollection	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Endpoint type.
Switches	SwitchCollection.SwitchCollection	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Switch type.

4.47.1 Intel® RSD OEM Extensions

Table 104. Fabric Attributes

Attribute	Type	Nullable	Description
FabricType	Intel.Oem.Protocol	True	Additional specification for OEM FabricType. Shall be specified if the Redfish FabricType is OEM (refer to Table 2).

Table 105. FabricLinks Attributes

Attribute	Type	Nullable	Description
ManagedBy	Collection(Manager.Manager)	True	Collection of managers managing the service.

4.47.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.47.2.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Fabric.Fabric",
  "@odata.id": "/redfish/v1/Fabrics/PCIe",
  "@odata.type": "#Fabric.v1_0_0.Fabric",
  "Id": "PCIe",
  "Name": "PCIe Fabric",
```

```
  "FabricType": "PCIe",
  "Description": "PCIe Fabric",
  "MaxZones": 8,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "Zones": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones"
  },
  "Endpoints": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints"
  },
  "Switches": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches"
  },
  "Links": {
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.FabricLinks",
        "ManagedBy": [
          {
            "@odata.id": "/redfish/v1/Managers/PSME"
          }
        ]
      }
    }
  },
  "Actions": {
    "Oem": {}
  },
  "Oem": {}
}
```

4.47.2.1.1 PUT

Operation is not allowed on this resource.

4.47.2.1.2 PATCH

Operation is not allowed on this resource.

4.47.2.1.3 POST

Operation is not allowed on this resource.

4.47.2.1.4 DELETE

Operation is not allowed on this resource.

4.48 Switch Collection

Properties details available in `SwitchCollection_v1.xml` metadata file.

Table 106. SwitchCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Switch.Switch)	True	Contains the members of this collection.

4.48.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.48.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SwitchCollection.SwitchCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches",
  "@odata.type": "#SwitchCollection.SwitchCollection",
  "Name": "Switch Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
    }
  ]
}
```

4.48.1.2 PUT

Operation is not allowed on this resource.

4.48.1.3 PATCH

Operation is not allowed on this resource.

4.48.1.4 4POST

Operation is not allowed on this resource.

4.48.1.5 DELETE

Operation is not allowed on this resource.

4.49 Switch

Properties details available in Switch_v1.xml metadata file.

Table 107. Switch Attributes

Attribute	Type	Nullable	Description
SwitchType	Protocol.Protocol	True	The value of this property shall contain the type of switch being represented by this simple switch.
Status	Resource.Status	False	-
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the switch. This organization might be the entity from whom the switch is purchased, but this is not necessarily true.
Model	Edm.String	True	This property shall indicate the model information as provided by the manufacturer of this switch.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this switch.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer-allocated number used to identify the switch.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the switch.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.
DomainID	Edm.Int64	True	The value of this property shall have a scope of uniqueness within the fabric of which the switch is a member.
IsManaged	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this switch is in a managed or unmanaged state.
TotalSwitchWidth	Edm.Int64	True	The value of this property shall be the number of physical transport lanes, phys, or other physical transport links that this switch contains. For PCIe*, this shall be lane count.

Attribute	Type	Nullable	Description
IndicatorLED	Resource.IndicatorLED	True	This value of this property shall contain the indicator light state for the indicator light associated with this switch.
PowerState	Resource.PowerState	True	The value of this property shall contain the power state of the switch.
Links	Switch.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Switch.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Ports	PortCollection.PortCollection	False	The value of this property shall be a reference to the resources that this switch contains and shall reference a resource of type Port.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the switches.
LogServices	LogServiceCollection.LogServiceCollection	True	The value of this property shall be a link to a collection of type LogServiceCollection
Location	Resource.Location	False	-

4.49.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.49.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Switch.Switch",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1",
  "@odata.type": "#Switch.v1_0_0.Switch",
  "Id": "1",
  "Name": "PCIe Switch",
  "Description": "PCIe Switch",
  "SwitchType": "PCIe",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
```

```
  },
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "1234567890",
  "PartNumber": "997",
  "AssetTag": "Customer Asset Tag",
  "DomainID": 1,
  "IsManaged": true,
  "TotalSwitchWidth": 97,
  "IndicatorLED": null,
  "PowerState": "On",
  "Ports": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports"
  },
  "Redundancy": [],
  "Links": {
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1"
      }
    ],
    "ManagedBy": [],
    "Oem": {}
  },
  "Actions": {
    "#Switch.Reset": {
      "target": "/redfish/v1/Fabrics/PCIe/Switches/1/Actions/Switch.Reset",
      "ResetType@Redfish.AllowableValues": [
        "GracefulRestart"
      ]
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.49.1.2 PUT

Operation is not allowed on this resource.

4.49.1.3 PATCH

Operation is not allowed on this resource.

4.49.1.4 POST

Request:

```
POST /redfish/v1/Fabrics/PCIe/Switches/1/Actions/Switch.Reset
Content-Type: application/json
{
  "ResetType": "GracefulRestart"
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.49.1.5 DELETE

Operation is not allowed on this resource.

4.50 Collection

Properties details available in `PortCollection_v1.xml` metadata file.

Table 108. PortCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Port.Port)`	True	Contains the members of this collection.

4.50.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.50.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports",
  "@odata.type": "#EthernetSwitchPortCollection.EthernetSwitchPortCollection",
  "Name": "Ethernet  Switch Port Collection",
  "Description": "Switch Port Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    }
  ]
}
```

4.50.1.2 PUT

Operation is not allowed on this resource.

4.50.1.3 PATCH

Operation is not allowed on this resource.

4.50.1.4 POST

Operation is not allowed on this resource.

4.50.1.5 DELETE

Operation is not allowed on this resource.

4.51 Port

Properties details available in Port_v1.xml metadata file. OEM extensions details available in IntelRackScaleOem_v1.xml.

Table 109. Port Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	False	-
PortId	Edm.String	True	The value of this property shall be the name of the switch port as indicated on the outside of the switch.
PortProtocol	Protocol.Protocol	True	The value of this property shall contain the protocol being sent over this port.
PortType	Port.v1_0_0.PortType	True	The value of this property shall be the port type for this port.
CurrentSpeedGbps	Edm.Decimal	True	The value of this property shall be the speed of this port currently negotiated and running.
MaxSpeedGbps	Edm.Decimal	True	The value of this property shall be the maximum speed of which this port is capable of configuring. If capable of auto-negotiation, the system shall attempt to negotiate at the maximum speed set.
Width	Edm.Int64	True	The value of this property shall be the number of physical transport links that this port contains.
Links	Port.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Port.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Location	Resource.Location	False	-

Table 110. Port Attributes

Attribute	Type	Nullable	Description
PCIeConnectionId	Collection(Edm.String)	True	An array of references to the PCIe connection identifiers (for example, cable ID).
Metrics	PortMetrics.PortMetrics	False	A reference to the Metrics associated with this Port.

4.51.1.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.51.1.2 GET

4.51.1.2.1 Upstream Port

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1",
  "@odata.type": "#Port.v1_1_0.Port",
  "Id": "Up1",
  "Name": "PCIe Upstream Port 1",
  "Description": "PCIe Upstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "PCIe",
  "PortType": "UpstreamPort",
  "CurrentSpeedGbps": 32,
  "Width": 4,
  "MaxSpeedGbps": 64,
  "Actions": {
    "#Port.Reset": {
      "target":
"/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Actions/PCIePort.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceOff",
        "ForceRestart",
        "ForceOn"
      ]
    },
    "Oem": {}
  },
  "Links": {
    "AssociatedEndpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ],
    "ConnectedSwitches": [],
    "ConnectedSwitchPorts": []
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Port",
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "Metrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics"
```

```
      }
    }
  }
}
```

4.51.1.2.2 Downstream Port

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1",
  "@odata.type": "#Port.v1_1_0.Port",
  "Id": "Down1",
  "Name": "PCIe Downstream Port 1",
  "Description": "PCIe Downstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "PCIe",
  "PortType": "DownstreamPort",
  "CurrentSpeedGbps": 32,
  "Width": 4,
  "MaxSpeedGbps": 64,
  "Actions": {
    "#Port.Reset": {
      "target":
"/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Actions/PCIePort.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceOff",
        "ForceRestart",
        "ForceOn"
      ]
    },
    "Oem": {}
  },
  "Links": {
    "AssociatedEndpoints": [],
    "ConnectedSwitches": [],
    "ConnectedSwitchPorts": []
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Port",
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "Metrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Metrics"
      }
    }
  }
}
```

4.51.1.3 PUT

Operation is not allowed on this resource.

4.51.1.4 PATCH

Operation is not allowed on this resource.

4.51.1.5 POST

Request:

```
POST /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Actions/PCIePort.Reset
Content-Type: application/json
{
  "ResetType": "ForceRestart"
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.51.2 DELETE

Operation is not allowed on this resource.

4.52 Port Metrics

Properties details available in the `PortMetrics_v1.xml` metadata file.

Table 111. PortMetrics Attributes

Attribute	Type	Nullable	Description
`Health`	`Edm.String`	True	The value of this property shall be Port health as a discrete sensor reading.
`Actions`	`PortMetrics.v1_0_0.Actions`	True	The `Actions` property shall contain the available actions for this resource.

4.52.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.52.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Port/Metrics/$entity",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics ",
  "@odata.type": "#PortMetrics.v1_0_0.PortMetrics",
  "Name": "Fabric Port Metrics for Up1",
```

```
  "Description": "description-as-string",
  "Id": "Metrics for Up1",
  "Health": "OK"
}
```

4.52.1.2 PUT

Operation is not allowed on this resource.

4.52.1.3 PATCH

Operation is not allowed on this resource.

4.52.1.4 POST

Operation is not allowed on this resource.

4.52.1.5 DELETE

Operation is not allowed on this resource.

4.53 Zone Collection

Properties details available in `ZoneCollection_v1.xml` metadata file.

Attribute	Type	Nullable	Description
`Members`	`Collection(Zone.Zone)`	True	Contains the members of this collection.

4.53.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.53.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Zones
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ZoneCollection.ZoneCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones",
  "@odata.type": "#ZoneCollection.ZoneCollection",
  "Name": "PCIe Zone Collection",
  "Description": "PCIe Zone Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
    }
  ]
}
```

4.53.1.2 PUT

Operation is not allowed on this resource.

4.53.1.3 PATCH

Operation is not allowed on this resource.

4.53.1.4 POST

To create new Fabric zone, initial zone structure should be provided in `POST` operation.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Zones
Content-Type: application/json
{
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Zones/2
((created resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.53.1.5 DELETE

Operation is not allowed on this resource.

4.53.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Zones
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, POST
```

4.54 Zone

Properties details available in `Zone_v1.xml` metadata file.

Table 112. Zone Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	-
`Links`	`Zone.v1_0_0.Links`	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`Actions`	`Zone.v1_1_0.Actions`	False	The Actions property shall contain the available actions for this resource.
`Identifiers`	`Collection(Resource.Identifier)`	True	Identifiers for this zone shall be unique in the context of other zones.

4.54.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.54.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Zones/Zone1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Zone.Zone",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1",
  "@odata.type": "#Zone.v1_2_0.Zone",
  "Id": "Zone1",
  "Name": "PCIe Zone 1",
  "Description": "PCIe Zone 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
```

```
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ],
    "InvolvedSwitches": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
      }
    ],
    "Oem": {}
  },
  "Actions": {
    "Oem": {}
  }
}
```

4.54.1.2 PUT

The `PUT` operation is not allowed on the zones resource.

4.54.1.3 PATCH

Note: `PATCH` operation on Zone is not Redfish* compliant. Refer to Redfish issue #2912 in the *Redfish Bug Tracker* (refer to Table 2).

`PATCH` method can be used to add or remove Endpoints from a Zone. Service require to always provide complete representation of `Endpoints` array. A partial update is not supported.

The following properties can be updated by the `PATCH` operation:

Table 113. Links Attributes

Attribute	Type	Nullable	Description
`Endpoints`	`Collection(Endpoint.Endpoint)`	True	The value of this property shall be a reference to the resources that this zone is associated with and shall reference a resource of type Endpoint.

Request:

```
PATCH /redfish/v1/Fabrics/PCIe/Zones/Zone1
Content-Type: application/json
{
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.54.1.4 POST

The `POST` operation is not allowed on the zones resource.

4.54.1.5 DELETE

Request:

```
DELETE redfish/v1/Fabrics/PCIe/Zones/Zone1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.54.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Zones/Zone1
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, PATCH, DELETE
```

4.55 Endpoint Collection

Properties details available in `EndpointCollection_v1.xml` metadata file.

Table 114. EndpointCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Endpoint.Endpoint)`	True	Contains the members of this collection.

4.55.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.55.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EndpointCollection.EndpointCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints",
  "@odata.type": "#EndpointCollection.EndpointCollection",
  "Name": "PCIe Endpoint Collection",
  "Members@odata.count": 3,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF2"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/HostRootComplex1"
    }
  ]
}
```

4.55.1.2 PUT

Operation is not allowed on this resource.

4.55.1.3 PATCH

Operation is not allowed on this resource.

4.55.1.4 POST

Table Table 115 describes the Endpoint POST properties. In addition, Table 116 shows the Identifiers `POST` properties, Table 117 shows `ConnectedEntities` POST properties, Table 118 shows IPTransportDetails POST properties, Table 119 shows the `DurableNameFormat` attributes, and Table 120 shows the `EntityRole` attributes.

Table 115. Endpoint Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	True	-
EndpointProtocol	Protocol.Protocol	True	The value of this property shall contain the protocol this endpoint uses to communicate with other endpoints on this fabric.
ConnectedEntities	Collection(Endpoint.v1_0_0.ConnectedEntity)	True	This value of this property shall contain all the entities which this endpoint allows access to.
Identifiers	Collection(Resource.Identifier)	True	Identifiers for this endpoint shall be unique in the context of other endpoints that can reached over the connected network.
PciId	Endpoint.v1_0_0.PciId	True	The value of this property shall be the PCI ID of the endpoint.
HostReservationMemoryBytes	Edm.Int64	True	The value of this property shall be the amount of memory, in bytes, that the Host should allocate to connect to this endpoint.
Links	Endpoint.v1_0_0.Links	False	The links object contains the links to other resources that are related to this resource.
Actions	Endpoint.v1_0_0.Actions	False	The Actions object contains the available custom actions on this resource.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the lower level endpoints supporting this endpoint.
IPTransportDetails	Collection(Endpoint.v1_1_0.IPTransportDetails)	True	This array shall contain the details for each IP transport supported by this endpoint.

Table 116. Identifier Attributes

Attribute	Type	Nullable	Description
DurableName	Edm.String	True	This property shall contain the world wide unique identifier for the resource. The string shall be in the format described by the value of the Identifier.DurableNameFormat property.
DurableNameFormat	Resource.v1_1_0.DurableNameFormat	True	This property shall represent the format of the DurableName property.

Table 117. ConnectedEntity Attributes

Attribute	Type	Nullable	Description
EntityType	Endpoint.v1_0_0.EntityType	True	The value of this property shall indicate if type of connected entity.
EntityRole	Endpoint.v1_0_0.EntityRole	True	The value of this property shall indicate if the specified entity is an initiator, target, or both.
EntityPciId	Endpoint.v1_0_0.PciId	True	The value of this property shall be the PCI ID of the connected PCIe entity.
PciFunctionNumber	Edm.Int64	True	The value of this property shall be the PCI Function Number of the connected PCIe entity.
PciClassCode	Edm.String	True	The value of this property shall be the PCI Class Code, Subclass code, and Programming Interface code of the PCIe device function.
Identifiers	Collection(Resource.Identifier)	True	Identifiers for the remote entity shall be unique in the context of other resources that can reached over the connected network.
Oem	Resource.Oem	True	-
EntityLink	Resource.Resource	True	This property shall be a reference to an entity of the type specified by the description of the value of the EntityType property.

Table 118. IPTransportDetails Attributes

Attribute	Type	Nullable	Description
TransportProtocol	Protocol.Protocol	False	The value shall be the protocol used by the connection entity.
IPv4Address	IPAddresses.IPv4Address	False	The value of this property shall specify the IPv4Address.
IPv6Address	IPAddresses.IPv6Address	False	The value of this property shall specify the IPv6Address.
Port	Edm.Decimal	False	The value of this property shall be an specify UDP or TCP port number used for communication with the Endpoint.

Table 119. DurableNameFormat Attributes

Member	Description
NAA	This durable name shall be a hexadecimal representation of the Name Address Authority structure as defined in *Fibre Channel Framing and Signaling - 4* (refer to Table 2).

Member	Description
iQN	This durable name shall be in the iSCSI Qualified Name format as defined in RFC 3720 and RFC 3721.
FC_WWN	This durable name shall be a hexadecimal representation of the World Wide Name format as defined in the T11 Fibre Channel Physical and Signaling Interface Specification.
UUID	This durable name shall be the hexadecimal representation of the Universal Unique Identifier as defined in the Internation Telecom Union's OSI networking and system aspects - Naming, Addressing and Registration Specification.
EUI	This durable name shall be the hexadecimal representation of the IEEE-defined 64-bit Extended Unique Identifier as defined in the IEEE's Guidelines for 64-bit Global Identifier (EUI-64) Specification.
NQN	This durable name shall be in the Non-Volatile Memory express* (NVMe*) Qualified Name format as defined in the NVN Express over Fabric Specification.
NSID	This durable name shall be in the NVM Namespace Identifier format as defined in the NVN Express Specification.

Table 120. EntityRole Attributes

Member	Description
Initiator	The entity is acting as an initiator.
Target	The entity is acting as a target.
Both	The entity is acting as both an initiator and a target.

4.55.1.4.1 PNC Initiator Endpoint

This example shows a POST operation to create Initiator endpoint for FPGA to specified port.

Note: The field "Links" is mandatory for a PNC Initiator endpoint and must contain a link to a port.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "PCIe",
  "ConnectedEntities": [
    {
      "EntityRole": "Initiator",
      "EntityLink": null
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.55.1.4.2 FPGA over PCIe* Target Endpoint

This example shows a POST operation to create Target endpoint for FPGA over PCIe*.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "PCIe",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      }
    }
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.55.1.4.3 FPGA-oF Initiator Endpoint

This example shows a `POST` operation to create Initiator endpoint for FPGA-oF.

Note: The Identifier should be the Host ID used by FPGA-oF software running on the initiator host.

Request:

```
POST /redfish/v1/Fabrics/FPGA-oF/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "OEM",
  "ConnectedEntities": [
    {
      "EntityRole": "Initiator",
      "EntityLink": null
    }
  ],
  "Identifiers": [
    {
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.55.1.4.4 FPGA-oF Target Endpoint

This example shows a `POST` operation to create Target endpoint for FPGA-oF.

Request:

```
POST /redfish/v1/Fabrics/FPGA-oF/Endpoints
Content-Type: application/json
{
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      }
    }
  ],
  "Identifiers": [
    {
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "IPTransportDetails": [
    {
      "TransportProtocol": "RoCEv2",
      "IPv4Address": {
        "Address": "192.168.0.10"
      },
      "IPv6Address": {},
      "Port": 4424
    }
  ],
  "EndpointProtocol": "OEM",
  "Oem": {
    "Intel_RackScale": {
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.55.1.5 DELETE

Operation is not allowed on this resource.

4.55.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Endpoints
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, POST
```

4.56 Endpoint

Properties details are available in the `Endpoint_v1.xml` metadata file.

Note: `EntityLink` property may not present or may be null on PSME. This property may be filled by PODM if all resources are available.

Table 121. Endpoint Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`EndpointProtocol`	`Protocol.Protocol`	True	The value of this property shall contain the protocol this endpoint uses to communicate with other endpoints on this fabric.
`ConnectedEntities`	`Collection(Endpoint.v1_0_0.ConnectedEntity)`	True	This value of this property shall contain all the entities which this endpoint allows access to.
`Identifiers`	`Collection(Resource.Identifier)`	True	Identifiers for this endpoint shall be unique in the context of other endpoints that can reached over the connected network.
`PciId`	`Endpoint.v1_0_0.PciId`	True	The value of this property shall be the PCI ID of the endpoint.
`HostReservationMemoryBytes`	`Edm.Int64`	True	The value of this property shall be the amount of memory in bytes that the Host should allocate to connect to this endpoint.
`Links`	`Endpoint.v1_0_0.Links`	false	The `links` object contains the links to other resources that are related to this resource.
`Actions`	`Endpoint.v1_0_0.Actions`	false	The `Actions` object contains the available custom actions on this resource.
`Redundancy`	`Collection(Redundancy.Redundancy)`	True	Redundancy information for the lower level endpoints supporting this endpoint.
`IPTransportDetails`	`Collection(Endpoint.v1_1_0.IPTransportDetails)`	True	This array shall contain the details for each IP transport supported by this endpoint.
`Status`	`Resource.Status`	True	-
`EndpointProtocol`	`Protocol.Protocol`	True	The value of this property shall contain the protocol this endpoint uses to communicate with other endpoints on this fabric.

Attribute	Type	Nullable	Description
ConnectedEntities	Collection(Endpoint.v1_0_0.ConnectedEntity)	True	This value of this property shall contain all the entities which this endpoint allows access to.
Identifiers	Collection(Resource.Identifier)	True	Identifiers for this endpoint shall be unique in the context of other endpoints that can reached over the connected network.
PciId	Endpoint.v1_0_0.PciId	True	The value of this property shall be the PCI ID of the endpoint.
HostReservationMemoryBytes	Edm.Int64	True	The value of this property shall be the amount of memory in bytes that the Host should allocate to connect to this endpoint.
Links	Endpoint.v1_0_0.Links	false	The links object contains the links to other resources that are related to this resource.
Actions	Endpoint.v1_0_0.Actions	false	The Actions object contains the available custom actions on this resource.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the lower level endpoints supporting this endpoint.
IPTransportDetails	Collection(Endpoint.v1_1_0.IPTransportDetails)	True	This array shall contain the details for each IP transport supported by this endpoint.

4.56.1 Intel® RSD OEM extensions:

Table 122. Endpoint Attributes

Attribute	Type	Nullable	Description
Authentication	Intel.Oem.EndpointAuthentication	True	This property provides information about the required credentials for endpoint authentication.
EndpointProtocol	Intel.Oem.Protocol	True	Additional specification for OEM EndpointProtocol. Shall be specified if the Redfish EndpointProtocol is OEM.

4.56.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.56.2.1 GET

4.56.2.1.1 NVMe* Drive Over PCIe* Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "NVMeDrivePF1",
  "Name": "NVMe Drive",
  "Description": "The PCIe Physical function of an 850GB NVMe drive",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.0"
      },
      "Identifiers": [],
      "Oem": {}
    }
  ],
  "Redundancy": [],
  "HostReservationMemoryBytes": null,
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1"
      }
    ]
  },
  "Oem": {},
  "Actions": {
    "Oem": {}
  }
}
```

4.56.2.1.2 FPGA over PCIe* Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint3
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Endpoint1",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Endpoint",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      },
      "Identifiers": [],
      "Oem": {}
    }
  ],
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null
    }
```

```
  }
}
```

4.56.2.1.3 PNC Initiator Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Endpoint2",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Initiator Endpoint",
  "ConnectedEntities": [
    {
      "EntityLink": null,
      "EntityRole": "Initiator"
    }
  ],
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  },
  "Status": {
    "Health": null,
    "HealthRollup": null,
    "State": null
  },
  "Oem": {
    "Intel_RackScale": {
```

```
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null
    }
```

4.56.2.1.4 FPGA-oF Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/FPGA-oF/Endpoints/Target
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Target",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Target",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Endpoint",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      },
      "Oem": {}
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "IPTransportDetails": [
    {
      "TransportProtocol": "RoCEv2",
      "IPv4Address": {
        "Address": "192.168.0.10"
      },
      "IPv6Address": {},
      "Port": 4424
    }
  ],
  "Links": {
    "Ports": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": [
```

```
          {
            "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
          }
        ]
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null,
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

4.56.2.1.5 FPGA-oF Initiator Endpoint

Request:

```
GET /redfish/v1/Fabrics/FPGA-oF/Endpoints/Initiator
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Initiator",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Initiator",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Initiator Endpoint",
  "ConnectedEntities": [
    {
      "EntityLink": null,
      "EntityRole": "Initiator"
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Links": {
    "Ports": [],
    "Endpoints": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": []
```

```
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null,
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

4.56.2.2 PUT

Operation is not allowed on this resource.

4.56.2.3 PATCH

Operation is not allowed on this resource.

4.56.2.4 POST

Operation is not allowed on this resource.

4.56.2.5 DELETE

Request:

```
DELETE redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.56.2.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, DELETE
```

4.57 PCIe* Device

Properties details available in `PCIeDevice_v1.xml` metadata file. This resource is required for Pooled Node Controller (PNC) service.

Note: Chassis property in the Links section in Rack Scale Design implementation shall point to single Chassis (array contain only one element).

Table 123. PCIeDevice Attributes

Attribute	Type	Nullable	Description
`Manufacturer`	`Edm.String`	True	The value of this property shall be the name of the organization responsible for producing the PCIe device. This organization might be the entity from whom the PCIe device is purchased, but this is not necessarily true.
`Model`	`Edm.String`	True	The value of this property shall be the name by which the manufacturer generally refers to the PCIe device.
`SKU`	`Edm.String`	True	The value of this property shall be the stock-keeping unit number for this PCIe device.
`SerialNumber`	`Edm.String`	True	The value of this property shall be a manufacturer-allocated number used to identify the PCIe device.
`PartNumber`	`Edm.String`	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the PCIe device.
`AssetTag`	`Edm.String`	True	The value of this property shall be an identifying string used to track the PCIe device for inventory purposes.
`DeviceType`	`PCIeDevice.v1_0_0.DeviceType`	False	The value of this property shall be the device type of the PCIe device such as `SingleFunction` or `MultiFunction`.

Attribute	Type	Nullable	Description
FirmwareVersion	Edm.String	True	The value of this property shall be the firmware version of the PCIe device.
Status	Resource.Status	True	-
Links	PCIeDevice.v1_0_0.Links	False	The links object contains the links to other resources that are related to this resource.
Actions	PCIeDevice.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of the Assembly type.

4.57.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.57.1.1 GET

Request:

```
GET /redfish/v1/Chassis/1/PCIeDevices/Device1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeDevice.PCIeDevice",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1",
  "@odata.type": "#PCIeDevice.v1_2_0.PCIeDevice",
  "Id": " Device1",
  "Name": "NVMe SSD Drive",
  "Description": "Simple NVMe Drive",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Intel",
  "Model": "Model Name",
  "SKU": "",
  "SerialNumber": "SN123456",
  "PartNumber": "",
  "DeviceType": "SingleFunction",
  "FirmwareVersion": "XYZ1234",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Links": {
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      }
    ],
    "PCIeFunctions": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1"
      }
```

```
    ],
    "Oem": {}
  },
  "Oem": {}
}
```

4.57.1.2 PUT

Operation is not allowed on this resource.

4.57.1.3 PATCH

Table 124 describes the properties that can be updated by the `PATCH` operation:

Table 124. PCIeDevice Attributes

Attribute	Type	Nullable	Description
`AssetTag`	`Edm.String`	True	The value of this property shall be an identifying string used to track the PCIe device for inventory purposes.

Request:

```
PATCH /redfish/v1/Chassis/1/PCIeDevices/Device1
Content-Type: application/json
{
  "AssetTag": "NVMe drive #1"
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.57.1.4 POST

Operation is not allowed on this resource.

4.57.1.5 DELETE

Operation is not allowed on this resource.

4.58 PCIe* Device Function

Properties details available in the `PCIeFunction_v1.xml` metadata file. This resource is required for the PNC service.

Table 125. PCIeFunction Attributes

Attribute	Type	Nullable	Description
FunctionId	Edm.Int64	True	The value of this property shall the PCIe device function number within a given PCIe device.
FunctionType	PCIeFunction.v1_0_0.FunctionType	False	The value of this property shall be the function type of the PCIe device function such as Physical or Virtual.
DeviceClass	PCIeFunction.v1_0_0.DeviceClass	False	The value of this property shall be the device class of the PCIe device function such as Storage, Network, Memory etc.
DeviceId	Edm.String	True	The value of this property shall be the PCI Device ID of the PCIe device function.
VendorId	Edm.String	True	The value of this property shall be the PCI Vendor ID of the PCIe device function.
ClassCode	Edm.String	True	The value of this property shall be the PCI Class Code of the PCIe device function.
RevisionId	Edm.String	True	The value of this property shall be the PCI Revision ID of the PCIe device function.
SubsystemId	Edm.String	True	The value of this property shall be the PCI Subsystem ID of the PCIe device function.
SubsystemVendorId	Edm.String	True	The value of this property shall be the PCI Subsystem Vendor ID of the PCIe device function.
Status	Resource.Status	True	-
Links	PCIeFunction.v1_0_0.Links	False	The links object contains the links to other resources that are related to this resource.
Actions	PCIeFunction.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.58.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.58.1.1 GET

Request:

```
GET /redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeFunction.PCIeFunction",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1",
  "@odata.type": "#PCIeFunction.v1_2_0.PCIeFunction",
  "Id": "1",
  "Name": "SSD",
  "Description": "SSD Drive",
  "FunctionId": 1,
  "FunctionType": "Physical",
  "DeviceClass": "MassStorageController",
  "DeviceId": "0xABCD",
  "VendorId": "0x8086",
  "ClassCode": "0x10802",
  "RevisionId": "0x00",
  "SubsystemId": "0xABCD",
  "SubsystemVendorId": "0xABCD",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Links": {
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.1"
      }
    ],
    "PCIeDevice": {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
    },
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.PCIeFunctionLinks",
        "Processors": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
          }
        ]
      }
    }
  },
  "Oem": {}
}
```


4.58.1.2 PUT

Operation is not allowed on this resource.

4.58.1.3 PATCH

Operation is not allowed on this resource.

4.58.1.4 POST

Operation is not allowed on this resource.

4.58.1.5 DELETE

Operation is not allowed on this resource.

4.59 Task Service

This resource represent task service that contains all actual tasks created by service. This resource is required to be supported by services supporting asynchronous operations (refer to Section 4.2).

Properties details available in `TaskService_v1.xml` metadata file.

Table 126. TaskService Attributes

Attribute	Type	Nullable	Description
`CompletedTaskOverWritePolicy`	`TaskService.v1_0_0.OverWritePolicy`	False	The value of this property shall indicate how completed tasks are handled, should the task service need to track more tasks.
`DateTime`	`Edm.DateTimeOffset`	True	The value of this property shall represent the current `DateTime` value for the `TaskService`, with offset from UTC, in Redfish* Timestamp format.
`LifeCycleEventOnTaskStateChange`	`Edm.Boolean`	False	The value of this property, if set to true, shall indicate that the service shall send a Life cycle event to Event Destinations Subscriptions registered for such events upon change of task state. Life cycle events are defined in the Eventing section of the Redfish Specification.
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled.
`Status`	`Resource.Status`	False	-
`Tasks`	`TaskCollection.TaskCollection`	False	The value of this property shall be a link to a resource of the `TaskCollection` type.
`Actions`	`TaskService.v1_1_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

4.59.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.59.1.1 GET

Request:

```
GET /redfish/v1/TaskService
Content-Type: application/json
```

Response:

```
{
  "@Redfish.Copyright": "Copyright 2014-2016 Distributed Management Task Force, Inc.
(DMTF). All rights reserved.",
  "@odata.context": "/redfish/v1/$metadata/TaskService.TaskService",
  "@odata.id": "/redfish/v1/TaskService",
  "@odata.type": "#TaskService.v1_0_0.TaskService",
  "Id": "TaskService",
  "Name": "Tasks Service",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "OverWritePolicy": "Never",
  "LifeCycleEventOnTaskStateChange": true,
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService/Tasks"
  },
  "Oem": {}
}
```

4.59.1.2 PUT

Operation is not allowed on this resource.

4.59.1.3 PATCH

Operation is not allowed on this resource.

4.59.1.4 POST

Operation is not allowed on this resource.

4.59.1.5 DELETE

Operation is not allowed on this resource.

4.60 Task Collection

This resource represent collection of resources of the Task type.

Properties details available in `TaskCollection_v1.xml` metadata file.

Table 127. TaskCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Task.Task)`	True	Contains the members of this collection.

4.60.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.60.1.1 GET

Request:

```
GET /redfish/v1/TaskService/Tasks
Content-Type: application/json
```

Response:

```
{
  "@Redfish.Copyright": "Copyright 2014-2016 Distributed Management Task Force, Inc.
(DMTF). All rights reserved.",
  "@odata.context": "/redfish/v1/$metadata#TasksCollection.TaskCollection",
  "@odata.id": "/redfish/v1/TaskService/Tasks",
  "@odata.type": "#TasksCollection.TaskCollection",
  "Name": "Task Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/TaskService/Tasks/1"
    }
  ]
}
```

4.60.1.2 PUT

Operation is not allowed on this resource.

4.60.1.3 PATCH

Operation is not allowed on this resource.

4.60.1.4 POST

Operation is not allowed on this resource.

4.60.1.5 DELETE

Operation is not allowed on this resource.

4.61 Task

This resource contains information about a specific Task scheduled by or being executed by a Redfish* service's Task Service.

Details of this resource are described in the `Task_v1.xml` metadata file.

Table 128. Task Attributes

Attribute	Type	Nullable	Description
TaskState	Task.v1_0_0.TaskState	False	The value of this property shall indicate the state of the task. "New" shall be used to indicate that the task is a new task which has just been instantiated and is in the initial state and indicates it has never been started. Starting shall be used to indicate that the task is moving from the New, Suspended, or Service states into the Running state. Running shall be used to indicate that the Task is running. Suspended shall be used to indicate that the Task is stopped (for example, by a user), but can be restarted in a seamless manner. Interrupted shall be used to indicate that the Task was interrupted (for example, by a server crash) in the middle of processing, and the user should either re-run or restart the Task. Pending shall be used to indicate that the Task has been queued and will be scheduled for processing as soon as resources are available to handle the request. Stopping shall be used to indicate that the Task is in the process of moving to a Completed, Killed, or Exception state. Completed shall be used to indicate that the task has completed normally. Killed shall be used to indicate that the task has been stopped by a Kill state change request (non-graceful shutdown). Exception shall be used to indicate that the Task is in an abnormal state that might be indicative of an error condition. Service shall be used to indicate that the Task is in a state that supports problem discovery, or resolution, or both. This state is used when a corrective action is possible.
StartTime	Edm.DateTimeOffset	False	The value of this property shall indicate the time the task was started.
EndTime	Edm.DateTimeOffset	False	The value of this property shall indicate the time the task was completed.
TaskStatus	Resource.Health	False	The value of this property shall be the completion status of the task, as defined in the Status section of the Redfish specification and shall not be set until the task has completed.
Messages	Collection(Message.Message)	False	The value of this property shall be an array of messages associated with the task.
Actions	Task.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
TaskMonitor	Edm.String	False	This property shall contain a URI to Task Monitor as defined in the Redfish Specification.

4.61.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.61.1.1 GET

Request:

```
GET /redfish/v1/TaskService/Tasks/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
```

```
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_2_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "Completed",
  "StartTime": "2016-08-18T12:00+01:00",
  "EndTime": "2016-08-18T13:13+01:00",
  "TaskMonitor": "http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor",
  "TaskStatus": "OK",
  "Messages": [
    {
      "MessageId": "Base.1.0.Created",
      "RelatedProperties": [],
      "Message": "The resource has been created successfully",
      "MessageArgs": [],
      "Severity": "OK"
    }
  ]
}
```

4.61.1.2 PUT

Operation is not allowed on this resource.

4.61.1.3 PATCH

Operation is not allowed on this resource.

4.61.1.4 POST

Operation is not allowed on this resource.

4.61.1.5 DELETE

Request:

```
DELETE redfish/v1/TaskService/Tasks/1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.62 Account Service

The Account Service resource contains properties common to all user accounts, such as password requirements, and control features such as account lockout.

It also contains links to the collections of Manager Accounts and Roles. In Rack Scale Design v2.4, there is always one Role ("Administrator") and one Account with this role.

Table 129 shows the AccountService attributes.

Table 129. AccountService Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	-
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled. If this is set to false, the `AccountService` is disabled. This means no users can be created, deleted or modified. Any service attempting to access the Account Service, like the Session Service, will fail accessing. New sessions cannot be started with the service disabled (though established sessions may still continue operating). ***Note:→*** This does not affect Basic AUTH connections.
`AuthFailureLoggingThreshold`	`Edm.Int64`	False	This property shall reference the threshold for when an authorization failure is logged. This represents a modulo function value, thus the failure shall log every occurrence.
`MinPasswordLength`	`Edm.Int64`	False	This property shall reference the minimum password length that the implementation will allow a password to be set to.
`MaxPasswordLength`	`Edm.Int64`	False	This property shall reference the maximum password length that the implementation will allow a password to be set to.

Attribute	Type	Nullable	Description
AccountLockoutThreshold	Edm.Int64	True	This property shall reference the threshold of failed login attempts at which point the user's account is locked. If set to 0, no lockout shall ever occur.
AccountLockoutDuration	Edm.Int64	True	This property shall reference the period of time in seconds that an account is locked after the number of failed login attempts reaches the threshold referenced by AccountLockoutThreshold, within the window of time referenced by AccountLockoutCounterResetAfter. The value shall be greater than or equal to the value of AccountLockoutResetAfter. If set to 0, no lockout shall occur.
AccountLockoutCounterResetAfter	Edm.Int64	False	This property shall reference the threshold of time in seconds from the last failed login attempt at which point the AccountLockoutThreshold counter (that counts number of failed login attempts) is reset back to zero (at which point AccountLockoutThreshold failures would be required before the account is locked). This value shall be less than or equal to AccountLockoutDuration. The threshold counter also resets to zero after each successful login.
Accounts	ManagerAccountCollection.ManagerAccountCollection	False	This property shall contain the link to a collection of type ManagerAccountCollection.
Roles	RoleCollection.RoleCollection	False	This property shall contain the link to a collection of type RoleCollection.

Attribute	Type	Nullable	Description
PrivilegeMap	PrivilegeRegistry.PrivilegeRegistry	False	The value of this property shall be a link to a resource of type PrivilegeMappoing that defines the privileges a user context needs in order to perform a requested operation on a URI associated with this service.
Actions	AccountService.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
LocalAccountAuth	AccountService.v1_3_0.LocalAccountAuth	False	This property shall govern how the service uses the Accounts collection within this AccountService as part of authentication. Details about each of the modes are found in the description of the enum values.
LDAP	AccountService.v1_3_0.ExternalAccountProvider	False	This property shall contain the first LDAP external account provider this AccountService supports. If the AccountService supports 1 or more LDAP services as an external account provider this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.
ActiveDirectory	AccountService.v1_3_0.ExternalAccountProvider	False	This property shall contain the first ActiveDirectory external account provider this AccountService supports. If the AccountService supports one or more ActiveDirectory services as an external account provider, this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.
AdditionalExternalAccountProviders	ExternalAccountProviderCollection.ExternalAccountProviderCollection	False	This property shall contain an additional external account providers this AccountService is using.

4.62.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.62.1.1 GET

Request:

```
GET /redfish/v1/AccountService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#AccountService.AccountService",
  "@odata.id": "/redfish/v1/AccountService",
  "@odata.type": "#AccountService.v1_3_0.AccountService",
  "Id": "AccountService",
  "Name": "Account Service",
  "Description": "Account Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "LocalAccountAuth": "Enabled",
  "Accounts": {
    "@odata.id": "/redfish/v1/AccountService/Accounts"
  },
  "Roles": {
    "@odata.id": "/redfish/v1/AccountService/Roles"
  }
}
```

4.62.1.2 PUT

The `PUT` operation is not allowed on the Account Service resource.

4.62.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.62.1.4 POST

The `POST` operation is not allowed on the Account Service resource.

4.62.1.5 DELETE

The `DELETE` operation is not allowed on the Account Service resource.

4.63 Manager Account Collection

The Manager Account Collection contains a collection of `ManagerAccount` resource instances.

Table 130 shows the `ManagerAccountCollection` attributes.

Table 130. ManagerAccountCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(ManagerAccount.ManagerAccount)	True	Contains the members of this collection.

4.63.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.63.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Accounts
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#ManagerAccountCollection.ManagerAccountCollection",
  "@odata.id": "/redfish/v1/AccountService/Accounts",
  "@odata.type": "#ManagerAccountCollection.ManagerAccountCollection",
  "Name": "Accounts Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Accounts/Account1"
    }
  ]
}
```

4.63.1.2 PUT

The PUT operation is not allowed on the Manager Account Collection resource.

4.63.1.3 PATCH

The PATCH operation is not allowed on the Manager Account Collection resource.

4.63.1.4 POST

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.63.1.5 DELETE

The DELETE operation is not allowed on the Manager Account Collection resource.

4.64 Manager Account

The Manager Account resource defines the user accounts.

Table 131 shows the ManagerAccount attributes.

Table 131. ManagerAccount Attributes

Attribute	Type	Nullable	Description
Password	Edm.String	True	The value of this property shall be the password for this account. The value shall be null for GET requests.
UserName	Edm.String	false	The value of this property shall be the user name for this account.
RoleId	Edm.String	false	The value of this property shall be the ID (the RoleId) of the Role resource that configured for this account. The service shall reject POST, PATCH, or PUT operations that provide a RoleId that does not exist by returning HTTP 400 (Bad Request).
Locked	Edm.Boolean	false	This property (when set to true) shall indicate that the account service has automatically locked the account due to the accountLockoutThreshold having been exceeded. If set to true, the account is locked. If set to false, the account is not locked. A user admin shall be able to write a false to the property to clear the lockout condition, prior to the lockout duration period.
Enabled	Edm.Boolean	false	This property shall enable (if set to **true**) or disable (if set to **false**) the account for future logins. The value of Enable over-rides the locked property.
Links	ManagerAccount.v1_0_0.Links	false	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	ManagerAccount.v1_1_0.Actions	false	The Actions property shall contain the available actions for this resource.

4.64.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.64.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Accounts/Account1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerAccount.ManagerAccount",
  "@odata.id": "/redfish/v1/AccountService/Accounts/Account1",
  "@odata.type": "#ManagerAccount.v1_1_2.ManagerAccount",
  "Id": "Account1",
  "Name": "User Account",
  "Description": "User Account",
  "Enabled": true,
  "Password": null,
  "UserName": "Administrator",
  "RoleId": "Administrator",
  "Locked": false,
  "Links": {
    "Role": {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  }
}
```

4.64.1.2 PUT

The `PUT` operation is not allowed on the Manager Account resource.

4.64.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.64.1.4 POST

The `POST` operation is not allowed on the Manager Account resource.

4.64.1.5 DELETE

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.65 Role Collection

The Role Collection contains a collection of Role resource instances.

Table 136 shows the `RoleCollection` attributes.

Table 132. RoleCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Role.Role)`	True	Contains the members of this collection.

4.65.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.65.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Roles
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#RoleCollection.RoleCollection",
  "@odata.id": "/redfish/v1/AccountService/Roles",
  "@odata.type": "#RoleCollection.RoleCollection",
  "Name": "Roles Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  ]
}
```

4.65.1.2 PUT

The `PUT` operation is not allowed on the Role Collection resource.

4.65.1.3 PATCH

The `PATCH` operation is not allowed on the Role Collection resource.

4.65.1.4 POST

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.65.1.5 DELETE

The `DELETE` operation is not allowed on the Role Collection resource.

4.66 Role

The Role resource defines a user role to be used in conjunction with an Account.

Table 133 shows the Role attributes.

Table 133. Role Attributes

Attribute	Type	Nullable	Description
`IsPredefined`	`Edm.Boolean`	False	The value of this property shall indicate if the role is a predefined role.

Attribute	Type	Nullable	Description
AssignedPrivileges	Collection(Privileges.PrivilegeType)	False	The value of this property shall be the Redfish privileges that the role includes. For pre-defined roles, this property shall be readOnly. For custom roles some implementations may not allow writing this property.
OemPrivileges	Collection(Edm.String)	False	The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be readOnly. For custom roles some implementations may not allow writing this property.
Actions	Role.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
RoleId	Edm.String	False	This property shall contain the string name of the Role. This property shall contain the same value as the Id property.

4.66.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.66.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Roles/Administrator
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Role.Role",
  "@odata.id": "/redfish/v1/AccountService/Roles/Administrator",
  "@odata.type": "#Role.v1_2_1.Role",
  "Id": "Administrator",
  "RoleId": "Administrator",
  "Name": "User Role",
  "Description": "Administrator Role",
  "IsPredefined": true,
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
```

```
  "OemPrivileges": []
}
```

4.66.1.2 PUT

The operation is not allowed on the Role resource.

4.66.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

Table 134 shows the RoleCollection attributes.

Table 134. Role Attributes

Attribute	Type	Nullable	Description
`OemPrivileges`	`Collection(Edm.String)`	False	The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles, some implementations may not allow writing this property.
`AssignedPrivileges`	`Collection(Privileges.PrivilegeType)`	False	The value of this property shall be the Redfish privileges that the role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles, some implementations may not allow writing this property.

Request:

```
PATCH /redfish/v1/AccountService/Roles/Administrator
Content-Type: application/json
{
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "OemPrivileges": []
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
Or (when task is created):
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.66.1.4 POST

The operation is not allowed on the Role resource.

4.66.1.5 DELETE

The operation is not allowed on the Role resource.

4.67 Session Service

The Session Service resource represents the properties for the service itself and has links to the actual list of sessions.

Table 135 shows the `SessionService` attributes.

Table 135. SessionService Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	-
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled. This means new sessions cannot be created and old sessions cannot be deleted, though established sessions may continue operating.

Attribute	Type	Nullable	Description
SessionTimeout	Edm.Int64	False	This property shall reference the threshold of time in seconds between requests on a specific session at which point the session service shall close the session due to inactivity. The session service shall support any value between the Validation.Minimum and Validation.Maximum.
Sessions	SessionCollection.SessionCollection	False	This property shall contain the link to a collection of Sessions.
Actions	SessionService.v1_1_0.Actions	False	The Actions object contains the available custom actions on this resource.

4.67.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.67.1.1 GET

Request:

```
GET /redfish/v1/SessionService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionService.SessionService",
  "@odata.id": "/redfish/v1/SessionService",
  "@odata.type": "#SessionService.v1_1_3.SessionService",
  "Id": "SessionService",
  "Name": "Session Service",
  "Description": "Session Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "SessionTimeout": 30,
  "Sessions": {
    "@odata.id": "/redfish/v1/SessionService/Sessions"
  }
}
```

4.67.1.2 PUT

The PUT operation is not allowed on the Session Service resource.

4.67.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

The properties in Table 136 can be updated by PATCH operation:

Table 136. SessionService Attributes

Attribute	Type	Nullable	Description
SessionTimeout	Edm.Int64	False	This property shall reference the threshold of time in seconds between requests on a specific session at which point the session service shall close the session due to inactivity. The session service shall support any value between the Validation.Minimum and Validation.Maximum.
ServiceEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this service is enabled. This means new sessions cannot be created, old sessions cannot be deleted though established sessions may continue operating.

Request:

```
PATCH /redfish/v1/SessionService
Content-Type: application/json
{
  "ServiceEnabled": true,
  "SessionTimeout": "30"
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
Or (when task is created):
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
```

```
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.67.1.4 POST

The `POST` operation is not allowed on the Session Service resource.

4.67.1.5 DELETE

The `DELETE` operation is not allowed on the Session Service resource.

4.68 Session Collection

The Session Collection contains a collection of Session resource instances.

Table 137 shows the `SessionCollection` attributes.

Table 137. SessionCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Session.Session)	True	Contains the members of this collection.

4.68.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.68.1.1 GET

Request:

```
GET /redfish/v1/SessionService/Sessions
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionCollection.SessionCollection",
  "@odata.id": "/redfish/v1/SessionService/Sessions",
  "@odata.type": "#SessionCollection.SessionCollection",
  "Name": "Session Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/SessionService/Sessions/Session1"
    }
  ]
}
```

4.68.1.2 PUT

The `PUT` operation is not allowed on the Session Collection resource.

4.68.1.3 PATCH

The PATCH operation is not allowed on the Session Collection resource.

4.68.1.4 POST

The properties shown in Table 138 can be provided as body to a POST operation to create a new session.

Table 138. Session Attributes

Attribute	Type	Nullable	Description
Password	Edm.String	True	The value of this property shall be the password for this session. The value shall be null for GET requests.
UserName	Edm.String	True	The value of this property shall be the UserName that matches a registered account identified by a ManagerAccount resource registered with the Account Service.

Request:

```
POST /redfish/v1/SessionService/Sessions
Content-Type: application/json
{
  "UserName": "Administrator",
  "Password": "password"
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/SessionService/Sessions/Session1
X-Auth-Token: <session-auth-token>
{
  "@odata.context": "/redfish/v1/$metadata#Session.Session",
  "@odata.id": "/redfish/v1/SessionService/Sessions/Session1",
  "@odata.type": "#Session.v1_1_0.Session",
  "Id": "Session1",
  "Name": "User Session",
  "Description": "User Session",
  "UserName": "Administrator",
  "Password": null,
  "Oem": {}
}
```

4.68.1.5 DELETE

The DELETE operation is not allowed on the Session Collection resource.

4.69 Session

The Session resource describes a single connection (session) between a client and a Redfish* service instance.

Table 139 shows the `Session` attributes.

Table 139. Session Attributes

Attribute	Type	Nullable	Description
`Password`	`Edm.String`	True	The value of this property shall be the password for this session. The value shall be null for `GET` requests.
`UserName`	`Edm.String`	True	The value of this property shall be the `UserName` that matches a registered account identified by a `ManagerAccount` resource registered with the Account Service.
`UserName`	`Edm.String`	True	The value of this property shall be the `UserName` that matches a registered account identified by a `ManagerAccount` resource registered with the Account Service.
`Password`	`Edm.String`	True	The value of this property shall be the password for this session. The value shall be null for `GET` requests.
`Actions`	`Session.v1_1_0.Actions`	false	The Actions property shall contain the available actions for this resource.

4.69.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.69.1.1 GET

Request:

```
GET /redfish/v1/SessionService/Sessions/Session1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Session.Session",
  "@odata.id": "/redfish/v1/SessionService/Sessions/Session1",
  "@odata.type": "#Session.v1_1_0.Session",
```

```
  "Id": "Session1",
  "Name": "User Session",
  "Description": "User Session",
  "UserName": "Administrator",
  "Password": null,
  "Oem": {}
}
```

4.69.1.2 PUT

The `PUT` operation is not allowed on the Session resource.

4.69.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.4.

4.69.1.4 POST

The `POST` operation is not allowed on the Session resource.

4.69.1.5 DELETE

Request:

```
DELETE redfish/v1/SessionService/Sessions/Session1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.70 Registries (MessageRegistryFileCollection)

This resource represent collection of Schema File locator resources.

Properties details available in `MessageRegistryFileCollection_v1.xml` metadata file.

Table 140. MessageRegistryFileCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(MessageRegistryFile.MessageRegistryFile)`	True	Contains the members of this collection.

4.70.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.70.1.1 GET

Request:

```
GET /redfish/v1/Registries
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MessageRegistryFileCollection.MessageRegistryFileCollection",
  "@odata.id": "/redfish/v1/Registries",
  "@odata.type": "#MessageRegistryFileCollection.MessageRegistryFileCollection",
  "Name": "Registry File Collection",
  "Description": "Registry Repository",
  "Members@odata.count": 2,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Registries/Base"
    },
    {
      "@odata.id": "/redfish/v1/Registries/Intel_RackScale"
    }
  ]
```

4.70.1.2 PUT

Operation is not allowed on this resource.

4.70.1.3 PATCH

Operation is not allowed on this resource.

4.70.1.4 POST

Operation is not allowed on this resource.

4.70.1.5 DELETE

Operation is not allowed on this resource.

4.71 Message Registry File

This resource shall be used to represent the Schema File locator resource for a Redfish* implementation.

Properties details available in `MessageRegistryFile_v1.xml` metadata file.

Table 141. MessageRegistryFile Attributes

Attribute	Type	Nullable	Description
Languages	Collection(Edm.String)	False	The value of this property shall be a string consisting of an RFC 5646, *Tags for Identifying Languages*, language code (refer to Table 2).
Registry	Edm.String	False	The value of this property shall be the value of the Registry Name, Major and Minor version and shall conform to the syntax specified in the Redfish specification for the MessageId property without the MessageKey.
Location	Collection(MessageRegistryFile.v1_0_0.Location)	False	Location information for this schema file.
Actions	MessageRegistryFile.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.71.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.71.1.1 GET

4.71.1.1.1 Redfish Base Registry

Request:

```
GET /redfish/v1/Registries/Base
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
  "@odata.id": "/redfish/v1/Registries/Base",
  "@odata.type": "#MessageRegistryFile.v1_1_0.MessageRegistryFile",
  "Id": "Base",
  "Name": "Base Message Registry File",
  "Description": "Base Message Registry File locations",
  "Languages": [
    "en"
  ],
  "Registry": "Base.1.0.0",
  "Location": [
    {
      "Language": "en",
      "Uri": null,
      "ArchiveUri": null,
      "PublicationUri":
"https://www.dmtf.org/sites/default/files/standards/documents/DSP8011_1.0.0a.json",
      "ArchiveFile": null
    }
```

```
  ],
  "Oem": {}
}
```

4.71.1.1.2 Intel RackScale Registry

Request:

```
GET /redfish/v1/Registries/Intel_RackScale
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
  "@odata.id": "/redfish/v1/Registries/Intel_RackScale",
  "@odata.type": "#MessageRegistryFile.v1_1_0.MessageRegistryFile",
  "Id": "Intel_RackScale.1.0.0",
  "Name": "Intel RackScale Message Registry File",
  "Description": "Message Registry File for Intel RackScale Message Registry",
  "Languages": [
    "en"
  ],
  "Registry": "Intel_RackScale.1.0.0",
  "Location": [
    {
      "Language": "en",
      "Uri": "/registries/Intel_RackScale.1.0.0.json",
      "ArchiveUri": null,
      "PublicationUri": null,
      "ArchiveFile": null
    }
  ],
  "Oem": {}
}
```

4.71.1.2 PUT

Operation is not allowed on this resource.

4.71.1.3 PATCH

Operation is not allowed on this resource.

4.71.1.4 POST

Operation is not allowed on this resource.

4.71.1.5 DELETE

Operation is not allowed on this resource.

4.72 Telemetry Service

Property details are available in in `Intel_RackScaleTelemetryService_v1.xml` metadata file.

Table 142. TelemetryService Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	True	-
MaxReports	Edm.Int64	True	If present, the value shall specify the maximum number of metric collectors that can be supported by this service.
MinCollectionInterval	Edm.String	True	If present, the value shall be an ISO 8601 duration specifying the minimum time between collections.
SupportedCollectionFunctions	Collection(Intel_RackScale.TelemetryService.v1_0_0.CollectionFunction)	True	If present, the value shall define the function to apply over the collection duration.
Actions	Intel_RackScale.TelemetryService.v1_0_0.Actions	False	The Actions object contains the available custom actions on this resource.
MetricDefinitions	Intel_RackScale.MetricDefinitionCollection.MetricDefinitionCollection	True	The entries of shall be resources of type MetricDefinitionCollection.
MetricReportDefinitions	Intel_RackScale.MetricReportDefinitionCollection.MetricReportDefinitionCollection	True	The value shall be a link to a resource of type MetricReportDefinitionCollection.
MetricReports	Intel_RackScale.MetricReportCollection.MetricReportCollection	True	The value shall be a link to a resource of type MetricReportCollection.
Triggers	Intel_RackScale.TriggersCollection.TriggersCollection	True	The value shall be a link to a resource of type TriggersCollection.

4.72.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.72.1.1 GET

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.TelemetryService.TelemetryService",
  "@odata.type": "#Intel_RackScale.TelemetryService.v1_0_0.TelemetryService",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService",
  "Id": "TelemetryService",
```

```
  "Name": "Telemetry Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricDefinitions": {
    "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions"
  }
}
```

4.72.1.2 PUT

Operation is not allowed on this resource.

4.72.1.3 PATCH

Operation is not allowed on this resource.

4.72.1.4 POST

Operation is not allowed on this resource.

4.72.1.5 DELETE

Operation is not allowed on this resource.

4.73 Metric Definition Collection

Properties details available in `Intel_RackScaleMetricDefinitionCollection_v1.xml` metadata file.

Table 143. MetricDefinitionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Intel_RackScale.MetricDefinition.MetricDefinition)`	True	Contains the members of this collection.

4.73.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.73.1.1 GET

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinitionCollection.MetricDefinitionCollection",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions",
  "@odata.type":
"#Intel_RackScale.MetricDefinitionCollection.MetricDefinitionCollection",
  "Name": "Metric Definitions Collection",
```

```
  "Description": "description-as-string",
  "Members@odata.count": 5,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUTemperature"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUBandwidth"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/SLEDTemperatures"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/MemoryHealth"
    }
  ]
}
```


4.73.1.2 PUT

Operation is not allowed on this resource.

4.73.1.3 PATCH

Operation is not allowed on this resource.

4.73.1.4 POST

Operation is not allowed on this resource.

4.73.1.5 DELETE

Operation is not allowed on this resource.

4.74 Metric Definition

Properties details are available in `Intel_RackScaleMetricDefinition_v1.xml` metadata file. Metric Definition describes either `Metric` associated with physical sensor (for example, exposed by BMC) or metric associated with specific resource (for example, statistics of Ethernet Switch Port). This resource is optional for metrics and required for sensors.

Table 144. MetricDefinition Attributes

Attribute	Type	Nullable	Description
`Implementation`	`Intel_RackScale.MetricDefinition.v1_0_0.ImplementationType`	True	The value of this property shall designate how the sensor is implemented.

Attribute	Type	Nullable	Description
Calculable	Intel_RackScale.MetricDefinition.v1_0_0.Calculable	True	The value shall define the calculability of this metric.
Units	Edm.String	True	The value shall be consistent with the case sensitive Unified Code for Units of Measure as defined at *http://unitsofmeasure.org/ucum.html*. ***Note:***→The units of measure are not covered in UCUM.
DataType	Intel_RackScale.MetricDefinition.v1_0_0.DataType	True	The value shall specify the data type of the corresponding metric values.
IsLinear	Edm.Boolean	True	The value shall specify that the corresponding metric values shall be linear or non-linear. Performance metrics are an example of linear metrics. Examples of non-linear metrics include error codes or operational states. Linear metrics may be compared using a greater than relation.
MetricType	Intel_RackScale.MetricDefinition.v1_0_0.MetricType	True	The value of this property shall designate the type of metric provided.
Wildcards	Collection(Intel_RackScale.MetricDefinition.v1_0_0.Wildcard)	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the AppliesTo or Caculates array.

Attribute	Type	Nullable	Description
MetricProperties	Collection(Edm.String)	True	Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding MetricDefinition.
CalculationParameters	Collection(Intel_RackScale.MetricDefinition.v1_0_0.CalculationParamsType)	True	The value of each list element share be a reference to the resource property which is characterized by this definition.
PhysicalContext	PhysicalContext.v1_0_0.PhysicalContext	True	The value of this property shall designate the physical context of the sensor.
SensorType	LogEntry.v1_0_0.SensorType	True	The value of this property shall describe the type of sensor.
SensingInterval	Edm.String	True	The value of the property shall specify the time interval between metric or sensor reading updates. The value shall be in the format specified in ISO 8601.
DiscreteValues	Collection(Edm.String)	True	The values of the property shall specify the possible values of the discrete metric. This property shall have values when the MetricType property has the value 'Discrete'.
Precision	Edm.Int64	True	The value of the property shall specify the number of significant digits in the metric reading described by MetricProperties field. A value shall not be present if MetricType is Discrete.

Attribute	Type	Nullable	Description
Accuracy	Edm.Decimal	True	The value of the property shall be the percent error +/- of the measured vs. actual values. A value shall not be present if MetricType is **Discrete**.
Calibration	Edm.Decimal	True	The value shall be the value which has been added to the Reading value to make the reading more accurate. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
TimeStampAccuracy	Edm.String	True	The value of property shall specify the expected + or - variability of the timestamp. The format of the property shall conformant to ISO 8601 duration format.
MinReadingRange	Edm.Decimal	True	If present, the value shall indicate the lowest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
MaxReadingRange	Edm.Decimal	True	If present, the value shall indicate the highest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
CalculationAlgorithm	Intel_RackScale.MetricDefinition.v1_0_0.CalculationAlgorithmEnum	True	The value of this property shall specify the calculation which is performed on a source metric to obtain the metric being defined.
CalculationTimeInterval	Edm.String	True	The value of the property shall specify the time interval over which a calculated metric algorithm is performed. The value shall be in the format specified in ISO 8601.

Table 145. MetricDefinition attributes extending the WIP model

Attribute	Type	Nullable	Description
CalculationPrecision	Edm.Double	True	The value of the property shall specify the precision of a calculated metric (calculated metric shall be aligned to a value specified by this property)
DiscreteMetricType	Intel.Oem.MetricValueType	True	The values of the property shall specify type of the discrete metric. It specifies whether single or multiple values defined in DiscreteValues array are valid for specific metric, metric property shall be defined accordingly. This property shall be defined only when the MetricType property has the value 'Discrete'.

4.74.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.74.1.1 GET (Metric Definition for Discrete Sensor)

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth",
  "@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
  "Id": "CPUHealth1",
  "Name": "CPU1 IPMI Health Sensor",
  "MetricType": "Discrete",
  "SensorType": "PhysicalSensor",
  "Implementation": "PhysicalSensor",
  "SensingInterval": "PT1S",
  "PhysicalContext": "CPU",
  "DiscreteValues": [
    "OK",
    "Internal Error",
    "Thermal Trip",
    "FRB1 BIST Failure",
    "FRB2 Hang in Post",
    "FRB3 Startup Failure",
    "Config Error",
    "SMBIOS Uncorrectable Error",
    "Processor Presence Detected",
```

```
    "Processor Disabled",
    "Terminator Presence Detected",
    "Processor Throttled",
    "Machine Check Exception",
    "Correctable Machine Check Error"
  ],
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/Health"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "DiscreteMetricType": "Multiple"
    }
  }
}
```

4.74.1.2 GET (Metric Definition for Numeric Sensor)

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUTemperature",
  "@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
  "Description": "CPU1 Temperature MetricDefinition",
  "Name": "Temperature MetricDefinition",
  "Id": "TEMP1",
  "SensorType": "Temperature",
  "Implementation": "Physical",
  "SensingInterval": "PT1S",
  "MetricType": "Numeric",
  "PhysicalContext": "CPU",
  "Units": "Cel",
  "MinReadingRange": 0,
  "MaxReadingRange": 80,
  "Precision": 1,
  "Calibration": 2,
  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius"
  ]
}
```

4.74.1.3 GET (Metric Definition for Counter or metric not associated with Sensor)

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUBandwidth
Content-Type: application/json
```

Response:

```
{
```

```
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUBandwidth",
  "@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
  "Id": "CPUBandwidth",
  "Name": "CPU Bandwidth type",
  "MetricType": "Numeric",
  "Implementation": "DigitalMeter",
  "PhysicalContext": "CPU",
  "SensingInterval": "PT1S",
  "Units": "%",
  "MinReadingRange": 0,
  "MaxReadingRange": 100,
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Metrics#/ProcessorBandwidthPercent"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "CalculationPrecision": 5
    }
  }
}
```


4.74.1.4 PUT

Operation is not allowed on this resource.

4.74.1.5 PATCH

Operation is not allowed on this resource.

4.74.1.6 POST

Operation is not allowed on this resource.

4.74.1.7 DELETE

Operation is not allowed on this resource.

4.75 Metric Report Definition Collection

Property details are available in `MetricReportDefinitionCollection_v1.xml` metadata file.

Note: In the current PSME implementation, Metric Report Definition Collection resource is not implemented.

Table 146. MetricReportDefinitionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Intel_RackScale.MetricReportDefinition.MetricReportDefinition`	True	Contains the members of this collection.

4.75.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.75.1.1 GET

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricReportDefinitionCollection.MetricReportDe
finitionCollection",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions",
  "@odata.type":
"#Intel_RackScale.MetricReportDefinitionCollection.MetricReportDefinitionCollection",
  "Name": "MetricReportDefinition Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPU1Metrics"
    }
  ]
}
```

4.75.1.2 PUT

Operation is not allowed on this resource.

4.75.1.3 PATCH

Operation is not allowed on this resource.

4.75.1.4 POST

Request:

```
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions
Content-Type: application/json
{
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"
  },
  "ReportActions": [
    "Transmit"
  ],
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
```

```
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/BandwidthPer
cent",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefiniti
ons/1
((created resource body))
```

4.75.1.5 DELETE

Operation is not allowed on this resource.

4.76 Metric Report Definition

Properties details available in `Intel_RackScaleMetricReportDefinition_v1.xml` metadata file.

Note: In current PSME implementation Metric Report Definition resource is not implemented.

Table 147. MetricReportDefinition Attributes

Attribute	Type	Nullable	Description
`Schedule`	`Schedule.v1_1_0.Schedule`	True	If present, metric values are collected starting at each scheduled interval and for the time specified by `Duration`. No more than `Schedule.MaxOccurrences` values shall be collected for this metric. If not present, the corresponding metric values shall be collected when the related metric report is retrieved.
`MetricReportType`	`MetricReportDefinition.v1_0_0.MetricReportType`	True	The value shall specify the collection type for the corresponding metric values.
`CollectionTimeScope`	`MetricReportDefinition.v1_0_0.CollectionTimeScope`	True	The value shall specify the time scope for collecting the corresponding metric values.

Attribute	Type	Nullable	Description
ReportActions	Collection(MetricReportDefinition.v1_0_0.ReportActionEnum)	False	The value of this property shall specify the action to perform when the metric report is generated. When a metric report is generated, place the metric information in the resource specified by the MetricReport property. The Volatile property will specify the behavior if MetricReport resource already exists.
Volatile	Edm.Boolean	True	If the Volatile property is true, the value in the Metric report is overwritten with the latest value. If the Volatile property is “false”, metric values are appended to the metric value collection. Them metric value collection shall have no more than the value of the Schedule.MaxOccurrences property. A management application may establish a time series by retrieving the metric value collection and sorting them according to their TimeStamp.
Status	Resource.Status	False	-
Wildcards	Collection(MetricReportDefinition.v1_0_0.Wildcard)	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array property.

Attribute	Type	Nullable	Description
MetricProperties	Collection(Edm.String)	True	This property shall list the metric properties to include in the metric report. Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property to include in the metric report.
Metrics	Collection(Metric.v1_0_0.Metric)	True	The value shall be a collection of metrics to collect.
MetricReport	MetricReport.v1_0_0.MetricReport	False	References the related MetricReport.

4.76.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.76.1.1 GET

Request:

```
GET
/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPU1Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricReportDefinition.MetricReportDefinition",
  "@odata.type":
"#Intel_RackScale.MetricReportDefinition.1.0.0.MetricReportDefinition",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPU1Metrics"
,
  "Id": "CPUEventPublish",
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "MetricReportActions": [
```

```
    "LOG"
  ],
  "MetricReport": {
    "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReports/TransmitCPU1Metrics"
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/BandwidthPer
cent",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius"
  ]
}
```

4.76.1.2 PUT

Operation is not allowed on this resource.

4.76.1.3 PATCH

In current PSME implementation `PATCH` operation is not implemented.

4.76.1.4 POST

Operation is not allowed on this resource.

4.76.1.5 DELETE

Request:

```
DELETE
redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPUEventPublis
h
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.77 Metric Report

Properties details available in `MetricReport_v1.xml` metadata file.

Note: In current PSME implementation Metric Report resource is not implemented.

Table 148. MetricReport Attributes

Attribute	Type	Nullable	Description
`MetricValues`	`Collection(Intel_RackScale.MetricReport.v1_0_0.MetricValue)`	True	The values shall be metric values for this MetricReport.
`MetricReportDefinition`	`Intel_RackScale.MetricReportDefinition.v1_0_0.MetricReportDefinition`	False	The value shall be reference to the definition for this metric.

4.77.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.77.1.1 GET

Operation is not allowed on this resource.

4.77.1.2 PUT

Operation is not allowed on this resource.

4.77.1.3 PATCH

Operation is not allowed on this resource.

4.77.1.4 POST

Operation is not allowed on this resource.

4.77.1.5 DELETE

Operation is not allowed on this resource.

4.78 Triggers Collection

Properties details available in `Intel_RackScaleTriggersCollection_v1.xml` metadata file.

Note: In current PSME implementation Triggers Collection resource is not implemented.

Table 149. TriggersCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Intel_RackScale.Triggers.Triggers)`	True	Contains the members of this collection.

4.78.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.78.1.1 GET

Request:

```
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.TriggersCollection.TriggersCollection",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers",
  "@odata.type": "#Intel_RackScale.TriggersCollection.TriggersCollection",
  "Name": "Triggers Collection",
  "Members@odata.count": 6,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorCatastrophicError"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorInitializationErro
r"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorPOSTFailure"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorTemperature"
    },
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorThermalTrip"
    }
  ]
}
```

4.78.1.2 PUT

Operation is not allowed on this resource.

4.78.1.3 PATCH

Operation is not allowed on this resource.

4.78.1.4 POST (Numeric Trigger)

Note: The `MetricDefinition` property associated with the given `Metric` within `POST` request on `Trigger` resource

can be `Null`, which means the Intel® RSD software has to complete this property upon creation.

Request:

```
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Content-Type: application/json
{
  "Name": "Triggers for Processor Temperature Malfunction",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
      "Value": "72",
      "DwellTimeMsec": "1"
    },
    {
      "Name": "CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD",
      "DirectionOfCrossing": "Decreasing",
      "Value": "12",
      "DwellTimeMsec": "4"
    }
  ],
  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU0/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/1
((created resource body))
```

4.78.1.5 POST (Discrete Trigger)

Note: `MetricDefinition` property associated with given Metric within `POST` request on Trigger resource can be `Null`, which means RSD SW has to complete this property upon creation.

Request:

```
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Content-Type: application/json
{
  "Name": "Trigger for Processor Machine Check Error",
  "Description": "Triggers for System1 Processor Machine Check Error",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
```

```
  "MetricType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
  "DiscreteTriggerCondition": "Specified",
  "DiscreteTriggers": [
    {
      "Name": "Discrete Trigger",
      "Value": "Machine Check Exception",
      "DwellTimeMsec": "1",
      "Severity": "Critical"
    }
  ],
  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU0/Oem/Intel_RackScale/Metrics#/CPUHealth",

"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/2
((created resource body))
```

4.78.1.6 DELETE

Operation is not allowed on this resource.

4.79 Triggers

Properties details available in `Intel_RackScaleTriggers_v1.xml` metadata file.

Note: In current PSME implementation, the Triggers resource is not implemented.

Table 150. Triggers Attributes

Attribute	Type	Nullable	Description
`MetricType`	`Intel_RackScale.Triggers.v1_0_0.MetricTypeEnum`	True	The value of this property shall specific the type of trigger.
`TriggerActions`	`Collection(Intel_RackScale.Triggers.v1_0_0.TriggerActionEnum)`	False	The value of this property shall specify the action to perform when the `MetricTrigger` occurs.
`NumericTriggers`	`Collection(Intel_RackScale.Triggers.v1_0_0.NumericTrigger)`	False	This property shall contain list of triggers to which a sensor reading will be compared.
`DiscreteTriggerCondition`	`Intel_RackScale.Triggers.v1_0_0.DiscreteTriggerConditionEnum`	True	The value of this property shall specify the type of trigger.

Attribute	Type	Nullable	Description
DiscreteTriggers	Collection(Intel_RackScale.Triggers.v1_0_0.DiscreteTrigger)	False	This property shall contains a list of value to which a sensor reading will be compared. This property shall be present when the DiscreteTriggerCondition property has a value of “Specified”.
Status	Resource.Status	False	-
Wildcards	Collection(Intel_RackScale.Triggers.v1_0_0.Wildcard)	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array.
MetricProperties	Collection(Edm.String)	True	Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding MetricDefinition.

4.79.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.79.1.1 GET (Numeric Trigger)

Request:

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Intel_RackScale.Trigger.Trigger",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorTemperature",
  "@odata.type": "#Intel_RackScale.Trigger.v1_0_0.Trigger",
  "Id": "ProcessorTemperature",
  "Name": "Triggers for Processor Temperature Malfunction",
```


```
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PollingIntervalMilliSeconds": "4000",
  "TriggerType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "MetricReportDestination": "http://192.168.1.1/Destination1",
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
      "Value": "72"
    },
    {
      "Name": "CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD",
      "DirectionOfCrossing": "Decreasing",
      "Value": "12"
    }
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureC
elsius"
        },
        "MetricDefinition": {
          "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/TempSensor"
        }
      }
    ]
  }
}
```


4.79.1.2 GET (Discrete Trigger)

Request:

```
GET
/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata##Intel_RackScale.Trigger.Trigger",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError"
,
  "@odata.type": "#Intel_RackScale.Trigger.v1_0_0.Trigger",
  "Id": "ProcessorMachineCheckError",
  "Name": "CPU_MACHINE_CHECK_ERROR",
  "Description": "Triggers for System1/CPU1 Processor Machine Check Error",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
```

```
  },
  "PollingIntervalMilliSeconds": "4000",
  "TriggerType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
  "MetricReportDestination": "http://192.168.1.1/Destination1",
  "DiscreteTriggers": [
    "Machine Check Exception"
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth"
        },
        "MetricDefinition": {
          "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth"
        }
      }
    ]
  }
}
```

4.79.1.3 PUT

Operation is not allowed on this resource.

4.79.1.4 PATCH (Numeric Trigger)

Request:

```
PATCH /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
{
  "PollingIntervalMilliSeconds": "8000",
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
      "Value": "72"
    }
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/TempSensor"
        }
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.79.1.5 PATCH (Discrete Trigger)

Request:

```
PATCH
/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
{
  "PollingIntervalMilliSeconds": "6000",
  "DiscreteTriggers": [
    "Machine Check Exception",
    "Correctable Machine Check Error"
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth"
        },
        "MetricDefinition": {
          "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth"
        }
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.79.1.6 POST

Operation is not allowed on this resource.

4.79.1.7 DELETE

Request:

```
DELETE
redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
```

```
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.80 Power

Power metrics resource. It represents the properties for Power Consumption and Power Limiting.

Detailed info about this resource properties can be obtained from metadata file: `Power`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 151. Power Attributes

Attribute	Type	Nullable	Description
`PowerControl`	`Collection(Power.v1_0_0.PowerControl)`	True	These properties shall be the definition for power control (power reading and limiting) for a Redfish* implementation.
`Voltages`	`Collection(Power.v1_0_0.Voltage)`	True	These properties shall be the definition for voltage sensors for a Redfish* implementation.
`PowerSupplies`	`Collection(Power.v1_0_0.PowerSupply)`	True	This object shall contain details of the power supplies associated with this system or device.
`Redundancy`	`Collection(Redundancy.Redundancy)`	True	Redundancy information for the power subsystem of this system or device.
`Actions`	`Power.v1_3_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Table 152. PowerControl Attributes

Attribute	Type	Nullable	Description
`Name`	`Edm.String`	True	The value of this property shall be the name of the Voltage sensor.
`PowerConsumedWatts`	`Edm.Decimal`	True	The value of this property shall represent the actual power being consumed (in watts) by the chassis.
`PowerRequestedWatts`	`Edm.Decimal`	True	The value of this property shall represent the amount of power (in watts) that the chassis resource is currently requesting be budgeted to it for future use.

Attribute	Type	Nullable	Description
PowerAvailableWatts	Edm.Decimal	True	The value of this property shall represent the amount of power capacity (in watts) not already allocated and shall equal PowerCapacityWatts - PowerAllocatedWatts.
PowerCapacityWatts	Edm.Decimal	True	The value of this property shall represent the total power capacity that is available for allocation to the chassis resources.
PowerAllocatedWatts	Edm.Decimal	True	The value of this property shall represent the total power currently allocated to chassis resources.
PowerMetrics	Power.v1_0_0.PowerMetric	False	This object shall contain power metrics for power readings (interval, min/max/ave power consumption) for the chassis.
PowerLimit	Power.v1_0_0.PowerLimit	False	This object shall contain power limit status and configuration information for this chassis.
Status	Resource.Status	False	-
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON* pointer syntax to the resource that is being limited.

Table 153. Voltage Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	The value of this property shall be the name of the Voltage sensor.
SensorNumber	Edm.Int64	True	The value of this property shall be a numerical identifier for this voltage sensor that is unique within this resource.
Status	Resource.Status	False	-

Attribute	Type	Nullable	Description
ReadingVolts	Edm.Decimal	True	The value of this property shall be the present reading of the voltage sensor's reading.
UpperThreshold NonCritical	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range but is not critical. Units shall use the same units as the related ReadingVolts propoerty.
UpperThreshold Critical	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts propoerty.
UpperThreshold Fatal	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range and is fatal. Units shall use the same units as the related ReadingVolts propoerty.
LowerThreshold NonCritical	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range but is not critical. Units shall use the same units as the related ReadingVolts propoerty.
LowerThreshold Critical	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts propoerty.
LowerThreshold Fatal	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.

Attribute	Type	Nullable	Description
MinReadingRange	Edm.Decimal	True	The value of this property shall indicate the lowest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.
MaxReadingRange	Edm.Decimal	True	The value of this property shall indicate the highest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this voltage measurement applies.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the areas or devices to which this voltage measurement applies.

Table 154. PowerSupply Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	This property shall contain a descriptive name for the associated power supply.
PowerSupplyType	Power.v1_0_0.PowerSupplyType	True	This property shall contain the input power type (AC or DC) of the associated power supply.
LineInputVoltageType	Power.v1_0_0.LineInputVoltageType	True	This property shall contain the type of input line voltage supported by the associated power supply.

Attribute	Type	Nullable	Description
LineInputVoltage	Edm.Decimal	True	This property shall contain the value in Volts of the line input voltage (measured or configured for) that the power supply has been configured to operate with or is currently receiving.
PowerCapacityWatts	Edm.Decimal	True	This property shall contain the maximum amount of power, in Watts, that the associated power supply is rated to deliver.
LastPowerOutputWatts	Edm.Decimal	True	This property shall contain the average power output, measured, in watts, of the associated power supply.
Model	Edm.String	True	This property shall contain the model information as defined by the manufacturer for the associated power supply.
FirmwareVersion	Edm.String	True	This property shall contain the firmware version as defined by the manufacturer for the associated power supply.
SerialNumber	Edm.String	True	This property shall contain the serial number as defined by the manufacturer for the associated power supply.
PartNumber	Edm.String	True	This property shall contain the part number as defined by the manufacturer for the associated power supply.
SparePartNumber	Edm.String	True	This property shall contain the spare or replacement part number as defined by the manufacturer for the associated power supply.
Status	Resource.Status	False	-
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is being limited.

Attribute	Type	Nullable	Description
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for power supplies and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.

Table 155. Redundancy Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.
Status	Resource.Status	False	-
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.

Attribute	Type	Nullable	Description
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is enabled.
Actions	Redundancy.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.80.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.80.1.1 GET (Rack Level Power Metrics)

Request:

```
GET /redfish/v1/Chassis/Rack1/Power
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Power.Power",
  "@odata.id": "/redfish/v1/Chassis/Rack1/Power",
  "@odata.type": "#Power.v1_5_0.Power",
  "Id": "Power",
  "Name": "Power",
  "PowerControl": [
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/PowerControl/0",
      "MemberId": "0",
      "Name": "System Power Control",
      "PowerConsumedWatts": 8000,
      "PowerRequestedWatts": 8500,
      "PowerAvailableWatts": 8500,
      "PowerCapacityWatts": 10000,
      "PowerAllocatedWatts": 8500,
      "PowerMetrics": {
        "IntervalInMin": 30,
        "MinConsumedWatts": 7500,
        "MaxConsumedWatts": 8200,
        "AverageConsumedWatts": 8000
      },
      "PowerLimit": {
        "LimitInWatts": 9000,
        "LimitException": "LogEventOnly",
        "CorrectionInMs": 42
      },
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Drawer1"
        },
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ],
```


```
      "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
      },
      "Oem": {}
    }
  ],
  "Voltages": [
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/Voltages/0",
      "MemberId": "0",
      "Name": "VRM1 Voltage",
      "SensorNumber": 11,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingVolts": 12,
      "UpperThresholdNonCritical": 12.5,
      "UpperThresholdCritical": 13,
      "UpperThresholdFatal": 15,
      "LowerThresholdNonCritical": 11.5,
      "LowerThresholdCritical": 11,
      "LowerThresholdFatal": 10,
      "MinReadingRange": 0,
      "MaxReadingRange": 20,
      "PhysicalContext": "VoltageRegulator",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ]
    }
  ],
  "PowerSupplies": [
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/PowerSupplies/0",
      "MemberId": "0",
      "Name": "Power Supply Bay 1",
      "Status": {
        "State": "Enabled",
        "Health": "Warning"
      },
      "Oem": {},
      "PowerSupplyType": "DC",
      "LineInputVoltageType": "DCNeg48V",
      "LineInputVoltage": -48,
      "PowerCapacityWatts": 400,
      "LastPowerOutputWatts": 192,
      "Model": "499253-B21",
      "Manufacturer": "ManufacturerName",
      "FirmwareVersion": "1.00",
      "SerialNumber": "1z0000001",
      "PartNumber": "1z0000001A3a",
      "SparePartNumber": "0000001A3a",
      "InputRanges": [
        {
          "InputType": "DC",
          "MinimumVoltage": -47,
          "MaximumVoltage": -49,
```

```
          "OutputWattage": 400,
          "MinimumFrequencyHz": 50,
          "MaximumFrequencyHz": 60,
          "Oem": {}
        }
      ],
      "IndicatorLED": "Off",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Rack1"
        }
      ],
      "Redundancy": [
        {
          "@odata.id": "/redfish/v1/Chassis/1/Power#/Redundancy/0"
        }
      ]
    }
  ],
  "Redundancy": [
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/Redundancy/0",
      "MemberId": "0",
      "Name": "PowerSupply Redundancy Group 1",
      "Mode": "Failover",
      "MaxNumSupported": 2,
      "MinNumNeeded": 1,
      "RedundancySet": [
        {
          "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/0"
        }
      ],
      "Status": {
        "State": "Offline",
        "Health": "OK"
      }
    }
  ],
  "Oem": {}
}
```

4.80.1.2 GET (SLED Level Power Metrics)

Request:

```
GET /redfish/v1/Chassis/Sled1/Power
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Power.Power",
  "@odata.id": "/redfish/v1/Chassis/Sled1/Power",
  "@odata.type": "#Power.v1_5_0.Power",
  "Id": "Power",
  "Name": "Power",
  "PowerControl": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Power#/PowerControl/0",
      "MemberId": "0",
      "Name": "System Power Control",
```


```
      "PowerConsumedWatts": 8000,
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ],
      "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
      },
      "Oem": {}
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "InputACPowerWatts": 245
    }
  }
}
```


4.80.1.3 PUT

Operation is not allowed on this resource.

4.80.1.4 PATCH

Operation is not allowed on this resource.

4.80.1.5 POST

Operation is not allowed on this resource.

4.80.1.6 DELETE

Operation is not allowed on this resource.

4.81 Thermal

Thermal metrics resource. It represents the properties for Temperature and Cooling.

Detailed info about this resource properties can be obtained from metadata file: `Thermal_v1.xml` OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 156. Thermal Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	-
`Temperatures`	`Collection(Thermal.v1_0_0.Temperature)`	True	These properties shall be the definition for temperature sensors for a Redfish implementation.

Attribute	Type	Nullable	Description
Fans	Collection(Thermal.v1_0_0.Fan)	True	These properties shall be the definition for fans for a Redfish* implementation.
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.
Actions	Thermal.v1_3_0.ThermalActions	False	The Actions property shall contain the available actions for this resource.

Table 157. Temperature Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	The value of this property shall be the name of the temperature sensor.
SensorNumber	Edm.Int64	True	The value of this property shall be a numerical identifier for this temperature sensor that is unique within this resource.
Status	Resource.Status	False	-
ReadingCelsius	Edm.Decimal	True	The value of this property shall be the current value of the temperature sensor's reading.
UpperThresholdNonCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.

Attribute	Type	Nullable	Description
UpperThresholdCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.
UpperThresholdFatal	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdNonCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdFatal	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.
MinReadingRangeTemp	Edm.Decimal	True	The value of this property shall indicate the lowest possible value for ReadingCelsius. The units shall be the same units as the related ReadingCelsius property.

Attribute	Type	Nullable	Description
MaxReadingRangeTemp	Edm.Decimal	True	The value of this property shall indicate the highest possible value for Read ReadingCelsius ingCelsius. The units shall be the same units as the related ReadingCelsius property.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this temperature measurement applies.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall the array of IDs of areas or devices to which this temperature measurement applies.

Table 158. Fan Attributes

Attribute	Type	Nullable	Description
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
Status	Resource.Status	False	-
Reading	Edm.Int64	True	The value of this property shall be the current value of the fan sensor's reading.
UpperThresholdNonCritical	Edm.Int64	True	The value of this property shall indicate the reading is above the normal range, but is not critical. The units shall be the same units as the related Reading property.
UpperThresholdCritical	Edm.Int64	True	The value of this property shall indicate the reading is above the normal range, but is not yet fatal. The units shall be the same units as the related Reading property.

Attribute	Type	Nullable	Description
UpperThresholdFatal	Edm.Int64	True	The value of this property shall indicate the reading is above the normal range, and is fatal. The units shall be the same units as the related Reading property.
LowerThresholdNonCritical	Edm.Int64	True	The value of this property shall indicate the reading is below the normal range, but is not critical. The units shall be the same units as the related Reading property.
LowerThresholdCritical	Edm.Int64	True	The value of this property shall indicate the reading is below the normal range, but is not yet fatal. The units shall be the same units as the related Reading property.
LowerThresholdFatal	Edm.Int64	True	The value of this property shall indicate the reading is below the normal range, and is fatal. The units shall be the same units as the related Reading property.
MinReadingRange	Edm.Int64	True	The value of this property shall indicate the lowest possible value for reading. The units shall be the same units as the related Reading property.
MaxReadingRange	Edm.Int64	True	The value of this property shall indicate the highest possible value for reading. The units shall be the same units as the related Reading property.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that are being serviced by this fan.

Attribute	Type	Nullable	Description
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.

Table 159. Redundancy Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.
Status	Resource.Status	False	-
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is enabled.

Attribute	Type	Nullable	Description
Actions	Redundancy.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.
Status	Resource.Status	False	-
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is **enabled**.
Actions	Redundancy.v1_2_0.Actions	false	The Actions property shall contain the available actions for this resource.

4.81.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.81.1.1 GET (Rack level Thermal Metrics)

Request:

```
GET /redfish/v1/Chassis/Rack1/Thermal
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.id": "/redfish/v1/Chassis/Drawer1/Thermal",
  "@odata.type": "#Thermal.v1_4_0.Thermal",
  "Id": "Thermal",
  "Name": "Thermal",
  "Description": "Thermal Subsystem",
  "Temperatures": [
    {
      "MemberId": "0",
      "Name": "Drawer inlet Temp",
      "SensorNumber": 42,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 21,
      "PhysicalContext": "Intake",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Drawer1"
        }
      ]
    }
  ],
  "Fans": [
    {
      "MemberId": "0",
      "Name": "BaseBoard System Fan",
      "PhysicalContext": "Backplane",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Reading": 2100,
      "ReadingUnits": "RPM",
      "Redundancy": [
        {
          "@odata.id": "/redfish/v1/Chassis/Drawer1/Thermal#/Redundancy/0"
        }
      ],
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Drawer1"
        }
      ]
    }
  ],
  "Redundancy": [
    {
      "MemberId": "0",
      "Name": "BaseBoard System Fans",
      "RedundancyEnabled": false,
```

```
      "RedundancySet": [
        {
          "@odata.id": "/redfish/v1/Chassis/Drawer1/Thermal#/Fans/0"
        }
      ],
      "Mode": "N+m",
      "Status": {
        "State": "Disabled",
        "Health": "OK"
      },
      "MinNumNeeded": 1,
      "MaxNumSupported": 2
    }
  ]
}
```

4.81.1.2 GET (SLED level Thermal Metrics)

SLED level Thermal Metrics differ from Rack level Thermal metrics, therefore metadata definition file `Thermal_v1.xml` contain superset of all available Thermal metrics.

Request:

```
GET /redfish/v1/Chassis/Rack1/Thermal
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal",
  "@odata.type": "#Thermal.v1_4_0.Thermal",
  "Id": "Thermal",
  "Name": "Thermal",
  "Temperatures": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/0",
      "MemberId": "0",
      "Name": "SLED inlet Temp",
      "SensorNumber": 42,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 21,
      "UpperThresholdNonCritical": 42,
      "UpperThresholdCritical": 42,
      "UpperThresholdFatal": 42,
      "LowerThresholdNonCritical": 42,
      "LowerThresholdCritical": 5,
      "LowerThresholdFatal": 42,
      "MinReadingRangeTemp": 0,
      "MaxReadingRangeTemp": 200,
      "PhysicalContext": "Intake",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        }
      ]
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/1",
```

```
      "MemberId": "0",
      "Name": "SLED Outlet Temp",
      "SensorNumber": 43,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 44,
      "UpperThresholdNonCritical": 55,
      "UpperThresholdCritical": 55,
      "UpperThresholdFatal": 55,
      "LowerThresholdNonCritical": 55,
      "LowerThresholdCritical": 5,
      "LowerThresholdFatal": 42,
      "MinReadingRangeTemp": 0,
      "MaxReadingRangeTemp": 200,
      "PhysicalContext": "Exhaust",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        }
      ]
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "VolumetricAirFlowCfm": 12
    }
  }
}
```


4.81.1.3 PUT

Operation is not allowed on this resource.

4.81.1.4 PATCH

Operation is not allowed on this resource.

4.81.1.5 POST

Operation is not allowed on this resource.

4.81.1.6 DELETE

Operation is not allowed on this resource.

4.82 Network Interface Collection

Properties' details available in `NetworkInterfaceCollection_v1.xml` metadata file.

Table 160. NetworkInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(NetworkInterface.NetworkInterface)`	True	Contains the members of this collection.

4.82.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.82.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces",
  "@odata.type": "# NetworkInterfaceCollection.NetworkInterfaceCollection",
  "Name": "Network Interface Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1"
    }
  ]
}
```

4.82.1.2 PUT

Operation is not allowed on this resource.

4.82.1.3 PATCH

Operation is not allowed on this resource.

4.82.1.4 POST

Operation is not allowed on this resource.

4.82.1.5 DELETE

Operation is not allowed on this resource.

4.83 Network Interface

`NetworkInterface` contains references linking `NetworkDeviceFunction` resources and represents the network functionality available to the containing system.

Table 161. NetworkInterface Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`Links`	`NetworkInterface.v1_0_0.Links`	False	Links for this controller.

NetworkPorts	NetworkPortCollection.NetworkPortCollection	False	Contains the members of this collection.
NetworkDeviceFunctions	NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection	False	Contains the members of this collection.
Actions	NetworkInterface.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.83.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.83.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkInterface.NetworkInterface",
  "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1",
  "@odata.type": "# NetworkInterface.v1_1_0.NetworkInterface",
  "Id": "1",
  "Name": "Network Device View",
  "Description": "Network Device View",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "NetworkDeviceFunctions": {
    "@odata.id":
"/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions"
  },
  "Links": {},
  "Oem": {}
}
```

4.83.1.2 PUT

Operation is not allowed on this resource.

4.83.1.3 PATCH

Operation is not allowed on this resource.

4.83.1.4 POST

Operation is not allowed on this resource.

4.83.1.5 DELETE

Operation is not allowed on this resource.

4.84 Network Device Function Collection

Properties' details available in `NetworkDeviceFunctionCollection_v1.xml` metadata file.

Table 162. NetworkDeviceFunctionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(NetworkDeviceFunction.NetworkDeviceFunction)`	True	Contains the members of this collection.

4.84.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.84.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkDeviceFunctionCollection.
NetworkDeviceFunctionCollection",
  "@odata.id":
"/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions",
  "@odata.type": "#NetworkDeviceFunctionCollection. NetworkDeviceFunctionCollection",
  "Name": "Network Device Function Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1"
    }
  ]
}
```

4.84.1.2 PUT

Operation is not allowed on this resource.

4.84.1.3 PATCH

Operation is not allowed on this resource.

4.84.1.4 POST

Operation is not allowed on this resource.

4.84.1.5 DELETE

Operation is not allowed on this resource.

4.85 Network Device Function

Network Device Function represents a logical interface exposed by the network adapter.

Property details are available in `NetworkDeviceFunction_v1.xml` metadata file.

Table 163. NetworkDeviceFunction Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`NetDevFuncType`	`NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology`	True	The value of this property shall be the configured capability of this network device function.
`DeviceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether the network device function is enabled. Disabled network device functions shall not be enumerated or seen by the operating system.
`NetDevFuncCapabilities`	`Collection(NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology)`	True	This object shall contain an array of capabilities of this network device function.
`Ethernet`	`NetworkDeviceFunction.v1_0_0.Ethernet`	True	This object shall contain Ethernet capabilities, status, and configuration values for this network device function.
`iSCSIBoot`	`NetworkDeviceFunction.v1_0_0.iSCSIBoot`	True	This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function.
`FibreChannel`	`NetworkDeviceFunction.v1_0_0.FibreChannel`	True	This object shall contain Fibre Channel capabilities, status, and configuration values for this network device function.

Attribute	Type	Nullable	Description
BootMode	NetworkDeviceFunction.v1_0_0.BootMode	True	The value of this property shall be the boot mode configured for this network device function. If the value is not "**Disabled**", this network device function shall be configured for boot using the specified technology.
VirtualFunctionsEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Single Root I/O Virtualization (SR-IOV) Virtual Functions (VFs) are enabled for this Network Device Function.
MaxVirtualFunctions	Edm.Int64	True	The value of this property shall be the number of virtual functions (VFs) that are available for this Network Device Function.
Links	NetworkDeviceFunction.v1_0_0.Links	False	Links for this NetworkDeviceFunction.
AssignablePhysicalPorts	Collection(NetworkPort.NetworkPort)	True	The value of this property shall be an array of physical port references that this network device function may be assigned to.
PhysicalPortAssignment	NetworkPort.NetworkPort	False	The value of this property shall be the physical port that this network device function is currently assigned to. This value shall be one of the AssignablePhysicalPorts array members.
Actions	NetworkDeviceFunction.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.85.1.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.85.2 GET

Note: Because of confidential nature of CHAP secret fields, it won't be shown in `GET` request, null will be shown instead.

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
  "@odata.id":
"/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1",
  "@odata.type": "#NetworkDeviceFunction.v1_2_1.NetworkDeviceFunction",
  "Id": "1",
  "Name": "Network Device Fuction View",
  "Description": "Network Device Function View",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "DeviceEnabled": true,
  "Ethernet": {
    "MACAddress": "00:0C:29:9A:98:ED"
  },
  "iSCSIBoot": {
    "IPAddressType": "IPv4",
    "InitiatorIPAddress": "10.0.10.10",
    "InitiatorName": "iqn.2017-03.com.intel:workload-server",
    "InitiatorDefaultGateway": "10.0.10.1",
    "InitiatorNetmask": "255.255.255.0",
    "TargetInfoViaDHCP": false,
    "PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
    "PrimaryTargetIPAddress": "10.0.10.254",
    "PrimaryTargetTCPPort": 3260,
    "PrimaryLUN": 1,
    "PrimaryVLANEnable": true,
    "PrimaryVLANId": 4088,
    "PrimaryDNS": null,
    "SecondaryTargetName": null,
    "SecondaryTargetIPAddress": null,
    "SecondaryTargetTCPPort": null,
    "SecondaryLUN": null,
    "SecondaryVLANEnable": null,
    "SecondaryVLANId": null,
    "SecondaryDNS": null,
    "IPMaskDNSViaDHCP": false,
    "RouterAdvertisementEnabled": false,
    "AuthenticationMethod": "CHAP",
    "CHAPUsername": "user",
    "CHAPSecret": null,
    "MutualCHAPUsername": "mutualuser",
    "MutualCHAPSecret": null
  },
  "Links": {},
  "Oem": {}
}
```

4.85.2.1 PUT

Operation is not allowed on this resource.

4.85.2.2 PATCH

The `PATCH` method should be used to enable iSCSI boot of compute node. After patching this resource, one needs to set `BootSourceOverrideTarget` to `RemoteDrive` and submit `PATCH` to `ComputerSystem.Reset` action.

The following properties can be updated by the `PATCH` operation:

Table 164. NetworkDeviceFunction Attributes

Attribute	Type	Nullable	Description
`Ethernet`	`NetworkDeviceFunction.v1_0_0.Ethernet`	True	This object shall contain Ethernet capabilities, status, and configuration values for this network device function.
`iSCSIBoot`	`NetworkDeviceFunction.v1_0_0.iSCSIBoot`	True	This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function.

Table 165. Ethernet Attributes

Attribute	Type	Nullable	Description
`PermanentMACAddress`	`Edm.String`	True	The value of this property shall be the Permanent MAC Address of this network device function (physical function). This value is typically programmed during the manufacturing time. This address is not assignable.
`MACAddress`	`Edm.String`	True	The value of this property shall be the effective current MAC Address of this network device function. If an assignable MAC address is not supported, this is a read only alias of the `PermanentMACAddress`.

Attribute	Type	Nullable	Description
MTUSize	Edm.Int64	True	The Maximum Transmission Unit (MTU) configured for this Network Device Function. This value serves as a default for the OS driver when booting. The value only takes-effect on boot.

Table 166. iSCSIBoot Attributes

Attribute	Type	Nullable	Description
IPAddressType	NetworkDeviceFunction.v1_0_0.IPAddressType	True	The value of this property shall be the type of IP address (IPv6 or IPv4) being populated in the iSCSIBoot IP address fields. Mixing of IPv6 and IPv4 addresses on the same network device function shall not be permissible.
InitiatorIPAddress	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the iSCSI boot initiator.
InitiatorName	Edm.String	True	The value of this property shall be the iSCSI boot initiator name. The value of this property should match formats defined in *Internet Small Computer Systems Interface (iSCSI)* or *Internet Small Computer Systems Interface (iSCSI) Naming and Discovery* (refer to Table 2).
InitiatorDefaultGateway	Edm.String	True	The value of this property shall be the IPv6 or IPv4 iSCSI boot default gateway.
InitiatorNetmask	Edm.String	True	The value of this property shall be the IPv6 or IPv4 netmask of the iSCSI boot initiator.

Attribute	Type	Nullable	Description
TargetInfoViaDHCP	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.
PrimaryTargetName	Edm.String	True	The value of this property shall be the name of the primary iSCSI boot target. The value of this property should match formats defined in *Internet Small Computer Systems Interface (iSCSI)* or *Internet Small Computer Systems Interface (iSCSI) Naming and Discovery* (refer to Table 2).
PrimaryTargetIPAddress	Edm.String	True	The value of this property shall be the IP address (IPv6 or IPv4) for the primary iSCSI boot target.
PrimaryTargetTCPPort	Edm.Int64	True	The value of this property shall be the TCP port for the primary iSCSI boot target.
PrimaryLUN	Edm.Int64	True	The value of this property shall be the logical unit number (LUN) for the primary iSCSI boot target.
PrimaryVLANEnable	Edm.Boolean	True	The value of this property shall be used to indicate if this VLAN is enabled for the primary iSCSI boot target.
PrimaryVLANId	Edm.Int64	True	The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the primary target. This VLAN ID is only used if PrimaryVLANEnable is true.

Attribute	Type	Nullable	Description
PrimaryDNS	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.
SecondaryTargetName	Edm.String	True	The value of this property shall be the name of the secondary iSCSI boot target. The value of this property should match formats defined in *Internet Small Computer Systems Interface (iSCSI)* or *Internet Small Computer Systems Interface (iSCSI) Naming and Discovery* (refer to Table 2)..
SecondaryTargetIPAddress	Edm.String	True	The value of this property shall be the IP address (IPv6 or IPv4) for the secondary iSCSI boot target.
SecondaryTargetTCPPort	Edm.Int64	True	The value of this property shall be the TCP port for the secondary iSCSI boot target.
SecondaryLUN	Edm.Int64	True	The value of this property shall be the logical unit number (LUN) for the secondary iSCSI boot target.
SecondaryVLANEnable	Edm.Boolean	True	The value of this property shall be used to indicate if this VLAN is enabled for the secondary iSCSI boot target.
SecondaryVLANId	Edm.Int64	True	The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the secondary target. This VLAN ID is only used if SecondaryVLANEnable is true.

Attribute	Type	Nullable	Description
SecondaryDNS	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.
IPMaskDNSViaDHCP	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the iSCSI boot initiator uses DHCP to obtain the iniator name, IP address, and netmask.
RouterAdvertisementEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether IPv6 router advertisement is enabled for the iSCSI boot target. This setting shall only apply to IPv6 configurations.
AuthenticationMethod	NetworkDeviceFunction.v1_0_0.AuthenticationMethod	True	The value of this property shall be the iSCSI boot authentication method for this network device function.
CHAPUsername	Edm.String	True	The value of this property shall be the username for CHAP authentication.
CHAPSecret	Edm.String	True	The value of this property shall be the shared secret for CHAP authentication.
MutualCHAPUsername	Edm.String	True	The value of this property shall be the CHAP Username for 2-way CHAP authentication.
MutualCHAPSecret	Edm.String	True	The value of this property shall be the CHAP Secret for 2-way CHAP authentication.

Request:

```
PATCH /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1
Content-Type: application/json
{
  "Ethernet": {
    "MACAddress": "00:0C:29:9A:98:ED"
  },
  "iSCSIBoot": {
    "IPAddressType": "IPv4",
```

```
    "InitiatorIPAddress": "10.0.10.10",
    "InitiatorName": "iqn.2017-03.com.intel:workload-server",
    "InitiatorDefaultGateway": "10.0.10.1",
    "InitiatorNetmask": "255.255.255.0",
    "TargetInfoViaDHCP": false,
    "PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
    "PrimaryTargetIPAddress": "10.0.10.254",
    "PrimaryTargetTCPPort": 3260,
    "PrimaryLUN": 1,
    "PrimaryVLANEnable": true,
    "PrimaryVLANId": 4088,
    "PrimaryDNS": null,
    "SecondaryTargetName": null,
    "SecondaryTargetIPAddress": null,
    "SecondaryTargetTCPPort": null,
    "SecondaryLUN": null,
    "SecondaryVLANEnable": null,
    "SecondaryVLANId": null,
    "SecondaryDNS": null,
    "IPMaskDNSViaDHCP": false,
    "RouterAdvertisementEnabled": false,
    "AuthenticationMethod": "CHAP",
    "CHAPUsername": "user",
    "CHAPSecret": "userpassword",
    "MutualCHAPUsername": "mutualuser",
    "MutualCHAPSecret": "mutualpassword"
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 200 OK
(updated resource body)
```

Or:

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.85.2.3 POST

Operation is not allowed on this resource.

4.85.2.4 DELETE

Operation is not allowed on this resource.

4.86 Update Service

Update service resource represents the properties required to invoke the software/firmware update.

Note: In current release this functionality is not implemented.

Table 167. UpdateService Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	True	-
ServiceEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this service is enabled.
Actions	UpdateService.v1_0_0.Actions	False	The Actions object contains the available custom actions on this resource.
FirmwareInventory	SoftwareInventoryCollection.SoftwareInventoryCollection	True	The value of this property shall be a link to a resource of type SoftwareInventoryCollection.
SoftwareInventory	SoftwareInventoryCollection.SoftwareInventoryCollection	True	The value of this property shall be a link to a resource of type SoftwareInventoryCollection.
HttpPushUri	Edm.String	False	This property shall contain a URI at which the UpdateService supports an HTTP or HTTPS POST of a software image for the purpose of installing software contained within the image.
HttpPushUriTargets	Collection(Edm.String)	True	This property shall contain zero or more URIs indicating the targets for applying the update image when using HttpPushUri to push a software image. If this property is not present, the Service shall determine where to apply the software image.
HttpPushUriTargetsBusy	Edm.Boolean	True	This property shall be a Boolean that is set by client when the HttpPushUriTargets property is being used by a client for firmware updates. It shall provide multiple clients a way to negotiate its ownership. This will help clients to know if a firmware update using HttpPushUriTargets is used by another client.

4.86.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.86.1.1 GET

Request:

```
GET /redfish/v1/UpdateService
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#UpdateService.v1_0_2.UpdateService",
  "Id": "UpdateService",
  "Name": "Update service",
  "Status": {
    "State": "Disabled",
    "Health": null,
    "HealthRollup": null
  },
  "ServiceEnabled": false,
  "Actions": {
    "#UpdateService.SimpleUpdate": {
      "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
      "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
    },
    "Oem": {}
  },
  "Oem": {},
  "@odata.context": "/redfish/v1/$metadata#UpdateService/$entity"
}
```

4.86.1.2 PUT

Operation is not allowed on this resource.

4.86.1.3 PATCH

Operation is not allowed on this resource.

4.86.1.4 POST

4.86.1.4.1 Simple Update Action

Operation is not allowed on this resource.

4.86.1.5 DELETE

Operation is not allowed on this resource.

4.87 Action Info

`ActionInfo` describes the parameters and other information necessary to perform a Redfish* Action to a particular Action target. As parameter, support may differ between implementations and even among instances of a resource. This data can be used to ensure Action requests from applications contain supported parameters.

Table 168. ActionInfo Attributes

Attribute	Type	Nullable	Description
Parameters	Collection(ActionInfo.v1_0_0.Parameters)	False	This property shall contain a list of parameters associated with a Redfish Action associated with this resource.

4.87.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.87.1.1 GET (UpdateService SimpleUpdate Action)

Request:

```
GET /redfish/v1/UpdateService/SimpleUpdateActionInfo
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#ActionInfo.v1_0_0.ActionInfo",
  "Parameters": [
    {
      "Name": "ImageURI",
      "Required": true,
      "DataType": "String"
    },
    {
      "Name": "TransferProtocol",
      "Required": false,
      "DataType": "String",
      "AllowableValues": []
    },
    {
      "Name": "Targets",
      "Required": false,
      "DataType": "StringArray",
      "AllowableValues": []
    }
  ],
  "Oem": {},
  "@odata.context": "/redfish/v1/$metadata#ActionInfo.ActionInfo",
  "@odata.id": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
}
```

4.87.1.2 2 PUT

Operation is not allowed on this resource.

4.87.1.3 PATCH

Operation is not allowed on this resource.

4.87.1.4 POST

Operation is not allowed on this resource.

4.87.1.5 DELETE

Operation is not allowed on this resource

§

5.0 Required Resources Per Service Type

Below table show what types of resources are required per service type:

R – Required

O – Optional/recommended

Table 169. Required Resources

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
$metadata.xml	R	R	R	R	R	R
AccountService_v1.xml	R	R	R	R	R	R
Chassis_v1.xml	R	R	-	R	R	-
ChassisCollection_v1.xml	R	R	-	R	R	-
ComposedNode_v1.xml	-	-	-	-	-	-
ComposedNodeCollection_v1.xml	-	-	-	-	-	-
ComputerSystem_v1.xml	R	R	-	R	-	R
ComputerSystemCollection_v1.xml	R	R	-	R	-	R
ComputerSystemMetrics_v1.xml	R	-	-	-	-	-
Drive_v1.xml	R	R	-	R	-	-
Endpoint_v1.xml	-	R	-	R	-	R
EndpointCollection_v1.xml	-	R	-	R	-	R
EthernetInterface_v1.xml	R	R	-	-	R	R
EthernetInterfaceCollection_v1.xml	R	R	-	-	R	R
EthernetSwitch_v1.xml	-	-	R	-	-	-
EthernetSwitchACL_v1.xml	-	-	O	-	-	-
EthernetSwitchACLCollection_v1.xml	-	-	O	-	-	-
EthernetSwitchACLRule_v1.xml	-	-	O	-	-	-
EthernetSwitchACLRuleCollection_v1.xml	-	-	O	-	-	-
EthernetSwitchCollection_v1.xml	-	-	R	-	-	-
EthernetSwitchMetrics_v1.xml	-	-	O	-	-	-
EthernetSwitchPort_v1.xml	-	-	R	-	-	-
EthernetSwitchPortCollection_v1.xml	-	-	R	-	-	-
EthernetSwitchPortMetrics_v1.xml	-	-	O	-	-	-
EthernetSwitchStaticMAC_v1.xml	-	-	O	-	-	-
EthernetSwitchStaticMACCollection_v1.xml	-	-	O	-	-	-
Event_v1.xml	R	R	R	R	R	R
EventDestination_v1.xml	R	R	R	R	R	R
EventDestinationCollection_v1.xml	R	R	R	R	R	R
EventService_v1.xml	R	R	R	R	R	R
Fabric_v1.xml	-	R	-	R	-	R
FabricCollection_v1.xml	-	R	-	R	-	R
IntelRackScaleOem_v1.xml	R	R	R	R	R	R
Manager_v1.xml	R	R	R	R	R	R
ManagerAccount_v1.xml	R	R	R	R	R	R
ManagerAccountCollection_v1.xml	R	R	R	R	R	R
ManagerCollection_v1.xml	R	R	R	R	R	R

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
ManagerNetworkProtocol_v1.xml	R	R	R	R	R	R
Memory_v1.xml	R	-	-	-	-	-
MemoryCollection_v1.xml	R	-	-	-	-	-
MemoryMetrics_v1.xml	R	-	-	-	-	-
Message_v1.xml	O	O	O	O	O	O
MessageRegistry_v1.xml	O	O	O	O	O	O
MessageRegistryCollection_v1.xml	O	O	O	O	O	O
MessageRegistryFile_v1.xml	R	R	R	R	R	R
MessageRegistryFileCollection_v1.xml	R	R	R	R	R	R
MetricDefinition_v1.xml	R	R	O	R	R	O
MetricDefinitionCollection_v1.xml	R	R	O	R	R	O
MetricReport_v1.xml	O	O	O	O	O	O
MetricReportDefinition_v1.xml	O	O	O	O	O	O
MetricReportDefinitionCollection_v1.xml	O	O	O	O	O	O
PCIeDevice_v1.xml	R	-	-	R	-	-
PCIeFunction_v1.xml	R	-	-	R	-	-
Port_v1.xml	-	-	-	R	-	-
PortCollection_v1.xml	-	-	-	R	-	-
PortMetrics_v1.xml	-	-	-	R	-	-
Power_v1.xml	R	-	-	-	R	-
Privileges_v1.xml	R	R	R	R	R	R
Processor_v1.xml	R	-	-	R	-	R
ProcessorCollection_v1.xml	R	-	-	R	-	R
ProcessorMetrics_v1.xml	R	-	-	-	-	-
Role_v1.xml	R	R	R	R	R	R
RoleCollection_v1.xml	R	R	R	R	R	R
ServiceRoot_v1.xml	R	R	R	R	R	R
Session_v1.xml	R	R	R	R	R	R
SessionCollection_v1.xml	R	R	R	R	R	R
SessionService_v1.xml	R	R	R	R	R	R
Storage_v1.xml	R	-	-	R	-	-
StorageCollection_v1.xml	R	-	-	R	-	-
StorageService_v1.xml	-	R	-	-	-	-
StorageServiceCollection_v1.xml	-	R	-	-	-	-
Switch_v1.xml	-	-	-	R	-	-
SwitchCollection_v1.xml	-	-	-	R	-	-
Task_v1.xml	R	R	O	R	R	R
TaskCollection_v1.xml	R	R	O	R	R	R
TaskService_v1.xml	R	R	O	R	R	R
TelemetryService_v1.xml	R	R	O	R	R	O
Thermal_v1.xml	R	-	-	-	R	-
Triggers_v1.xml	O	O	O	O	O	O
TriggersCollection_v1.xml	O	O	O	O	O	O
UpdateService_v1.xml	-	-	-	-	R	-
VLanNetworkInterface_v1.xml	-	-	R	-	R	-

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
VLanNetworkInterfaceCollection_v1.xml	-	-	R	-	R	-
Volume_v1.xml	-	R	-	-	-	-
VolumeCollection_v1.xml	-	R	-	-	-	-
Zone_v1.xml	-	R	-	R	-	R
ZoneCollection_v1.xml	-	R	-	R	-	R
$metadata.xml	R	R	R	R	R	R

§

6.0 Common Property Description

6.1 Status

Table 170. Status Attributes

Attribute	Type	Nullable	Description
State	String	Yes	This indicates the known state of the resource, such as if it is enabled. Allowed values: refer to Section 6.2.
Health	String	Yes	This represents the health state of this resource in the absence of its dependent resources. Allowed values: refer to Section 6.3.
HealthRollup	String	Yes	This represents the overall health state from the view of this resource. Allowed values: refer to Section 6.3.

6.2 Status->State

- Enabled: This function or resource has been enabled
- Disabled: This function or resource has been disabled
- StandbyOffline: This function or resource is enabled, but awaiting an external action to activate it
- StandbySpare: This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it.
- InTest: This function or resource is under doing testing
- Starting: This function or resource is starting
- Absent: This function or resource is not installed
- UnavailableOffline: This function or resource is present but cannot be used
- Deferring: The element will not process any commands but will queue new requests.
- Quiesced: The element is enabled but only processes a restricted set of commands.
- Updating: The element is updating and may be unavailable or degraded.

6.3 Status->Health

- OK: Normal
- Warning: A condition exists that requires attention
- Critical: A critical condition exists that requires immediate attention

6.4 ComputerSystem.Reset

- On: Turn the system on
- ForceOff: Turn the system off immediately (non-graceful) shutdown
- GracefulRestart: Perform a graceful system shutdown followed by a restart of the system
- ForceRestart: Perform an immediate (non-graceful) shutdown, followed by a restart of the system
- Nmi: Generate a non-maskable interrupt to cause an immediate system halt

- `ForceOn`: Turn the system on immediately
- `PushPowerButton`: Simulate the pressing of the physical power button on this system
- `GracefulShutdown`: Perform a graceful system shutdown and power off

6.5 BootSourceOverrideTarget/Supported

- `None`: Boot from the normal boot device
- `Pxe`: Boot from the preboot execution (PXE) environment
- `Floppy`: Boot from the floppy disk drive
- `Cd`: Boot from the CD/DVD disc
- `USB`: Boot from a USB device as specified by the system BIOS
- `HDD`: Boot from a hard drive
- `BiosSetup` - Boot to the BIOS Setup Utility
- `Utilities`: Boot the manufacturer's Utilities programs
- `Diags`: Boot the manufacturer's Diagnostics program
- `UefiShell`: Boot to the UEFI Shell
- `UefiTarget`: Boot to the UEFI Device specified in the `UefiTargetBootSourceOverride` property
- `SDCard`: Boot from an SD Card
- `UefiHttp`: Boot from a UEFI HTTP network location
- `RemoteDrive`: Boot from a remote drive (for example iSCSI)

§