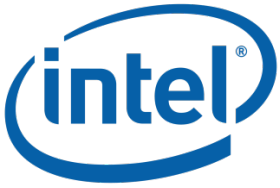

Intel® Rack Scale Design PSME REST

API Specification
Software v2.2

December 19, 2017

Revision 001

Document Number: 336855-001

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Revision History

Revision	Description	Date
001	Initial Release	December 19, 2017

§

1 Introduction

1.1 Scope

This specification defines the interface to the Pooled System Management Engine (PSME) module to support Intel® Rack Scale Design (Intel® RSD) drawers. Covering the functionality designed and implemented in Intel® Rack Scale Design software v2.2.

The interface specified in this document is based on the Distributed Management Task Force's Redfish* Interface Specification and schema, Doc #DSP8010 (refer to *https://www.dmtf.org*) version 2016.3. The schema has been enhanced with the Sensor Model, which is still a work in progress at the Scalable Platforms Management Forum (SPMF), also the `MemoryMetrics` model has been updated based on Redfish/SPMF API DSP8010_2017.1.

1.2 Intended audience

The intended audiences for this document include:

- Software vendors (for example, independent software vendors (xSsV) of pod management software, that make use of the PSME API to discover, compose, and manage Intel® RSD drawers, regardless of the hardware vendor and/or manage drawers in a multivendor environment.
- Hardware vendors (for example, an OxMs) of PSME firmware that implement PSME firmware for their hardware platforms, providing 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 RFC 2119, Table 2.

1.4 Terminology

Table 1. Terminology

Term	Definition
BMC	Baseboard management controller
HTTP	Hypertext Transfer Protocol
ISV	Independent software vendor
JSON	JavaScript object notation
NIC	Network interface card
OData	Open Data Protocol
POD	A physical collection of multiple racks
PNC	Pooled Node Controller
PODM	POD Manager
PSME	Pooled System Management Engine
PXE	Preboot execution
REST	Representational state transfer
SPMF	Scalable Platforms Management Forum
URI	Uniform resource identifier
UUID	Universally unique identifier

1.5 Document References

Table 2. Document References

Doc ID	Title	Location
336811	Intel® Rack Scale Design (RSD) Conformance and Software Reference Kit Getting Started Guide v2.2, Revision 001	*http://www.intel.com/intelRSD*
336814	Intel® Rack Scale Design Pod Manager (PDOM) Release Notes, Software v2.2, Revision 001	
336815	Intel® Rack Scale Design Pod Manager (PDOM) User Guide, Software v2.2, Revision 001	
336816	Intel® Rack Scale Design PSME Release Notes, Software v2.2, Revision 001	
336810	Intel® Rack Scale Design PSME User Guide, Software v2.2, Revision 001	
336856	Intel® Rack Scale Design Storage Services API Specification, Software v2.2, Revision 001	
336857	Intel® Rack Scale Design Pod Manager REST API Specification, Software v2.2, Revision 001	
336858	Intel® Rack Scale Design Rack Management Module (RMM) API Specification, Software v2.2, Revision 001	
336859	Intel® Rack Scale Design Generic Assets Management Interface API Specification, Software v2.2, Revision 001	
336860	Intel® Rack Scale Design Firmware Extension Specification, Software v2.2, Revision 001	
336861	Intel® Rack Scale Design Architecture Specification, Software v2.2, Revision 001	
336862	Intel® RSD v2.2 Solid State Drive (SSD) Technical Advisory	
RFC2119	Key words for use in RFCs to Indicate Requirement Levels, March 1997	*https://www.ietf.org/rfc/rfc2119.txt*
SDP0266	Scalable Platforms Management API Specification v1.1.0	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.1.0.pdf*
DSP8010	Redfish Schema v2016.3	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2016.3.zip*

1.6 Notes and Symbol Convention

Symbol and note convention are similar to typographical conventions used in CIMI specification.

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 (i.e., "...") indicate points of extensibility.

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

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2 PSME API

2.1 PSME API structure and relations

The Pooled System Management Engine REST API provides the representational state transfer (REST) based interface that allows full management of the Pooled System Management Engine (PSME), including asset discovery and configuration.

The API hierarchy for compute resources is shown in Figure 1, the API hierarchy for Pooled Node Controller (PNC) resources is shown in Figure 2, and resources and Uniform resource identifiers (URI) are listed in Table 3.

2.1.1 PSME API physical resource hierarchy

Figure 1. PSME REST API Hierarchy for Compute Resources

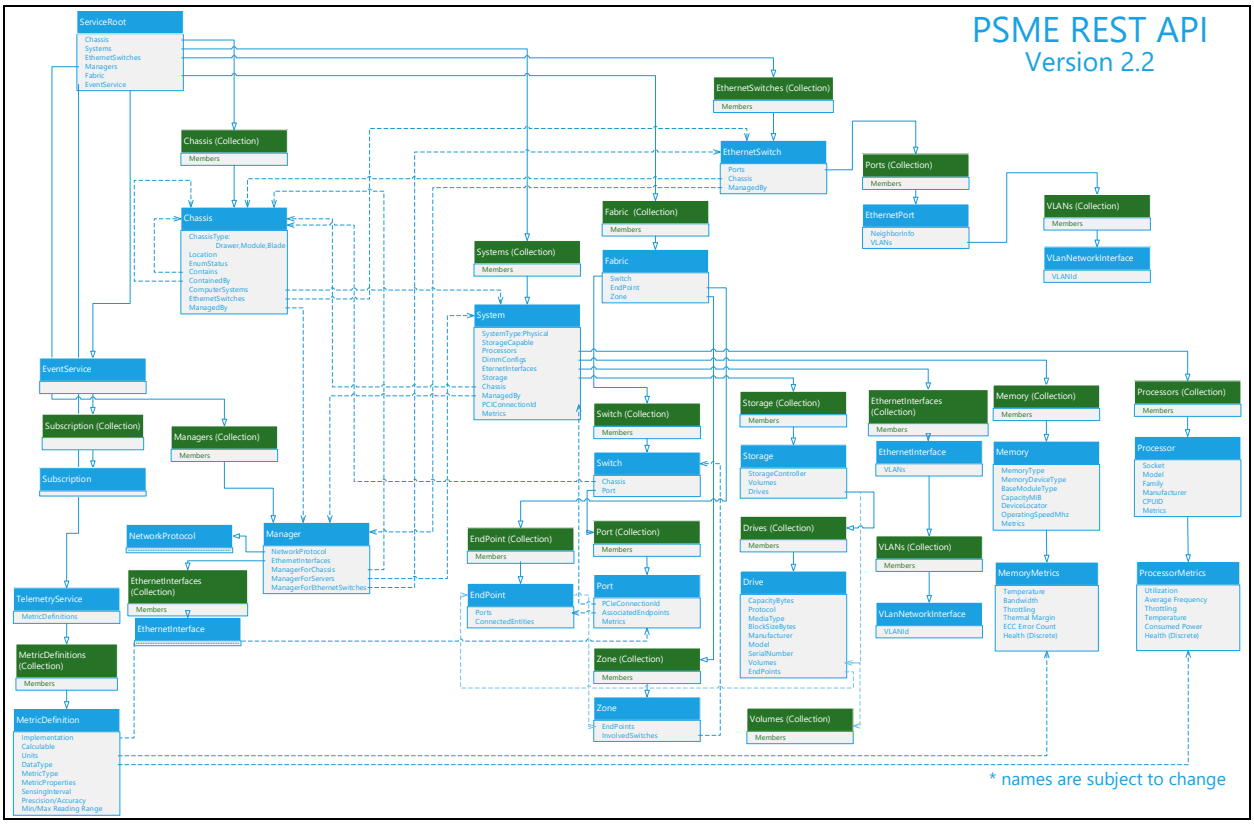

Figure 2. PSME REST API Hierarchy for PNC Resources

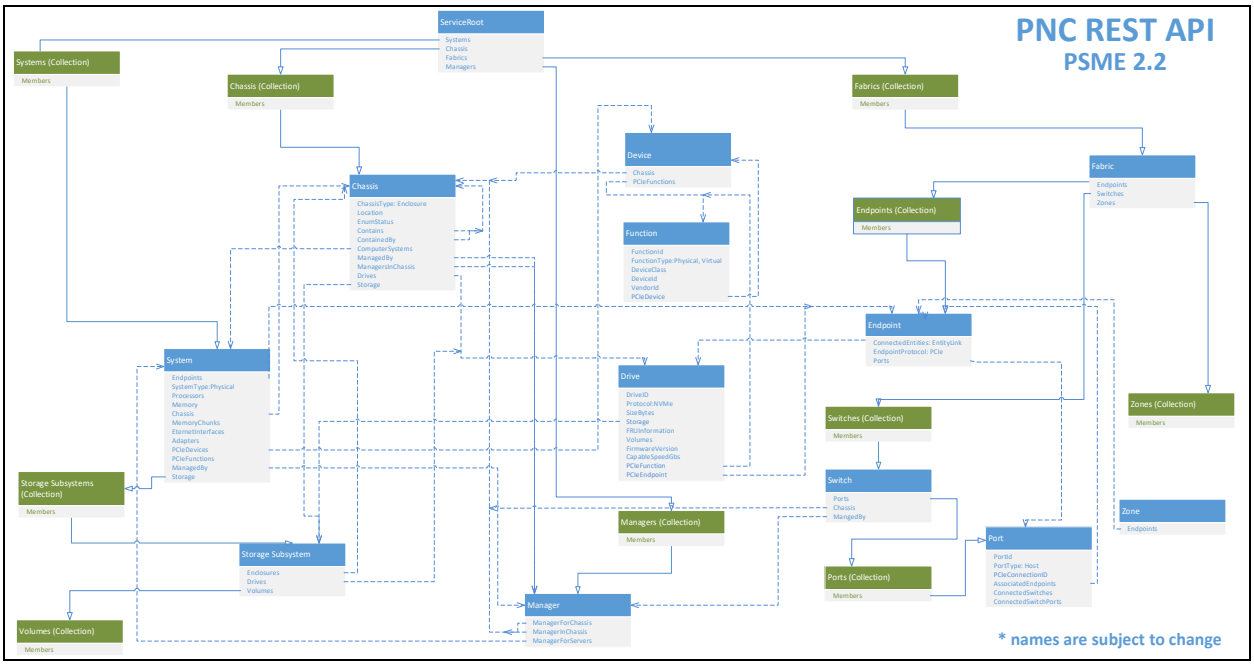

Table 3. Resources and URIs

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}/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}

Resource	Schema Version	OEM Extended?	URI
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}
Ethernet Switch Access Control List (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}

Resource	Schema Version	OEM Extended?	URI
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	WIP		/redfish/v1/TelemetryService
Metric Definition Collection	WIP		/redfish/v1/TelemetryService/MetricDefinitions
Metric Definition	WIP		/redfish/v1/TelemetryService/MetricDefinitions/{metricDefinitionId}
Metric Report Definition Collection	WIP		/redfish/v1/TelemetryService/MetricReportDefinitions
Metric Report Definition	WIP		/redfish/v1/TelemetryService/MetricReportDefinitions/{metricReportDefinitionId}
Metric Report Collection	WIP		/redfish/v1/TelemetryService/MetricReports
Metric Report	WIP		/redfish/v1/TelemetryService/MetricReports/{metricReportId}
Triggers Collection	WIP		/redfish/v1/TelemetryService/Triggers
Triggers	WIP		/redfish/v1/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

Resource	Schema Version	OEM Extended?	URI
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

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3 PSME REST API Error Codes

This chapter contains descriptions of all error codes that may be returned by the Representational State Transfer (REST) calls implemented in the Pooled System Management Engine REST API (PSME REST API) in the Intel® Rack Scale Design (Intel® RSD) software v2.2 release.

3.1 API error response

In the case of an error, the PSME REST API responds with a Hypertext Transfer Protocol (HTTP) status code, as defined by the HTTP 1.1 specification and constrained by additional requirements defined in this specification.

HTTP response status codes alone often do not provide enough information to enable deterministic error semantics. PSME REST API return extended error information as a JSON object with single property named “error”. The value of this property is 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 if there is no better message.
`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 a JSON object with the properties listed in Table 5.

Table 5. Message Object Attributes

Attribute	Description
`MessageId`	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 is 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 the error.
`Resolution`	An optional string describing recommended action(s) to take to resolve the error.
`RelatedProperties`	An optional array of JSON Pointers defining the specific properties within a JSON payload described by the message.

3.1.2 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_0.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_0.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

In general, 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 detailed list of error codes refer to *Redfish* Scalable Platforms Management API Specification*, Section 6.5.2.

The client should be prepared and ready to handle the error codes listed in Table 6.

Table 6. HTTP Error Status Codes

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, and so on). An extended error is returned in the response body.
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 (e.g., DELETE, GET, HEAD, POST, PUT, and PATCH) is not supported for this request URI. The response includes an Allow header, which provides a list of methods that are 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).
500 Internal Server Error	The server encountered an unexpected condition that prevented it from fulfilling the request. An extended error is 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 PATCH methods, the Intel® RSD service conforms to IETF RFC 5789.

Service responds with the following error codes in the following cases:

- 400 Bad Request – malformed JSON in request (values not in range, unknown property, etc.)
- 405 Method Not Allowed – resource does not support PATCH method
- 409 Conflict – update cannot be executed at this moment. User might be able to resolve the conflict and resubmit the request.
- 501 Not Implemented – resource supports PATCH method, but current implementation doesn't (e.g. underlying HW doesn't support such functionality)
- 500 Internal Server Error – all other situations where any of above codes does not fit (e.g. underlying HW does not allow to execute this particular request).

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4 PSME REST API Definition

Important note: The JavaScript* object notation (JSON) examples 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*.

All resources within this RESTful API are identified by a unique identifier property named “@odata.id”. Resource Identifiers is represented in JSON payloads as URI paths relative to the Redfish Schema portion of the Uniform resource identifier (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 enable 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 *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 is "/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 changed in a backward incompatible way.
- MinorVersion = integer: a minor update. New functionality may have been added but nothing removed. Compatibility will be preserved with previous minorversions.
- Errata = integer: something in the prior version was broken and needed to be fixed.

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

4.3.1 Operations

4.3.1.1 GET

Request:

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

Response:

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

4.4 OData service document

This 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

4.4.1.1 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"
        }
    ]
}
```

4.5 Intel® Rack Scale Design OEM extensions

All Intel® RSD OEM extensions to all resources defined in this document are supported.

4.6 Service root

Service root resource – entry point.

Property details are available in `ServiceRoot.xml` metadata file. OEM extensions details are available in `IntelRackScaleOem.xml`.

4.6.1 Operations

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_1_1.ServiceRoot",
    "Id": "RootService",
    "Name": "Root Service",
    "Description": "description-as-string",
    "RedfishVersion": "1.1.0",
    "UUID": "92384634-2938-2342-8820-489239905423",
    "Systems": {
        "@odata.id": "/redfish/v1/Systems"
    },
    "Chassis": {
        "@odata.id": "/redfish/v1/Chassis"
    },
    "Managers": {
        "@odata.id": "/redfish/v1/Managers"
    },
    "EventService": {
        "@odata.id": "/redfish/v1/EventService"
    },
    "Fabrics": {
      "@odata.id": "/redfish/v1/Fabrics"
    },
    "Tasks": {
      "@odata.id": "/redfish/v1/TaskService"
    },
    "Registries": {
        "@odata.id": "/redfish/v1/Registries"
    },
    "TelemetryService": {
        "@odata.id": "/redfish/v1/TelemetryService"
    },
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.ServiceRoot",
            "ApiVersion": "2.2.0",
            "Services": {
              "@odata.id": "/redfish/v1/Services"
            },
            "EthernetSwitches": {
              "@odata.id": "/redfish/v1/EthernetSwitches"
            }
        }
    },
  "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

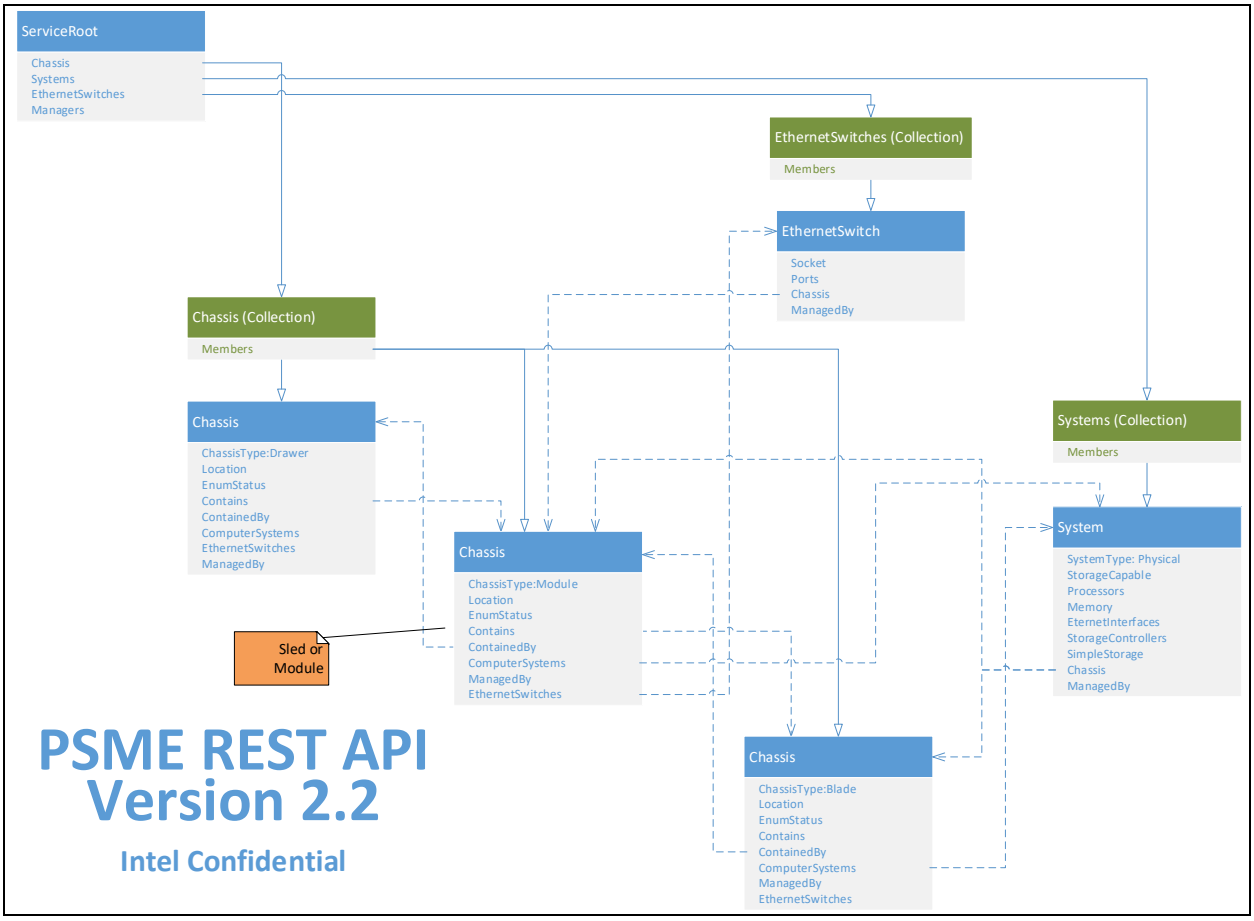
Operation is not allowed on this resource.

4.7 Chassis collection

Chassis collection resource.

Figure 3 shows the relationship between chassis components in this example Intel RSD rack.

Figure 3. Chassis Relationship



4.7.1 Operations

4.7.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#ChassisCollection.ChassisCollection",
    "@odata.id": "/redfish/v1/Chassis",
    "@odata.type": "#ChassisCollection.ChassisCollection",
    "Name": "Chassis Collection",
    "Description": "description-as-string",
    "Members@odata.count": 4,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Chassis/Drawer1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/FabricModule1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Blade1"
        }
    ]
}
```

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 section provides the schema definition for the Chassis resource. It represents the properties for 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 metadata file: `Chassis.xml`. OEM extensions details are available in `IntelRackScaleOem.xml`.

4.8.1 Operations

4.8.1.1 GET

Request:

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

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#Chassis.Chassis",
        "@odata.id": "/redfish/v1/Chassis/Blade1",
        "@odata.type": "#Chassis.v1_3_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": "OK"
        },

        "Oem": {
                "Intel_RackScale": {
                        "@odata.type": "#Intel.Oem.Chassis",
                        "Location": {
                            "Id": "Blade1",
                            "ParentId": "Sled1"
                        }
                }
        },
        "Links": {
                "@odata.type": "#Chassis.v1_2_0.Links",
                "Contains": [],
                "ContainedBy": {
                        "@odata.id": "/redfish/v1/Chassis/Sled1"
                },
                "ComputerSystems": [{
                        "@odata.id": "/redfish/v1/Systems/System1"
                }],
                "ManagedBy": [{
                        "@odata.id": "/redfish/v1/Managers/VirtualBMC1"
                }],
```

```
                "ManagersInChassis ": [{
                      "@odata.id": "/redfish/v1/Managers/Manager1"
                }],
                "Storage": [
                   {"@odata.id":"/redfish/v1/Systems/System1/Storage/SATA"}
                ],
                "Drives": [
                    {"@odata.id": "/redfish/v1/Chassis/Blade1/Drives/1"}
                ],
                "Oem": {
                  "Intel_RackScale": {
                    "@odata.type": "#Intel.Oem.ChassisLinks",
                     "Switches": [],
                },
                 "PoweredBy": [],
                 "CooledBy": []
          }
       },
    "PowerState": "On",
    "Thermal": {
        "@odata.id": "/redfish/v1/Chassis/Blade1/Thermal"
    },
    "Power": {
        "@odata.id": "/redfish/v1/Chassis/Blade1/Power"
    }
}
```

4.8.1.2 PUT

Operation is not allowed on this resource.

4.8.1.3 PATCH

The properties in Table 7 can be updated by the PATCH operation:

Table 7. Properties Updated by Patch Operation

Attribute	Type	Required	Description
`AssetTag`	String	No	The user assigned asset tag for this chassis.
`Oem->Intel_RackScale->Location`	Object	No	Object representing physical location of chassis. Following properties can be patched: “Id” - String containing physical location ID of this chassis

Request:

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

Response:

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

Or:

```
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 Systems collection

4.9.1 Operations

4.9.1.1 GET

Request:

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

Response:

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

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 metadata file: `ComputerSystem.xml` OEM extensions details available in `IntelRackScaleOem.xml`.

4.10.1 Operations

4.10.1.1 GET (PSME Compute)

Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.id": "/redfish/v1/Systems/System1",
  "@odata.type": "#ComputerSystem.v1_3_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"
  },
  "SimpleStorage": {},
  "Storage": {
    "@odata.id": "/redfish/v1/Systems/System1/Storage"
  },
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory"
  },
  "PCIeDevices": [],
  "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.StartDeepDiscovery": {
          "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.StartDeepDiscovery"
        },
        "#Intel.Oem.StartDiscoveryOnDemand": {
          "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.StartDiscoveryOnDemand"
        },
        "#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": [
        {
          "VendorId": "0x8086",
          "DeviceId": "0x1234"
```

```
        }
      ],
      "DiscoveryState": "Basic",
      "ProcessorSockets": 8,
      "MemorySockets": 8,
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "UserModeEnabled": false,
      "TrustedExecutionTechnologyEnabled": false,
      "Metrics": {
        "@odata.id": "/redfish/v1/Systems/System1/Metrics"
      }
    }
  },
    "NetworkInterfaces": {
        "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces"
    }
}
```

4.10.1.2 GET (PSME PCIe* Fabric)

This resource represents logical system containing PCIe* devices (no CPU or memory) and is excluded from POD Manager Composition.

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
    "@odata.id": "/redfish/v1/Systems/System2",
    "@odata.type": "#ComputerSystem.v1_3_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": 0,
        "Model": null,
        "Status": {
            "State": null,
            "Health": null,
            "HealthRollup": null
        }
    },
    "MemorySummary": {
        "TotalSystemMemoryGiB": 0,
        "Status": {
            "State": null,
            "Health": null,
            "HealthRollup": null
        }
    },
    "Processors": {
        "@odata.id": "/redfish/v1/Systems/System2/Processors"
    },
    "EthernetInterfaces": {
        "@odata.id": "/redfish/v1/Systems/System2/EthernetInterfaces"
    },
    "SimpleStorage": {},
    "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.StartDeepDiscovery": {
          "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.StartDeepDiscovery"
         },
        "#Intel.Oem.StartDiscoveryOnDemand": {
          "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.StartDiscoveryOnDemand"
         },
        "#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": [],
            "DiscoveryState": "Basic",
            "ProcessorSockets": null,
            "MemorySockets": null,
            "PCIeConnectionId": [
            ],
            "UserModeEnabled": false,
            "TrustedExecutionTechnologyEnabled": false,
            "Metrics": {
               "@odata.id": "/redfish/v1/Systems/System2/Metrics"
            }
        }
    }
}
```

4.10.1.3 PUT

Operation is not allowed on this resource.

4.10.1.4 PATCH

The properties in Table 8 can be updated by the PATCH operation:

Table 8. Properties Updated by Patch Operation

Attribute	Type	Required	Description
`AssetTag`	String	No	The user assigned asset tag for this system.
`Boot`	Object	No	Boot override properties, details in Table 9
`UserModeEnabled`	Boolean	No	Allows to switch between user mode (FW upgrade of system components disabled) and admin mode (FW upgrade enabled)

Table 9 describes the "Boot" properties that can be patched.

Table 9. Boot Override Update Properties

Attribute	Type	Required	Description
`BootSourceOverrideEnabled`	String	No	Describes the state of the Boot Source Override feature. Allowed values: "Disabled" - The system will boot as normal "Once" - On its next boot cycle, the system will boot (one time) to the Boot Source Override Target "Continuous" - The system will boot to the target specified in the `BootSourceOverride` Target until this property is set to Disabled
`BootSourceOverrideTarget`	String	No	The current boot source to be used at next boot instead of the normal boot device, if `BootSourceOverrideEnabled` is true. Available values (refer to annotation `@Redfish.AllowableValues` for actual list of supported values): "None" - Boot from the normal boot device "Pxe" - Boot from the Pre-Boot EXecution (PXE) environment "Hdd" - Boot from a hard drive "`RemoteDrive`" - Boot from a remote drive (e.g. iSCSI)
`BootSourceOverrideMode`	String	No	The BIOS Boot Mode (either Legacy or UEFI) to be used when `BootSourceOverrideTarget` boot source is booted from: "Legacy" - The system will boot in non-UEFI boot mode to the Boot Source Override Target "UEFI" - The system will boot in UEFI boot mode to the Boot Source Override Target

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
        }
    }
}
```

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

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
```

4.10.1.5.2 Start Deep Discovery process (Pod Manager only)

Request:

```
POST /redfish/v1/Systems/System1/Actions/ComputerSystem.StartDeepDiscovery
Content-Type: application/json
{
}
```

Response:

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

Note: If `DeepDiscovery` process already started, or resource is allocated for composed node.

```
HTTP/1.1 409 Conflict
```

4.10.1.5.3 Start discovery on demand process (Pod Manager only)

This action is used to trigger discovery process on POD Manager despite other discovery mechanisms (refresh assets inventory).

Request:

```
POST
/redfish/v1/Systems/System1/Actions/ComputerSystem.StartDiscoveryOnDemand
Content-Type: application/json
{
}
```

Response:

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

4.10.1.5.4 Change TPM state and/or version:

This action typically can be applied to system during reset operation. Created task remains "InProgress" until reset action is triggered. Table 10 describes the action parameters.

Table 10. Action Parameters

Attribute	Type	Required	Description
DeviceEnabled	Boolean	Yes	This defines the 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.xml 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/ComputerSystem.ChangeTPMState
Content-Type: application/json
{
       "DeviceEnabled": true,
       "InterfaceType": "TPM2_0",
       "ClearOwnership": true
}
```

Response:

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

Or when task is created:

```
(header)
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/TaskMonitors/1
(body)
{
    "@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 Computer System Metrics

Property details are available in `ComputerSystemMetrics.xml` metadata file.

4.11.1 Operations

4.11.1.1 GET

Request:

```
GET /redfish/v1/Systems/{systemID}/Metrics
Content-Type: application/json
```

Response:

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

4.12.1 Operations

4.12.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#ProcessorCollectionProcessorCollection",
    "@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"
        }
    ] }
```

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

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

Property details are available in `Processor.xml` metadata file. OEM extensions details are available in `IntelRackScaleOem.xml`.

4.13.1 Operations

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_0_0.Processor",
        "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": "http://rsa.intel.com/Schema#RSA.Processor",
            "Brand": "E5",
            "Capabilities": [
              "sse",
              "sse2",
              "sse3"
            ],
            "OnPackageMemory": [
              {
                "Type": "L2Cache",
                "CapacityMB": 2,
                "SpeedMHz": null
              },
              {
                "Type": "L3Cache",
                "CapacityMB": 20,
                "SpeedMHz": null
              }
            ],
            "ThermalDesignPowerWatt": 160,
            "Metrics": {
              "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/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_0_0.Processor",
  "Description": "description-as-string",
  "Name": "Accelerator",
  "Id": "FPGA1",
  "Socket": "CPU 1",
  "ProcessorType": "FPGA",
  "ProcessorArchitecture": "OEM",
  "InstructionSet": "OEM",
  "Manufacturer": "Intel(R) Corporation",
  "Model": "CPU Integrated FPGA Accelerator XYZ8008",
  "ProcessorId": {
    "VendorId": "GenuineIntel",
    "IdentificationRegisters": "0xDEADBEEF",
    "EffectiveFamily": "0xFF",
    "EffectiveModel": "0xAA",
    "Step": "0x1",
    "MicrocodeInfo": null
  },
  "MaxSpeedMHz": null,
  "TotalCores": 2,
  "TotalThreads": null,
  "Status": {
```


```
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Processor",
      "Brand": null,
      "Capabilities": [],
      "OnPackageMemory": [
        {
          "Type": "HBM2",
          "CapacityMB": 512,
          "SpeedMHz": 1066
        }
      ],
      "ThermalDesignPowerWatt": 2.5,
      "FPGA": {
        "Type": "Integrated",
        "BitStreamVersion": "Blue1",
        "HSSIConfiguration": "4x10G",
        "HSSISideband": "I2C",
        "ReconfigurationSlots": 1
      }
    }
  }
}
```


4.13.1.3 PUT

Operation is not allowed on this resource.

4.13.1.4 PATCH

Operation is not allowed on this resource.

4.13.1.5 POST

Operation is not allowed on this resource.

4.13.1.6 DELETE

Operation is not allowed on this resource.

4.14 Processor Metrics

Property details are available in `ProcessorMetrics.xml` metadata file.

4.14.1 Operations

4.14.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#ProcessorMetrics.ProcessorMetrics",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/Metrics",
  "@odata.type": "#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

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

4.15.1 Operations

4.15.1.1 GET

Request:

```
GET /redfish/v1/Systems/{systemID}/Memory
Content-Type: application/json
```

Response:

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

4.15.1.2 PUT

Operation is not allowed on this resource.

4.15.1.3 PATCH

Operation is not allowed on this resource.

4.15.1.4 POST

Operation is not allowed on this resource.

4.15.1.5 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.xml` metadata file. OEM extensions details available in `IntelRackScaleOem.xml`.

4.16.1 Operations

4.16.1.1 GET

Request:

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

Response:


```
{
	"@odata.context": "/redfish/v1/$metadata#Memory.Memory",
	"@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
	"@odata.type": "#Memory.v1_1_0.Memory",
	"Name": "DIMM",
	"Id": "Dimm1",
	"MemoryType": "DRAM",
	"MemoryDeviceType": "DDR4",
	"BaseModuleType": "LRDIMM",
	"MemoryMedia": [
		"DRAM"
	],
	"CapacityMiB": 16384,
	"DataWidthBits": 64,
	"BusWidthBits": 72,
	"Manufacturer": "Contoso",
	"SerialNumber": "1A2B3B",
	"PartNumber": "1A2B3D",
	"AllowedSpeedsMHz": [
		2133,
		2400,
		2667
	],
	"FirmwareRevision": "RevAbc",
	"FirmwareApiVersion": "ApiAbc",
	"FunctionClasses": [
		"Volatile"
	],
	"VendorID": "vendorX",
	"DeviceID": "deviceX",
	"RankCount": 1,
	"DeviceLocator": "PROC 1 DIMM 1",
	"MemoryLocation": {
		"Socket": 1,
		"MemoryController": 1,
		"Channel": 1,
		"Slot": 1
	},
	"ErrorCorrection": "MultiBitECC",
	"Status": {
		"State": "Enabled",
		"Health": "OK",
		"HealthRollup": null
	},
	"OperatingSpeedMhz": 2400,
```

```
        "Regions": [{
                "RegionId": "1",
                "MemoryClassification": "Volatile",
                "OffsetMiB": 0,
                "SizeMiB": 16384,
        }],
        "OperatingMemoryModes": [
                "Volatile"
        ],
        "Metrics": {
          "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1/Metrics"
        },
        "Oem": {
                "Intel_RackScale": {
                        "@odata.type": "#Intel.Oem.Memory",
                        "VoltageVolt": 1.35
                }
        },
        "MaxTDPMilliWatts": [ 5000 ]
}
```

4.16.1.2 PUT

Operation is not allowed on this resource.

4.16.1.3 PATCH

Operation is not allowed on this resource.

4.16.1.4 POST

Operation is not allowed on this resource.

4.16.1.5 DELETE

Operation is not allowed on this resource.

4.17 Memory Metrics

Property details are available in `MemoryMetrics.xml` metadata file for official Redfish Memory Metrics and `IntelRackScaleOem.xml` file for Intel® RSD extensions for Memory Metrics.

Note: The current version of Intel® RSD does not implement all memory metrics. Currently implemented metrics are annotated as “Required in metadata”. Third Party PSME implementations may choose bigger memory metric set for implementation based on capabilities on underlying HW/FW.

4.17.1 Operations

4.17.1.1 GET

Request:

```
GET /redfish/v1/Systems/3/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",
  "Oem": {
    "Intel_RackScale": {
      "TemperatureCelsius": 46,
      "Health": ["OK"]
    }
  }
}
```

4.17.1.2 PUT

Operation is not allowed on this resource.

4.17.1.3 PATCH

Operation is not allowed on this resource.

4.17.1.4 POST

Operation is not allowed on this resource.

4.17.1.5 DELETE

Operation is not allowed on this resource.

4.18 Storage subsystem collection

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.xml`

4.18.1 Operations

4.18.1.1 GET

Request:

```
GET /redfish/v1/Systems/{systemID}/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

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

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

4.19.1 Operations

4.19.1.1 GET

Request:

```
GET /redfish/v1/Systems/{systemID}/Storage/{storageID}
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Storage.Storage",
  "@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_1_0.StorageController",
    "MemberId": "0",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "Manufacturer": "ManufacturerName",
    "Model": "ProductModelName",
    "SKU": "",
```

```
    "SerialNumber": "2M220100SL",
    "PartNumber": "",
    "AssetTag": "CustomerWritableThingy",
    "SpeedGbps": 6,
    "FirmwareVersion": null,
    "SupportedControllerProtocols": [
      "PCIe"
    ],
    "SupportedDeviceProtocols": [
      "SATA"
    ],
    "Identifiers": [{
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }],
    "Links": {
      "Endpoints": []
    }
  }],
  "Drives": [{
    "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
  }],
  "Volumes": {"@odata.id": "/redfish/v1/Systems/1/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.

4.20 Volume collection

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

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

4.20.1 Operations

4.20.1.1 GET

Request:

```
GET /redfish/v1/Systems/1/Storage/SATA/Volumes
Content-Type: application/json
```

Response:


```
{
```

```
    "@odata.context":
"/redfish/v1/$metadata#VolumeCollection.VolumeCollection",
    "@odata.id": "/redfish/v1/Systems/1/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.xml` OEM extensions details available in `IntelRackScaleOem.xml`.

The Intel® RSD OEM section contains `EraseOnDetach` property, which is handled by POD Manager. If exposed on PSME it does not provide any function thus it is recommended to keep it read-only with value **null.**

4.21.1 Operations

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_1_1.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,
    "Location": [{
        "Info": "4",
        "InfoFormat": "Hdd index"
    }],
    "Identifiers": [
        {
            "DurableName": "123e4567-e89b-12d3-a456-426655440000",
            "DurableNameFormat": "UUID"
        }
    ],
    "HotspareType": null,
    "EncryptionAbility": null,
    "EncryptionStatus": null,
    "RotationSpeedRPM": null,
    "BlockSizeBytes": null,
    "PredictedMediaLifeLeftPercent": null,
    "Links": {
        "@odata.type": "#Drive.v1_1_0.Links",
        "Volumes": [],
        "Endpoints": [],
        "Oem": {
        }
    },
    "Actions": {
        "#Drive.SecureErase": {
            "target":
"/redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.SecureErase"
        }
    },
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.Drive",
            "EraseOnDetach": null,
            "FirmwareVersion": "1.17",
            "DriveErased": true,
            "Storage": {"@odata.id": "/redfish/v1/Systems/1/Storage/NVMe"},
            "PCIeFunction": {"@odata.id":
"/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1"}
        }
```

```
    }
}
```

4.21.1.2 PUT

Operation is not allowed on this resource.

4.21.1.3 PATCH

The properties in Table 11 can be updated by the PATCH operation:

Table 11. Properties Updated by PATCH Operation

Attribute	Type	Required	Description
`AssetTag`	String	No	The user assigned asset tag for this drive.
`Oem`	Object	No	Within "`Intel_RackScale`" object following properties are PATCH-able: "`EraseOnDetach`" – property can be updated on PODM. It indicates if drive should be erased when detached from Composed Node. "`DriveErased`" – property used to indicate whether drive was cleared after assignment to composed node.

Request:

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

POST action is used to `SecureErase` drives. If this operation is not immediate, Status->State of resource should be changed to "Starting". This action works only on drives currently not assigned to any zone.

```
POST /redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.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/TaskMonitors/1
{
    "@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

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

Details of this resource are described in metadata file: `EthernetInterface.xml` OEM extensions details available in `IntelRackScaleOem.xml`.

4.22.1 Operations

4.22.1.1 GET

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_1_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": [
        {
            "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"
        }
    ],
    "IPv6StaticAddresses": [
    ],
    "VLAN": null,
    "VLANs": null,

    "Oem": {}
  "Links" : {
    "Oem" : {
      "Intel_RackScale" : {
        "@odata.type" : "#Intel.Oem.EthernetInterface",
       "NeighborPort" : {
          "@odata.id" : "/redfish/v1/EthernetSwitches/1/Ports/1"
        }
      }
    }
  }
}
```


4.22.1.2 PUT

Operation is not allowed on this resource.

4.22.1.3 PATCH

Operation is not allowed on this resource.

4.22.1.4 POST

Operation is not allowed on this resource.

4.22.1.5 DELETE

Operation is not allowed on this resource.

4.23 Manager collection

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

4.23.1 Operations

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/BMC2”
              },
              {
                     “@odata.id”: “/redfish/v1/Managers/PSME”
              }
       ]
}
```

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

Manager resource – provides detailed information about a manager identified by {managerID}.

Details about resource properties are found in metadata file: Manager.xml OEM extensions details available in IntelRackScaleOem.xml.

4.24.1 Operations

4.24.1.1 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_2_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
       },

"GraphicalConsole": {
              "ServiceEnabled": true,
              "MaxConcurrentSessions": 2,
              "ConnectTypesSupported": ["KVMIP"]
       },
       "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_1_0.Links"
                "ManagerForServers": [],
                "ManagerForChassis": [{
                      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
                }],
                "ManagerInChassis": {
                      "@odata.id": "/redfish/v1/Chassis/Drawer1"
                },
                "Oem": {
                      "Intel_RackScale": {
                             "@odata.type": "#Intel.Oem.ManagerLinks",
                             "ManagerForServices": [{
                                          "@odata.id":
"/redfish/v1/Services/RSS1"
                             }],
                      "ManagerForSwitches": []
                      }
                }
        },
        "Oem": {},
        "PowerState": "On",
        "Actions": {
         "#Manager.Reset": {
             "target": "/redfish/v1/Managers/PSME/Actions/Manager.Reset",
             "ResetType@Redfish.AllowableValues": [
             ]
         },
         "Oem": {}
    }
}
```


4.24.1.2 PUT

Operation is not allowed on this resource.

4.24.1.3 PATCH

Operation is not allowed on this resource.

4.24.1.4 POST

Operation is not allowed on this resource.

4.24.1.5 DELETE

Operation is not allowed on this resource.

4.25 Ethernet Switch collection

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

4.25.1 Operations

4.25.1.1 GET

Request:

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

Response:

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

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

Detailed info about these resource properties can be obtained from metadata file: `EthernetSwitch.xml`

4.26.1 Operations

4.26.1.1 GET

Request:

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

Response:

```
{
```

```
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitch.EthernetSwitch",
  "@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"
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Metrics"
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/PSME"
      }
    ],
    "Oem": {}
  }
}
```


4.26.1.2 PUT

Operation is not allowed on this resource.

4.26.1.3 PATCH

Operation is not allowed on this resource.

4.26.1.4 DELETE

Operation is not allowed on this resource.

4.26.1.5 POST

Operation is not allowed on this resource.

4.26.1.6 DELETE

Operation is not allowed on this resource.

4.27 Ethernet Switch Metrics

Property details are available in `EthernetSwitchMetrics.xml` metadata file.

Note: The current version of Intel RSD does not implement Ethernet switch metrics.

4.27.1 Operations

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 ports available in a switch.

4.28.1 Operations

4.28.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#SwitchPortsCollection.SwitchPortsCollection",
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports",
    "@odata.type": "#SwitchPortsCollection.SwitchPortsCollection",
    "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
```

4.28.1.5 DELETE

Operation is not allowed on this resource.

4.29 Ethernet Switch port

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.xml

4.29.1 Operations

4.29.1.1 GET

Request:

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

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchPort.EthernetSwitchPort",
       "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1",
       "@odata.type": "#EthernetSwitchPort.v1_1_0.EthernetSwitchPort",
       "Id": "Port1",
       "Name": "RSA 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"
        },
        "Metrics": {
                "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics"
        },
        "Links": {
                "@odata.type": "#EthernetSwitchPort.v1_1_0.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"
                }]

        },
        "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

The properties in Table 12 can be updated by the PATCH operation:

Table 12. Properties Updated by Patch Operation

Attribute	Type	Required	Description
`AdministrativeState`	String (enum)	No	Port link state forced by user. Allowed values: “Up” “Down”

Attribute	Type	Required	Description
LinkSpeedMbps	Number	No	Port speed in Mbps
FrameSize	Number	No	MAC frame size in bytes
Autosense	Boolean	No	Indicates if the speed and duplex is automatically configured.
Links	Object	No	**Attribute** / **Type** / **Required** / **Description** PrimaryVLAN / Reference / No / Link to VLAN resource that should be primary for this port PortMembers / Array of References / No / List of ports being members of this logical port
FullDuplex	Boolean	No	Enables full duplex mode.
MACAddress	String	No	MAC address of port.
IPv4Addresses	Array of objects	No	Array of IP addresses of this port in following format: **Attribute** / **Type** / **Required** / **Description** Address / String / Yes / IP v4 address SubnetMask / String / No / Subnet mask Gateway / String / No / IPv4 gateway for this address
IPv6Addresses	Array of objects	No	Array of IP addresses of this port in following format: **Attribute** / **Type** / **Required** / **Description** Address / String / Yes / IP address in v6 format PrefixLength / Number / No / Provides the IPv6 network prefix length in bits for this address

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"
        },
               “PortMembers”: [
                     {
                                “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port10”
                     },
                     {
                                “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port12”
                     }
               ]
   }
}
```

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": [
    ]
}
```

Note: `PortMembers` array is an optional parameter. If not present in PATCH request, list of port members does not change.

4.29.1.4 POST

Operation is not allowed on this resource.

4.29.1.5 DELETE

Request:

```
DELETE /redfish/v1/EthernetSwitches/Switch1/Ports/Lag1
```

Response:

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

4.30 Ethernet Switch Port Metrics

Property details are available in `EthernetSwitchPortMetrics.xml` metadata file.

Note: The current version of Intel® RSD does not implement Ethernet switch port metrics.

4.30.1 Operations

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 the collection of resources of type `EthernetSwitchACL` defined on the Ethernet switch.

Information on properties can be obtained from metadata file: `EthernetSwitchACLCollection.xml.`

4.31.1 Operations

4.31.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchACLCollection.EthernetSwitchACLCollectio
n",
  "@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

POST action is used to create a new clean Access Control List (ACL) without any rules and bound port. Because of that, JSON used in this post operation does 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
```

4.31.1.5 DELETE

Operation is not allowed on this resource.

4.32 Ethernet Switch ACL

Ethernet Switch ACL resource – provides detailed information about a switch Access Control List defined on switch.

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

4.32.1 Operations

4.32.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchACL.EthernetSwitchACL",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1",
  "@odata.type": "#EthernetSwitchACL.v1_0_0.EthernetSwitchACL",
  "Id": "ACL1",
  "Name": "Ethernet Switch Access Control List",
  "Description": "Switch 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.Bin
d",
            "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.Unb
ind",
            "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 13. Port Attribute

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
```

Note: The 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 extended error info indicating that ACL is persistent.

4.33 Ethernet Switch ACL rule collection

Ethernet Switch ACL rule collection resource – provides collection of all rules for Access Control List (ACL) defined on switch.

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

4.33.1 Operations

4.33.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchACLRuleCollection.EthernetSwitchACLRuleC
ollection",
  "@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

Table 14. New ACL Rule Condition Attributes

Attribute	Type	Required	Description
`RuleId`	Number	No	This is ACL rule ID which determine rule priority. If not provided during creation, service will assign default next free Id
`Action`	String (enum)	Yes	Action that will be executed when rule condition will be met. Available actions: • Permit – packets meeting condition will be allowed • Deny – deny packets meeting condition • Forward – forwards packets to selected interface • Mirror – mirrors traffic on selected interface
`ForwardMirrorInterface`	Link object	Yes for "Forward" and "Mirror" actions	This is link to interface where traffic will be mirrored/forwarded.
`MirrorPortRegion`	Array of link objects	Yes for "Mirror" action	Array of links to Ethernet interfaces which traffic should be mirrored on `ForwardMirrorInterface`
`MirrorType`	String (enum)	Yes for "Mirror" action	Type of mirroring traffic. Available values: • Egress - Mirror egressing traffic on the mirrored port to the mirror destination port • Ingress - Mirror ingressing traffic on the mirrored port to the mirror destination port • Bidirectional - Mirror ingressing and egressing traffic on the mirrored port to the mirror destination port • Redirect - Mirror ingress traffic to the mirror destination port and drop the traffic ingressing the mirror ports
`Condition`	Object	Yes	Provides all conditions that must be met to trigger rule action. Must contain at least one non null property. List of available properties is described below.

Table 15. ACL Rule Condition Attributes

Attribute	Type	Required	Nullable	Description
`IPSource`	Object	No	Yes	Provides packet source IPv4 address. `IPv4Address` – String – Yes – IPv4 address `Mask` – String, null – No – The mask selects which bits in the corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
`IPDestination`	Object	No	Yes	Provides packet destination IPv4 address `IPv4Address` – String – Yes – IPv4 address

Attribute	Type	Required	Nullable	Description
				`Mask` — String, null — No — The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
`MACSource`	Object	No	Yes	Provides packet source MAC address: `MACAddress` — String — Yes — IPv4 address `Mask` — String, null — No — The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
`MACDestination`	Object	No	Yes	Provides packet destination MAC address: `MACAddress` — String — Yes — IPv4 address `Mask` — String, null — No — The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
`VLANId`	Object	No	Yes	Provides packet VLAN tag ID: `Id` — Number — Yes — VLAN Id tag

<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Nullable</th><th>Description</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>Mask</td><td>Number, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table>
</td></tr>
<tr><td>L4SourcePort</td><td>Object</td><td>No</td><td>Yes</td><td>IP layer 4 Source port. Contains following properties:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>Port</td><td>Number</td><td>Yes</td><td>Port numeric value</td></tr>
<tr><td>Mask</td><td>Number, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table>
</td></tr>
<tr><td>L4DestinationPort</td><td>Object</td><td>No</td><td>Yes</td><td>IP layer 4 Destination port. Contains following properties:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>Port</td><td>Number</td><td>Yes</td><td>Port numeric value</td></tr>
<tr><td>Mask</td><td>Number, null</td><td>No</td><td>Mask</td></tr>
</table>
</td></tr>
<tr><td>L4Protocol</td><td>Number</td><td>No</td><td>Yes</td><td>IP layer 4 protocol number as defined here: http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml</td></tr>
</table>

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules
Content-Type: application/json
{
       "RuleId": 1,
       "Action": "Deny",
       "ForwardMirrorInterface": null,
       "MirrorPortRegion": [],
       "MirrorType": null,
       "Condition": {
              "IPSource": {
                     "IPv4Address": "192.168.8.0",
                     "Mask": "0.0.0.255"
              },
              "IPDestination": null,
              "MACSource":  null,
             "MACDestination": null,
              "VLANId": null,
```

```
                "L4SourcePort": null,
                "L4DestinationPort": null,
                "L4Protocol": null
        }
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
```

4.33.1.5 DELETE

Operation is not allowed on this resource.

4.34 Ethernet Switch ACL rule

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.xml`

4.34.1 Operations

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#EthernetSwitchACLRule.EthernetSwitchACLRule",
        "@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 that can be modified by PATCH method are listed in Table 16.

Table 16. ACL Rule Modification Attributes

Attribute	Type	Required	Description
`RuleId`	Number	No	This is ACL rule ID that determines rule priority.
`Action`	String (enum)	No	Action that will be executed when rule condition will be met. Available actions: • Permit – packets meeting condition will be allowed • Deny – deny packets meeting condition • Forward – forwards packets to selected interface • Mirror – mirrors traffic on selected interface
`ForwardMirrorInterface`	Link object	Yes for “Forward” and “Mirror” actions	This is link to interface where traffic will be mirrored/forwarded.
`MirrorPortRegion`	Array of link objects	Yes for “Mirror” action	Array of links to Ethernet interfaces which traffic should be mirrored on `ForwardMirrorInterface`

Attribute	Type	Required	Description
MirrorType	String (enum)	Yes for "Mirror" action	Type of mirroring traffic. Available values: • Egress - Mirror egressing traffic on the mirrored port to the mirror destination port • Ingress - Mirror ingressing traffic on the mirrored port to the mirror destination port • Bidirectional - Mirror ingressing and egressing traffic on the mirrored port to the mirror destination port • Redirect - Mirror ingress traffic to the mirror destination port and drop the traffic ingressing the mirror ports
Condition	Object	No	Provides all conditions that must be met to trigger rule action. List of available properties is described in Table 17.

Table 17. ACL Rule Condition Attributes

Attribute	Type	Required	Nullable	Description
IPSource	Object	No	Yes	Provides packet source IPv4 address. IPv4Address: String, Yes, IPv4 address Mask: String, null, No, The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
IPDestination	Object	No	Yes	Provides packet destination IPv4 address IPv4Address: String, Yes, IPv4 address Mask: String, null, No, The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.

<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Nullable</th><th>Description</th></tr>
<tr><td>MACSource</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet source MAC address:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>MACAddress</td><td>String</td><td>Yes</td><td>IPv4 address</td></tr>
<tr><td>Mask</td><td>String, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
<tr><td>MACDestination</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet destination MAC address:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>MACAddress</td><td>String</td><td>Yes</td><td>IPv4 address</td></tr>
<tr><td>Mask</td><td>String, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
<tr><td>VLANId</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet VLAN tag ID:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>Id</td><td>Number</td><td>Yes</td><td>VLAN Id tag</td></tr>
<tr><td>Mask</td><td>Number, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
</table>

Attribute	Type	Required	Nullable	Description
L4SourcePort	Object	No	Yes	IP layer 4 Source port. Contains following properties: Attribute / Type / Required / Description Port / Number / Yes / Port numeric value Mask / Number, null / No / The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
L4DestinationPort	Object	No	Yes	IP layer 4 Destination port. Contains following properties: Attribute / Type / Required / Description Port / Number / Yes / Port numeric value Mask / Number, null / No / The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.
L4Protocol	Number	No	Yes	IP layer 4 protocol number as defined here: *http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml*

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:

Or:

```
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
```

4.35 Ethernet Switch port static MAC collection

Ethernet Switch port static MAC collection resource – provides collection of all static MAC forwarding table entries.

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

4.35.1 Operations

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/StaticMA
Cs ",
  "@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

Attributes of POST action to create new static MAC entry are listed in Table 18.

Table 18. New Static MAC Entry 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:

```
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
```

4.35.1.5 DELETE

Operation is not allowed on this resource.

4.36 Ethernet Switch port static MAC

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.xml`

4.36.1 Operations

4.36.1.1 GET

Request:

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

Response:

```
{
```

```
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticM
ACs/Members/$entity",
  "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1",
  "@odata.type": "#StaticMAC.v1_1_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 PATCH method are listed in Table 19.

Table 19. Static MAC Modification 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.

Note: Only entries with “Type” == “Static” can be updated.

Request:

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

Response:

Or:

```
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
```

4.37 Network protocol

Network protocol resource – provides detailed information about all network services supported by a manager identified by {managerID}. Network service attributes are listed in Table 20.

Table 20. Network Service Attributes

Name	Network service		
Type URI	/redfish/v1/Managers/{managerID}/NetworkProtocol		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Resource name
Description	String, null	No	Resource description
Status	Object, null	No	Refer to Section 6.1 for resource status.
Oem	Object	No	OEM defined object
HostName	String, null	No	Provides information about host name
FQDN	String, null	No	Fully Qualified Domain Name
HTTP	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port
HTTPS	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port
SNMP	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port
VirtualMedia	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port
Telnet	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port
SSDP	Object	No	**Name** / **Type** / **Required** / **Description** ProtocolEnabled: Boolean, null: No: Availability of protocol Port: Number, null: No: Indicates the protocol port

Name	Network service					
Type URI	/redfish/v1/Managers/{managerID}/NetworkProtocol					
Attribute	Type	Required	Description			
			NotifyMulticastIntervalSeconds	Number, null	No	Indicates how often the Multicast is done from this service for SSDP
			NotifyTTL	Number, null	No	Indicates the time to live hop count for SSDPs Notify messages.
			NotifyIPv6Scope	String, null	No	Indicates the scope for the IPv6 Notify messages for SSDP
IPMI	Object	No	Name	Type	Required	Description
			ProtocolEnabled	Boolean, null	No	Availability of protocol
			Port	Number, null	No	Indicates the protocol port
SSH	Object	No	Name	Type	Required	Description
			ProtocolEnabled	Boolean, null	No	Availability of protocol
			Port	Number, null	No	Indicates the protocol port
KVMIP	Object	No	Name	Type	Required	Description
			ProtocolEnabled	Boolean, null	No	Availability of protocol
			Port	Number, null	No	Indicates the protocol port

4.37.1 Operations

4.37.1.1 GET

Request:

```
GET /redfish/v1/Managers/{managerID}/NetworkProtocol
Content-Type: application/json
```

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#ManagerNetworkProtocol.ManagerNetworkProtocol",
    "@odata.id": "/redfish/v1/Managers/BMC1/NetworkProtocol",
    "@odata.type": "#ManagerNetworkProtocol.v1_0_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": 80
    },
    "HTTPS": {
        "ProtocolEnabled": true,
        "Port": 443
    },
    "IPMI": {
        "ProtocolEnabled": true,
        "Port": 623
    },
    "SSH": {
        "ProtocolEnabled": true,
        "Port": 22
    },
    "SNMP": {
        "ProtocolEnabled": true,
        "Port": 161
    },
    "VirtualMedia": {
        "ProtocolEnabled": true,
        "Port": 17988
    },
    "SSDP": {
        "ProtocolEnabled": true,
        "Port": 1900,
        "NotifyMulticastIntervalSeconds": 600,
        "NotifyTTL": 5,
        "NotifyIPv6Scope": "Site"
    },
    "Telnet": {
        "ProtocolEnabled": true,
        "Port": 23
    },
    "KVMIP": {
        "ProtocolEnabled": true,
        "Port": 5288
    },
    "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

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}. Ethernet interface collection attributes are listed in **Error! Reference source not found.**.

4.38.1 Operations

4.38.1.1 GET

Request:

```
GET /redfish/v1/Managers/{managerID}/EthernetInterfaces
Content-Type: application/json
```

Response:

```
{
       “@odata.context”:
"/redfish/v1/$metadata#Managers/Members/1/EthernetInterfaces/$entity",
       “@odata.id”: “/redfish/v1/Managers/1/EthernetInterfaces”,
       “@odata.type”:
“#EthernetNetworkInterface.v1_0_0.EthernetNetworkInterfaceCollection”,
       “Name”: “Ethernet Network Interface Collection”,
       "Description": "description-as-string",
       “Members@odata.count”: 1,
       “Members”: [
                {
                       “@odata.id”:
“/redfish/v1/Managers/1/EthernetInterfaces/1”
                }
       ]
}
```

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

Ethernet interface resource – provides detailed information about an Ethernet interface identified by {nicID}.

For current API version this resource is identical with System Network interface (refer to Section 4.22).

4.40 VLAN network interface collection

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}. VLAN network interface collection attributes are listed in Section 4.40, VLAN network interface collection.

4.40.1 Operations

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.VLanNetworkInterfaceCol
lection",
    "@odata.id": "/redfish/v1/EthernetSwitches",
    "@odata.type":
"#VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection",
    "Name": "VLAN Network Interface Collection"
    "Description": "VLAN Network Interface Collection",
    "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

POST action attributes are listed in Table 21.

Table 21. Post Action Attributes

Attribute	Type	Required	Description
Oem	Object	Yes	OEM defined object "Intel_RackScale" extensions: Attribute: Tagged; Type: Boolean; Description: 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/VLAN
2
```

4.40.1.5 DELETE

Operation is not allowed on this resource.

4.41 VLAN network interface

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.xml`, OEM extensions details are available in `IntelRackScaleOem.xml`.

4.41.1 Operations

4.41.1.1 GET

Request:

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

Response:

```
{
       “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1”,
    "@odata.context":
"/redfish/v1/$metadata#VLanNetworkInterface.VLanNetworkInterface",
    "@odata.type": "#VLanNetworkInterface.v1_0_1.VLanNetworkInterface",
    "Id": "VLAN1",
    "Name": "VLAN Network Interface",
    "Description": "System NIC 1 VLAN",
    "VLANEnable": true,
    "VLANId": 101,
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.VLanNetworkInterface",
            "Tagged": false,
```

```
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
        }
    }
}
```

4.41.1.2 PUT

Operation is not allowed on this resource.

4.41.1.3 PATCH

The properties in Table 22 can be updated by the PATCH operation:

Table 22. Properties 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 (e.g 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
OrLocation: 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": [
    ]
}
```

Or:

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

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
```

4.42 Event service

Event service resource responsible for sending events to subscribers. Event service attributes are listed in Table 23.

Table 23. Event Service Attributes

Name		Event service	
Type URI		/redfish/v1/EventService	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Resource name
Description	String, null	No	Resource description
Status	Object, null	No	Refer to Section 6.1 for resource status.
Oem	Object, null	No	OEM defined object
ServiceEnabled	Boolean, Null	No	This indicates whether this service is enabled.
DeliveryRetryAttempts	Number	No	This is the number of attempts an event posting is retried before the subscription is terminated.
DeliveryRetryIntervalSeconds	Number	No	This represents the number of seconds between retry attempts for sending any given Event
EventTypesForSubscription	Array	Yes	This is the types of Events that can be subscribed to. Available event types: - 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 exist which requires attention. - MetricReport - A MetricReport as specified by MetricReportDefinition.
Subscriptions	Object, null	Yes	This is a reference to a collection of Event Destination resources.
Actions	Object	No	The Actions object contains the available custom actions on this resource.

4.42.1 Operations

4.42.1.1 GET

Request:

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

Response:

```
{
    „@odata.context”: „/redfish/v1/$metadata#EventService”,
    „@odata.id”: „/redfish/v1/EventService”,
    „@odata.type”: „#EventService.v1_0_2.EventService”,
    „Id”: „EventService”,
    „Name”: „Event Service”,
    „Description”: „Event Service”,
    „Status”: {
        „State”: „Enabled”,
        „Health”: „OK”
    },
    „ServiceEnabled”: true,
    „DeliveryRetryAttempts”: 3,
    „DeliveryRetryIntervalSeconds”: 60,
    „EventTypesForSubscription”: [
        „StatusChange”,
        „ResourceUpdated”,
        „ResourceAdded”,
        „ResourceRemoved”,
        „Alert”,
        „MetricDefinition”
    ],
    „Subscriptions”: {
        „@odata.id”: „/redfish/v1/EventService/Subscriptions”
    },
    "Actions": {
        "Oem": {}
    },
    „Oem”: {}
}
```

4.42.1.2 PUT

Operation is not allowed on this resource.

4.42.1.3 PATCH

Operation is not allowed on this resource.

4.42.1.4 POST

Operation is not allowed on this resource.

4.42.1.5 DELETE

Operation is not allowed on this resource.

4.43 Event subscription collection

4.43.1 Metadata

http://redfish.dmtf.org/schemas/v1/EventDestinationColection.xml

4.43.2 Operations

4.43.2.1 GET

Request:

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

Response:

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

4.43.2.2 PUT

Operation is not allowed on this resource.

4.43.2.3 PATCH

Operation is not allowed on this resource.

4.43.2.4 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”
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/EventService/Subscriptions/2
```

4.43.2.5 DELETE

Operation is not allowed on this resource.

4.44 Event subscription

Event subscription contains information about the type of events that the user subscribes to and those that should be sent. Even subscription attributes are listed in Table 24.

Table 24. Event Subscription Attributes

Name		Event subscription	
Type URI		/redfish/v1/EventService/Subscriptions/{destinationID}	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	No	Resource name
Description	String	No	Resource description
Oem	Object	No	OEM defined object
Destination	String	Yes	The URI of the destination Event Service.
EventTypes	Array	Yes	These are types of Events that can be subscribed to. Available event types: • 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 exist which requires attention. • MetricReport – A MetricReport as specified by MetricReportDefinition.
Context	String	Deprecated	A client-supplied string that is stored with the event destination subscription.
Protocol	String (enum)	Yes	The protocol type of the event connection. Available protocols: • "Redfish" - event type that adheres to definition in the Redfish specification.
OriginResources	Array)	No	A list of resources for which the service will send events specified in EventTypes array. Empty array or NULL is interpreted as subscription for all resources and assets in subsystem. **Not exposed by current version of PSME.**
MessageIds	Array	No	A list of MessageIds that the service will send. **Not exposed by current version of PSME.**

4.44.1 Metadata

http://redfish.dmtf.org/schemas/v1/EventDestination.xml

4.44.2 Operations

4.44.2.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EventService/Members/Subscriptions/Members/$entity",
  "@odata.id": "/redfish/v1/EventService/Subscriptions/1",
  "@odata.type": "#EventDestination.v1_1_1.EventDestination",
  "Id": "1",
  "Name": "EventSubscription 1",
```

```
  "Description": "EventSubscription",
  "Destination": "http://192.168.1.1/Destination1",
  "EventTypes": [
    "ResourceAdded",
    "ResourceRemoved"
  ],
  "Context": "My Event",
  "Protocol": "Redfish",
  "OriginResources": [
    {"@odata.id": "/redfish/v1/Systems/1"}
  ],
  "MessageIds": [
  ]
}
```

4.44.2.2 PUT

Operation is not allowed on this resource.

4.44.2.3 PATCH

Operation is not allowed on this resource.

4.44.2.4 POST

Operation is not allowed on this resource.

4.44.2.5 DELETE

Request:

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

Response:

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

4.45 Event array

Definition of Event array that is POSTed by Event Service to active subscribers. It represents the properties for the events themselves and not subscriptions or any other resource. Each event in this array has a set of properties that describe the event. Since this is an array, more than one event can be sent simultaneously. Event array attributes are listed in Table 25 and Event attributes are listed in Table 26.

Table 25. Event Array Attributes

Name		Event array	
Type URI		n/a	
Attribute	**Type**	**Required**	**Description**
`Id`	String	Yes	Resource identifier
`Name`	String	No	Resource name
`Description`	String	No	Resource description
`Oem`	Object	No	OEM defined object
`Events`	Array	Yes	Array of events – Refer to Table 26
`Context`	String	No	A context can be supplied at subscription time. This property shall contain a client supplied context for the Event Destination to which this event is being sent.

Table 26. Event Attributes

Attribute	Type	Required	Description
EventType	String (enum)	Yes	These are the types of Events that can be subscribed to. Available event types: • 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 exist which requires attention. • MetricReport – A MetricReport as specified by MetricReportDefinition.
EventId	String	No	This is a unique instance identifier of an event.
EventTimestamp	String	No	This is the time in which the event occurred.
Severity	String	No	This is the severity of the event.
Message	String	No	This is the human readable message, if provided.
MessageId	String	Yes	This is the key for this message, which can be used to look up the message in a message registry.
MessageArgs	Array of strings	No	This array of message arguments is substituted for the arguments in the message when looked up in the message registry.
Context	String	Deprecated.	A context can be supplied at subscription time. This property is the context value supplied by the subscriber.
OriginOfCondition	Object	Yes	This indicates the resource that originated the condition that caused the event to be generated.

4.45.1 Metadata

http://redfish.dmtf.org/schemas/v1/Event.xml

4.45.2 Operations

4.45.2.1 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
```

4.45.2.2 PUT

Operation is not allowed on this resource.

4.45.2.3 PATCH

Operation is not allowed on this resource.

4.45.2.4 GET

Operation is not allowed on this resource.

4.45.2.5 DELETE

Operation is not allowed on this resource.

4.46 Fabric collection

Property details are available in `FabricCollection.xml` metadata file.

4.46.1 Operations

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",
       "Name": "Fabric Collection",
       "Description": " Fabric Collection",
       "Members@odata.count": 1,
       "Members": [{
              "@odata.id": "/redfish/v1/Fabrics/PCIe"
       }]
}
```

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

Property details are available in `Fabric.xml` metadata file.

4.47.1 Operations

4.47.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe
Content-Type: applicaton/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": null,
    "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": {}
    },
    "Actions": {
        "Oem": {}
    },
    "Oem": {}
}
```

4.47.1.2 PUT

Operation is not allowed on this resource.

4.47.1.3 PATCH

Operation is not allowed on this resource.

4.47.1.4 POST

Operation is not allowed on this resource.

4.47.1.5 DELETE

Operation is not allowed on this resource.

4.48 Switch collection

Property details are available in `SwitchCollection.xml` metadata file.

4.48.1 Operations

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 POST

Operation is not allowed on this resource.

4.48.1.5 DELETE

Operation is not allowed on this resource.

4.49 Switch

Property details are available in `Switch.xml` metadata file.

4.49.1 Operations

4.49.1.1 GET

Request:

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

To trigger switch action POST request should be sent:

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 Port Collection

Property details are available in `PortCollection.xml` metadata file.

4.50.1 Operations

4.50.1.1 GET

Request:

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

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#PortCollection.PortCollection",
       "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports",
       "@odata.type": "#PortCollection.PortCollection",
       "Name": "PCIe Port Collection",
       "Description": "PCIe Port Collection",
       "Members@odata.count": 4,
       "Members": [
        {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"},
        {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up2"},
        {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1"},
        {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down2"},
    ]
}
```

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

Property details are available in `Port.xml` metadata file. OEM extension details are available in `IntelRackScaleOem.xml`.

4.51.1 Operations

4.51.1.1 GET

Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1",
  "@odata.type": "#Port.v1_0_0.Port",
  "Id": "Up1",
  "Name": "PCIe Upstream Port 1",
  "Description": "PCIe Upstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
        "HealthRollup": null
  },
  "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/HostRootComplex1"
      }
    ],
    "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 PUT

Operation is not allowed on this resource.

4.51.1.3 PATCH

Operation is not allowed on this resource.

4.51.1.4 POST

To trigger switch port action POST request should be sent:

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
```

4.51.1.5 DELETE

4.52 Port Metrics

Property details are available in `PortMetrics.xml` metadata file.

4.52.1 Operations

4.52.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics
Content-Type: applicaton/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 Port1",
  "Description": "description-as-string",
  "Id": "Metrics for Port1",
  "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 Zones collection

Property details are available in `ZoneCollection.xml` metadata file.

4.53.1 Operations

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": 2,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/1"
        },
        {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/2"
        }
    ]
}
```

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 a new Fabric zone, the initial zone structure should be POSTed.

Note: In the current PSME implementation the PCIe Fabric switch is preconfigured with maximum number of zones. The user can not create additional zones.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Zones
Content-Type: application/json
{
       "Name": "PCIe Zone 3",
       "Description": "PCIe Zone 3",
       "Links": {
          "Endpoints": [
            {"@odata.id":
"/redfish/v1/Fabrics/PCIe/Endpoints/HostRootComplex1"},
            {"@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1"}
         ],
          "InvolvedSwitches": [
            {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"}
          ]
       }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Zones/3
```

4.53.1.5 DELETE

Operation is not allowed on this resource.

4.54 Zone

Property details are available in `Zone.xml` metadata file.

4.54.1 Operations

4.54.1.1 GET

Request:

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

Response:

```
{
       "@odata.context": "/redfish/v1/$metadata#Zone.Zone",
       "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/1",
       "@odata.type": "#Zone.v1_0_0.Zone",
       "Id": "1",
       "Name": "PCIe Zone 1",
       "Description": "PCIe Zone 1",
       "Status": {
              "State": "Enabled",
              "Health": "OK"
       },
       "Links": {
              "Endpoints": [
           {"@odata.id":
"/redfish/v1/Fabrics/PCIe/Endpoints/HostRootComplex1"},
           {"@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1"},
                    {"@odata.id":
"/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF2"}
        ],
         "InvolvedSwitches": [
           {"@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"}
         ]
       },
       "Oem": {}
}
```

4.54.1.2 PUT

Operation is not allowed on this resource.

4.54.1.3 PATCH

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

The properties in Table 27 can be updated by the PATCH operation:

Table 27. Properties Updated by Patch Operation

Attribute	Type	Required	Description
Endpoints	Array	No	An array of references to the endpoints that are contained in this zone.

```
PATCH /redfish/v1/Fabrics/PCIe/Zones/1
Content-Type: application/json
{
  "Endpoints": [
    {"@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/HostRootComplex1"},
```

```
    {"@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF2"}
  ]
}
```

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

Operation is not allowed on this resource.

4.54.1.5 DELETE

Note: In current PSME implementation PCIe fabric switch is preconfigured with maximum number of zones. The user can not delete any existing zone.

Request:

```
DELETE /redfish/v1/Fabrics/PCIe/Zones/1
```

Response:

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

4.55 Endpoint collection

Property details are available in `EndpointCollection.xml` metadata file.

4.55.1 Operations

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

In the Intel® RSD software v2.2, endpoints are created automatically for every detected NVMe drive connected to the PNC switch. Implementation of this action is not required.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
{
  "Name": "NVMe Drive",
  "Description": "The PCIe Physical function of an 850GB NVMe drive",
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "ConnectedEntities": [
    {
      "EntityType": "Drive",
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.0"
      },
      "Identifiers": [
        {
          "DurableNameFormat": "UUID",
          "DurableName": "00000000-0000-0000-0000-000000000000"
        }
```

```
      ]
    }
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
```

4.55.1.5 DELETE

Operation is not allowed on this resource.

4.56 Endpoint

Property details are available in `Endpoint.xml` metadata file.

Additional notes:

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

4.56.1 Operations

4.56.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1",
  "@odata.type": "#Endpoint.v1_0_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": [
    {
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "ConnectedEntities": [
    {
      "EntityType": "Drive",
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.0"
```

```
      },
      "Identifiers": [
        {
          "DurableNameFormat": "UUID",
          "DurableName": "00000000-0000-0000-0000-000000000000"
        }
      ],
      "Oem": {}
    }
  ],
  "Redundancy": [],
  "HostReservationMemoryBytes": null,
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1"
      }
    ]
  },
  "Oem": {},
  "Actions": {
    "Oem": {}
  }
}
```

4.56.1.2 PUT

Operation is not allowed on this resource.

4.56.1.3 PATCH

Operation is not allowed on this resource.

4.56.1.4 POST

Operation is not allowed on this resource.

4.56.1.5 DELETE

4.57 PCIe* Device

Property details are available in the `PCIeDevice.xml` metadata file. This resource is required for Pooled Node Controller (PNC) service.

Note: Chassis property in the links section of the Intel® RSD implementation points to a single Chassis (array contains only one element).

4.57.1 Operations

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_0_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

The properties in Table 28 can be updated by the PATCH operation:

Table 28. Properties Updated by Patch Operation

Attribute	Type	Required	Description
AssetTag	String	No	The user assigned asset tag for this storage PCIe* device.

```
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

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

4.58.1 Operations

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_0_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": {}
}}
```

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 represents the task service which contains all actual tasks created by this service. This resource must be supported by services supporting asynchronous operations (Refer to Section 4.2).

Property details are available in `TaskService.xml` metadata file.

4.59.1 Operations

4.59.1.1 GET

Request:

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

Response:

```
{
    "@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",
    "CompletedTaskOverWritePolicy": "Manual",
    "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 represents a collection of resources of Task type.

Property details are available in `TaskCollection.xml` metadata file.

4.60.1 Operations

4.60.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#TaskCollection.TaskCollection",
    "@odata.id": "/redfish/v1/TaskService/Tasks",
    "@odata.type": "#TaskCollection.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.

Property details are available in `Task.xml` metadata file.

4.61.1 Operations

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_0_0.Task",
    "Id": "1",
    "Name": "Task 1",
    "Description": "Task 1",
    "TaskState": "Completed",
    "StartTime": "2016-08-18T12:00+01:00",
    "EndTime": "2016-08-18T13:13+01:00",
    "TaskStatus": "OK",
    "Messages": [
        {
            "@odata.type”: "Message.v1_0_0.Message",
            "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
```

4.62 Registries (MessageRegistryFileCollection)

This resource represents a collection of the Schema File locator resources.

Property details are available in `MessageRegistryFileCollection.xml` metadata file.

4.62.1 Operations

4.62.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#MessageRegistryFileCollection.MessageRegistryFileColle
ction",
    "@odata.id": "/redfish/v1/Registries",
    "@odata.type":
"#MessageRegistryFileCollection.MessageRegistryFileCollection",
    "Name": "Registry File Collection",
    "Description": "Registry Repository",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Registries/Base"
        }
    ]
}
```

4.62.1.2 PUT

Operation is not allowed on this resource.

4.62.1.3 PATCH

Operation is not allowed on this resource.

4.62.1.4 POST

Operation is not allowed on this resource.

4.62.1.5 DELETE

Operation is not allowed on this resource.

4.63 Message Registry File

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

Property details are available in `MessageRegistryFile.xml` metadata file.

The base message registry file is defined by Redfish. Refer to the following address:
http://redfish.dmtf.org/registries/Base.v1_0_0.json

4.63.1 Operations

4.63.1.1 GET

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_0_0.MessageRegistryFile",
    "Id": "Base",
    "Name": "Base Message Registry File",
    "Description": "Base Message Registry File locations",
    "Languages": [
        "en"
    ],
    "Registry": "Base.1.0",
    "Location": [
        {
            "Language": "en",
            "PublicationUri":
"http://redfish.dmtf.org/registries/Base.v1_0_0.json",
        }
    ],
    "Oem": {}
}
```

4.63.1.2 PUT

Operation is not allowed on this resource.

4.63.1.3 PATCH

Operation is not allowed on this resource.

4.63.1.4 POST

Operation is not allowed on this resource.

4.63.1.5 DELETE

Operation is not allowed on this resource.

4.64 Metric Definition Collection

Property details are available in `MetricDefinitionCollection.xml` metadata file.

4.64.1 Operations

4.64.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#TelemetryService/MetricDefinitions/$entity",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions",
  "@odata.type": "#MetricDefinitionCollection.MetricDefinitionCollection",
  "Name": "Metric Definitions Collection",
  "Description": "description-as-string",
  "Members@odata.count": 5,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth"
    },
    {
      "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth"
    },
    {
      "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/SLEDTemperatures"
    },
    {
      "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/MemoryHealth"
    }
  ]
}
```

4.64.1.2 PUT

Operation is not allowed on this resource.

4.64.1.3 PATCH

Operation is not allowed on this resource.

4.64.1.4 POST

Operation is not allowed on this resource.

4.64.1.5 DELETE

Operation is not allowed on this resource.

4.65 Metric Definition

Property details are available in the MetricDefinition.xml metadata file. Metric Definition describes either metric associated with physical sensor (e.g. exposed by BMC) or metric associated with specific resource (e.g. statistics of Ethernet Switch Port). This resource is optional for metrics and required for sensors.

4.65.1 Operations

4.65.1.1 GET (Metric Definition for Discrete Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUHealth
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth",
  "@odata.type": "#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/Metrics#/CPUHealth"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "DiscreteMetricType": "Multiple"
    }
  }
```

```
}
```

4.65.1.2 GET (Metric Definition for Numeric Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature",
  "@odata.type": "#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/Metrics#/TemperatureCelsius"
  ]
}
```

4.65.1.3 GET (Metric Definition for Counter or metric not associated with Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth",
  "@odata.type": "#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/Processors/CPU1/Metrics#/CPUBandwidthPercent"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "CalculationPrecision": 5
    }
  }
}
```

4.65.1.4 PUT

Operation is not allowed on this resource.

4.65.1.5 PATCH

Operation is not allowed on this resource.

4.65.1.6 POST

Operation is not allowed on this resource.

4.65.1.7 DELETE

Operation is not allowed on this resource.

4.66 Telemetry Service

Property details are available in the `TelemetryService.xml` metadata file.

4.66.1 Operations

4.66.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#TelemetryService",
    "@odata.type": "#TelemetryService.v1_0_0.TelemetryService",
    "@odata.id": "/redfish/v1/TelemetryService",
    "Id": "TelemetryService",
    "Name": "Telemetry Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
```

```
    },

    "MetricDefinitions": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions"
    }
}
```

4.66.1.2 PUT

Operation is not allowed on this resource.

4.66.1.3 PATCH

Operation is not allowed on this resource.

4.66.1.4 POST

Operation is not allowed on this resource.

4.66.1.5 DELETE

Operation is not allowed on this resource.

4.67 Metric Report Definition Collection

Property details are available in the `MetricReportDefinitionCollection.xml` metadata file.

Note: In the current PSME implementation, the Metric Report Definition Collection resource is not implemented.

4.67.1 Operations

4.67.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#TelemetryService/MetricReportDefinitions/$entity",
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions",
    "@odata.type":
"#MetricReportDefinitionCollection.MetricReportDefinitionCollection",
    "Name": "MetricReportDefinition Collection",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id":
"/redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics"
        }
    ]
}
```

4.67.1.2 PUT

Operation is not allowed on this resource.

4.67.1.3 PATCH

Operation is not allowed on this resource.

4.67.1.4 POST

Request:

```
POST /redfish/v1/TelemetryService/MetricReportDefinitions
Content-Type: application/json
{
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "ReportActions": ["Transmit", "Log"],
  "MetricReport": {"@odata.id":
"/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"},
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
"MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/BandwidthPercent",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/CPUHealth",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
       ]
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT/redfish/v1/TelemetryService/MetricReportDefinitions/1
```

4.67.1.5 DELETE

Operation is not allowed on this resource.

4.68 Metric Report Definition

Property details are available in the `MetricReportDefinition.xml` metadata file.

Note: In the current PSME implementation, the Metric Report Definition resource is not implemented.

4.68.1 Operations

4.68.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics
Content-Type: application/json
```

Response:

```
{
```

```
  "@odata.context": "/redfish/v1/$metadata#MetricReportDefinition",
  "@odata.type": "#MetricReportDefinition.1.0.0.MetricReportDefinition",
  "@odata.id":
"/redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics",
  "Id": "CPUEventPublish",
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "ReportActions": ["Transmit", "Log"],
  "MetricReport": {"@odata.id":
"/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"},
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/BandwidthPercent",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/CPUHealth",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

4.68.1.2 PUT

Operation is not allowed on this resource.

4.68.1.3 PATCH

Operation is not allowed on this resource.

4.68.1.4 POST

Operation is not allowed on this resource.

4.68.1.5 DELETE

Request:

```
DELETE /redfish/v1/TelemetryService/MetricReportDefinitions/CPUEventPublish
```

Response:

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

4.69 Metric Report Collection

Property details are available in the `MetricReportCollection.xml` metadata file.

Note: In the current PSME implementation, the Metric Report Collection resource is not implemented.

4.69.1 Operations

4.69.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricReports
```

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#TelemetryService/MetricReports",
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports",
    "@odata.type": "#MetricReportCollection.MetricReportCollection",
    "Name": "MetricReports",
    "Members@odata.count": 1,
    "Members": [
        {"@odata.id":
"/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"}
    ]
}
```

4.69.1.2 PUT

Operation is not allowed on this resource.

4.69.1.3 PATCH

Operation is not allowed on this resource.

4.69.1.4 POST

Operation is not allowed on this resource.

4.69.1.5 DELETE

Operation is not allowed on this resource.

4.70 Metric Report

Property details are available in the `MetricReport.xml` metadata file.

Note: In the current PSME implementation, the Metric Report resource is not implemented.

4.70.1 Operations

4.70.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics
Content-Type: application/json
```

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#MetricReport.MetricReport",
    "@odata.type": "#MetricReport.v1_0_0.MetricReport",
    "@odata.id":
"/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics",
    "Id": "TransmitCPU1Metrics",
    "Name": "CPU1 Metric Report",
    "Description": "description-as-string",
```


```
    "MetricReportDefinition": { "@odata.id":
"/redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics" },
    "MetricValues": [
        {
            "MetricValue": "29",
            "Timestamp": "2016-07-25T11:27:59.895513984+02:00",
            "MetricProperty":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/BandwidthPercent",
            "MetricDefinition": { "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth" }
        },
        {
            "MetricValue": "FRB1 BIST Failure",
            "Timestamp": "2016-07-25T11:27:59.795513984+02:00",
            "MetricProperty": { "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/CPUHealth"},
            "MetricDefinition": { "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth" }
        },
        {
            "MetricValue": "43",
            "Timestamp": "2016-07-25T11:27:59.595513984+02:00",
            "MetricProperty": { "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"},
            "MetricDefinition": { "@odata.id":
"/redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature" }
        }
    ]
}
```


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 Triggers Collection

Property details are available in the `TriggersCollection.xml` metadata file.

Note: In the current PSME implementation, the Triggers Collection resource is not implemented.

4.71.1 Operations

4.71.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#TelemetryService/Triggers/$entity",
    "@odata.id": "/redfish/v1/TelemetryService/Triggers",
    "@odata.type": "#TriggersCollection.TriggersCollection",
    "Name": "Triggers Collection",
    "Members@odata.count": 6,
    "Members": [
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorCatastrophicError"
        },
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorInitializationError"
        },
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError"
        },
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorPOSTFailure"
        },
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorTemperature"
        },
        {
            "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorThermalTrip"
        }
    ]
}
```

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 (Numeric Trigger)

Request:

```
POST /redfish/v1/TelemetryService/Triggers
Content-Type: application/json
{
  "Name": "Triggers for Processor Temperature Malfunction",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "NumericTriggers": [
    {
      "Name": "UpperThresholdCritical",
      "Value": "90",
      "DirectionOfCrossing": "Increasing",
      "DwellTimems": "1",
      "Severity": "Critical"
    },
    {
      "Name": "UpperThresholdNonCritical",
      "Value": "75",
      "DirectionOfCrossing": "Increasing",
      "DwellTimems": "4",
      "Severity": "Warning"
    }
  ],

  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU0/Metrics#/TemperatureCelsius",

"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/TelemetryService/Triggers/1
```

4.71.1.5 POST (Discrete Trigger)

Request:

```
POST /redfish/v1/TelemetryService/Triggers
Content-Type: application/json
{
```

```
  "Name": "Trigger for Processor Machine Check Error",
  "Description": "Triggers for System1 Processor Machine Check Error",

  "MetricType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
  "DiscreteTriggerCondition": "Specified",
  "DiscreteTriggers": [
    {
      "Value": "Machine Check Exception",
      "DwellTimems": "1",
      "Severity": "Critical"
    }
  ],

  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU0/Metrics#/CPUHealth",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/CPUHealth"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/TelemetryService/Triggers/2
```

4.71.1.6 DELETE

Operation is not allowed on this resource.

4.72 Triggers

Property details are available in the `Triggers.xml` metadata file.

Note: In the current PSME implementation, the Triggers resource is not implemented.

4.72.1 Operations

4.72.1.1 GET (Numeric Trigger)

Request:

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#TelemetryService/Triggers/Members/$entity",
  "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorTemperature",
  "@odata.type": "#Trigger.v1_0_0.Trigger",
  "Id": "ProcessorTemperature",
```

```
  "Name": "Triggers for Processor Temperature Malfunction",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "NumericTriggers": [
    {
      "Name": "UpperThresholdCritical",
      "Value": "90",
      "DirectionOfCrossing": "Increasing",
      "DwellTimems": "1",
      "Severity": "Critical"
    },
    {
      "Name": "UpperThresholdNonCritical",
      "Value": "75",
      "DirectionOfCrossing": "Increasing",
      "DwellTimems": "4",
      "Severity": "Warning"
    }
  ],

  "MetricProperties": [

"/redfish/v1/Systems/System1/Processors/CPU0/Metrics#/TemperatureCelsius",

"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

4.72.1.2 GET (Discrete Trigger)

Request:

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#TelemetryService/Triggers/Members/$entity",
  "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError",
  "@odata.type": "#Trigger.v1_0_0.Trigger",
  "Id": "ProcessorMachineCheckError",
  "Name": "Trigger for Processor Machine Check Error",
  "Description": "Triggers for System1 Processor Machine Check Error",

  "MetricType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
```

```
  "DiscreteTriggerCondition": "Specified",
       "DiscreteTriggers": [
    {
      "Value": "Machine Check Exception",
      "DwellTimems": "1",
      "Severity": "Critical"
    }
  ],

  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU0/Metrics#/CPUHealth",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/CPUHealth"
  ]
}
```

4.72.1.3 PUT

Operation is not allowed on this resource.

4.72.1.4 PATCH

Operation is not allowed on this resource.

4.72.1.5 POST

Operation is not allowed on this resource.

4.72.1.6 DELETE

Request:

```
DELETE /redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError
```

Response:

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

4.73 Power

The Power metrics resource represents the properties for Power Consumption and Power Limiting.

Detailed information about resource properties can be obtained from the metadata file: `Power.xml`. OEM extensions details are available in the `IntelRackScaleOem.xml`.

4.73.1 Operations

4.73.1.1 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/Drawer1/Power",
    "@odata.type": "#Power.v1_1_0.Power",
    "Id": "Power",
    "Name": "Power",
    "Description": "PowerSubsystem",
    "PowerControl": [
        {
            "MemberId": "0",
            "Name": "System Power Control",
            "PowerConsumedWatts": 8000,
            "PowerRequestedWatts": null,
            "PowerAvailableWatts": null,
            "PowerCapacityWatts": 10000,
            "PowerAllocatedWatts": null,
            "PowerMetrics": {
                "IntervalInMin": 30,
                "MinConsumedWatts": 7500,
                "MaxConsumedWatts": 8200,
                "AverageConsumedWatts": 8000
            },
            "PowerLimit": {
                "LimitInWatts": null,
                "LimitException": null,
                "CorrectionInMs": null
               },
            "RelatedItem": [
                {"@odata.id": "/redfish/v1/Systems/System1"}
            ],
             "Status": {
                   "State": "Enabled",
                   "Health": "OK",
                "HealthRollup": "OK"
               },
               "Oem": {}
        }
    ],
    "Voltages": [
        {
            "MemberId": "0",
            "Name": "VRM1 Voltage",
            "SensorNumber": 11,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "ReadingVolts": 12,
            "PhysicalContext": "VoltageRegulator",
            "RelatedItem": [
                {"@odata.id": "/redfish/v1/Systems/System1" }
            ]
        }
    ],
    "PowerSupplies": [
        {
            "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": [
            ],
            "IndicatorLED": "Off",
            "RelatedItem": [
              { "@odata.id": "/redfish/v1/Chassis/Drawer1" }
            ],
            "Redundancy": [
              { "@odata.id":
"/redfish/v1/Chassis/Drawer1/Power#/Redundancy/0" }
            ]
        }
    ],
    "Redundancy": [
        {
            "MemberId": "0",
            "Name": "PowerSupply Redundancy Group 1",
            "Mode": "Failover",
            "MaxNumSupported": 2,
            "MinNumNeeded": 1,
            "RedundancySet": [
                { "@odata.id":
"/redfish/v1/Chassis/Drawer1/Power#/PowerSupplies/0" }
            ],
            "Status": {
                "State": "Offline",
                "Health": "OK"
            }
        }
    ],
    "Oem": {}
}
```


4.73.1.2 GET (SLED level Power Metrics)

Chassis metrics that are available on the SLED level differ from those available on the Rack level, therefore metadata file definition `Power.xml` contains a superset of all Chassis 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_1_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
      }
    }
}
```

4.73.1.3 PUT

Operation is not allowed on this resource.

4.73.1.4 PATCH

Operation is not allowed on this resource.

4.73.1.5 POST

Operation is not allowed on this resource.

4.73.1.6 DELETE

Operation is not allowed on this resource.

4.74 Thermal

The Thermal metrics resource represents the properties for Temperature and Cooling.

Detailed information about the resource properties can be obtained from the metadata file: `Thermal.xml` OEM extensions details available in `IntelRackScaleOem.xml`.

4.74.1 Operations

4.74.1.1 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_1_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
        }
    ]
}
```

4.74.1.2 PUT

Operation is not allowed on this resource.

4.74.1.3 PATCH

Operation is not allowed on this resource.

4.74.1.4 POST

Operation is not allowed on this resource.

4.74.1.5 DELETE

Operation is not allowed on this resource.

4.74.1.6 GET (SLED level Thermal Metrics)

SLED level thermal metrics differ from Rack level thermal metrics, therefore metadata definition file `Thermal.xml` contains the 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_1_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
        }
    }
}
```


4.74.1.7 PUT

Operation is not allowed on this resource.

4.74.1.8 PATCH

Operation is not allowed on this resource.

4.74.1.9 POST

Operation is not allowed on this resource.

4.74.1.10 DELETE

Operation is not allowed on this resource.

4.75 Network Interface collection

Property details are available in the `NetworkInterfaceCollection.xml` metadata file.

4.75.1 Operations

4.75.1.1 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"
        }
    ]
}
}
```

4.75.1.2 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

Operation is not allowed on this resource.

4.75.1.5 DELETE

Operation is not allowed on this resource.

4.76 Network Interface

Network Interface contains references linking the `NetworkDeviceFunction` resources and represents network functionality available to the containing system.

Property details are available in the `NetworkInterface.xml` metadata file.

4.76.1 Operations

4.76.1.1 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_0_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": {}
}
```

4.76.1.2 PUT

Operation is not allowed on this resource.

4.76.1.3 PATCH

Operation is not allowed on this resource.

4.76.1.4 POST

Operation is not allowed on this resource.

4.76.1.5 DELETE

Operation is not allowed on this resource.

4.77 Network Device Function collection

Property details are available in the `NetworkDeviceFunctionCollection.xml` metadata file.

4.77.1 Operations

4.77.1.1 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"
        }
    ]
}
}
```

4.77.1.2 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 Network Device Function

Network Device Function represents a logical interface exposed by the network adapter.

Property details are available in the `NetworkDeviceFunction.xml` metadata file.

4.78.1 Operations

4.78.1.1 GET

Note: Because of the confidential nature of CHAP secret fields, they cannot be shown in a GET request, ***null*** is 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_0_0.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": {}
}
```

4.78.1.2 PUT

Operation is not allowed on this resource.

4.78.1.3 PATCH

The PATCH method should be used to enable iSCSI boot of compute node (Table 29). After patching this resource, one needs to set the `BootOverride` target to `RemoteDrive` and submit a PATCH to `ComputerSystem.Reset` action. Attributes for this method are listed in Table 29, Table 30, and Table 31.

Table 29. Properties Updated by Patch Operation

Attribute	Type	Required	Description
`Ethernet`	Object	No	Ethernet capabilities for this network device function. Details in table below.
`iSCSIBoot`	Object	No	iSCSI boot capabilities, status, and configuration values for this network device function. Details in table below.

Table 30. Ethernet Object Properties

Attribute	Type	Required	Description
`MACAddress`	String	No	MAC address of NIC to be used for iSCSI boot.

Table 31. iSCSIBoot Object Properties

Attribute	Type	Required	Description
`IPAddressType`	String (enum)	No	The type of IP address (IPv6 or IPv4) being populated in the `iSCSIBoot` IP address fields.
`InitiatorIPAddress`	String	No	Address of the iSCSI initiator.
`InitiatorName`	String	No	The iSCSI initiator name.
`InitiatorDefaultGateway`	String	No	The IPv6 or IPv4 iSCSI boot default gateway.
`InitiatorNetmask`	String	No	The IPv6 or IPv4 netmask of the iSCSI boot initiator.
`TargetInfoViaDHCP`	Boolean	No	Whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.
`PrimaryTargetName`	String	No	The name of the iSCSI primary boot target.
`PrimaryTargetIPAddress`	String	No	The IP address (IPv6 or IPv4) for the primary iSCSI boot target.
`PrimaryTargetTCPPort`	Number	No	The TCP port for the primary iSCSI boot target.
`PrimaryLUN`	Number	No	The logical unit number (LUN) for the primary iSCSI boot target.
`PrimaryVLANEnable`	Boolean	No	This indicates if the primary VLAN is enabled.
`PrimaryVLANId`	Number	No	The 802.1q VLAN ID to use for iSCSI boot from the primary target.

Attribute	Type	Required	Description
PrimaryDNS	String	No	The IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.
SecondaryTargetName	String	No	The name of the iSCSI secondary boot target.
SecondaryTargetIPAddress	String	No	The IP address (IPv6 or IPv4) for the secondary iSCSI boot target.
SecondaryTargetTCPPort	Number	No	The TCP port for the secondary iSCSI boot target.
SecondaryLUN	Number	No	The logical unit number (LUN) for the secondary iSCSI boot target.
SecondaryVLANEnable	Boolean	No	This indicates if the secondary VLAN is enabled.
SecondaryVLANId	Number	No	The 802.1q VLAN ID to use for iSCSI boot from the secondary target.
SecondaryDNS	String	No	The IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.
IPMaskDNSViaDHCP	Boolean	No	Whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask.
RouterAdvertisementEnabled	Boolean	No	Whether IPv6 router advertisement is enabled for the iSCSI boot target.
AuthenticationMethod	String (enum)	No	The iSCSI boot authentication method for this network device function. Supported values: "None" "CHAP" "MutualCHAP"
CHAPUsername	String	No	The username for CHAP authentication.
CHAPSecret	String	No	The shared secret for CHAP authentication.
MutualCHAPUsername	String	No	The CHAP Username for 2-way CHAP authentication.
MutualCHAPSecret	String	No	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": [
    ]
}
```

4.78.1.4 POST

Operation is not allowed on this resource.

4.78.1.5 DELETE

Operation is not allowed on this resource.

4.79 Update service

The Update service resource represents the properties required to invoke software/firmware update.

Note: In the current release, this functionality is not implemented.

4.79.1 Operations

4.79.1.1 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",
}
```

4.79.1.2 PUT

Operation is not allowed on this resource.

4.79.1.3 PATCH

Operation is not allowed on this resource.

4.79.1.4 POST

4.79.1.4.1 Simple update action

Operation is not allowed on this resource.

4.80 ActionInfo

`ActionInfo` describes the parameters and other information necessary to perform a Redfish Action to a particular Action target. Because parameter support can differ between implementations and even among instances of a resource, this data can be used to ensure Action requests from applications contain supported parameters.

4.80.1 Operations

4.80.1.1 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"
}
```

4.80.1.2 PUT

Operation is not allowed on this resource.

4.80.1.3 PATCH

Operation is not allowed on this resource.

4.80.1.4 POST

Operation is not allowed on this resource.

4.80.1.5 DELETE

Operation is not allowed on this resource.

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5 Required Resources per Service Type

Table 32 lists the types of resources that are required per service type.

R – Required

O – Optional/recommended

Table 32. Required Resources per Service Type

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM
$metadata.xml	R	R	R	R	R
AccountService.xml					
Chassis.xml	R			R	R
ChassisCollection.xml	R			R	R
ComposedNode.xml					
ComposedNodeCollection.xml					
ComputerSystem.xml	R			R	
ComputerSystemCollection.xml	R			R	
ComputerSystemMetrics.xml	R				
Drive.xml	R			R	
Endpoint.xml				R	
EndpointCollection.xml				R	
EthernetInterface.xml	R	R	R	R	R
EthernetInterfaceCollection.xml	R	R	R	R	R
EthernetSwitch.xml			R		
EthernetSwitchACL.xml			R		
EthernetSwitchACLCollection.xml			R		
EthernetSwitchACLRule.xml			R		
EthernetSwitchACLRuleCollection.xml			R		
EthernetSwitchCollection.xml			R		
EthernetSwitchMetrics.xml			O		
EthernetSwitchPort.xml			R		
EthernetSwitchPortCollection.xml			R		
EthernetSwitchPortMetrics.xml			O		
EthernetSwitchStaticMAC.xml			R		
EthernetSwitchStaticMACCollection.xml			R		
Event.xml	R	R	R	R	R
EventDestination.xml	R	R	R	R	R
EventDestinationCollection.xml	R	R	R	R	R
EventService.xml	R	R	R	R	R
Fabric.xml				R	
FabricCollection.xml				R	
IntelRackScaleOem.xml	R	R	R	R	R
JsonSchemaFile.xml					
JsonSchemaFileCollection.xml					
LogEntry.xml					
LogEntryCollection.xml					
LogicalDrive.xml		R			

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM
LogicalDriveCollection.xml		R			
LogService.xml					
LogServiceCollection.xml					
Manager.xml	R	R	R	R	R
ManagerAccount.xml					
ManagerAccountCollection.xml					
ManagerCollection.xml	R	R	R	R	R
ManagerNetworkProtocol.xml					
Memory.xml	R				
MemoryCollection.xml	R				
MemoryMetrics.xml	R				
Message.xml	O	O	O	O	O
MessageRegistry.xml	O	O	O	O	O
MessageRegistryCollection.xml	O	O	O	O	O
MessageRegistryFile.xml	O	O	O	O	O
MessageRegistryFileCollection.xml	O	O	O	O	O
MetricDefinition_v1.xml	R		O	R	O
MetricDefinitionCollection_v1.xml	R		O	R	O
MetricReport.xml	O		O	O	O
MetricReportCollection.xml	O		O	O	O
MetricReportDefinition_v1.xml	O		O	O	O
MetricReportDefinitionCollection_v1.xml	O		O	O	O
NetworkDeviceFunction.xml	R				
NetworkDeviceFunctionCollection.xml	R				
NetworkInterface.xml	R				
NetworkInterfaceCollection.xml	R				
PCIeDevice.xml	O			R	
PCIeFunction.xml	O			R	
PhysicalDrive.xml		R			
PhysicalDriveCollection.xml		R			
Port.xml			R		
PortCollection.xml			R		
PortMetrics.xml			O		
Power.xml	O				R
PowerZone.xml					
PowerZoneCollection.xml					
Privileges.xml					
Processor.xml	R				
ProcessorCollection.xml	R				
ProcessorMetrics.xml	R				
Redundancy.xml					R
RemoteTarget.xml		R			
RemoteTargetCollection.xml		R			
Role.xml					
RoleCollection.xml					
SensorRegistry_v1.xml					

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM
SerialInterface.xml					
SerialInterfaceCollection.xml					
ServiceRoot.xml	R	R	R	R	R
Session.xml					
SessionCollection.xml					
SessionService.xml					
Settings.xml					
SimpleStorage.xml					
SimpleStorageCollection.xml					
Storage.xml	R				
StorageCollection.xml	R				
StorageService.xml		R			
StorageServiceCollection.xml		R			
Switch.xml			R		
SwitchCollection.xml			R		
Task.xml	R	O	O	R	R
TaskCollection.xml	R	O	O	R	R
TaskService.xml	R	O	O	R	R
TelemetryService_v1.xml	R		O	R	O
Thermal.xml	O				R
ThermalZone.xml					
ThermalZoneCollection.xml					
Triggers_v1.xml	O		O	O	O
TriggersCollection_v1.xml	O		O	O	O
VirtualMedia.xml					
VirtualMediaCollection.xml					
VLanNetworkInterface.xml			R		
VLanNetworkInterfaceCollection.xml			R		
Volume.xml					
VolumeCollection.xml					
Zone.xml			R		
ZoneCollection.xml			R		

§

6 Common Property Description

6.1 Status

Table 33. Status

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 undergoing 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 does not process any commands, but queues new requests.
- `Quiesced`: The element is enabled, but 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: Turns the system on
- `ForceOff`: Turns the system off immediately (nongraceful) shutdown
- `GracefulRestart`: Performs a graceful system shutdown followed by a restart of the system
- `ForceRestart`: Performs an immediate (non-graceful) shutdown, followed by a restart of the system
- `Nmi`: Generates a nonmaskable interrupt to cause an immediate system halt
- `ForceOn`: Turns the system on immediately
- `PushPowerButton`: Simulates the pressing of the physical power button on this system
- `GracefulShutdown`: Performs 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 (e.g. iSCSI)

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