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

API Specification
Software v2.4

April 2019

Revision 001
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## Revision History

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<td>April 2019</td>
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1.0 Introduction

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

1.1 Scope

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

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

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

1.2 Intended Audience

The intended audience for this document includes:

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

1.3 Conventions

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

1.4 Notes and Symbol Convention

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

The notation used in JSON* serialization description:

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

Ellipses (for example, "...") indicate points of extensibility.

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

### 1.5 Terminology

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

### Table 2. Reference Documents and Resources

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<td>608298</td>
<td>Field Programmable Gate Array (FPGA) over Fabric Protocol Architecture Specification</td>
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**Note:** Documents referenced in this table which have a Document ID, but cannot be accessed, can be obtained by calling 1-800-548-4725 or by visiting www.intel.com/design/literature.htm obtain a copy.
2.1 PSME API Structure and Relations

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

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

Figure 1. Common Resource Hierarchy
2.1.1 PSME Compute API Resource Hierarchy

Figure 2 represents the hierarchy of the PSME Compute resources.

Figure 2. PSME REST API Hierarchy for PSME Compute Resources
2.1.2 PSME Network API Resource Hierarchy

Figure 3 represents the hierarchy of the PSME Network resources.

Figure 3. PSME REST API Hierarchy for PSME Network Resources
2.1.3 PSME PNC API Resource Hierarchy

Figure 4 represents the hierarchy of PSME PNC resources.

Figure 4. PSME REST API hierarchy for PSME PNC resources
2.1.4 PSME FPGA-Over-Fabrics (oF) API Resource Hierarchy

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

Figure 5. PSME REST API hierarchy for PSME FPGA-oF resources
### 2.2 Resources and URIs

Table 3: Resources and Uniform Resource Identifiers (URIs)

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<td>Computer System</td>
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<td></td>
<td>/redfish/v1/EthernetSwitches/Ports/{portID}/StaticMACs/{macID}</td>
</tr>
<tr>
<td>Resource</td>
<td>Schema version</td>
<td>OEM Extended?</td>
<td>URI</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ethernet Switch ACL collection</td>
<td></td>
<td></td>
<td>/redfish/v1/EthernetSwitches/{switchID}/ACLs</td>
</tr>
<tr>
<td>Ethernet Switch ACL</td>
<td>Oem v1_0_0</td>
<td></td>
<td>/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}</td>
</tr>
<tr>
<td>Ethernet Switch ACL rule collection</td>
<td></td>
<td></td>
<td>/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules</td>
</tr>
<tr>
<td>Ethernet Switch ACL rule</td>
<td>Oem v1_0_0</td>
<td></td>
<td>/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules/{ruleID}</td>
</tr>
<tr>
<td>VLAN Network Interface collection</td>
<td>V1_0_1</td>
<td>Yes</td>
<td>/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>/redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs</td>
</tr>
<tr>
<td>VLAN Network Interface</td>
<td>V1_0_1</td>
<td>Yes</td>
<td>/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>/redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs</td>
</tr>
<tr>
<td>EventService</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/EventService</td>
</tr>
<tr>
<td>Event Subscription Collection</td>
<td></td>
<td></td>
<td>/redfish/v1/EventService/Subscriptions</td>
</tr>
<tr>
<td>Event Subscription</td>
<td>V1_1_1</td>
<td>No</td>
<td>/redfish/v1/EventService/Subscriptions/{subscriptionID}</td>
</tr>
<tr>
<td>Fabrics collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Fabrics</td>
</tr>
<tr>
<td>Fabric</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Fabrics/{fabricID}</td>
</tr>
<tr>
<td>Fabric Switch collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Fabrics/{fabricID}/Switches</td>
</tr>
<tr>
<td>Fabric Switch</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}</td>
</tr>
<tr>
<td>Fabric Switch Port collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports</td>
</tr>
<tr>
<td>Fabric Switch Port</td>
<td>V1_0_0</td>
<td>Yes</td>
<td>/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}</td>
</tr>
<tr>
<td>Fabric Switch Port Metrics</td>
<td>Oem v1_0_0</td>
<td></td>
<td>/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}/Metrics</td>
</tr>
<tr>
<td>Fabric Zone collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Fabrics/{fabricID}/Zones</td>
</tr>
<tr>
<td>Fabric Zone</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Fabrics/{fabricID}/Zones/{zoneID}</td>
</tr>
<tr>
<td>Endpoint Collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Fabrics/{fabricID}/Endpoints</td>
</tr>
<tr>
<td>Endpoint</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Fabrics/{fabricID}/Endpoints/{endpointID}</td>
</tr>
<tr>
<td>PCIeDevice</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}</td>
</tr>
<tr>
<td>PCIe Device Function</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}/Functions/{functionID}</td>
</tr>
<tr>
<td>TelemetryService</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService</td>
</tr>
<tr>
<td>Metric Definition Collection</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions</td>
</tr>
<tr>
<td>Metric Definition</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/{metricDefinitionID}</td>
</tr>
<tr>
<td>Metric Report Definition Collection</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions</td>
</tr>
<tr>
<td>Resource</td>
<td>Schema version</td>
<td>OEM Extended?</td>
<td>URI</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Metric Report Definition</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/{metricReportDefinitionId}</td>
</tr>
<tr>
<td>Triggers Collection</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers</td>
</tr>
<tr>
<td>Triggers</td>
<td>Oem (WIP)</td>
<td></td>
<td>/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/{triggerId}</td>
</tr>
<tr>
<td>Network Interface collection</td>
<td></td>
<td></td>
<td>/redfish/v1/Systems/{systemID}/NetworkInterfaces</td>
</tr>
<tr>
<td>Network Interface</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Systems/{systemID}/NetworkInterfaces/{interfaceID}</td>
</tr>
<tr>
<td>Network Device Function</td>
<td></td>
<td></td>
<td>/redfish/v1/Systems/{systemID}/NetworkInterfaces/</td>
</tr>
<tr>
<td>Network Device Function</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/Systems/{systemID}/NetworkInterfaces/{interfaceID}/NetworkDeviceFunctions</td>
</tr>
<tr>
<td>Task Service</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/TaskService</td>
</tr>
<tr>
<td>Task Collection</td>
<td></td>
<td></td>
<td>/redfish/v1//TaskService/Tasks/{taskID}</td>
</tr>
<tr>
<td>Power</td>
<td>V1_1_0</td>
<td>No</td>
<td>/redfish/v1/Chassis/{chassisID}/Power</td>
</tr>
<tr>
<td>Thermal</td>
<td>V1_1_0</td>
<td>No</td>
<td>/redfish/v1/Chassis/{chassisID}/Thermal</td>
</tr>
<tr>
<td>Update Service</td>
<td>V1_1_0</td>
<td>No</td>
<td>/redfish/v1/UpdateService</td>
</tr>
<tr>
<td>Action Info</td>
<td>V1_0_0</td>
<td>No</td>
<td>/redfish/v1/UpdateService/SimpleUpdateActionInfo</td>
</tr>
<tr>
<td>Account Service</td>
<td>V1_3_0</td>
<td>No</td>
<td>/redfish/v1/AccountService</td>
</tr>
<tr>
<td>Manager Account</td>
<td>V1_1_2</td>
<td>No</td>
<td>/redfish/v1/AccountService/Accounts/{accountID}</td>
</tr>
<tr>
<td>Manager Account Collection</td>
<td></td>
<td></td>
<td>/redfish/v1/AccountService/Accounts</td>
</tr>
<tr>
<td>Role</td>
<td>V1_2_1</td>
<td>No</td>
<td>/redfish/v1/AccountService.Roles/{roleID}</td>
</tr>
<tr>
<td>Role Collection</td>
<td></td>
<td></td>
<td>/redfish/v1/AccountService/Roles</td>
</tr>
<tr>
<td>Session Service</td>
<td>V1_1_3</td>
<td>No</td>
<td>/redfish/v1/SessionService</td>
</tr>
<tr>
<td>Session</td>
<td>V1_1_0</td>
<td>No</td>
<td>/redfish/v1/SessionService/Sessions/{sessionID}</td>
</tr>
<tr>
<td>Session Collection</td>
<td></td>
<td></td>
<td>/redfish/v1/SessionService/Sessions</td>
</tr>
</tbody>
</table>
3.0 REST API Error Codes

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

3.1 API Error Responses

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

Table 4. API Error Response Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>A string indicating a specific MessageId from the message registry. &quot;Base.1.0.GeneralError&quot; should be used only when no other message is better.</td>
</tr>
<tr>
<td>Message</td>
<td>A human-readable error message corresponding to the message in the message registry.</td>
</tr>
<tr>
<td>@Message.ExtendedInfo</td>
<td>An array of message objects describing one or more error message(s).</td>
</tr>
</tbody>
</table>

3.1.1 Message Object

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

Table 5. Message Object Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MessageId</td>
<td>A string indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.</td>
</tr>
<tr>
<td>Message</td>
<td>A human-readable error message indicating the semantics associated with the error. This is the complete message and does not rely on substitution variables.</td>
</tr>
<tr>
<td>MessageArgs</td>
<td>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.</td>
</tr>
<tr>
<td>Severity</td>
<td>An optional string representing the severity of an error.</td>
</tr>
<tr>
<td>Resolution</td>
<td>An optional string describing recommended action(s) to take to resolve an error.</td>
</tr>
<tr>
<td>RelatedProperties</td>
<td>An optional array of JSON pointers defining the specific properties in a JSON payload described by the message.</td>
</tr>
</tbody>
</table>

3.1.2 Error Message Definitions

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

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

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

The registry contains two RSD-specific error messages.

Request:

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

Response:

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

3.1.4 Example Error JSON Object

```json
{
  "error": {
    "code": "Base.1.0.GeneralError",
    "message": "A general error has occurred. See ExtendedInfo for more information",
    "@Message.ExtendedInfo": [
      {}
    ]
  }
}
```
3.2 API Error Codes

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

3.2.1 General Error Codes

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

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

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

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

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

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

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

4.1 Odata* Support

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

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

4.2 Asynchronous Operations

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

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

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

4.3 Protocol Version

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

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

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

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

MajorVersion.MinorVersion.Errata
Where:

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

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

### 4.3.1 Operations

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

#### 4.3.1.1 GET

**Request:**

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

**Response:**

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

### 4.4 OData* Service Document

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

#### 4.4.1 Operations

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

#### 4.4.1.1 GET

**Request:**

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

**Response:**

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

```json
},
{
    "name": "Chassis",
    "kind": "Singleton",
    "url": "/redfish/v1/Chassis"
},
{
    "name": "Managers",
    "kind": "Singleton",
    "url": "/redfish/v1/Managers"
},
{
    "name": "Services",
    "kind": "Singleton",
    "url": "/redfish/v1/Services"
},
{
    "name": "EthernetSwitches",
    "kind": "Singleton",
    "url": "/redfish/v1/EthernetSwitches"
},
{
    "name": "EventService",
    "kind": "Singleton",
    "url": "/redfish/v1/EventService"
},
{
    "name": "Tasks",
    "kind": "Singleton",
    "url": "/redfish/v1/TaskService"
},
{
    "name": "Registries",
    "kind": "Singleton",
    "url": "/redfish/v1/Registries"
},
{
    "name": "Fabrics",
    "kind": "Singleton",
    "url": "/redfish/v1/Fabrics"
},
{
    "name": "UpdateService",
    "kind": "Singleton",
    "url": "/redfish/v1/UpdateService"
},
{
    "name": "AccountService",
    "kind": "Singleton",
    "url": "/redfish/v1/AccountService"
},
{
    "name": "SessionService",
    "kind": "Singleton",
    "url": "/redfish/v1/SessionService"
},
{
    "name": "TelemetryService",
    "kind": "Singleton",
    "url": "/redfish/v1/Oem/Intel_RackScale/TelemetryService"
}
```
4.5 Intel® Rackscale Design OEM Extensions

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

4.6 Service Root

Service root resource - entry point.

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

Table 7. ServiceRoot Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RedfishVersion</td>
<td>Edm.String</td>
<td>False</td>
<td>The value of this string shall represent the version of the Redfish* service. The format of this string shall be of the format majorversion.minorversion.errata in compliance with Protocol Version section of the Redfish specification.</td>
</tr>
<tr>
<td>UUID</td>
<td>Resource.UUID</td>
<td>True</td>
<td>The value of this string shall represent the id of the Redfish service instance. The format of this string shall be a 32-byte value in the form 8-4-4-4-12. If SSDP is used, this value shall be an exact match of the UUID value returned in a 200 OK from an SSDP M-SEARCH request during discovery. A Universally Unique IDentifier (UUID) URN Namespace, RFC4122, Table 2 describes methods that can be used to create a UUID value. The value should be considered to be opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID.</td>
</tr>
<tr>
<td>Links</td>
<td>ServiceRoot.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td><strong>Attribute</strong></td>
<td><strong>Type</strong></td>
<td><strong>Nullable</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------</td>
<td>--------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Systems</td>
<td>ComputerSystemCollection.ComputerSystemCollection</td>
<td>False</td>
<td>This object shall only contain a reference to a collection of resources that comply with the Systems schema.</td>
</tr>
<tr>
<td>Chassis</td>
<td>ChassisCollection.ChassisCollection</td>
<td>False</td>
<td>This object shall only contain a reference to a collection of resources that comply with the Chassis schema.</td>
</tr>
<tr>
<td>Managers</td>
<td>ManagerCollection.ManagerCollection</td>
<td>False</td>
<td>This object shall only contain a reference to a collection of resources that comply with the Managers schema.</td>
</tr>
<tr>
<td>Tasks</td>
<td>TaskService.TaskService</td>
<td>False</td>
<td>The classes structure shall only contain a reference to a resource that complies to the TaskService schema.</td>
</tr>
<tr>
<td>SessionService</td>
<td>SessionService.SessionService</td>
<td>False</td>
<td>The classes structure shall only contain a reference to a resource that complies to the SessionService schema.</td>
</tr>
<tr>
<td>AccountService</td>
<td>AccountService.AccountService</td>
<td>False</td>
<td>The classes structure shall only contain a reference to a resource that complies to the AccountService schema.</td>
</tr>
<tr>
<td>EventService</td>
<td>EventService.EventService</td>
<td>False</td>
<td>The classes structure shall only contain a reference to a resource that complies to the EventService schema.</td>
</tr>
<tr>
<td>Registries</td>
<td>MessageRegistryFileCollection.MessageRegistryFileCollection</td>
<td>False</td>
<td>This object shall contain a reference to Message Registry.</td>
</tr>
<tr>
<td>JsonSchemas</td>
<td>JsonSchemaFileCollection.JsonSchemaFileCollection</td>
<td>False</td>
<td>This object shall only contain a reference to a collection of resources that comply with the SchemaFile schema where the files are Json-Schema files.</td>
</tr>
<tr>
<td>StorageSystems</td>
<td>StorageSystemCollection.StorageSystemCollection</td>
<td>False</td>
<td>The referenced collection shall contain computer systems that act as storage servers. The HostingRoles attribute of each such computer system shall have an entry for StorageServer.</td>
</tr>
<tr>
<td>StorageServices</td>
<td>StorageServiceCollection.StorageServiceCollection</td>
<td>False</td>
<td>The referenced collection shall contain references to all StorageService instances.</td>
</tr>
<tr>
<td>Fabrics</td>
<td>FabricCollection.FabricCollection</td>
<td>False</td>
<td>The referenced collection shall contain references to all Fabric instances.</td>
</tr>
<tr>
<td>UpdateService</td>
<td>UpdateService.UpdateService</td>
<td>False</td>
<td>The classes structure shall only contain a reference to a resource that complies to the UpdateService schema.</td>
</tr>
</tbody>
</table>
Intel® RSD OEM extensions:

Table 8. ServiceRoot Attributes

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

4.6.1 Operations

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

4.6.1.1 GET

Request:

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#ServiceRoot.ServiceRoot",
  "@odata.id": "/redfish/v1/",
  "@odata.type": "#ServiceRoot.v1_3_1.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "Description": "description-as-string",
  "RedfishVersion": "1.5.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Systems": [ ]
}
```
"@odata.id": "/redfish/v1/Systems"
},
"Chassis": {
  "@odata.id": "/redfish/v1/Chassis"
},
"Managers": {
  "@odata.id": "/redfish/v1/Managers"
},
"StorageServices": {
  "@odata.id": "/redfish/v1/StorageServices"
},
"EventService": {
  "@odata.id": "/redfish/v1/EventService"
},
"Fabrics": {
  "@odata.id": "/redfish/v1/Fabrics"
},
"Tasks": {
  "@odata.id": "/redfish/v1/TaskService"
},
"Registries": {
  "@odata.id": "/redfish/v1/Registries"
},
"AccountService": {
  "@odata.id": "/redfish/v1/AccountService"
},
"SessionService": {
  "@odata.id": "/redfish/v1/SessionService"
},
"Oem": {
  "Intel_RackScale": {
    "@odata.type": "#Intel.Oem.ServiceRoot",
    "ApiVersion": "2.4.0",
    "EthernetSwitches": {
      "@odata.id": "/redfish/v1/EthernetSwitches"
    },
    "TelemetryService": {
      "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService"
    }
  }
},
"UpdateService": {
  "@odata.id": "/redfish/v1/UpdateService"
},
"Links": {}

4.6.1.2 PUT
Operation is not allowed on this resource.

4.6.1.3 PATCH
Operation is not allowed on this resource.

4.6.1.4 POST
Operation is not allowed on this resource.
4.6.1.5 **DELETE**
Operation is not allowed on this resource.

### 4.7 Chassis Collection
This section describes the chassis collection resource.

<table>
<thead>
<tr>
<th>Table 9. ChassisCollection Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attribute</strong></td>
</tr>
<tr>
<td>Members</td>
</tr>
</tbody>
</table>

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

#### 4.7.1.1 GET
Request:

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

Response:

```json
{
    "@odata.context": "/redfish/v1/$metadata#Chassis",
    "@odata.id": "/redfish/v1/Chassis",
    "@odata.type": ":ChassisCollection.ChassisCollection",
    "Name": "Chassis Collection",
    "Description": "description as string",
    "Members@odata.count": 7,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Chassis/Pod"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Rack1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Drawer1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/FabricModule1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Blade1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/PCIeSwitchChassis"
        }
    ]
}
```
4.7.1.2 **PUT**
Operation is not allowed on this resource.

4.7.1.3 **PATCH**
Operation is not allowed on this resource.

4.7.1.4 **POST**
Operation is not allowed on this resource.

4.7.1.5 **DELETE**
Operation is not allowed on this resource.

### 4.8 Chassis

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

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

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChassisType</td>
<td>Chassis.v1_0_0.ChassisType</td>
<td>False</td>
<td>ChassisType shall indicate the physical form factor for the type of chassis.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the organization responsible for producing the chassis. This organization might be the entity from whom the chassis is purchased, but this is not necessarily true.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name by which the manufacturer generally refers to the chassis.</td>
</tr>
<tr>
<td>SKU</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the stock-keeping unit number for this chassis.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a manufacturer-allocated number used to identify the chassis.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the chassis.</td>
</tr>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be an identifying string used to track the chassis for inventory purposes.</td>
</tr>
<tr>
<td>IndicatorLED</td>
<td>Chassis.v1_0_0.IndicatorLED</td>
<td>True</td>
<td>This value of this property shall contain the indicator light state for the indicator light associated with this system.</td>
</tr>
<tr>
<td>Links</td>
<td>Chassis.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>Chassis.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property contains the available actions for this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>LogServices</td>
<td>LogServiceCollection.LogServiceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type LogServiceCollection.</td>
</tr>
<tr>
<td>Thermal</td>
<td>Thermal.Thermal</td>
<td>False</td>
<td>The value of this property is a reference to the resource that represents the thermal characteristics of this chassis and shall be a Thermal type.</td>
</tr>
<tr>
<td>Power</td>
<td>Power.Power</td>
<td>False</td>
<td>The value of this property is a reference to the resource that represents the power characteristics of this chassis and shall be of type Power.</td>
</tr>
<tr>
<td>PowerState</td>
<td>Chassis.v1_0_1.PowerState</td>
<td>True</td>
<td>The value of this property shall contain the power state of the chassis.</td>
</tr>
<tr>
<td>PhysicalSecurity</td>
<td>Chassis.v1_1_0.PhysicalSecurity</td>
<td>False</td>
<td>This value of this property shall contain the sensor state of physical security.</td>
</tr>
<tr>
<td>Location</td>
<td>Resource.Location</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>HeightMm</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the height of the chassis (in millimeters) as specified by the manufacturer.</td>
</tr>
<tr>
<td>WidthMm</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the width of the chassis (in millimeters) as specified by the manufacturer.</td>
</tr>
</tbody>
</table>
### Attribute Table

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

### Table 11. Location Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oem</td>
<td>Resource.Oem</td>
<td>False</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 12. Chassis Type Attributes

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

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

---

### Table 13. Links Attributes

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drives</td>
<td>Collection(Drive.Drive)</td>
<td>True</td>
<td>The value of this property shall reference one or more Drive type resources that are in this Chassis.</td>
</tr>
<tr>
<td>Storage</td>
<td>Collection(Storage.Storage)</td>
<td>True</td>
<td>The value of this property shall reference one or more Storage type resources that are connected to or contained inside this Chassis.</td>
</tr>
<tr>
<td>PCIeDevices</td>
<td>Collection(PCleDevice.PCIeDevice)</td>
<td>True</td>
<td>The value of this property shall reference one or more PCIeDevices type resources.</td>
</tr>
</tbody>
</table>

### Table 14. Intel® RSD OEM extensions: ChassisLinks Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EthernetSwitches</td>
<td>Collection(EthernetSwitch.v1_0_0.EthernetSwitch)</td>
<td>True</td>
<td>The value of this property shall reference one or more EthernetSwitch type resources that are in this Chassis.</td>
</tr>
</tbody>
</table>

### Table 15. Chassis Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Intel.Oem.Location</td>
<td>True</td>
<td>Chassis location in relation to its parent.</td>
</tr>
</tbody>
</table>

### 4.8.1 Operations

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

#### 4.8.1.1 GET

GET /redfish/v1/Chassis/Blade1

Content-Type: application/json

**Response:**

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

Operation is not allowed on this resource.
4.8.1.3 PATCH

Request:

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

Response:

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

4.8.1.4 POST

Operation is not allowed on this resource.

4.8.1.5 DELETE

Operation is not allowed on this resource.

4.9 Computer System Collection

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

**Table 16. ComputerSystemCollection Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(ComputerSystem.ComputerSystem)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.9.1 Operations

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

4.9.1.1 GET

Request:

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

Response:

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

4.9.1.2 PUT
Operation is not allowed on this resource.

4.9.1.3 PATCH
Operation is not allowed on this resource.

4.9.1.4 POST
Operation is not allowed on this resource.

4.9.1.5 DELETE
Operation is not allowed on this resource.

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

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

Table 17. Computer System Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SystemType</td>
<td>ComputerSystem.v1_0_0.SystemType</td>
<td>False</td>
<td>An enumeration that indicates the kind of system this resource represents.</td>
</tr>
<tr>
<td>Links</td>
<td>ComputerSystem.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains the value of the asset tag of the system.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains a value that represents the manufacturer of the system.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains information about how the manufacturer references this system. This is typically the product name, without the manufacturer name.</td>
</tr>
<tr>
<td>SKU</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains the Stock Keeping Unit (SKU) for the system.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains the serial number for the system.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property contains the part number for the system (defined by the manufacturer).</td>
</tr>
<tr>
<td>UUID</td>
<td>Resource.UUID</td>
<td>True</td>
<td>The value of this property is used to contain a universal unique identifier number for the system. RFC4122 describes methods that can be used to create the value. The value should be considered opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID. If the system supports SMBIOS, the value of the property should be formed by following the SMBIOS 2.6+ recommendation for converting the SMBIOS 16-byte UUID structure into the Redfish canonical xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx string format so that the property value matches the byte order presented by current OS APIs such as WMI and <code>dmidecode</code>.</td>
</tr>
<tr>
<td>HostName</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the host name for this system, as reported by the operating system or hypervisor. This value is typically provided to the Manager by a service running in the host operating system.</td>
</tr>
<tr>
<td>IndicatorLED</td>
<td>ComputerSystem.v1_0_0.IndicatorLED</td>
<td>True</td>
<td>The value of this property shall contain the indicator light state for the indicator light associated with this system.</td>
</tr>
<tr>
<td>PowerState</td>
<td>ComputerSystem.v1_0_0.PowerState</td>
<td>True</td>
<td>The value of this property shall contain the power state of the system.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Boot</td>
<td>ComputerSystem.v1_0_0.Boot</td>
<td>False</td>
<td>This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.</td>
</tr>
<tr>
<td>BiosVersion</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the version string of the currently installed and running BIOS (for x86 systems). For other systems, the value may contain a version string representing the primary system firmware.</td>
</tr>
<tr>
<td>ProcessorSummary</td>
<td>ComputerSystem.v1_0_0.ProcessorSummary</td>
<td>False</td>
<td>This object shall contain properties which describe the central processors for the current resource.</td>
</tr>
<tr>
<td>MemorySummary</td>
<td>ComputerSystem.v1_0_0.MemorySummary</td>
<td>False</td>
<td>This object shall contain properties which describe the central memory for the current resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>ComputerSystem.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type ProcessorCollection.</td>
</tr>
<tr>
<td>Processors</td>
<td>ProcessorCollection.ProcessorCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type ProcessorCollection.</td>
</tr>
<tr>
<td>EthernetInterfaces</td>
<td>EthernetInterfaceCollection.EthernetInterfaceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type EthernetInterfaceCollection.</td>
</tr>
<tr>
<td>SimpleStorage</td>
<td>SimpleStorageCollection.SimpleStorageCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type SimpleStorageCollection.</td>
</tr>
<tr>
<td>LogServices</td>
<td>LogServiceCollection.LogServiceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type LogServiceCollection.</td>
</tr>
<tr>
<td>TrustedModules</td>
<td>ComputerSystem.v1_1_0.TrustedModules</td>
<td>False</td>
<td>This object shall contain an array of objects with properties which describe the trusted modules for the current resource.</td>
</tr>
<tr>
<td>SecureBoot</td>
<td>SecureBoot.SecureBoot</td>
<td>False</td>
<td>The value of this property shall be a link to a resource of type SecureBoot.</td>
</tr>
<tr>
<td>Bios</td>
<td>Bios.Bios</td>
<td>False</td>
<td>The value of this property shall be a link to a resource of type Bios that lists the BIOS settings for this system.</td>
</tr>
<tr>
<td>Memory</td>
<td>MemoryCollection.MemoryCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type MemoryCollection.</td>
</tr>
<tr>
<td>Storage</td>
<td>StorageCollection.StorageCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type StorageCollection.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HostingRoles</td>
<td>Collection(ComputerSystem.v1_2_0.HostingRole)</td>
<td>False</td>
<td>The values of this collection shall be the hosting roles supported by this computer system.</td>
</tr>
<tr>
<td>HostedServices</td>
<td>ComputerSystem.v1_2_0.HostedServices</td>
<td>False</td>
<td>The values of this collection shall describe services supported by this computer system.</td>
</tr>
<tr>
<td>PCIeDevices</td>
<td>Collection(PCleDevice.PCIeDevice)</td>
<td>True</td>
<td>The value of this property shall be an array of references of type PCIeDevice.</td>
</tr>
<tr>
<td>PCIeFunctions</td>
<td>Collection(PCleFunction.PCIeFunction)</td>
<td>True</td>
<td>The value of this property shall be an array of references of type PCIeFunction.</td>
</tr>
<tr>
<td>MemoryDomains</td>
<td>MemoryDomainCollection.MemoryDomainCollection</td>
<td>True</td>
<td>The value of this property shall be a link to a collection of type MemoryDomainCollection.</td>
</tr>
<tr>
<td>NetworkInterfaces</td>
<td>NetworkInterfaceCollection.NetworkInterfaceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type NetworkInterfaceCollection.</td>
</tr>
<tr>
<td>HostWatchdogTimer</td>
<td>ComputerSystem.v1_5_0.WatchdogTimer</td>
<td>False</td>
<td>This object shall contain properties which describe the host watchdog timer functionality for this ComputerSystem.</td>
</tr>
<tr>
<td>SubModel</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall contain the information about the sub-model (or configuration) of the system. This shall not include the model/product name or the manufacturer name.</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Collection(Reudancy.Reudancy)</td>
<td>True</td>
<td>If present, each entry shall reference a redundancy entity that specifies a kind and level of redundancy and a collection (RedundancySet) of other ComputerSystems that provide the specified redundancy to this ComputerSystem.</td>
</tr>
</tbody>
</table>

Refer to Table 18 for Intel® RSD OEM extensions:

**Table 18. ComputerSystem Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIeConnectionId</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>This property shall contain an array of the string identifying cable(s) connected to this port. This is crucial for topology discovery.</td>
</tr>
<tr>
<td>PciDevices</td>
<td>Collection(Intel.Oem.PciDevice)</td>
<td>False</td>
<td>This indicates array of the PCI devices present in computer system</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ProcessorSockets</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This indicates number of memory sockets available in the system</td>
</tr>
<tr>
<td>MemorySockets</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This indicates number of memory sockets available in the system</td>
</tr>
<tr>
<td>UserModeEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>This property shall represent current platform mode. When enabled update of FW components should be blocked on in-band interfaces.</td>
</tr>
<tr>
<td>InitiatorConfiguration</td>
<td>Intel.Oem.InitiatorConfiguration</td>
<td>True</td>
<td>This property contains information for NVMe-oF* initiator software and FPGA-oF initiator software running on the computer system, such as the network address of the Discovery Service.</td>
</tr>
<tr>
<td>TrustedExecutionTechnologyEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>This property shall represent current Intel® Trusted Execution Technology state.</td>
</tr>
<tr>
<td>PerformanceConfiguration</td>
<td>Intel.Oem.SystemCpuPerformanceConfiguration</td>
<td>True</td>
<td>This property shall be used to manage the current and available performance configurations.</td>
</tr>
</tbody>
</table>

**4.10.1.1 Operations**

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

**4.10.1.1.1 GET (PSME Compute)**

**Request:**

GET /redfish/v1/Systems/System1

**Content-Type: application/json**

**Response:**

```
{
"@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
"@odata.id": "/redfish/v1/Systems/System1",
"@odata.type": ":ComputerSystem.v1_5_0.ComputerSystem",
"Id": "System1",
"Name": "My Computer System",
"Description": "Description of server",
"SystemType": "Physical",
"AssetTag": "free form asset tag",
"Manufacturer": "Manufacturer Name",
"Model": "Model Name",
"SKU": "SKU",
"SerialNumber": "2M220100SL",
"PartNumber": "Computer1",
"UUID": "00000000-0000-0000-0000-000000000000",
```
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.AllowedValues": [
      "None",
      "Pxe",
      "Hdd",
      "RemoteDrive"
    ],
    "BootSourceOverrideMode": "Legacy",
    "BootSourceOverrideMode#Redfish.AllowedValues": [
      "Legacy",
      "UEFI"
    ],
    "BiosVersion": "P79 v1.00 (09/20/2013)",
    "ProcessorSummary": {
      "Count": 8,
      "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
      "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
      }
    },
    "MemorySummary": {
      "TotalSystemMemoryGiB": 16.0,
      "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
      }
    },
    "Processors": {
      "@odata.id": "/redfish/v1/Systems/System1/Processors"
    },
    "EthernetInterfaces": {
      "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces"
    },
    "Storage": {
      "@odata.id": "/redfish/v1/Systems/System1/Storage"
    },
    "Memory": {
      "@odata.id": "/redfish/v1/Systems/System1/Memory"
    },
    "PCIeDevices": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
      }
    ],
    "PCIeFunctions": [],
    "TrustedModules": []}
```json
{
    "@odata.type": "#ComputerSystem.v1_3_0.TrustedModules",
    "FirmwareVersion": "0.001",
    "InterfaceType": "TPM2_0",
    "Status": {
        "State": "Enabled",
        "Health": null,
        "HealthRollup": null
    },
    "Oem": {},
    "FirmwareVersion2": null,
    "InterfaceTypeSelection": "OemMethod"
}
]",
"Links": {
    "@odata.type": "#ComputerSystem.v1_2_0.Links",
    "Chassis": [
        {
            "@odata.id": "/redfish/v1/Chassis/4"
        }
    ],
    "ManagedBy": [
        {
            "@odata.id": "/redfish/v1/Managers/1"
        }
    ],
    "Endpoints": [],
    "Oem": {}
}
],
"Actions": {
    "#ComputerSystem.Reset": {
        "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
        "ResetType@Redfish.AllowableValues": [
            "On",
            "ForceOff",
            "GracefulShutdown",
            "ForceRestart",
            "Nmi",
            "GracefulRestart",
            "ForceOn",
            "PushPowerButton"
        ]
    },
    "Oem": {
        "#Intel.Oem.ChangeTPMState": {
            "InterfaceType@Redfish.AllowableValues": [
                "TPM1_2",
                "TPM2_0"
            ]
        },
        "#Intel.Oem.EraseOptaneDCPersistentMemory": {
            "target": "/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.EraseOptaneDCPersistentMemory"
        }
    },
    "Oem": {
        "Intel_RackScale": {
            "PciDevices": [
```
4.10.1.2 GET (PSME PCIe* Fabric)

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

Request:

```json
{
    "VendorId": "0x8086",
    "DeviceId": "0x1234"
}

"ProcessorSockets": 8,
"MemorySockets": 8,
"PCIeConnectionId": [
    "XYZ1234567890"
],
"UserModeEnabled": false,
"TrustedExecutionTechnologyEnabled": false,
"Metrics": {
    "@odata.id": "/redfish/v1/Systems/System1/Metrics"
},
"PerformanceConfiguration": {
    "CurrentConfigurationId": 1,
    "Configurations": [
        {
            "@odata.type": "Intel.Ipmi.SpeedSelectConfiguration",
            "ConfigurationId": 0,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "ActiveCoresPerCpu": 18,
            "BaseCoreFrequency": 1600
        },
        {
            "@odata.type": "Intel.Ipmi.SpeedSelectConfiguration",
            "ConfigurationId": 1,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "ActiveCoresPerCpu": 14,
            "BaseCoreFrequency": 2800
        },
        {
            "@odata.type": "Intel.Ipmi.PrioritizedBaseFrequency",
            "ConfigurationId": 2,
            "Type": "PrioritizedBaseFrequency",
            "TDPPerCpu": 120,
            "MaxJunctionTemp": 105,
            "HighPriorityCoreCountPerCpu": 4,
            "HighPriorityBaseCoreFrequency": 2600,
            "LowPriorityCoreCountPerCpu": 14,
            "LowPriorityBaseCoreFrequency": 1800
        }
    ]
},
"NetworkInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces"
}
}``
GET /redfish/v1/Systems/System2
Content-Type: application/json

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
    "@odata.id": "/redfish/v1/Systems/System2",
    "@odata.type": ">#ComputerSystem.v1_5_0.ComputerSystem",
    "Id": "System2",
    "Name": "My Computer System",
    "Description": "Description of server",
    "SystemType": "Physical",
    "AssetTag": "free form asset tag",
    "Manufacturer": "Manufacturer Name",
    "Model": "Model Name",
    "SKU": "SKU",
    "SerialNumber": "2M220100SL",
    "PartNumber": "Computer1",
    "UUID": "00000000-0000-0000-0000-000000000000",
    "Hostname": null,
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "IndicatorLED": null,
    "PowerState": "On",
    "Boot": {
        "@odata.type": ">#ComputerSystem.v1_1_0.Boot",
        "BootSourceOverrideEnabled": "Disabled",
        "BootSourceOverrideTarget": "None",
        "BootSourceOverrideTarget@Redfish.AllowableValues": ["None"]
    },
    "BiosVersion": null,
    "ProcessorSummary": {
        "Count": null,
        "Model": null,
        "Status": {
            "State": null,
            "Health": null,
            "HealthRollup": null
        }
    },
    "MemorySummary": {
        "TotalSystemMemoryGiB": null,
        "Status": {
            "State": null,
            "Health": null,
            "HealthRollup": null
        }
    },
    "Processors": {
        "@odata.id": "/redfish/v1/Systems/System2/Processors"
    },
    "EthernetInterfaces": {
        "@odata.id": "/redfish/v1/Systems/System2/EthernetInterfaces"
    }
}
```
"Storage": {
   "@odata.id": "/redfish/v1/Systems/System2/Storage"
},
"Memory": {
   "@odata.id": "/redfish/v1/Systems/System1/Memory"
},
"PCIEDevices": [
   {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/PCIEDevices/Device1"
   }
],
"PCIEFunctions": [],
"TrustedModules": [],
"Links": {
   "@odata.type": "#ComputerSystem.v1_2_0.Links",
   "Chassis": [
      {
         "@odata.id": "/redfish/v1/Chassis/4"
      }
   ],
   "ManagedBy": [
      {
         "@odata.id": "/redfish/v1/Managers/1"
      }
   ],
   "Endpoints": [],
   "Oem": {}
},
"Actions": {
   "#ComputerSystem.Reset": {
      "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
      "ResetType@Redfish.AllowableValues": [
         "On",
         "ForceOff",
         "GracefulShutdown",
         "ForceRestart",
         "Nmi",
         "GracefulRestart",
         "ForceOn",
         "PushPowerButton"
      ]
   },
   "Oem": {
      "#Intel.Oem.ChangeTPMState": {
         "InterfaceType@Redfish.AllowableValues": [
            "TPM1_2",
            "TPM2_0"
         ]
      }
   },
   "Oem": {
      "Intel_RackScale": {
         "PciDevices": [],
         "ProcessorSockets": null,
         "MemorySockets": null,
         "PCIEConnectionId": [],
         "UserModeEnabled": false,
"TrustedExecutionTechnologyEnabled": false,
"Metrics": {
  
    "@odata.id": "/redfish/v1/Systems/System2/Metrics"

},

"PerformanceConfiguration": null

}

4.10.1.3 PUT
Operation is not allowed on this resource.

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

Table 19. ComputerSystem Attributes

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

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

Table 20. ComputerSystem Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
</table>
| PerformanceConfigu
ration | Intel.Oem.SystemCpuPerformanceConfigu
ration | True     | This property shall be used to manage the current and available performance configurations.                                                |
| UserModeEnabled    | Edm.Boolean                 | True     | This property shall represent current platform mode. When enabled update of FW components should be blocked on in-band interfaces.            |

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

Table 21. Boot Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
</table>
| BootSourceOverrideEnabled | ComputerSystem.v1_0_0.BootSourceOve
rrideEnabled | True     | The value of this property shall be Once if this is a one-time boot override and Continuous if this selection should remain active until cancelled. If the property value is set to Once, the value will be reset back to Disabled after the BootSourceOverrideTarget actions have been completed. |
**Attribute** | **Type** | **Nullable** | **Description**
--- | --- | --- | ---
BootSourceOverrideTarget | ComputerSystem.BootSource | True | The value of this property shall contain the source to boot the system from, overriding the normal boot order. The valid values for this property are specified through the Redfish.AllowableValues annotation. Pxe indicates to PXE boot from the primary NIC; Floppy, Cd, Usb, Hdd indicates to boot from their devices respectively. BiosSetup indicates to boot into the native BIOS screen setup. Utilities and Diags indicate to boot from the local utilities or diags partitions. UefiTarget indicates to boot from the UEFI device path found in UefiTargetBootSourceOverride. UefiBootNext indicates to boot from the UEFI BootOptionReference found in BootNext.

BootSourceOverrideMode | ComputerSystem.v1_1_0.BootSourceOverrideMode | True | The value of this property shall be Legacy for non-UEFI BIOS boot or UEFI for UEFI boot from boot source specified in BootSourceOverrideTarget property.

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

**Table 22. SystemCpuPerformanceConfiguration Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CurrentConfigurationId</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall match the ConfigurationId of the configuration which is currently active.</td>
</tr>
</tbody>
</table>

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

**Request:**

```json
PATCH /redfish/v1/Systems/System1
Content-Type: application/json
{
    "Boot": {
        "BootSourceOverrideEnabled": "Once",
        "BootSourceOverrideTarget": "Pxe",
        "BootSourceOverrideMode": "UEFI"
    },
    "AssetTag": "Storage System",
    "Oem": {
        "Intel_RackScale": {
            "UserModeEnabled": true,
            "PerformanceConfiguration": {
                "CurrentConfigurationId": 0
            }
        }
    }
}```
Response:
HTTP/1.1 200 OK
((updated resource body))

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

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

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

Response:
HTTP/1.1 204 No Content

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

4.10.1.5.2 Change TPM State and/or Version
Table 23 contains the parameters of this action.
Note: Triggering this action causes the system to reboot.

Table 23. Attributes of Action for changing TPM State

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

Request:

Content-Type: application/json
{
    "DeviceEnabled": true,
    "InterfaceType": "TPM2_0",
    "ClearOwnership": true
}

Response:

HTTP/1.1 204 No Content

Or (when task is created):

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

4.10.1.5.3 Erase Intel® Optane™ DC Memory Modules

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

Note: Triggering this action with any type of erasure (with any of the parameters set to true) causes the system to reboot.
Table 24. Attributes of Action for Clearing Optane Memory Modules

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResetConfiguration</td>
<td>Boolean</td>
<td>No</td>
<td>Indicates that the Platform Configuration Data should be overwritten.</td>
</tr>
<tr>
<td>EraseConfigurationKeys</td>
<td>Boolean</td>
<td>No</td>
<td>Indicates that the configuration keys should be securely erased.</td>
</tr>
</tbody>
</table>

Request:

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

Response:

HTTP/1.1 204 No Content

Or (when task is created):

```plaintext
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": "2016-09-01T04:45:00.000Z",
    "TaskStatus": "OK",
    "Messages": []
}
```

4.10.1.6 DELETE

Operation is not allowed on this resource.

4.11 ComputerSystemMetrics

Properties details are available in ComputerSystemMetrics_v1.xml metadata file.

Table 25. ComputerSystemMetrics Attributes

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

### 4.11.1 Operations

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

#### 4.11.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Metrics
```

Content-Type: application/json

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/ComputerSystem/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Metrics",
  "@odata.type": "#ComputerSystemMetrics.v1_0_0.ComputerSystemMetrics",
  "Name": "Computer System Metrics for System1",
  "Description": "description-as-string",
  "Id": "Metrics for System1",
  "ProcessorBandwidthPercent": 17,
  "MemoryBandwidthPercent": 23,
  "MemoryThrottledCyclesPercent": 13,
  "ProcessorPowerWatt": 120,
  "MemoryPowerWatt": 48,
}
```
"IOBandwidthGBps": 4,
"Health": [
  "OK"
]
}

4.11.1.2 PUT
Operation is not allowed on this resource.

4.11.1.3 PATCH
Operation is not allowed on this resource.

4.11.1.4 POST
Operation is not allowed on this resource.

4.11.1.5 DELETE
Operation is not allowed on this resource.

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

Table 26. ProcessorCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Processor.Processor)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Processors/#entity",
  "@odata.id": "/redfish/v1/Systems/System1/Processors",
  "@odata.type": ";ProcessorCollection;ProcessorCollection",
  "Name": "Processors Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU2"
    }
  ]
}
```
4.12.1.2 PUT
Operation is not allowed on this resource.

4.12.1.3 PATCH
Operation is not allowed on this resource.

4.12.1.4 POST
Operation is not allowed on this resource.

4.12.1.5 DELETE
Operation is not allowed on this resource.

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

Table 27. Processor Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the string which identifies the physical location or socket of the processor.</td>
</tr>
<tr>
<td>ProcessorType</td>
<td>Processor.v1_0_0.ProcessorType</td>
<td>True</td>
<td>This property shall contain the string which identifies the type of processor contained in this socket.</td>
</tr>
<tr>
<td>ProcessorArchitecture</td>
<td>Processor.v1_0_0.ProcessorArchitecture</td>
<td>True</td>
<td>This property shall contain the string which identifies the architecture of the processor contained in this socket.</td>
</tr>
<tr>
<td>InstructionSet</td>
<td>Processor.v1_0_0.InstructionSet</td>
<td>True</td>
<td>This property shall contain the string which identifies the instruction set of the processor contained in this socket.</td>
</tr>
<tr>
<td>ProcessorId</td>
<td>Processor.v1_0_0.ProcessorId</td>
<td>False</td>
<td>This object shall contain identification information for this processor.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain a string which identifies the manufacturer of the processor.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall indicate the model information as provided by the manufacturer of this processor.</td>
</tr>
<tr>
<td>MaxSpeedMHz</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall indicate the maximum rated clock speed of the processor in MHz.</td>
</tr>
<tr>
<td>TotalCores</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall indicate the total count of independent processor cores contained within this processor.</td>
</tr>
<tr>
<td>TotalThreads</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall indicate the total count of independent execution threads supported by this processor.</td>
</tr>
<tr>
<td>Links</td>
<td>Processor.v1_1_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>Processor.v1_1_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Location</td>
<td>Resource.Location</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Assembly</td>
<td>Assembly.Assembly</td>
<td>False</td>
<td>The value of this property shall be a link to a resource of type Assembly.</td>
</tr>
<tr>
<td>SubProcessors</td>
<td>ProcessorCollection.ProcessorCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type ProcessorCollection.</td>
</tr>
</tbody>
</table>

### Table 28. Links Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis</td>
<td>Chassis.Chassis</td>
<td>False</td>
<td>The value of this property shall be a reference to a resource of type Chassis that represent the physical container associated with this processor.</td>
</tr>
</tbody>
</table>

### Table 29. Processor Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>Intel.Oem.ProcessorBrand</td>
<td>True</td>
<td>This property shall represent the brand of processor.</td>
</tr>
<tr>
<td>Capabilities</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>This property shall represent array of processor capabilities (like reported in /proc/cpuinfo flags)</td>
</tr>
<tr>
<td>IntegratedMemory</td>
<td>Collection(Intel.Oem.ProcessorMemory)</td>
<td>True</td>
<td>The value of this property shall be a reference to the resources that this processor is associated with and shall reference a resource of type Endpoint.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ThermalDesignPowerWatt</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>Thermal Design Power (TDP) of this processor.</td>
</tr>
<tr>
<td>FPGA</td>
<td>Intel.Oem.FPGA</td>
<td>True</td>
<td>For FPGA ProcessorType, this property will expose FPGA-specific data.</td>
</tr>
<tr>
<td>ExtendedIdentificationRegisters</td>
<td>Intel.Oem.ExtendedIdentificationRegister</td>
<td>True</td>
<td>This property shall include the extended raw CPUID* instruction output for (that is for all possible combinations of input registers) as provided by the manufacturer of this processor.</td>
</tr>
<tr>
<td>Metrics</td>
<td>ProcessorMetrics.ProcessorMetrics</td>
<td>False</td>
<td>A reference to the Metrics associated with this Processor.</td>
</tr>
<tr>
<td>PCIeFunction</td>
<td>PCIeFunction.PCIeFunction</td>
<td>True</td>
<td>A reference to the PCIe* function that provides this processor functionality.</td>
</tr>
</tbody>
</table>

### 4.13.1 Operations

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

#### 4.13.1.1 GET

**Request:**

GET /redfish/v1/Systems/System1/Processors/CPU1

**Content-Type: application/json**

**Response:**

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

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

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

"Oem": {
  "Intel_RackScale": {
    "@odata.type": ":Intel.Oem.Processor",
    "Brand": "E5",
    "Capabilities": ["sse", "sse2", "sse3"],
    "Metrics": {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics"
    },
    "ExtendedIdentificationRegisters": {
      "EAX_00h": "0x0429943FFFFFFFFF",
      "EAX_01h": "0x0429943FFFFFFFFF",
      "EAX_02h": "0x0429943FFFFFFFFF",
      "EAX_03h": "0x0429943FFFFFFFFF",
      "EAX_04h": "0x0429943FFFFFFFFF",
      "EAX_05h": "0x0429943FFFFFFFFF",
      "EAX_07h": "0x0429943FFFFFFFFF",
      "EAX_80000000h": "0x0429943FFFFFFFFF",
      "EAX_80000001h": "0x0429943FFFFFFFFF",
      "EAX_80000002h": "0x0429943FFFFFFFFF",
      "EAX_80000003h": "0x0429943FFFFFFFFF",
      "EAX_80000004h": "0x0429943FFFFFFFFF",
      "EAX_80000005h": "0x0429943FFFFFFFFF",
      "EAX_80000006h": "0x0429943FFFFFFFFF",
      "EAX_80000007h": "0x0429943FFFFFFFFF",
      "EAX_80000008h": "0x0429943FFFFFFFFF"
    }
  }
}
```
"MaxSpeedMHz": null,
"TotalCores": null,
"TotalThreads": null,
"Status": {
  "State": "Enabled",
  "Health": "OK",
  "HealthRollup": null
},
"MaxTDPWatts": 150,
"Links": {
  "Oem": {
    "Intel_Rackscale": {
      "@odata.type": "#Intel.Oem.ProcessorLinks",
      "Endpoints": [
        {
          "@odata.id": "/redfish/v1/Fabrics/FPGAoF/Endpoints/1"
        }
      ],
      "ConnectedProcessors": [
        {
          "@odata.id": "/redfish/v1/Systems/System1/Processors/1"
        }
      ]
    }
  }
},
"Oem": {
  "Intel_RackScale": {
    "@odata.type": "#Intel.Oem.Processor",
    "Brand": null,
    "Capabilities": [],
    "PCIEFunction": {
      "@odata.id": "/redfish/v1/Chassis/1/PCIEDevices/Devices/1/Functions/1"
    },
    "FPGA": {
      "Type": "Discrete",
      "Model": "Stratix10",
      "FwId": "0x6400002fc614bb9",
      "FwManufacturer": "Intel(R) Corporation",
      "FwVersion": "Blue v.1.00.86",
      "HostInterface": "8xPCIe-4",
      "ExternalInterfaces": ["4x10G"],
      "SidebandInterface": "I2C",
      "PCIEVirtualFunctions": 1,
      "ProgrammableFromHost": true,
      "ReconfigurationSlots": 1,
      "ReconfigurationSlotsDetails": [
        {
          "SlotId": "AFU0",
          "UUID": "00000000-0000-0000-0000-000000000000",
          "ProgrammableFromHost": true
        }
      ],
      "Erased": true
    },
    "Metrics": {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1/Oem/Intel_RackScale/Metrics"
    }
  }
}
"OnPackageMemory": [
  {
    "MemoryType": "HBM2",
    "CapacityMiB": 512,
    "SpeedMHz": 1066
  }
]
}

4.13.1.3 PUT
Operation is not allowed on this resource.

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erased</td>
<td>EDM Boolean</td>
<td>True</td>
<td>This property shall represent the erase state of an FPGA.</td>
</tr>
</tbody>
</table>

Request:

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

Response:

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

Or (when task is created):

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

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

Request:

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

Response:

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

Or (when task is created):

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

4.13.1.6 DELETE

Operation is not allowed on this resource.

4.14 Processor Metrics

Properties details available in ProcessorMetrics_v1.xml metadata file.

**Table 31. ProcessorMetrics Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BandwidthPercent</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be CPU Utilization on specific CPU in %</td>
</tr>
<tr>
<td>AverageFrequencyMHz</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be average frequency across all enabled cores in MHz.</td>
</tr>
<tr>
<td>ThrottlingCelsius</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be CPU margin to throttle based on an offset between max temperature resource can operate and its current temperature.</td>
</tr>
<tr>
<td>TemperatureCelsius</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be temperature of the Processor resource in Celsius.</td>
</tr>
<tr>
<td>ConsumedPowerWatt</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be power for specific CPU domain in Watts.</td>
</tr>
</tbody>
</table>
### Attribute | Type | Nullable | Description
--- | --- | --- | ---
Health | Collection(Edm.String) | True | The value of this property shall be Processor Health as a discrete sensor reading.
FrequencyRatio | Edm.Decimal | True | The value of this property shall be Frequency relative to nominal CPU frequency of the Processor resource.
L3Miss | Edm.Decimal | True | The value of this property shall be L3 cache line misses of the Processor resource in millions.
L3HitRatio | Edm.Decimal | True | The value of this property shall be L3 cache hit ratio of the Processor resource.
L3Mpi | Edm.Decimal | True | The value of this property shall be L3 cache misses per instruction of the Processor resource.
LlcOccupancyBytes | Edm.Int64 | True | The value of this property shall be total last level cache occupancy of the Processor resource in bytes.
LlcOccupancyPercent | Edm.Decimal | True | The value of this property shall be total last level cache occupancy percentage of the Processor resource.
MblBytes | Edm.Int64 | True | The value of this property shall be local memory bandwidth usage of the Processor resource in bytes.
MbrBytes | Edm.Int64 | True | The value of this property shall be remote memory bandwidth usage of the Processor resource in bytes.
KernelPercent | Edm.Decimal | True | The value of this property shall be total percentage of time the processor spend in kernel mode.
UserPercent | Edm.Decimal | True | The value of this property shall be total percentage of time the processor spend in user mode.
CoreMetrics | Collection(ProcessorMetrics.v1_0_0CoreMetrics) | True | This type shall contain properties that describe this Core of the Processor resource.
Actions | ProcessorMetrics.v1_0_0Actions | false | The Actions property shall contain the available actions for this resource.

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

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

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

4.14.1.2 PUT
Operation is not allowed on this resource.

4.14.1.3 PATCH
Operation is not allowed on this resource.

4.14.1.4 POST
Operation is not allowed on this resource.

4.14.1.5 DELETE
Operation is not allowed on this resource.

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Memory.Memory)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.15.1.1 Operations
The following sections specify the HTTP methods available on this endpoint.
4.15.1.2 GET

Request:

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

Response:

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

4.15.1.3 PUT

Operation is not allowed on this resource.

4.15.1.4 PATCH

Operation is not allowed on this resource.

4.15.1.5 POST

Operation is not allowed on this resource.

4.15.1.6 DELETE

Operation is not allowed on this resource.

4.16 Memory

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

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

Table 33 describes the Memory attributes:
Table 33. Memory Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MemoryType</td>
<td>Memory.v1_0_0.MemoryType</td>
<td>True</td>
<td>The value of this property shall be the type of Memory represented by this resource.</td>
</tr>
<tr>
<td>MemoryDeviceType</td>
<td>Memory.v1_0_0.MemoryDeviceType</td>
<td>True</td>
<td>The value of this property shall be the Memory Device Type as defined by SMBIOS.</td>
</tr>
<tr>
<td>BaseModuleType</td>
<td>Memory.v1_0_0.BaseModuleType</td>
<td>True</td>
<td>The value of this property shall be the base module type of Memory.</td>
</tr>
<tr>
<td>MemoryMedia</td>
<td>Collection(Memory.v1_0_0.MemoryMedia)</td>
<td>False</td>
<td>The value of this property shall be the media types of this Memory.</td>
</tr>
<tr>
<td>CapacityMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the Memory capacity in MiB.</td>
</tr>
<tr>
<td>DataWidthBits</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the data width in bits.</td>
</tr>
<tr>
<td>BusWidthBits</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the bus width in bits.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain a string which identifies the manufacturer of the Memory.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall indicate the serial number as provided by the manufacturer of this Memory.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall indicate the part number as provided by the manufacturer of this Memory.</td>
</tr>
<tr>
<td>AllowedSpeedsMHz</td>
<td>Collection(Edm.Int64)</td>
<td>False</td>
<td>The value of this property shall be the speed supported by this Memory.</td>
</tr>
<tr>
<td>FirmwareRevision</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the revision of firmware on the Memory controller.</td>
</tr>
<tr>
<td>FirmwareApiVersion</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the version of API supported by the firmware.</td>
</tr>
<tr>
<td>MaxTDPMilliWatts</td>
<td>Collection(Edm.Int64)</td>
<td>False</td>
<td>The value of this property shall be the maximum power budgets supported by the Memory in milliwatts.</td>
</tr>
<tr>
<td>SecurityCapabilities</td>
<td>Memory.v1_0_0.SecurityCapabilities</td>
<td>False</td>
<td>This object shall contain properties which describe the security capabilities of the Memory.</td>
</tr>
<tr>
<td>SpareDeviceCount</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the number of unused spare devices available in the Memory. If memory devices fail, the spare device could be used.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RankCount</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be number of ranks available in the Memory.</td>
</tr>
<tr>
<td>DeviceLocator</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be location of the Memory in the platform.</td>
</tr>
<tr>
<td>MemoryLocation</td>
<td>Memory.v1_0_0.MemoryLocation</td>
<td>False</td>
<td>This object shall contain properties which describe the Memory connection.</td>
</tr>
<tr>
<td>ErrorCorrection</td>
<td>Memory.v1_0_0.ErrorCorrection</td>
<td>True</td>
<td>The value of this property shall be the error correction scheme.</td>
</tr>
<tr>
<td>OperatingSpeedMhz</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the operating speed of Memory in MHz.</td>
</tr>
<tr>
<td>VolatileRegionSizeLimitMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of volatile regions.</td>
</tr>
<tr>
<td>PersistentRegionSizeLimitMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of persistent regions.</td>
</tr>
<tr>
<td>Regions</td>
<td>Collection(Memory.v1_0_0.RegionSet)</td>
<td>False</td>
<td>The value of this property shall be the memory region information.</td>
</tr>
<tr>
<td>OperatingMemoryModes</td>
<td>Collection(Memory.v1_0_0.OperatingMemoryModes)</td>
<td>False</td>
<td>The value of this property shall be the memory modes supported.</td>
</tr>
<tr>
<td>PowerManagementPolicy</td>
<td>Memory.v1_0_0.PowerManagementPolicy</td>
<td>False</td>
<td>This object shall contain properties which describe the power management.</td>
</tr>
<tr>
<td>IsSpareDeviceEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be true if a spare device is enabled.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IsRankSpareEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be true if a rank spare is enabled for this Memory.</td>
</tr>
<tr>
<td>Actions</td>
<td>Memory.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Metrics</td>
<td>MemoryMetrics.MemoryMetrics</td>
<td>False</td>
<td>A reference to the Metrics associated with this Memory.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>This property shall contain any status or health properties of the resource.</td>
</tr>
<tr>
<td>VolatileRegionNumberOfLimit</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total number of volatile regions this Memory can support.</td>
</tr>
<tr>
<td>PersistentRegionNumberOfLimit</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total number of persistent regions this Memory can support.</td>
</tr>
<tr>
<td>VolatileRegionSizeMaxMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the maximum size of a single volatile regions in MiB.</td>
</tr>
<tr>
<td>PersistentRegionSizeMaxMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the maximum size of a single persistent regions in MiB.</td>
</tr>
<tr>
<td>AllocationIncrementMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the allocation increment for regions, measured in MiB.</td>
</tr>
<tr>
<td>AllocationAlignmentMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the alignment boundary on which memory regions are allocated, measured in MiB.</td>
</tr>
<tr>
<td>Links</td>
<td>Memory.v1_2_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish* Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>ModuleManufacturerID</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the two byte manufacturer ID of this memory module as defined by JEDEC in JEP-106.</td>
</tr>
<tr>
<td>ModuleProductID</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the two byte product ID of this memory module as defined by the manufacturer.</td>
</tr>
<tr>
<td>MemorySubsystemControllerManufa</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the two byte manufacturer ID of the memory subsystem controller of this memory module as defined by JEDEC in JEP-106.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MemorySubsystemControllerProductID</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the two byte product ID of the memory subsystem controller of this memory module as defined by the manufacturer.</td>
</tr>
<tr>
<td>VolatileSizeMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of the volatile portion memory in MiB.</td>
</tr>
<tr>
<td>NonVolatileSizeMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of the non-volatile portion memory in MiB.</td>
</tr>
<tr>
<td>CacheSizeMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of the cache portion memory in MiB.</td>
</tr>
<tr>
<td>LogicalSizeMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the total size of the logical memory in MiB.</td>
</tr>
<tr>
<td>Location</td>
<td>Resource.Location</td>
<td>False</td>
<td>This property shall contain location information of the associated memory.</td>
</tr>
<tr>
<td>Assembly</td>
<td>Assembly.Assembly</td>
<td>False</td>
<td>The value of this property shall be a link to a resource of type Assembly.</td>
</tr>
</tbody>
</table>

**Table 34** shows the RegionSet attributes:

**Table 34. MemoryLocation Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socket</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Socket number in which Memory is connected.</td>
</tr>
<tr>
<td>MemoryController</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Memory controller number in which Memory is connected.</td>
</tr>
<tr>
<td>Channel</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Channel number in which Memory is connected.</td>
</tr>
<tr>
<td>Slot</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Slot number in which Memory is connected.</td>
</tr>
</tbody>
</table>

**Table 35** shows the PowerManagementPolicy attribute:

**Table 35. RegionSet Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegionId</td>
<td>Edm.String</td>
<td>True</td>
<td>Unique region ID representing a specific region within the Memory.</td>
</tr>
<tr>
<td>MemoryClassification</td>
<td>Memory.v1_0_0.MemoryClassification</td>
<td>True</td>
<td>Classification of memory occupied by the given memory region.</td>
</tr>
<tr>
<td>OffsetMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Offset with in the Memory that corresponds to the starting of this memory region in MiB.</td>
</tr>
<tr>
<td>SizeMiB</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Size of this memory region in MiB.</td>
</tr>
</tbody>
</table>
Table 35 shows the PowerManagementPolicy attributes:

### PowerManagementPolicy Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PolicyEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>Power management policy enabled status.</td>
</tr>
<tr>
<td>MaxTDPMilliWatts</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Maximum TDP in milli watts.</td>
</tr>
<tr>
<td>PeakPowerBudgetMilliWatts</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Peak power budget in milli watts.</td>
</tr>
<tr>
<td>AveragePowerBudgetMilliWatts</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Average power budget in milli watts.</td>
</tr>
</tbody>
</table>

Table 36 shows the SecurityCapabilities attributes:

### SecurityCapabilities Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PassphraseCapable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>Memory passphrase set capability.</td>
</tr>
<tr>
<td>MaxPassphraseCount</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Maximum number of passphrases supported for this Memory.</td>
</tr>
<tr>
<td>SecurityStates</td>
<td>Collection(Memory.v1_0_0.SecurityStates)</td>
<td>False</td>
<td>Security states supported by the Memory.</td>
</tr>
</tbody>
</table>

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

### Memory Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VoltageVolt</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall represent current voltage of memory module</td>
</tr>
</tbody>
</table>

4.16.1 Operations

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

4.16.1.1 GET (Legacy DIMM)

Request:

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
  "@odata.type": ":Memory.v1_6_0.Memory",
  "Name": "DRAM",
  "Description": "DDR SDRAM",
  "Id": "Dimm1",
  "MemoryType": "DRAM",
  "MemoryDeviceType": "DDR4",
  "BaseModuleType": "LRMemory",
  "MemoryMedia": [
    "DRAM"
  ]
}
```
4.16.1.2 GET (Intel® Optane™ DC DIMM)

Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2",
  "@odata.type": "#Memory.v1_6_0.Memory",
  "Name": "DCPMM",
  "Description": "Intel(R) Optane DC Persistent Memory Module",
  "Id": "Dimm2",
  "MemoryType": "IntelOptane",
  "MemoryDeviceType": "DDR4",
  "BaseModuleType": "LRDIMM",
  "MemoryMedia": [ "Proprietary" ],
  "CapacityMiB": 131072,
  "DataWidthBits": 64,
  "BusWidthBits": 72,
  "Manufacturer": "Intel",
  "SerialNumber": "000003c5",
  "PartNumber": "8089A21751000003C5",
  "AllowedSpeedsMHz": [ 2133, 2400, 2667 ],
  "FirmwareRevision": "01.00.00.4847",
  "FirmwareApiVersion": "01.09",
  "ModuleManufacturerID": "0x8086",
  "ModuleProductID": "0x097a",
  "MemorySubsystemControllerManufacturerID": "SubsystemVendorID",
  "MemorySubsystemControllerProductID": "SubsystemDeviceID",
  "MaxTDPMilliWatts": [ 240 ],
  "SecurityCapabilities": {
    "PassphraseCapable": true,
    "MaxPassphraseCount": 3,
    "SecurityStates": [ "Enabled", "Locked" ]
  },
  "SpareDeviceCount": 2,
  "RankCount": 1,
  "DeviceLocator": "PROC 1 DIMM A1",
  "MemoryLocation": {
    "Socket": 1,
    "MemoryController": 1,
    "Channel": 1,
    "Slot": 2
  }
}
```
"ErrorCorrection": "MultiBitECC",
"Status": {
   "State": "Enabled",
   "Health": "OK",
   "HealthRollup": null
},
"OperatingSpeedMhz": 2400,
"VolatileRegionSizeLimitMiB": 98304,
"PersistentRegionSizeLimitMiB": 32768,
"Regions": [
   {
      "RegionId": "1",
      "MemoryClassification": "Volatile",
      "OffsetMiB": 0,
      "SizeMiB": 32768
   },
   {
      "RegionId": "2",
      "MemoryClassification": "ByteAccessiblePersistent",
      "OffsetMiB": 32768,
      "SizeMiB": 32768
   },
   {
      "RegionId": "3",
      "MemoryClassification": "Block",
      "OffsetMiB": 65536,
      "SizeMiB": 32768
   },
   {
      "RegionId": "4",
      "MemoryClassification": "Block",
      "OffsetMiB": 98304,
      "SizeMiB": 32768
   }
],
"OperatingMemoryModes": [
   "Volatile",
   "PMEM",
   "Block"
],
"PowerManagementPolicy": {
   "PolicyEnabled": true,
   "MaxTDPMilliWatts": 5000,
   "PeakPowerBudgetMilliWatts": 3400,
   "AveragePowerBudgetMilliWatts": 1983
},
"Metrics": {
   "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2/Metrics"
},
"Oem": {
   "Intel_RackScale": {
      "@odata.type": "Intel.Oem.Memory",
      "VoltageVolt": 1.35
   }
}

4.16.1.3 PUT

Operation is not allowed on this resource.
4.16.1.4 PATCH
Operation is not allowed on this resource.

4.16.1.5 POST
Operation is not allowed on this resource.

4.16.1.6 DELETE
Operation is not allowed on this resource.

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

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

Table 39. MemoryMetrics Attributes

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

Table 40. CurrentPeriod Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BlocksRead</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be number of blocks read since reset.</td>
</tr>
<tr>
<td>BlocksWritten</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be member of blocks written since reset.</td>
</tr>
</tbody>
</table>
Table 41. LifeTime Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BlocksRead</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be number of blocks read for the lifetime of the Memory.</td>
</tr>
<tr>
<td>BlocksWritten</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be number of blocks written for the lifetime of the Memory.</td>
</tr>
</tbody>
</table>

Table 42. HealthData Attributes

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

Intel® RSD OEM extensions:

Table 43. MemoryMetrics Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TemperatureCelsius</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be temperature of the Memory resource in Celsius.</td>
</tr>
<tr>
<td>ControllerTemperatureCelsius</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be temperature of the Memory controller in Celsius.</td>
</tr>
<tr>
<td>BandwidthPercent</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be Memory Utilization on specific Memory module in Percent.</td>
</tr>
<tr>
<td>ThrottledCyclesPercent</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the percentage of memory cycles that were throttled due to power limiting.</td>
</tr>
<tr>
<td>ConsumedPowerWatt</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be global power for specific Memory module (for example, DIMM) in Watts.</td>
</tr>
</tbody>
</table>
### Attribute | Type | Nullable | Description
--- | --- | --- | ---
ThermalMarginCelsius | Edm.Decimal | True | The value of this property shall be a difference between current memory module temperature and optimal temperature for the module in degree Celsius.
Health | Collection(Edm.String) | True | The value of this property shall be Memory module Health as a discrete sensor reading.
CurrentPeriod | Intel.Oem.MemoryMetricsCurrentPeriod | False | This object shall contain properties which describe the CurrentPeriod metrics for the current resource.
LifeTime | Intel.Oem.MemoryMetricsLifeTime | False | This object shall contain properties which describe the LifeTime metrics for the current resource.

### Table 44. MemoryMetricsCurrentPeriod Attributes

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

### Table 45. MemoryMetricsLifeTime Attributes

| Attribute | Type | Nullable | Description |
--- | --- | --- | ---
UnsafeShutdownCount | Edm.Int64 | True | This property shall be a number of times the Memory module has undergone unsafe shutdown.
PowerCycles | Edm.Decimal | True | The value of this property shall be number of power cycles over the lifetime of the Memory module.
PowerOnTimeSeconds | Edm.Decimal | True | The value of this property shall be the amount of time the Memory module was powered on during its lifetime in seconds.
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HostReadRequests</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the number of read requests the Memory module has serviced over its lifetime.</td>
</tr>
<tr>
<td>HostWriteRequests</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the number of write requests the Memory module has serviced over its lifetime.</td>
</tr>
<tr>
<td>WriteCountMax</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the largest number of data writes to a single block across the Memory module.</td>
</tr>
<tr>
<td>WriteCountAvg</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the average number of data writes to all blocks across the Memory module.</td>
</tr>
<tr>
<td>MediaECCCorrectedErrors</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be a number of corrected ECC Errors found on Media of this Memory module.</td>
</tr>
<tr>
<td>MediaECCUncorrectableErrors</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a number of Uncorrectable ECC Errors found on Media of this Memory module.</td>
</tr>
<tr>
<td>ECCUncorrectableErrors</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be a number of ECC Errors found on this Memory module.</td>
</tr>
</tbody>
</table>

### 4.17.1 Operations

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

#### 4.17.1.1 GET (Legacy DIMM)

**Request:**

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

**Response:**

```json
{
"@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
"@odata.id": "/redfish/v1/Systems/3/Memory/Dimm1/Metrics",
"@odata.type": ">#MemoryMetrics.v1_0_0.MemoryMetrics",
"Name": "Memory Metrics for DIMM1",
"Description": "description-as-string",
"Id": "Metrics for DIMM1",
"HealthData": {
  "AlarmTrips": {
    "Temperature": false,
    "UncorrectableECCError": false,
    "CorrectableECCError": true
  }
},
"Oem": {
  "Intel_RackScale": {
```
4.17.1.2 GET (Intel® Optane™ DC DIMM)

**Request:**

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

**Response:**

```json
{
    "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
    "@odata.id": "/redfish/v1/Systems/3/Memory/Dimm2/Metrics",
    "@odata.type": ">#MemoryMetrics.v1_1_3.MemoryMetrics",
    "Name": "Memory Metrics for DIMM2",
    "Id": "Metrics for DIMM2",
    "BlockSizeBytes": 64,
    "CurrentPeriod": {
        "BlocksRead": 1406,
        "BlocksWritten": 12
    },
    "LifeTime": {
        "BlocksRead": 1452306,
        "BlocksWritten": 1212
    },
    "HealthData": {
        "DataLossDetected": false,
        "LastShutdownsSuccess": true,
        "PerformanceDegraded": false,
        "PredictedMediaLifeLeftPercent": 98,
        "RemainingSpareBlockPercentage": 75,
        "AlarmTrips": {
            "Temperature": false,
            "SpareBlock": true,
            "AddressParityError": false,
            "UncorrectableECCError": false,
            "CorrectableECCError": false
        }
    },
    "Oem": {
        "Intel_RackScale": {
            "TemperatureCelsius": 46,
            "ControllerTemperatureCelsius": 49,
            "ThermalMarginCelsius": 32,
            "BandwidthPercent": 10,
            "ConsumedPowerWatt": 52,
            "ThrottledCyclesPercent": 0,
            "Health": [{
                "NonCritical"
            }],
            "CurrentPeriod": {
                "UptimeSeconds": 550800,
                "HostReadRequests": 5276,
                "HostWriteRequests": 235
            }
        }
    }
}
```
"ECCCorrectedErrors": 4
},
"LifeTime": {
  "UnsafeShutdownCount": 565,
  "PowerCycles": 3091,
  "PowerOnTimeSeconds": 190330568712445,
  "HostReadRequests": 5023256,
  "HostWriteRequests": 239400442,
  "WriteCountMax": 2703818,
  "WriteCountAvg": 4679,
  "MediaECCCorrectedErrors": 47023,
  "MediaECCUncorrectableErrors": 2,
  "ECCUncorrectableErrors": 7
}
]
}

### 4.17.1.3 PUT
Operation is not allowed on this resource.

### 4.17.2 PATCH
Operation is not allowed on this resource.

### 4.17.3 POST
Operation is not allowed on this resource.

### 4.17.4 DELETE
Operation is not allowed on this resource.

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

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

#### Table 46. Storage Collection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Storage.Storage)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

### 4.18.1 Operations
The following sections specify the HTTP methods available on this endpoint.
4.18.1.1 GET

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

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

4.18.1.2 PUT
Operation is not allowed on this resource.

4.18.1.3 PATCH
Operation is not allowed on this resource.

4.18.1.4 POST
Operation is not allowed on this resource.

4.18.1.5 DELETE
Operation is not allowed on this resource.

4.19 Storage Subsystem

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

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

Table 47. Storage Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Links</td>
<td>Storage.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>Storage.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
</tbody>
</table>
## Attribute | Type | Nullable | Description
--- | --- | --- | ---
StorageControllers | Collection(Storage.StorageController) | True | A collection that indicates all the storage controllers that this resource represents.
Drives | Collection(Drive.Drive) | True | A collection that indicates all the drives attached to the storage controllers that this resource represents.
Volumes | VolumeCollection.VolumeCollection | False | A collection that indicates all the volumes produced by the storage controllers that this resource represents.
Redundancy | Collection(Redundancy.Redundancy) | True | Redundancy information for the storage subsystem.

### 4.19.1 Operations

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

#### 4.19.1.1 GET

**Request:**

GET /redfish/v1/Systems/System1/Storage/SATA

**Content-Type:** application/json

**Response:**

```json
{
    "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Storage/Members/$entity",
    "@odata.id": "/redfish/v1/Systems/1/Storage/SATA",
    "@odata.type": "#Storage.v1_1_0.Storage",
    "Id": "1",
    "Name": "SATA Storage System",
    "Description": "System SATA",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollUp": "OK"
    },
    "StorageControllers": [
        {
            "@odata.id": "/redfish/v1/Systems/1/Storage/SATA#/StorageControllers/0",
            "@odata.type": "#Storage.v1_0_0.StorageController",
            "Id": "0",
            "Name": "System SATA",
            "Description": "System SATA (Embedded)",
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "Manufacturer": "ManufacturerName",
            "Model": "ProductModelName",
            "SKU": "",
            "SerialNumber": "2M220100SL",
            "PartNumber": "",
            "AssetTag": "CustomerWritableThingy",
            "SpeedGbps": 6,
            "FirmwareVersion": null
        }
    ]
}
```
"SupportedControllerProtocols": [ "PCIe" ],
"SupportedDeviceProtocols": [ "SATA" ],
"Identifiers": [ {
  "@odata.type": "#Resource.v1_1_0.Identifier",
  "DurableName": "123e4567-e89b-12d3-a456-426655440000",
  "DurableNameFormat": "UUID"
  }
},
"Drives": [ {
  "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
} ],
"Volumes": { 
  "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA/Volumes"
},
"Links": { 
  "Enclosures": [ 
    { "@odata.id": "/redfish/v1/Chassis/Blade1"
  ] 
  },
"Actions": {} 
]

4.19.1.2 PUT
Operation is not allowed on this resource.

4.19.1.3 PATCH
Operation is not allowed on this resource.

4.19.1.4 POST
Operation is not allowed on this resource.

4.19.1.5 DELETE
Operation is not allowed on this resource.

4.20 Volume Collection
The resource Volume Collection provides collection of all storage volumes available in a storage subsystem.
Details of this resource are described in metadata file: VolumeCollection_v1.xml
Table 48  VolumeCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Volume.Volume)</td>
<td>True</td>
<td>The value of each member entry shall reference a Volume resource.</td>
</tr>
</tbody>
</table>

4.20.1  Operations

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

4.20.1.1 GET

Request:

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

Response:

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

4.20.1.2 PUT

Operation is not allowed on this resource.

4.20.1.3 PATCH

Operation is not allowed on this resource.

4.20.1.4 POST

Operation is not allowed on this resource.

4.20.1.5 DELETE

Operation is not allowed on this resource.

4.21  Drive

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

Details of this resource are described in metadata file: Drive_v1.xml OEM extensions details available in IntelRackScaleOem_v1.xml.
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StatusIndicator</td>
<td>Drive.v1_0_0.StatusIndicator</td>
<td>True</td>
<td>The value of this property shall contain the status indicator state for the status indicator associated with this drive. The valid values for this property are specified through the Redfish*.AllowableValues annotation.</td>
</tr>
<tr>
<td>IndicatorLED</td>
<td>Resource.IndicatorLED</td>
<td>True</td>
<td>This value of this property shall contain the indicator light state for the indicator light associated with this drive.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name by which the manufacturer generally refers to the drive.</td>
</tr>
<tr>
<td>Revision</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the revision as defined by the manufacturer for the associated drive.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>This property shall contain failure information as defined by the manufacturer for the associated drive.</td>
</tr>
<tr>
<td>CapacityBytes</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall contain the raw size in bytes of the associated drive.</td>
</tr>
<tr>
<td>FailurePredicted</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>This property shall contain failure information as defined by the manufacturer for the associated drive.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Protocol.Protocol</td>
<td>True</td>
<td>This property shall contain the protocol which the associated drive is using to communicate to the storage controller for this system.</td>
</tr>
<tr>
<td>MediaType</td>
<td>Drive.v1_0_0.MediaType</td>
<td>True</td>
<td>This property shall contain the type of media contained in the associated drive.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the organization responsible for producing the drive. This organization might be the entity from whom the drive is purchased, but this is not necessarily true.</td>
</tr>
<tr>
<td>SKU</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the stock-keeping unit number for this drive.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a manufacturer allocated number used to identify the drive.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the drive.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be an identifying string used to track the drive for inventory purposes.</td>
</tr>
<tr>
<td>Identifiers</td>
<td>Collection(Resource.Identifier)</td>
<td>False</td>
<td>This property shall contain a list of all known durable names for the associated drive.</td>
</tr>
<tr>
<td>HotspareType</td>
<td>Drive.v1_0_0.HotspareType</td>
<td>True</td>
<td>This property shall contain the hot spare type for the associated drive. If the drive is currently serving as a hot spare its <code>Status.State</code> field shall be <code>StandbySpare</code> and <code>Enabled</code> when it is being used as part of a Volume.</td>
</tr>
<tr>
<td>EncryptionAbility</td>
<td>Drive.v1_0_0.EncryptionAbility</td>
<td>True</td>
<td>This property shall contain the encryption ability for the associated drive.</td>
</tr>
<tr>
<td>EncryptionStatus</td>
<td>Drive.v1_0_0.EncryptionStatus</td>
<td>True</td>
<td>This property shall contain the encryption status for the associated drive.</td>
</tr>
<tr>
<td>RotationSpeedRPM</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain rotation speed of the associated drive.</td>
</tr>
<tr>
<td>BlockSizeBytes</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall contain size of the smallest addressable unit of the associated drive.</td>
</tr>
<tr>
<td>CapableSpeedGbs</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain fastest capable bus speed of the associated drive.</td>
</tr>
<tr>
<td>NegotiatedSpeedGb</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain current bus speed of the associated drive.</td>
</tr>
<tr>
<td>PredictedMediaLifeLeftPercent</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain an indicator of the percentage of life remaining in the Drive's media.</td>
</tr>
<tr>
<td>Links</td>
<td>Drive.v1_0_0.Links</td>
<td>False</td>
<td>The <code>Links</code> property, as described by the Redfish® Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>Drive.v1_0_0.Actions</td>
<td>False</td>
<td>The <code>Actions</code> property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Operations</td>
<td>Collection(Drive.v1_1_0.Operations)</td>
<td>False</td>
<td>This property shall contain a list of all operations currently running on the Drive.</td>
</tr>
<tr>
<td>Assembly</td>
<td>Assembly.Assembly</td>
<td>False</td>
<td>The value of this property shall be a link to an <code>Assembly</code> type resource.</td>
</tr>
<tr>
<td>PhysicalLocation</td>
<td>Resource.Location</td>
<td>False</td>
<td>This property shall contain location information of the associated drive.</td>
</tr>
</tbody>
</table>
4.21.1 Operations

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

4.21.1.1 GET

Request:

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

Response:

```json
{
    "@odata.context": "/redfish/v1/$metadata#Drive.Drive",
    "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/1",
    "@odata.type": "#Drive.v1_4_0.Drive",
    "Id": "1",
    "Name": "Drive",
    "Description": "Drive description string",
    "IndicatorLED": "Lit",
    "Model": "Drive Model string",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": null
    },
    "CapacityBytes": 899527000000,
    "Protocol": "SATA",
    "MediaType": "SSD",
    "Manufacturer": "Intel",
    "SerialNumber": "72D0A037FRD27",
    "PartNumber": "SG0GP8811253178M02GJA00",
    "SKU": "SKU version",
    "StatusIndicator": "OK",
    "Revision": "revision string",
    "FailurePredicted": false,
    "AssetTag": null,
    "CapableSpeedGbs": 6,
    "NegotiatedSpeedGbs": 6,
    "Identifiers": [
        {
            "@odata.type": ".Resource.v1_1_0.identifier",
            "DurableName": "123e4567-e89b-12d3-a456-426655440000",
            "DurableNameFormat": "UUID"
        }
    ],
    "HotspareType": null,
    "EncryptionAbility": null,
    "EncryptionStatus": null,
    "RotationSpeedRPM": null,
    "BlockSizeBytes": null,
    "PredictedMediaLifeLeftPercent": null,
    "Links": {
        "Volumes": [],
        "Endpoints": []
    },
    "Actions": {
        ".Drive.SecureErase": {
            "target": "/redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.SecureErase"
        }
    }
}
```
4.21.1.2 PUT
Operation is not allowed on this resource.

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

Table 50. Drive Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be an identifying string used to track the drive for inventory purposes.</td>
</tr>
</tbody>
</table>

The following OEM object properties can be patched.

Table 51. Drive Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DriveErased</td>
<td>Edm.Boolean</td>
<td>False</td>
<td>This property shall represent the erase state of drive.</td>
</tr>
</tbody>
</table>

Request:

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

Response:

HTTP/1.1 204 No Content

Or:

HTTP/1.1 200 OK
{(updated resource body as in 4.21.1.1)}
4.21.1.4 POST

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

Request:

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

Response:

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

4.21.1.5 DELETE

Operation is not allowed on this resource.

4.22 System Network Interface

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

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

<table>
<thead>
<tr>
<th>Table 52. Storage Collection Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute</td>
</tr>
<tr>
<td>UefiDevicePath</td>
</tr>
<tr>
<td>Status</td>
</tr>
<tr>
<td>InterfaceEnabled</td>
</tr>
<tr>
<td>Attribute</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>PermanentMACAddress</td>
</tr>
<tr>
<td>MACAddress</td>
</tr>
<tr>
<td>SpeedMbps</td>
</tr>
<tr>
<td>AutoNeg</td>
</tr>
<tr>
<td>FullDuplex</td>
</tr>
<tr>
<td>MTUSize</td>
</tr>
<tr>
<td>HostName</td>
</tr>
<tr>
<td>FQDN</td>
</tr>
<tr>
<td>Attribute</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>MaxIPv6StaticAddresses</td>
</tr>
<tr>
<td>VLAN</td>
</tr>
<tr>
<td>IPv4Addresses</td>
</tr>
<tr>
<td>IPv6AddressPolicyTable</td>
</tr>
<tr>
<td>IPv6Addresses</td>
</tr>
<tr>
<td>IPv6StaticAddresses</td>
</tr>
<tr>
<td>Attribute</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>IPv6DefaultGateway</td>
</tr>
<tr>
<td>NameServers</td>
</tr>
<tr>
<td>VLANs</td>
</tr>
<tr>
<td>LinkStatus</td>
</tr>
<tr>
<td>Links</td>
</tr>
<tr>
<td>Actions</td>
</tr>
<tr>
<td>DHCPv4</td>
</tr>
<tr>
<td>DHCPv6</td>
</tr>
<tr>
<td>StatelessAddressAutoConfig</td>
</tr>
<tr>
<td>IPv6StaticDefaultGateways</td>
</tr>
<tr>
<td>Attribute</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>StaticNameServers</td>
</tr>
<tr>
<td>IPv4StaticAddresses</td>
</tr>
</tbody>
</table>

### 4.22.1 Intel® RSD OEM Extensions

Table 53. EthernetInterface Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SupportedProtocols</td>
<td>Collection(Protocol.Protocol)</td>
<td>True</td>
<td>This property shall represent an array of supported protocol types by the Ethernet interface.</td>
</tr>
</tbody>
</table>

### 4.22.2 Intel® RSD OEM Links extensions

Table 54. EthernetInterfaceLinks Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NeighborPort</td>
<td>EthernetSwitchPort.EthernetSwitchPort</td>
<td>True</td>
<td>This property shall represent the URI of ethernet port connected to this interface.</td>
</tr>
</tbody>
</table>

### 4.22.3 Operations

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

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

**Request:**

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

**Response:**

```
{
   "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
   "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1",
   "@odata.type": ">#EthernetInterface.v1_3_0.EthernetInterface",
   "Id": "LAN1",
   "Name": "Ethernet Interface",
   "Description": "System NIC 1",
   "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": null
   },
   "InterfaceEnabled": true,
   "PermanentMACAddress": "AA:BB:CC:DD:EE:FF",
   "MACAddress": "AA:BB:CC:DD:EE:FF",
   "SpeedMbps": 100,
   "AutoNeg": true,
   "FullDuplex": true,
   "MTUSize": 1500,
   "HostName": "web483",
   "FQDN": "web483.redfishspecification.org",
   "IPv6DefaultGateway": "fe80::3ed9:2bff:fe34:600",
   "MaxIPv6StaticAddresses": null,
   "NameServers": [
      "names.redfishspecification.org"
   ],
   "IPv4Addresses": [
      {
         "@odata.type": ">#IPAddresses.v1_0_0.IPv4Address",
         "Address": "192.168.0.10",
         "SubnetMask": "255.255.252.0",
         "AddressOrigin": "Static",
         "Gateway": "192.168.0.1"
      }
   ],
   "IPv4StaticAddresses": [],
   "IPv6Addresses": [
      {
         "@odata.type": ">#IPAddresses.v1_0_0.IPv6Address",
         "Address": "fe80::1ec1:deff:fe6f:1e24",
         "PrefixLength": 64,
         "AddressOrigin": "Static",
         "AddressState": "Preferred"
      }
   ],
   "IPv6StaticAddresses": [],
   "IPv6StaticDefaultGateways": []
}
```
"StaticNameServers": [],
"VLAN": null,
"Oem": {
  "Intel_RackScale": {
    "@odata.type": "#Intel.Oem.EthernetInterface",
    "SupportedProtocols": [
      "RoCEv2"
    ]
  }
},
"Links": {
  "Chassis": {
    "@odata.id": "/redfish/v1/Chassis/Drawer1"
  }
},
"Oem": {
  "Intel_RackScale": {
    "@odata.type": "#Intel.Oem.EthernetInterfaceLinks",
    "NeighborPort": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    }
  }
},
"Actions": {
  "Oem": {} 
}

4.22.3.2 PUT
Operation is not allowed on this resource.

4.22.3.3 PATCH
Operation is not allowed on this resource.

4.22.3.4 POST
Operation is not allowed on this resource.

4.22.3.5 DELETE
Operation is not allowed on this resource.

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

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

Table 55. ManagerCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection (Manager.Manager)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.23.1 Operations

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

4.23.1.1 GET

Request:

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

Response:

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

4.23.1.2 PUT

Operation is not allowed on this resource.

4.23.1.3 PATCH

Operation is not allowed on this resource.

4.23.1.4 POST

Operation is not allowed on this resource.

4.23.1.5 DELETE

Operation is not allowed on this resource.

4.24 Manager

The Manager Resource provides detailed information about a manager identified by {managerID}. 
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagerType</td>
<td>Manager.v1_0_0.ManagerType</td>
<td>False</td>
<td>The value of this property shall describe the function of this manager. The value EnclosureManager shall be used if this manager controls one or more services through aggregation. The value BMC shall be used if this manager represents a traditional server management controller. The value ManagementController shall be used if none of the other enumerations apply.</td>
</tr>
<tr>
<td>Links</td>
<td>Manager.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>ServiceEntryPoint</td>
<td>Resource.UUID</td>
<td>True</td>
<td>This property shall contain the UUID of the Redfish Service provided by this manager. Each Manager providing an Entry Point to the same Redfish Service shall report the same UUID value (even though the name of the property may imply otherwise). This property shall not be present if this manager does not provide a Redfish Service Entry Point.</td>
</tr>
<tr>
<td>UUID</td>
<td>Resource.UUID</td>
<td>True</td>
<td>The value of this property shall contain the universal unique identifier number for the manager.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall contain the information about how the manufacturer references this manager.</td>
</tr>
<tr>
<td>DateTime</td>
<td>Edm.DateTimeOffset</td>
<td>True</td>
<td>The value of this property shall represent the current DateTime value for the manager, with offset from UTC, in Redfish Timestamp format.</td>
</tr>
<tr>
<td>DateTimeLocalOffset</td>
<td>Edm.String</td>
<td>True</td>
<td>The value property shall represent the offset from UTC time that the current value of DateTime property contains.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>FirmwareVersion</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the firmware version as defined by the manufacturer for the associated manager.</td>
</tr>
<tr>
<td>SerialConsole</td>
<td>Manager.v1_0_0.SerialConsole</td>
<td>False</td>
<td>The value of this property shall contain information about the Serial Console service of this manager.</td>
</tr>
<tr>
<td>CommandShell</td>
<td>Manager.v1_0_0.CommandShell</td>
<td>False</td>
<td>The value of this property shall contain information about the Command Shell service of this manager.</td>
</tr>
<tr>
<td>GraphicalConsole</td>
<td>Manager.v1_0_0.GraphicalConsole</td>
<td>False</td>
<td>The value of this property shall contain the information about the Graphical Console (KVM-IP) service of this manager.</td>
</tr>
<tr>
<td>Actions</td>
<td>Manager.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>This property shall contain any status or health properties of the resource.</td>
</tr>
<tr>
<td>EthernetInterfaces</td>
<td>EthernetInterfaceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type EthernetInterfaceCollection.</td>
</tr>
<tr>
<td>SerialInterfaces</td>
<td>SerialInterfaceCollection</td>
<td>False</td>
<td>The value of this property shall be a link to a collection of type SerialInterfaceCollection which are for the use of this manager.</td>
</tr>
<tr>
<td>NetworkProtocol</td>
<td>ManagerNetworkProtocol</td>
<td>False</td>
<td>The value of this property shall contain a reference to a resource of type ManagerNetworkProtocol which represents the network services for this manager.</td>
</tr>
<tr>
<td>LogServices</td>
<td>LogServiceCollection.LogServiceCollection</td>
<td>False</td>
<td>The value of this property shall contain a reference to a collection of type LogServiceCollection which are for the use of this manager.</td>
</tr>
<tr>
<td>VirtualMedia</td>
<td>VirtualMediaCollection</td>
<td>False</td>
<td>The value of this property shall contain a reference to a collection of type VirtualMediaCollection which are for the use of this manager.</td>
</tr>
</tbody>
</table>
### PSME REST API Definition

#### Table 57. Attributes

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

#### Table 57. Links Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagerForServers</td>
<td>Collection(ComputerSystem.ComputerSystem)</td>
<td>True</td>
<td>This property shall contain an array of references to ComputerSystem resources of which this Manager instance has control.</td>
</tr>
<tr>
<td>ManagerForChassis</td>
<td>Collection(Chassis.Chassis)</td>
<td>True</td>
<td>This property shall contain an array of references to Chassis resources of which this Manager instance has control.</td>
</tr>
<tr>
<td>ManagerInChassis</td>
<td>Chassis.Chassis</td>
<td>False</td>
<td>This property shall contain a reference to the chassis that this manager is located in.</td>
</tr>
</tbody>
</table>
4.24.1 Intel® RSD OEM extensions

Table 58. ManagerLinks Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagerForServices</td>
<td>Collection(StorageService.StorageService)</td>
<td>True</td>
<td>This property is an array of references to services that this manager has control over.</td>
</tr>
<tr>
<td>ManagerForEthernetSwitches</td>
<td>Collection(EthernetSwitch.v1_0_0.EthernetSwitch)</td>
<td>True</td>
<td>This property is an array of references to ethernet switches that this manager has control over.</td>
</tr>
<tr>
<td>ManagerForFabrics</td>
<td>Collection(Fabric.Fabric)</td>
<td>True</td>
<td>This property is an array of references to fabrics that this manager has control over.</td>
</tr>
</tbody>
</table>

4.24.2 Operations

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

4.24.2.1 GET

Request:

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.id": "/redfish/v1/Managers/PSME",
  "@odata.type": "#Manager.v1_4_0.Manager",
  "Id": "1",
  "Name": "Manager",
  "ManagerType": "BMC",
  "Description": "BMC",
  "ServiceEntryPointUUID": "92384634-2938-2342-8820-489239905423",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "Model": "Joo Janta 200",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "AutoDSTEnabled": false,
  "GraphicalConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 2,
    "ConnectTypesSupported": [
      "KVMIP"
    ]
  },
  "HostInterfaces": [],
  "SerialConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 1
  }
}
"ConnectTypesSupported": [  "Telnet",  "SSH",  "IPMI"
],
"CommandShell": {  "ServiceEnabled": true,
  "MaxConcurrentSessions": 4,
  "ConnectTypesSupported": [  "Telnet",  "SSH"
  ],
  "FirmwareVersion": "1.00",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces"
  },
  "Links": {
    "@odata.type": "#Manager.v1_4_0.Links",
    "ManagerForServers": [],
    "ManagerForChassis": {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    "ManagerInChassis": {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    "ManagerForSwitches": {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ManagerLinks",
      "ManagerForServices": {
        "@odata.id": "/redfish/v1/StorageServices/NVMeoE1"
      },
      "ManagerForFabrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe"
      },
      "ManagerForEthernetSwitches": {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
      }
    }
  },
  "Actions": {
    "#Manager.Reset": {
      "target": "/redfish/v1/Managers/PSME/Actions/Manager.Reset"
4.24.2.2 PUT
Operation is not allowed on this resource.

4.24.2.3 PATCH
Operation is not allowed on this resource.

4.24.2.4 POST
Operation is not allowed on this resource.

4.24.2.5 DELETE
Operation is not allowed on this resource.

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

Table 59. EthernetSwitchCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetSwitch.v1_0_0.EthernetSwitch)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

4.25.1.1 GET
Request:

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches",
  "@odata.id": "/redfish/v1/EthernetSwitches",
  "@odata.type": "#EthernetSwitchCollection.EthernetSwitchCollection",
  "Name": "Ethernet Switches Collection",
  "Description": "Network Switches Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
    }
  ]
}
```
4.25.1.2 PUT
Operation is not allowed on this resource.

4.25.1.3 PATCH
Operation is not allowed on this resource.

4.25.1.4 POST
Operation is not allowed on this resource.

4.25.1.5 DELETE
Operation is not allowed on this resource.

4.26 Ethernet Switch
The Ethernet Switch resource provides detailed information about a switch identified by `{switchID}`.
Detailed info about this resource's properties can be obtained from metadata file: `EthernetSwitch_v1.xml`.

Table 60. EthernetSwitch Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SwitchId</td>
<td>Edm.String</td>
<td>True</td>
<td>Unique switch Id (within drawer) used to identify in switch hierarchy discovery.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch manufacturer name.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch model.</td>
</tr>
<tr>
<td>ManufacturingDate</td>
<td>Edm.String</td>
<td>True</td>
<td>Manufacturing date.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch serial number.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch part number.</td>
</tr>
<tr>
<td>FirmwareName</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch firmware name.</td>
</tr>
<tr>
<td>FirmwareVersion</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch firmware version.</td>
</tr>
<tr>
<td>Role</td>
<td>Edm.String</td>
<td>True</td>
<td>Role of switch.</td>
</tr>
<tr>
<td>MaxACLNumber</td>
<td>Edm.Int32</td>
<td>True</td>
<td>Maximum quantity of Access Control Lists.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>Links</td>
<td>EthernetSwitch.v1_0_0.Links</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Ports</td>
<td>EthernetSwitchPortCollection, EthernetSwitchPortCollection</td>
<td>True</td>
<td>Collection of switch ports.</td>
</tr>
<tr>
<td>ACLs</td>
<td>EthernetSwitchACLCollection, EthernetSwitchACLCollection</td>
<td>True</td>
<td>Collection of switch access control list.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LLDPEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch.</td>
</tr>
<tr>
<td>ETSEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Enhanced Transmission Selection (ETS) defined in IEEE 802.1Qaz is enabled on this switch.</td>
</tr>
<tr>
<td>DCBXEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch.</td>
</tr>
<tr>
<td>PFCEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch.</td>
</tr>
<tr>
<td>DCBXSharedConfiguration</td>
<td>EthernetSwitch.v1_1_0.DCBXConfig</td>
<td>True</td>
<td>This object shall contain Data Center Bridging Extensions capabilities and configuration conveyed between neighbors to ensure consistent configuration across the network. This protocol leverages functionality provided by IEEE 802.1AB (LLDP).</td>
</tr>
<tr>
<td>Metrics</td>
<td>EthernetSwitchMetrics.EthernetSwitchMetrics</td>
<td>False</td>
<td>A reference to the Metrics associated with this EthernetSwitch.</td>
</tr>
</tbody>
</table>

**Table 61. DCBXConfig Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ApplicationProtocol</td>
<td>Collection(EthernetSwitch.v1_1_0.ApplicationProtocolType)</td>
<td>True</td>
<td>This object allows Data Center Bridging (DCB) node to announce upper layer protocols and associated priority map over DCB link.</td>
</tr>
</tbody>
</table>
## Table 62. ApplicationProtocolType Attributes

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

## Table 63. ProtocolType Attributes

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP</td>
<td>TCP.</td>
</tr>
<tr>
<td>UDP</td>
<td>UDP.</td>
</tr>
<tr>
<td>L2</td>
<td>L2 EtherType.</td>
</tr>
</tbody>
</table>

## Table 64. PriorityClassMapping Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PriorityGroup</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a Priority Group ID.</td>
</tr>
<tr>
<td>Priority</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a numeric value of PFC priority ID.</td>
</tr>
</tbody>
</table>

## Table 65. BandwidthMapping Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PriorityGroup</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a Priority Group ID.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>BandwidthPercent</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a percentage of guaranteed bandwidth.</td>
</tr>
</tbody>
</table>

### 4.26.1 Operations

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

#### 4.26.1.1 GET

**Request:**

GET /redfish/v1/EthernetSwitches/Switch1

Content-Type: application/json

**Response:**

```json
{
    "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/$entity",
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1",
    "@odata.type": "#EthernetSwitch.v1_1_0.EthernetSwitch",
    "Id": "Switch1",
    "SwitchId": "unique switch id",
    "Name": "Switch1",
    "Description": "description-as-string",
    "Manufacturer": "Quanta",
    "Model": "ly8_rangley",
    "ManufacturingDate": "02/21/2015 00:00:00",
    "SerialNumber": "2M220100SL",
    "PartNumber": "1LY8UZ2007",
    "FirmwareName": "ONIE",
    "FirmwareVersion": "1.1",
    "Role": "TOR",
    "MaxACLNumber": 4,
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": null
    },
    "Oem": {},
    "Ports": {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports"
    },
    "ACLs": {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs"
    },
    "Links": {
        "Chassis": {
            "@odata.id": "/redfish/v1/Chassis/FabricModule1"
        },
        "ManagedBy": [
            { "@odata.id": "/redfish/v1/Managers/PSME"
            },
            "Oem": {}
        ],
        "LLDPEnabled": true,
    }
}```
"ETSEnabled": true,
"DCBXEnabled": true,
"DCBXSSharedConfiguration": {
  "ApplicationProtocol": [
    { "Priority": 1,
      "Protocol": "UDP",
      "Port": 4791
    },
    { "Priority": 2,
      "Protocol": "TCP",
      "Port": 860
    },
    { "Priority": 2,
      "Protocol": "TCP",
      "Port": 3260
    }
  ],
  "PriorityToPriorityGroupMapping": [
    { "PriorityGroup": 1,
      "Priority": 5
    },
    { "PriorityGroup": 2,
      "Priority": 5
    }
  ],
  "BandwidthAllocation": [
    { "PriorityGroup": 1,
      "BandwidthPercent": 60
    },
    { "PriorityGroup": 2,
      "BandwidthPercent": 30
    }
  ]
},
"PFCEnabled": true

4.26.1.2 PUT

Operation is not allowed on this resource.
### 4.26.1.3 PATCH

**Table 66. EthernetSwitch Attributes**

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

**Request:**

```json
PATCH /redfish/v1/EthernetSwitches/Switch1
Content-Type: application/json
{
    "LLDPEnabled": true,
    "ETSEnabled": true,
    "DCBXEnabled": true,
    "DCBXSharedConfiguration": {
        "ApplicationProtocol": [ {
            "Priority": 1,
```
"Protocol": "UDP",
"Port": 4791
}
,
{
"Priority": 2,
"Protocol": "TCP",
"Port": 860
}
,
{
"Priority": 2,
"Protocol": "TCP",
"Port": 3260
}
",
"PriorityGroupToPriorityMapping": [
{
"PriorityGroup": 1,
"Priority": 5
},
{
"PriorityGroup": 2,
"Priority": 5
}
],
"BandwidthAllocation": [
{
"PriorityGroup": 1,
"BandwidthPercent": 60
},
{
"PriorityGroup": 2,
"BandwidthPercent": 30
}
],
"PFCEnabled": true
}

Response:
HTTP/1.1 200 OK
((updated resource body))

4.26.1.4 POST
Operation is not allowed on this resource.

4.26.1.5 DELETE
Operation is not allowed on this resource.

4.27 Ethernet Switch Metrics
Properties details available in EthernetSwitchMetrics_v1.xml metadata file.

Note: Current version of RSD doesn't implement Ethernet switch metrics.
### Table 67. EthernetSwitchMetrics Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be Health of EthernetSwitch as a discrete sensor reading.</td>
</tr>
</tbody>
</table>

### 4.27.1 Operations

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

#### 4.27.1.1 GET

**Request:**

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

**Response:**

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

#### 4.27.1.2 PUT

Operation is not allowed on this resource.

#### 4.27.1.3 PATCH

Operation is not allowed on this resource.

#### 4.27.1.4 POST

Operation is not allowed on this resource.

#### 4.27.1.5 DELETE

Operation is not allowed on this resource.

### 4.28 Ethernet Switch Port Collection

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

#### Table 68. EthernetSwitchPortCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetSwitchPort.v1_0_0.EthernetSwitchPort)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.28.1 Operations

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

4.28.1.1 GET

Request:

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

Response:

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

4.28.1.2 PUT

Operation is not allowed on this resource.

4.28.1.3 PATCH

Operation is not allowed on this resource.

4.28.1.4 POST

Request:

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

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

Response:

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

Operation is not allowed on this resource.

### 4.29 Ethernet Switch Port

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

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

**Table 69. EthernetSwitchPort Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PortId</td>
<td>Edm.String</td>
<td>True</td>
<td>Switch port unique identifier.</td>
</tr>
<tr>
<td>LinkType</td>
<td>EthernetSwitchPort.v1_0_0.LinkType</td>
<td>True</td>
<td>Type of port link.</td>
</tr>
<tr>
<td>OperationalState</td>
<td>EthernetSwitchPort.v1_0_0.OperationalState</td>
<td>True</td>
<td>Port link operational state.</td>
</tr>
<tr>
<td>AdministrativeState</td>
<td>EthernetSwitchPort.v1_0_0.AdministrativeState</td>
<td>True</td>
<td>Port link state forced by user.</td>
</tr>
<tr>
<td>LinkSpeedMbps</td>
<td>Edm.Int64</td>
<td>True</td>
<td>Port speed.</td>
</tr>
<tr>
<td>NeighborInfo</td>
<td>EthernetSwitchPort.v1_0_0.NeighborInfo</td>
<td>True</td>
<td>For Upstream port type this property provide information about neighbor switch (and switch port if available) connected to this port</td>
</tr>
<tr>
<td>NeighborMAC</td>
<td>EthernetInterface.v1_0_0.MACAddress</td>
<td>True</td>
<td>For Downstream port type this property provide MAC address of NIC connected to this port</td>
</tr>
<tr>
<td>FrameSize</td>
<td>Edm.Int64</td>
<td>True</td>
<td>MAC frame size in bytes.</td>
</tr>
<tr>
<td>Autosense</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>Indicates if the speed and duplex is automatically configured by the NIC</td>
</tr>
<tr>
<td>FullDuplex</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>Indicates if port is in Full Duplex mode or not.</td>
</tr>
<tr>
<td>MACAddress</td>
<td>EthernetInterface.v1_0_0.MACAddress</td>
<td>True</td>
<td>MAC address of port.</td>
</tr>
<tr>
<td>IPv4Addresses</td>
<td>Collection(IPAddresses.v1_0_0.IPv4Address)</td>
<td>False</td>
<td>Array of following IPv4 address.</td>
</tr>
<tr>
<td>IPv6Addresses</td>
<td>Collection(IPAddresses.v1_0_0.IPv6Address)</td>
<td>False</td>
<td>Array of following IPv6 address.</td>
</tr>
<tr>
<td>PortClass</td>
<td>EthernetSwitchPort.v1_0_0.PortClass</td>
<td>True</td>
<td>Port class.</td>
</tr>
<tr>
<td>PortMode</td>
<td>EthernetSwitchPort.v1_0_0.PortMode</td>
<td>True</td>
<td>Port working mode. The value shall correspond to the port class (especially to the logical port definition).</td>
</tr>
<tr>
<td>PortType</td>
<td>EthernetSwitchPort.v1_0_0.PortType</td>
<td>True</td>
<td>PortType.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>Links</td>
<td>EthernetSwitchPort.v1_0_0.Links</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>VLANs</td>
<td>VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>StaticMACs</td>
<td>EthernetSwitchStaticMACCollection.EthernetSwitchStaticMACCollection</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>PriorityFlowControl</td>
<td>EthernetSwitchPort.v1_0_0.PFC</td>
<td>True</td>
<td>This property shall provide configuration of Priority Flow Control for this switch port.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DCBXState</td>
<td>EthernetSwitchPort.v1_1_0.DCBXStateType</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch port.</td>
</tr>
<tr>
<td>LLDPEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch port.</td>
</tr>
<tr>
<td>Metrics</td>
<td>EthernetSwitchPortMetrics.EthernetSwitchPortMetrics</td>
<td>False</td>
<td>A reference to the Metrics associated with this EthernetSwitchPort.</td>
</tr>
<tr>
<td>NeighborInterface</td>
<td>EthernetInterface.EthernetInterface</td>
<td>True</td>
<td>A reference to the Metrics associated with this EthernetSwitchPort.</td>
</tr>
</tbody>
</table>

**Table 70. OperationalState Attributes**

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>Port link operational state is up.</td>
</tr>
<tr>
<td>Down</td>
<td>Port link operational state is down.</td>
</tr>
</tbody>
</table>

**Table 71. AdministrativeState Attributes**

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>Port link state forced by user is up.</td>
</tr>
<tr>
<td>Down</td>
<td>Port link state forced by user is down.</td>
</tr>
</tbody>
</table>

**Table 72. PortClass Attributes**

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Port class is physical.</td>
</tr>
<tr>
<td>Logical</td>
<td>Port class is logical.</td>
</tr>
<tr>
<td>Reserved</td>
<td>Port class is reserved.</td>
</tr>
</tbody>
</table>

**Table 73. PortMode Attributes**

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkAggregationStatic</td>
<td>Port working mode is Link Aggregation Static.</td>
</tr>
<tr>
<td>LinkAggregationDynamic</td>
<td>Port working mode is Link Aggregation Dynamic.</td>
</tr>
<tr>
<td>Unknown</td>
<td>Port working mode is unknown.</td>
</tr>
</tbody>
</table>

**Table 74. PFC Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch port.</td>
</tr>
<tr>
<td>EnabledPriorities</td>
<td>Collection(Edm.Int64)</td>
<td>True</td>
<td>This property shall provide a list of priorities that should be treated by switch as lossless - for those priorities switch will send PAUSE frame.</td>
</tr>
</tbody>
</table>
Table 75. DCBXStateType Attributes

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled</td>
<td>TCP.</td>
</tr>
<tr>
<td>EnabledIEEE</td>
<td>DCBX messages will be sent in IEEE defined format.</td>
</tr>
<tr>
<td>EnabledCEE</td>
<td>DCBX messages will be sent in CEE defined format.</td>
</tr>
</tbody>
</table>

4.29.1 Operations

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

4.29.1.1 GET

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

Request:

GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1

Content-Type: application/json

Response:

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

Operation is not allowed on this resource.
4.29.1.3 PATCH

Table 76. EthernetSwitchPort Attributes

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

Table 77. EthernetSwitchPort Link attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PrimaryVLAN</td>
<td>VlanNetworkInterface.v1_0_0.VLanNetworkInterface</td>
<td>True</td>
<td>-</td>
</tr>
</tbody>
</table>

Request:

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

}
PSME REST API Definition

Response:

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

Or:

HTTP/1.1 204 No Content

Or (when task is created):

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

4.29.1.4 POST

Operation is not allowed on this resource.

4.29.1.5 DELETE

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

Request:

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

Response:

HTTP/1.1 204 No Content

Or (when a task is created):

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

Properties details available in EthernetSwitchPortMetrics_v1.xml metadata file.

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

<table>
<thead>
<tr>
<th>Table 78. EthernetSwitchPortMetrics Attributes</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>EthernetSwitchPortMetrics.v1_0_0.Metrics</td>
<td>True</td>
</tr>
<tr>
<td>Transmitted</td>
<td>EthernetSwitchPortMetrics.v1_0_0.Metrics</td>
<td>True</td>
</tr>
<tr>
<td>Collisions</td>
<td>Edm.Int64</td>
<td>True</td>
</tr>
</tbody>
</table>

4.30.1 Operations

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

4.30.1.1 GET

Request:

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

Response:

```
{
"@odata.context": "/redfish/v1/$metadata#EthernetSwitchPortMetrics.EthernetSwitchPortMetrics",
"@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics",
"@odata.type": "#EthernetSwitchPortMetrics.v1_0_0.EthernetSwitchPortMetrics",
"Name": "Ethernet Switch Port Metrics",
"Id": "Metrics",
"Received": {
   "Packets": 8,
   "DroppedPackets": 0,
   "ErrorPackets": 0,
   "BroadcastPackets": 0,
   "MulticastPackets": 0,
   "Errors": 0,
   "Bytes": 64
 },
"Transmitted": {
   "Packets": 128,
   "DroppedPackets": 0,
   "ErrorPackets": 0,
   "BroadcastPackets": 0,
   "MulticastPackets": 0,
   "Errors": 0,
   "Bytes": 512
 },
"Collisions": 0,
"Oem": {}
}
```
4.30.1.2 PUT
Operation is not allowed on this resource.

4.30.1.3 PATCH
Operation is not allowed on this resource.

4.30.1.4 POST
Operation is not allowed on this resource.

4.30.1.5 DELETE
Operation is not allowed on this resource.

4.31 Ethernet Switch ACL Collection

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

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

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

Table 79. EthernetSwitchACLCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetSwitchACL.v1_0_0.EthernetSwitchACL)</td>
<td>True</td>
<td>Contains the Members of this collection.</td>
</tr>
</tbody>
</table>

4.31.1 Operations

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

4.31.1.1 GET

Request:

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

Response:

```json
{
   "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs",
   "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs",
   "@odata.type": "#EthernetSwitchACLCollection.EthernetSwitchACLCollection",
   "Name": "Ethernet Switch Access Control List Collection",
   "Description": "Switch Access Control List. Each ACL entry can be bind to any switch port",
   "Members@odata.count": 1,
   "Members": [
      {
         "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
      }
   ]
}
```
4.31.1.2 PUT
Operation is not allowed on this resource.

4.31.1.3 PATCH
Operation is not allowed on this resource.

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

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

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

4.31.1.5 DELETE
Operation is not allowed on this resource.

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

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

### Table 80. EthernetSwitchACL Attributes

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

4.32.1 Operations
The following sections specify the HTTP methods available on this endpoint.
4.32.1.1 GET

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

Response:

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

4.32.1.2 PUT

Operation is not allowed on this resource.

4.32.1.3 PATCH

Operation is not allowed on this resource.
4.32.1.4 POST

POST action is used to execute one of supported actions:

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

### Table 81. Ethernet Switch ACL POST Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>Link object</td>
<td>Yes</td>
<td>Provides URI of switch port that should be bind to current ACL. Port should be located on the same switch as ACL is.</td>
</tr>
</tbody>
</table>

**Request:**

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bind
```

**Content-Type: application/json**

```
{
  "Port": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"
  }
}
```

**Response:**

HTTP/1.1 204 No Content

### 4.32.1.5 DELETE

**Request:**

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

**Response:**

HTTP/1.1 204 No Content

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
```

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

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

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

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.33.1 Operations

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

4.33.1.1 GET

Request:

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

Response:

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

4.33.1.2 PUT

Operation is not allowed on this resource.

4.33.1.3 PATCH

Operation is not allowed on this resource.

4.33.1.4 POST

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

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

Table 84. ConditionType Attributes

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

4.33.1.5 DELETE
Operation is not allowed on this resource.

4.34 Ethernet Switch ACL Rule

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

Detailed info about this resource properties can be obtained from metadata file: EthernetSwitchACLRule_v1.xml
Table 85. EthernetSwitchACLRule Attributes

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

4.34.1 Operations

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

4.34.1.1 GET

Request:

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

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

### 4.34.1.2 PUT

Operation is not allowed on this resource.

### 4.34.1.3 PATCH

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

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

### Table 87. ConditionType Attributes

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

**Request:**

```
PATCH /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
Content-Type: application/json
{
    "RuleId": 1,
    "Action": "Permit",
    "ForwardMirrorInterface": null,
    "MirrorPortRegion": [],
    "MirrorType": null,
    "Condition": {
        "IPSource": {
            "IPv4Address": "192.168.6.0",
```
"Mask": "0.0.0.255"
},
  "IPDestination": null,
  "MACSource": null,
  "MACDestination": null,
  "VLANId": null,
  "L4SourcePort": null,
  "L4DestinationPort": null,
  "L4Protocol": null
}
)

Response:
HTTP/1.1 200 OK
{(updated resource body))

4.34.1.4 POST
Operation is not allowed on this resource.

4.34.1.5 DELETE
Request:
DELETE redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
Response:
HTTP/1.1 204 No Content

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

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

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

Detailed info about this resource properties can be obtained from metadata file: EthernetSwitchACLRuleCollection_v1.xml
### Table 88. EthernetSwitchACLRuleCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetSwitchACLRule.v1_0_0. EthernetSwitchACLRule)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

### 4.35.1 Operations

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

#### 4.35.1.1 GET

Request:

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

Response:

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

#### 4.35.1.2 PUT

Operation is not allowed on this resource.

#### 4.35.1.3 PATCH

Operation is not allowed on this resource.

#### 4.35.1.4 POST

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACAddress</td>
<td>EthernetInterface.v1_0_0.MACAddress</td>
<td>Yes</td>
<td>MAC address that should be forwarded to this port.</td>
</tr>
<tr>
<td>VLANId</td>
<td>Edm.Int32</td>
<td>No</td>
<td>Defines which packets tagged with specific VLAN Id, should be forwarded to this port.</td>
</tr>
</tbody>
</table>

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs
Content-Type: application/json
```
"MACAddress": "00:11:22:33:44:55",
"VLANId": 69
}

Response:

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

4.35.1.5 DELETE

Operation is not allowed on this resource.

4.36 Ethernet Switch Port Static MAC

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

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACAddress</td>
<td>EthernetInterface.v1_0_0.MACAddress</td>
<td>True</td>
<td>MAC address that should be forwarded to this port.</td>
</tr>
<tr>
<td>VLANId</td>
<td>Edm.Int32</td>
<td>True</td>
<td>Defines which packets tagged with specific VLANId should be forwarded to this port.</td>
</tr>
</tbody>
</table>

4.36.1 Operations

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

4.36.1.1 GET

Request:

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

Response:

{"@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticMACs/Members/$entity",
"@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1",
"@odata.type": "#StaticMAC.v1_0_0.StaticMAC",
"Id": "1",
"Name": "StaticMAC",
"Description": "description-as-string",
"MACAddress": "00:11:22:33:44:55",
"VLANId": 112,
"Oem": {}}
4.36.1.2 PUT
Operation is not allowed on this resource.

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

Table 91. StaticMac Attributes
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACaddress</td>
<td>String</td>
<td>Yes</td>
<td>MAC address that should be forwarded to this port</td>
</tr>
<tr>
<td>VLANId</td>
<td>Number, null</td>
<td>No</td>
<td>This if specified defines which packets tagged with specific VLANId should be forwarded to this port</td>
</tr>
</tbody>
</table>

Request:
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
Content-Type: application/json
{
   "VLANId": 697
}

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

4.36.1.4 POST
Operation is not allowed on this resource.

4.36.1.5 DELETE
Request:
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2

Response:
HTTP/1.1 204 No Content

Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
   "@odata.context": "/redfish/v1/$metadata#Task.Task",
   "@odata.id": "/redfish/v1/TaskService/Tasks/1",
   "@odata.type": ">#Task.v1_0_0.Task",
   "Id": "1",
   "Name": "Task 1",
   "TaskState": "New",
   "StartTime": "2017-12-06T04:45:01:00",
   "TaskStatus": "OK",
   "Messages": []
}
4.37 Network Protocol

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

Table 92. ManagerNetworkProtocol Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HostName</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall contain the host name without any domain information.</td>
</tr>
<tr>
<td>FQDN</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall contain the fully qualified domain name for the manager.</td>
</tr>
<tr>
<td>HTTP</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the HTTP protocol settings for the manager. The default value of the Port property should be 80 for compatibility with established client implementations.</td>
</tr>
<tr>
<td>HTTPS</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the HTTPS/SSL protocol settings for this manager. The default value of the Port property should be &quot;443&quot; for compatibility with established client implementations.</td>
</tr>
<tr>
<td>SNMP</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the SNMP protocol settings for this manager. The default value of the Port property should be &quot;161&quot; for compatibility with established client implementations.</td>
</tr>
<tr>
<td>VirtualMedia</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the Virtual Media protocol settings for this manager. The value of the Port property shall contain the TCP port assigned for Virtual Media usage.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Telnet</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the Telnet protocol settings for this manager. The default value of the Port property should be “23” for compatibility with established client implementations.</td>
</tr>
<tr>
<td>SSDP</td>
<td>ManagerNetworkProtocol.v1_0_0.SSDPProtocol</td>
<td>False</td>
<td>This object shall contain information for the SSDP protocol settings for this manager. Simple Service Discovery Protocol (SSDP) is for network discovery of devices supporting the Redfish service. The default value of the Port property should be “1900” for compatibility with established client implementations.</td>
</tr>
<tr>
<td>IPMI</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the IPMI over LAN protocol settings for the manager. The default value of the Port property should be “623” for compatibility with established client implementations.</td>
</tr>
<tr>
<td>SSH</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the SSH protocol settings for the manager. The default value of the Port property should be “22” for compatibility with established client implementations.</td>
</tr>
<tr>
<td>KVMIP</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the KVM-IP (Keyboard, Video, Mouse) protocol settings for the manager.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>DHCP</td>
<td>ManagerNetworkProtocol.v1_0_0.Protocol</td>
<td>False</td>
<td>This object shall contain information for the DHCP protocol settings for the manager.</td>
</tr>
<tr>
<td>NTP</td>
<td>ManagerNetworkProtocol.v1_2_0.NTPProtocol</td>
<td>False</td>
<td>This object shall contain information for the NTP protocol settings for the manager.</td>
</tr>
</tbody>
</table>
### 4.37.1 Operations

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

#### 4.37.1.1 GET

**Request:**

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

**Response:**

```json
{
  "@odata.id": "redfish/v1/Managers/PSME/NetworkProtocol",
  "@odata.type": "#ManagerNetworkProtocol.v1_2_0.ManagerNetworkProtocol",
  "Id": "NetworkProtocol",
  "Name": "Manager Network Protocol",
  "Description": "Manager Network Service Status",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "HostName": "mymanager",
  "FQDN": "mymanager.mydomain.com",
  "HTTP": {
    "ProtocolEnabled": true,
    "Port": 8888
  },
  "HTTPS": {
    "ProtocolEnabled": true,
    "Port": 8443
  },
  "DHCP": {
    "ProtocolEnabled": false
  },
  "IPMI": {
    "ProtocolEnabled": false
  },
  "SSH": {
    "ProtocolEnabled": true,
    "Port": 22
  },
  "SNMP": {
    "ProtocolEnabled": false
  },
  "VirtualMedia": {
    "ProtocolEnabled": false
  },
  "SSDP": {
    "ProtocolEnabled": true,
    "Port": 1900
  }
}
```
"NotifyMulticastIntervalSeconds": 600,
  "NotifyTTL": 5,
  "NotifyIPv6Scope": "Site"
},
"Telnet": {
  "ProtocolEnabled": false
},
"KVMIP": {
  "ProtocolEnabled": false
},
"NTP": {
  "ProtocolEnabled": false
},
"Actions": {
  "Oem": {}
},
"Oem": {}
}

4.37.1.2 PUT
Operation is not allowed on this resource.

4.37.1.3 PATCH
Operation is not allowed on this resource.

4.37.1.4 POST
Operation is not allowed on this resource.

4.37.1.5 DELETE
Operation is not allowed on this resource.

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

Table 93. EthernetInterfaceCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EthernetInterface.EthernetInterface)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

4.38.1.1 GET
Request:

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

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

4.38.1.2 PUT

Operation is not allowed on this resource.

4.38.1.3 PATCH

Operation is not allowed on this resource.

4.38.1.4 POST

Operation is not allowed on this resource.

4.38.1.5 DELETE

Operation is not allowed on this resource.

4.39 Ethernet Interface

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

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

4.40 VLAN Network Interface Collection

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(VLanNetworkInterface.VLanNetworkInterface)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.40.1 Operations

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

Request:

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

Response:

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

4.40.1.2 PUT

Operation is not allowed on this resource.

4.40.1.3 PATCH

Operation is not allowed on this resource.

4.40.1.4 POST

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oem</td>
<td>Object</td>
<td>Yes</td>
<td>OEM defined object &quot;Intel_RackScale&quot; extensions: &quot;Tagged&quot; attribute of type Boolean - Indicates if VLAN is tagged (as defined in IEEE 802.1Q) – required property.</td>
</tr>
<tr>
<td>VLANEnable</td>
<td>Boolean</td>
<td>Yes</td>
<td>Indicates if this VLAN is enabled</td>
</tr>
<tr>
<td>VLANId</td>
<td>Number</td>
<td>Yes</td>
<td>VLAN identifier for this NIC</td>
</tr>
</tbody>
</table>

Request:

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

{  
  "VLANId": 101,  
  "VLANEnable": true,  
  "Oem": {  
    "Intel_RackScale": {  
      "Tagged": true      
    }  
  }  
}
Response:

HTTP/1.1 201 Created
Location: http://<IP>:/<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2

((created resource body))

4.40.1.5 DELETE
Operation is not allowed on this resource.

4.41 VLAN Network Interface
The VLAN Network Interface resource provides detailed information about a VLAN network interface identified by {vlanID}.
Details of this resource are described in metadata file: VLanNetworkInterface_v1.xml, OEM extensions details available in IntelRackScaleOem_v1.xml.

Table 96. VLanNetworkInterface Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLANEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be used to indicate if this VLAN is enabled for this interface.</td>
</tr>
<tr>
<td>VLANId</td>
<td>VLanNetworkInterface.v1_0_0.VLANId</td>
<td>True</td>
<td>The value of this property shall be used to indicate the VLAN identifier for this VLAN.</td>
</tr>
<tr>
<td>Actions</td>
<td>VLanNetworkInterface.v1_1_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

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

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

Response:
Response:

{ "@odata.context": "/redfish/v1/$metadata#VLanNetworkInterface.VLanNetworkInterface", "VLANEnable": true, "VLANId": 123, "Actions": { "#OemActions": { "IntelAction": { "ActionId": "RefreshVLAN" } } } }
4.41.1.2 PUT
Operation is not allowed on this resource.

4.41.1.3 PATCH
Following properties can be updated by PATCH operation:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLANId</td>
<td>Number</td>
<td>No</td>
<td>VLAN identifier for this VLAN.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Note:</strong> Ability to write this property value is implementation specific.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>May not work, or work on only some types of VLANs (for example, only untagged VLANs).</td>
</tr>
</tbody>
</table>

Request:

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

Response:

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

Or:

HTTP/1.1 204 No Content
Or (when task is created):
HTTP/1.1 204 No Content202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
```
4.41.1.4 POST
Operation is not allowed on this resource.

4.41.1.5 DELETE
Request:
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2
Response:
HTTP/1.1 204 No Content

Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor

  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": ":#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}

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

Table 97. EventService Attributes

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

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

4.42.1.1 GET

Request:

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

Response:

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

4.42.1.2 PUT

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

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

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

4.43  Event Subscription Collection
The event subscription collection is a collection of event destination resources. Table 98 shows the EventDestinationCollection attributes.

Table 98. EventDestinationCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(EventDestination.EventDestination)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

4.43.1.1 GET
Request:

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

Response:

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

4.43.1.2 PUT
The PUT operation is not allowed on the event subscription collection of resources.
4.43.1.3 PATCH

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

4.43.1.4 POST

Request:

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

Response:

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

4.43.1.5 DELETE

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

4.44 Event Subscription

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

Table 99. EventDestination Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination</td>
<td>Edm.String</td>
<td>False</td>
<td>This property shall contain a URI to the destination where the events will be sent.</td>
</tr>
<tr>
<td>EventTypes</td>
<td>Collection(Event.EventType)</td>
<td>False</td>
<td>This property shall contain the types of events that shall be sent to the destination.</td>
</tr>
<tr>
<td>Context</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain a client supplied context that will remain with the connection through the connections lifetime.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Protocol</td>
<td>EventDestination.v1_0_0.EventDestinationProtocol</td>
<td>False</td>
<td>This property shall contain the protocol type that the event will use for sending the event to the destination. A value of Redfish* shall be used to indicate that the event type shall adhere to that defined in the Redfish specification.</td>
</tr>
<tr>
<td>HttpHeaders</td>
<td>Collection(EventDestination.v1_0_0.HttpHeaderProperty)</td>
<td>False</td>
<td>This property shall contain an object consisting of the names and values of HTTP header to be included with every event POST to the Event Destination. This property shall be null on a GET.</td>
</tr>
<tr>
<td>MessageIds</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>The value of this property shall specify an array of MessageIds that are the only allowable values for the MessageId property within an EventRecord sent to the subscriber. Events with MessageIds not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events with any MessageId to the subscriber.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>OriginResources</td>
<td>Collection(Resource.ItemOrCollection)</td>
<td>True</td>
<td>The value of this property shall specify an array of Resources, Resource Collections, or Referenceable Members that are the only allowable values for the OriginOfCondition property within an EventRecord sent to the subscriber. Events originating from Resources, Resource Collections, or Referenceable Members not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events originating from any Resource, Resource Collection, or Referenceable Member to the subscriber.</td>
</tr>
<tr>
<td>Actions</td>
<td>EventDestination.v1_2_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>SubscriptionType</td>
<td>EventDestination.v1_3_0.SubscriptionType</td>
<td>True</td>
<td>The value of this property shall indicate the type of subscription for events. If this property is not present, the SubscriptionType shall be assumed to be RedfishEvent.</td>
</tr>
</tbody>
</table>

### Table 100. EventType Attributes

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StatusChange</td>
<td>The status of this resource has changed.</td>
</tr>
<tr>
<td>ResourceUpdated</td>
<td>The value of this resource has been updated.</td>
</tr>
<tr>
<td>ResourceAdded</td>
<td>A resource has been added.</td>
</tr>
<tr>
<td>ResourceRemoved</td>
<td>A resource has been removed.</td>
</tr>
<tr>
<td>Alert</td>
<td>A condition exists which requires attention.</td>
</tr>
</tbody>
</table>

### 4.44.1 Metadata

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

### 4.44.2 Operations

The following sections specify the HTTP methods available on this endpoint.
4.44.2.1 GET
Request:
GET /redfish/v1/EventService/Subscriptions/1
Content-Type: application/json
Response:
{
  "@odata.context": "/redfish/v1/$metadata#EventDestination.EventDestination",
  "@odata.id": "/redfish/v1/EventService/Subscriptions/1",
  "@odata.type": "#EventDestination.v1_3_0.EventDestination",
  "Id": "1",
  "Name": "EventSubscription 1",
  "Description": "description-as-string",
  "Destination": "http://www.dnsname.com/Destination1",
  "EventTypes": [
    "Alert"
  ],
  "Context": "ABCDEFGHJLKJ",
  "Protocol": "Redfish",
  "SubscriptionType": "RedfishEvent",
  "Actions": {
    "Oem": {}
  }
}

4.44.2.2 PUT
The operation is not allowed on the event subscription resource.

4.44.2.3 PATCH
The operation is not allowed on the event subscription resource.

4.44.2.4 POST
The operation is not allowed on the event subscription resource.

4.44.2.5 DELETE
Request:
DELETE redfish/v1/EventService/Subscriptions/1
Response:
HTTP/1.1 204 No Content
Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor

4.45  Event Array

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

Table 101.  Event Attributes

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

4.45.1  Metadata

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

4.45.2  Operations

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

4.45.2.1 GET

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

4.45.2.2 PUT

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

4.45.2.3 PATCH

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

4.45.2.4 POST

Request:

```
POST http://192.168.1.1/Destination1
Content-Type: application/json
```
"@odata.context": "/redfish/v1/$metadata#EventService/Members/Events/1",
"@odata.id": "/redfish/v1/EventService/Events/1",
"@odata.type": "#Event.v1_2_0.Event",
"Id": "1",
"Name": "Event Array",
"Description": "Events",
"Events": [
{
"EventType": "ResourceRemoved",
"EventId": "ABC132489713478812346",
"Severity": "Ok",
"EventTimestamp": "2015-02-23T14:44:44+00:00",
"Message": "The Blade was removed",
"MessageId": "Base.1.0.Success",
"MessageArgs": [],
  "OriginOfCondition": {
   "@odata.id": "/redfish/v1/Systems/System1"
  },
  "Context": "HotSwap event"
}
]

Response:
HTTP/1.1 204 No Content

4.45.2.5 DELETE

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

4.46 Fabric Collection

Properties details available in FabricCollection_v1.xml metadata file.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Fabric.Fabric)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.46.1 Operations

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

4.46.1.1 GET

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

Response:

{"@odata.context": "/redfish/v1/$metadata#FabricCollection.FabricCollection",
"@odata.id": "/redfish/v1/Fabrics",
"@odata.type": ":#FabricCollection.FabricCollection"}
"Description": "Fabric Collection",
"Members": [ 
  { 
    "@odata.id": "/redfish/v1/Fabrics/PCIe"
  },
  { 
    "@odata.id": "/redfish/v1/Fabrics/FPGA-oF"
  }
],
"Members@odata.count": 2,
"Name": "Fabric Collection"
}

4.46.1.2 PUT
Operation is not allowed on this resource.

4.46.1.3 PATCH
Operation is not allowed on this resource.

4.46.1.4 POST
Operation is not allowed on this resource.

4.46.1.5 DELETE
Operation is not allowed on this resource.

4.47 Fabric
Properties details available in the Fabric_v1.xml metadata file.

Table 103. Fabric Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FabricType</td>
<td>Protocol.Protocol</td>
<td>True</td>
<td>The value of this property shall contain the type of fabric being represented by this simple fabric.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>MaxZones</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the maximum number of zones the switch can currently configure. This value can change based on changes in the logical or physical configuration of the system.</td>
</tr>
<tr>
<td>Links</td>
<td>Fabric.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
</tbody>
</table>
## Attribute | Type | Nullable | Description
--- | --- | --- | ---
Actions | Fabric.v1_0_0.Actions | False | The Actions property shall contain the available actions for this resource.
Zones | ZoneCollection.ZoneCollection | False | The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Zone type.
Endpoints | EndpointCollection.EndpointCollection | False | The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Endpoint type.
Switches | SwitchCollection.SwitchCollection | False | The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Switch type.

### 4.47.1 Intel® RSD OEM Extensions

**Table 104. Fabric Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FabricType</td>
<td>Intel.Oem.Protocol</td>
<td>True</td>
<td>Additional specification for OEM FabricType. Shall be specified if the Redfish FabricType is OEM (refer to Table 2).</td>
</tr>
</tbody>
</table>

**Table 105. FabricLinks Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagedBy</td>
<td>Collection(Manager.Manager)</td>
<td>True</td>
<td>Collection of managers managing the service.</td>
</tr>
</tbody>
</table>

### 4.47.2 Operations

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

#### 4.47.2.1 GET

**Request:**

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

**Response:**

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

### 4.47.2.1.1 PUT
Operation is not allowed on this resource.

### 4.47.2.1.2 PATCH
Operation is not allowed on this resource.

### 4.47.2.1.3 POST
Operation is not allowed on this resource.

### 4.47.2.1.4 DELETE
Operation is not allowed on this resource.

#### 4.48 Switch Collection
Properties details available in `SwitchCollection_v1.xml` metadata file.
Table 106. SwitchCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Switch.Switch)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.48.1 Operations

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

4.48.1.1 GET

Request:

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

Response:

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

4.48.1.2 PUT

Operation is not allowed on this resource.

4.48.1.3 PATCH

Operation is not allowed on this resource.

4.48.1.4 POST

Operation is not allowed on this resource.

4.48.1.5 DELETE

Operation is not allowed on this resource.

4.49 Switch

Properties details available in Switch_v1.xml metadata file.
### Table 107. Switch Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SwitchType</td>
<td>Protocol.Protocol</td>
<td>True</td>
<td>The value of this property shall contain the type of switch being represented by this simple switch.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the organization responsible for producing the switch. This organization might be the entity from whom the switch is purchased, but this is not necessarily true.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall indicate the model information as provided by the manufacturer of this switch.</td>
</tr>
<tr>
<td>SKU</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the stock-keeping unit number for this switch.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a manufacturer-allocated number used to identify the switch.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the switch.</td>
</tr>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be an identifying string used to track the drive for inventory purposes.</td>
</tr>
<tr>
<td>DomainID</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall have a scope of uniqueness within the fabric of which the switch is a member.</td>
</tr>
<tr>
<td>IsManaged</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether this switch is in a managed or unmanaged state.</td>
</tr>
<tr>
<td>TotalSwitchWidth</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the number of physical transport lanes, phys, or other physical transport links that this switch contains. For PCIe*, this shall be lane count.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IndicatorLED</td>
<td>Resource.IndicatorLED</td>
<td>True</td>
<td>This value of this property shall contain the indicator light state for the indicator light associated with this switch.</td>
</tr>
<tr>
<td>PowerState</td>
<td>Resource.PowerState</td>
<td>True</td>
<td>The value of this property shall contain the power state of the switch.</td>
</tr>
<tr>
<td>Links</td>
<td>Switch.v1_0_0.Links</td>
<td>False</td>
<td>The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.</td>
</tr>
<tr>
<td>Actions</td>
<td>Switch.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Ports</td>
<td>PortCollection.PortCollection</td>
<td>False</td>
<td>The value of this property shall be a reference to the resources that this switch contains and shall reference a resource of type Port.</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Collection(Reundancy.Redundancy)</td>
<td>True</td>
<td>Redundancy information for the switches.</td>
</tr>
<tr>
<td>LogServices</td>
<td>LogServiceCollection.LogServiceCollection</td>
<td>True</td>
<td>The value of this property shall be a link to a collection of type LogServiceCollection</td>
</tr>
<tr>
<td>Location</td>
<td>Resource.Location</td>
<td>False</td>
<td>-</td>
</tr>
</tbody>
</table>

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

#### 4.49.1.1 GET

**Request:**

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

**Response:**

```json
{
    "@odata.context": "/redfish/v1/$metadata#Switch.Switch",
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1",
    "#Switch.v1_0_0.Switch": {
        "Id": "1",
        "Name": "PCIe Switch",
        "Description": "PCIe Switch",
        "SwitchType": "PCIe",
        "Status": {
            "State": "Enabled",
            "Health": "OK",
            "HealthRollUp": "OK"
        }
    }
}
```
4.49.1.2 PUT
Operation is not allowed on this resource.

4.49.1.3 PATCH
Operation is not allowed on this resource.

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

Response:
HTTP/1.1 204 No Content
4.49.1.5 DELETE
Operation is not allowed on this resource.

4.50 Collection
Properties details available in PortCollection_v1.xml metadata file.

Table 108. PortCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Port.Port)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

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

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

4.50.1.2 PUT
Operation is not allowed on this resource.

4.50.1.3 PATCH
Operation is not allowed on this resource.

4.50.1.4 POST
Operation is not allowed on this resource.

4.50.1.5 DELETE
Operation is not allowed on this resource.
## 4.51 Port


### Table 109. Port Attributes

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

### Table 110. Port Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIeConnectionId</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>An array of references to the PCIe connection identifiers (for example, cable ID).</td>
</tr>
<tr>
<td>Metrics</td>
<td>PortMetrics.PortMetrics</td>
<td>False</td>
<td>A reference to the Metrics associated with this Port.</td>
</tr>
</tbody>
</table>
4.51.1.1 Operations

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

4.51.1.2 GET

4.51.1.2.1 Upstream Port

Request:

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

Response:

```json
{}
```
4.51.1.2.2 Downstream Port

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1",
  "@odata.type": "#Port.v1_1_0.Port",
  "Id": "Down1",
  "Name": "PCIe Downstream Port 1",
  "Description": "PCIe Downstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "PCIe",
  "PortType": "DownstreamPort",
  "CurrentSpeedGbps": 32,
  "Width": 4,
  "MaxSpeedGbps": 64,
  "Actions": {
    "#Port.Reset": {
      "target": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Actions/PCIePort.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceOff",
        "ForceRestart",
        "ForceOn"
      ]
    },
    "Oem": {}
  },
  "Links": {
    "AssociatedEndpoints": [],
    "ConnectedSwitches": [],
    "ConnectedSwitchPorts": []
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Port",
      "PCIeConnectionId": [ "XYZ1234567890" ],
      "Metrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Metrics"
      }
    }
  }
}
```
4.51.1.3 PUT
Operation is not allowed on this resource.

4.51.1.4 PATCH
Operation is not allowed on this resource.

4.51.1.5 POST
Request:
PUT /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Actions/PCIePort.Reset
Content-Type: application/json
{
    "ResetType": "ForceRestart"
}
Response:
HTTP/1.1 204 No Content

4.52 DELETE
Operation is not allowed on this resource.

4.52 Port Metrics
Properties details available in the PortMetrics_v1.xml metadata file.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be Port health as a discrete sensor reading.</td>
</tr>
<tr>
<td>Actions</td>
<td>PortMetrics.v1_0_0.Actions</td>
<td>True</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

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

4.52.1.1 GET
Request:
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics
Content-Type: application/json
Response:
{
    "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Port/Metrics/$entity",
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics",
    "@odata.type": "#PortMetrics.v1_0_0.PortMetrics",
    "Name": "Fabric Port Metrics for Up1",
"}
4.52.1.2 PUT
Operation is not allowed on this resource.

4.52.1.3 PATCH
Operation is not allowed on this resource.

4.52.1.4 POST
Operation is not allowed on this resource.

4.52.1.5 DELETE
Operation is not allowed on this resource.

4.53 Zone Collection
Properties details available in ZoneCollection_v1.xml metadata file.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Zone.Zone)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

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

Response:
```json
{
  "@odata.context": "/redfish/v1/$metadata#ZoneCollection.ZoneCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones",
  "@odata.type": ":ZoneCollection.ZoneCollection",
  "Name": "PCIe Zone Collection",
  "Description": "PCIe Zone Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
    }
  ]
}
```
4.53.1.2 PUT
Operation is not allowed on this resource.

4.53.1.3 PATCH
Operation is not allowed on this resource.

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

Request:

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

Response:

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

Or (when task is created):

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

4.53.1.5 DELETE
Operation is not allowed on this resource.

4.53.1.6 OPTIONS
This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.
4.54  Zone
Properties details available in Zone_v1.xml metadata file.

Table 112.  Zone Attributes

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

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

4.54.1.1 GET

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

Response:

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

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

### 4.54.1.3 PATCH

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

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

The following properties can be updated by the PATCH operation:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endpoints</td>
<td>Collection(Endpoint.Endpoint)</td>
<td>True</td>
<td>The value of this property shall be a reference to the resources that this zone is associated with and shall reference a resource of type Endpoint.</td>
</tr>
</tbody>
</table>

**Request:**

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

{   "Links": {       "Endpoints": [       {           "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"       },       {           "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"       ]   } }
```

**Response:**

HTTP/1.1 204 No Content
Or:

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

### 4.54.1.4 POST

The POST operation is not allowed on the zones resource.

### 4.54.1.5 DELETE

**Request:**

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

**Response:**

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

Or (when a task is created):

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

### 4.54.1.6 OPTIONS

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

**Request:**

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

**Response:**

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

Properties details available in EndpointCollection_v1.xml metadata file.

### Table 114. EndpointCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Endpoint.Endpoint)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.55.1 Operations

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

#### 4.55.1.1 GET

Request:

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

Response:

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

#### 4.55.1.2 PUT

Operation is not allowed on this resource.

#### 4.55.1.3 PATCH

Operation is not allowed on this resource.

#### 4.55.1.4 POST

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

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

## Table 116. Identifier Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DurableName</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the world wide unique identifier for the resource. The string shall be in the format described by the value of the Identifier.DurableNameFormat property.</td>
</tr>
<tr>
<td>DurableNameFormat</td>
<td>Resource.v1_1_0.DurableNameFormat</td>
<td>True</td>
<td>This property shall represent the format of the DurableName property.</td>
</tr>
</tbody>
</table>
### Table 117. ConnectedEntity Attributes

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

### Table 118. IPTransportDetails Attributes

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

### Table 119. DurableNameFormat Attributes

<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAA</td>
<td>This durable name shall be a hexadecimal representation of the Name Address Authority structure as defined in Fiber Channel Framing and Signaling - 4 (refer to Table 2).</td>
</tr>
</tbody>
</table>
Table 120. EntityRole Attributes

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

4.55.1.4.1 PNC Initiator Endpoint

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

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

**Request:**

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

```
{
   "EndpointProtocol": "PCIe",
   "ConnectedEntities": [
   {
      "EntityRole": "Initiator",
      "EntityLink": null
   },
   "Links": {
      "Ports": [
      {
         "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
   }
}
```

**Response:**

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

4.55.1.4.2 FPGA over PCIe* Target Endpoint

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

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

Response:

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

4.55.1.4.3 FPGA-oF Initiator Endpoint

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

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

Request:

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

Response:

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

4.55.1.4.4 FPGA-oF Target Endpoint

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

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

Response:

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

4.55.1.5 DELETE
Operation is not allowed on this resource.

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

Request:

OPTIONS redfish/v1/Fabrics/PCIe/Endpoints

Response:

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

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

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

Table 121. Endpoint Attributes

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

### 4.56.1 Intel® RSD OEM extensions:

#### Table 122. Endpoint Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentication</td>
<td>Intel.Oem.EndpointAuthentication</td>
<td>True</td>
<td>This property provides information about the required credentials for endpoint authentication.</td>
</tr>
</tbody>
</table>

### 4.56.2 Operations

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

4.56.2.1.1 NVMe* Drive Over PCIe* Target Endpoint

Request:

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

Response:

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

Request:

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

Response:

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

Request:

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

Response:

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

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

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

Request:

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

Response:

```json
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Initiator",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Initiator",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Initiator Endpoint",
  "ConnectedEntities": [
    {
      "EntityLink": null,
      "EntityRole": "Initiator"
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Links": {
    "Ports": [],
    "Endpoints": [],
    "Oem": {
      "Intel RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  }
}
```
4.56.2.2 PUT
Operation is not allowed on this resource.

4.56.2.3 PATCH
Operation is not allowed on this resource.

4.56.2.4 POST
Operation is not allowed on this resource.

4.56.2.5 DELETE
Request:
DELETE redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1

Response:
HTTP/1.1 204 No Content

Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor

{  
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": ">#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}

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

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

Response:

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

4.57 PCIe* Device

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

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

Table 123. PCIeDevice Attributes

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

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

### 4.57.1.1 GET

**Request:**

GET /redfish/v1/Chassis/1/PCIeDevices/Device1

Content-Type: application/json

**Response:**

```json
{
    "@odata.context": "/redfish/v1/$metadata#PCIeDevice.PCIeDevice",
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1",
    "@odata.type": "#PCIeDevice.v1_2_0.PCIeDevice",
    "Id": "Device1",
    "Name": "NVMe SSD Drive",
    "Description": "Simple NVMe Drive",
    "AssetTag": "free form asset tag",
    "Manufacturer": "Intel",
    "Model": "Model Name",
    "SKU": ",",
    "SerialNumber": "SN123456",
    "PartNumber": ",",
    "DeviceType": "SingleFunction",
    "FirmwareVersion": "XYZ1234",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "Links": {
        "Chassis": [
            {
                "@odata.id": "/redfish/v1/Chassis/1"
            }
        ],
        "PCIeFunctions": [
            {
                "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1"
            }
        ]
}
```
4.57.1.2 PUT
Operation is not allowed on this resource.

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AssetTag</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be an identifying string used to track the PCIe device for inventory purposes.</td>
</tr>
</tbody>
</table>

Request:

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

Response:

HTTP/1.1 204 No Content

Or:

HTTP/1.1 200 OK
 {
(updated_resource_body)}

4.57.1.4 POST
Operation is not allowed on this resource.

4.57.1.5 DELETE
Operation is not allowed on this resource.

4.58 PCIe* Device Function
Properties details available in the PCIeFunction_v1.xml metadata file. This resource is required for the PNC service.
Table 125. PCIeFunction Attributes

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

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

4.58.1.1 GET
Request:
GET /redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1
Content-Type: application/json
Response:

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

### 4.58.1.2 PUT
Operation is not allowed on this resource.

### 4.58.1.3 PATCH
Operation is not allowed on this resource.

### 4.58.1.4 POST
Operation is not allowed on this resource.
4.58.1.5 DELETE
Operation is not allowed on this resource.

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

Properties details available in TaskService_v1.xml metadata file.

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

4.59.1 Operations
The following sections specify the HTTP methods available on this endpoint.
4.59.1.1 GET

Request:

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

Response:

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

4.59.1.2 PUT

Operation is not allowed on this resource.

4.59.1.3 PATCH

Operation is not allowed on this resource.

4.59.1.4 POST

Operation is not allowed on this resource.

4.59.1.5 DELETE

Operation is not allowed on this resource.

4.60 Task Collection

This resource represent collection of resources of the Task type.


Table 127. TaskCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Task.Task)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.60.1 Operations
The following sections specify the HTTP methods available on this endpoint.

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

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

4.60.1.2 PUT
Operation is not allowed on this resource.

4.60.1.3 PATCH
Operation is not allowed on this resource.

4.60.1.4 POST
Operation is not allowed on this resource.

4.60.1.5 DELETE
Operation is not allowed on this resource.

4.61 Task
This resource contains information about a specific Task scheduled by or being executed by a Redfish* service's Task Service.
Details of this resource are described in the Task_v1.xml metadata file.
Table 128. Task Attributes

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

4.61.1 Operations

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

4.61.1.1 GET

Request:

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

Response:

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

4.61.1.2 PUT
Operation is not allowed on this resource.

4.61.1.3 PATCH
Operation is not allowed on this resource.

4.61.1.4 POST
Operation is not allowed on this resource.

4.61.1.5 DELETE
Request:
DELETE redfish/v1/TaskService/Tasks/1
Response:
HTTP/1.1 204 No Content
Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "/Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
4.62 Account Service

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

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

Table 129 shows the AccountService attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>ServiceEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether this service is enabled. If this is set to false, the AccountService is disabled. This means no users can be created, deleted or modified. Any service attempting to access the Account Service, like the Session Service, will fail accessing. New sessions cannot be started with the service disabled (though established sessions may still continue operating). Note: This does not affect Basic AUTH connections.</td>
</tr>
<tr>
<td>AuthFailureLoggingThreshold</td>
<td>Edm.Int64</td>
<td>False</td>
<td>This property shall reference the threshold for when an authorization failure is logged. This represents a modulo function value, thus the failure shall log every occurrence.</td>
</tr>
<tr>
<td>MinPasswordLength</td>
<td>Edm.Int64</td>
<td>False</td>
<td>This property shall reference the minimum password length that the implementation will allow a password to be set to.</td>
</tr>
<tr>
<td>MaxPasswordLength</td>
<td>Edm.Int64</td>
<td>False</td>
<td>This property shall reference the maximum password length that the implementation will allow a password to be set to.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AccountLockoutThreshold</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall reference the threshold of failed login attempts at which point the user's account is locked. If set to 0, no lockout shall ever occur.</td>
</tr>
<tr>
<td>AccountLockoutDuration</td>
<td>Edm.Int64</td>
<td>True</td>
<td>This property shall reference the period of time in seconds that an account is locked after the number of failed login attempts reaches the threshold referenced by AccountLockoutThreshold, within the window of time referenced by AccountLockoutCounterResetAfter. The value shall be greater than or equal to the value of AccountLockoutResetAfter. If set to 0, no lockout shall occur.</td>
</tr>
<tr>
<td>AccountLockoutCounterResetAfter</td>
<td>Edm.Int64</td>
<td>False</td>
<td>This property shall reference the threshold of time in seconds from the last failed login attempt at which point the AccountLockoutThreshold counter (that counts number of failed login attempts) is reset back to zero (at which point AccountLockoutThreshold failures would be required before the account is locked). This value shall be less than or equal to AccountLockoutDuration. The threshold counter also resets to zero after each successful login.</td>
</tr>
<tr>
<td>Accounts</td>
<td>ManagerAccountCollection.ManagerAccountCollection</td>
<td>False</td>
<td>This property shall contain the link to a collection of type ManagerAccountCollection.</td>
</tr>
<tr>
<td>Roles</td>
<td>RoleCollection.RoleCollection</td>
<td>False</td>
<td>This property shall contain the link to a collection of type RoleCollection.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PrivilegeMap</td>
<td>PrivilegeRegistry.PrivilegeRegistry</td>
<td>False</td>
<td>The value of this property shall be a link to a resource of type PrivilegeMapping that defines the privileges a user context needs in order to perform a requested operation on a URI associated with this service.</td>
</tr>
<tr>
<td>Actions</td>
<td>AccountService.v1_2_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>LocalAccountAuth</td>
<td>AccountService.v1_3_0.LocalAccountAuth</td>
<td>False</td>
<td>This property shall govern how the service uses the Accounts collection within this AccountService as part of authentication. Details about each of the modes are found in the description of the enum values.</td>
</tr>
<tr>
<td>LDAP</td>
<td>AccountService.v1_3_0.ExternalAccountProvider</td>
<td>False</td>
<td>This property shall contain the first LDAP external account provider this AccountService supports. If the AccountService supports 1 or more LDAP services as an external account provider this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.</td>
</tr>
<tr>
<td>ActiveDirectory</td>
<td>AccountService.v1_3_0.ExternalAccountProvider</td>
<td>False</td>
<td>This property shall contain the first ActiveDirectory external account provider this AccountService supports. If the AccountService supports one or more ActiveDirectory services as an external account provider, this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.</td>
</tr>
<tr>
<td>AdditionalExternalAccountProviders</td>
<td>ExternalAccountProviderCollection.ExternalAccountProviderCollection</td>
<td>False</td>
<td>This property shall contain an additional external account providers this AccountService is using.</td>
</tr>
</tbody>
</table>
4.62.1 Operations
The following sections specify the HTTP methods available on this endpoint.

4.62.1.1 GET
Request:

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

Response:

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

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

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

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

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

4.63 Manager Account Collection
The Manager Account Collection contains a collection of ManagerAccount resource instances.
Table 130 shows the ManagerAccountCollection attributes.
### Table 130. ManagerAccountCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(ManagerAccount.ManagerAccount)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

#### 4.63.1 Operations

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

#### 4.63.1.1 GET

**Request:**

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

**Response:**

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

#### 4.63.1.2 PUT

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

#### 4.63.1.3 PATCH

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

#### 4.63.1.4 POST

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

#### 4.63.1.5 DELETE

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

#### 4.64 Manager Account

The Manager Account resource defines the user accounts.  
*Table 131* shows the ManagerAccount attributes.
### Table 131. ManagerAccount Attributes

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

### 4.64.1 Operations

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

#### 4.64.1.1 GET
Request:

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

Response:

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

4.64.1.2 PUT

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

4.64.1.3 PATCH

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

4.64.1.4 POST

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

4.64.1.5 DELETE

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

4.65 Role Collection

The Role Collection contains a collection of Role resource instances.

Table 136 shows the **RoleCollection** attributes.

**Table 132. RoleCollection Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Role.Role)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

4.65.1 Operations

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

Request:

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

Response:

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

**4.65.1.2 PUT**

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

**4.65.1.3 PATCH**

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

**4.65.1.4 POST**

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

**4.65.1.5 DELETE**

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

### 4.66 Role

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

Table 133 shows the Role attributes.

**Table 133. Role Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IsPredefined</td>
<td>Edm.Boolean</td>
<td>False</td>
<td>The value of this property shall indicate if the role is a predefined role.</td>
</tr>
</tbody>
</table>
### 4.66.1 Operations

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

#### 4.66.1.1 GET

**Request:**

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

**Response:**

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

---

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AssignedPrivileges</td>
<td>Collection(Privileges.PrivilegeType)</td>
<td>False</td>
<td>The value of this property shall be the Redfish privileges that the role includes. For pre-defined roles, this property shall be <code>readOnly</code>. For custom roles some implementations may not allow writing this property.</td>
</tr>
<tr>
<td>OemPrivileges</td>
<td>Collection(Edm.String)</td>
<td>False</td>
<td>The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be <code>readOnly</code>. For custom roles some implementations may not allow writing this property.</td>
</tr>
<tr>
<td>Actions</td>
<td>Role.v1_1_0.Actions</td>
<td>False</td>
<td>The <code>Actions</code> property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>RoleId</td>
<td>Edm.String</td>
<td>False</td>
<td>This property shall contain the string name of the Role. This property shall contain the same value as the <code>Id</code> property.</td>
</tr>
</tbody>
</table>
"OemPrivileges": []
}

### 4.66.1.2 PUT

The operation is not allowed on the Role resource.

### 4.66.1.3 PATCH

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

Table 134 shows the RoleCollection attributes.

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

**Request:**

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

```json
{
    "AssignedPrivileges": [
        "Login",
        "ConfigureManager",
        "ConfigureUsers",
        "ConfigureSelf",
        "ConfigureComponents"
    ],
    "OemPrivileges": []
}
```

**Response:**

HTTP/1.1 200 OK
((updated resource body))
HTTP/1.1 204 No Content
Or (when task is created):
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
    "@odata.context": "/redfish/v1/$metadata#Task.Task",
    "@odata.id": "/redfish/v1/TaskService/Tasks/1",
    "@odata.type": ":Task.v1_0_0.Task",
    "Id": "1",
    "Name": "Task 1",
    "TaskState": " New",
    "StartTime": "2016-09-01T04:45+01:00",
    "TaskStatus": "OK",
    "Messages": []
}

4.66.1.4 POST
The operation is not allowed on the Role resource.

4.66.1.5 DELETE
The operation is not allowed on the Role resource.

4.67 Session Service
The Session Service resource represents the properties for the service itself and has links to the actual list of sessions.
Table 135 shows the SessionService attributes.

Table 135. SessionService Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>ServiceEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether this service is enabled. This means new sessions cannot be created and old sessions cannot be deleted, though established sessions may continue operating.</td>
</tr>
</tbody>
</table>
### Attribute

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

### 4.67.1 Operations

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

#### 4.67.1.1 GET

**Request:**

GET /redfish/v1/SessionService

Content-Type: application/json

**Response:**

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

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

### 4.67.1.3 PATCH

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

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

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

Request:

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

Response:

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

Or:

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

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

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

4.68 Session Collection
The Session Collection contains a collection of Session resource instances. 

Table 137 shows the SessionCollection attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Session.Session)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

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

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

Response:

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

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

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

4.68.1.4 POST

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

Table 138. Session Attributes

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

Request:

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

Response:

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

4.68.1.5 DELETE

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

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

Table 139 shows the Session attributes.

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

4.69.1 Operations

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

4.69.1.1 GET

Request:

GET /redfish/v1/SessionService/Sessions/Session1

Content-Type: application/json

Response:

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

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

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

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

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

4.69.1.5 DELETE
Request:
DELETE redfish/v1/SessionService/Sessions/Session1
Response:
HTTP/1.1 204 No Content
Or (when a task is created):
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45:01:00",
  "TaskStatus": "OK",
  "Messages": []
}

4.70 Registries (MessageRegistryFileCollection)
This resource represent collection of Schema File locator resources.
Properties details available in MessageRegistryFileCollection_v1.xml metadata file.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(MessageRegistryFile.MessageRegistryFile)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.70.1 Operations

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

4.70.1.1 GET

Request:

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

Response:

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

4.70.1.2 PUT

Operation is not allowed on this resource.

4.70.1.3 PATCH

Operation is not allowed on this resource.

4.70.1.4 POST

Operation is not allowed on this resource.

4.70.1.5 DELETE

Operation is not allowed on this resource.

4.71 Message Registry File

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

Properties details available in MessageRegistryFile_v1.xml metadata file.
Table 141. MessageRegistryFile Attributes

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

4.71.1 Operations

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

4.71.1.1 GET

4.71.1.1.1 Redfish Base Registry

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
    "@odata.id": "/redfish/v1/Registries/Base",
    "@odata.type": "<<MessageRegistryFile.v1_1_0.MessageRegistryFile",
    "Id": "Base",
    "Name": "Base Message Registry File",
    "Description": "Base Message Registry File locations",
    "Languages": [
        "en"
    ],
    "Registry": "Base.1.0.0",
    "Location": [
        {
            "Language": "en",
            "Uri": null,
            "ArchiveUri": null,
            "PublicationUri": "https://www.dmtf.org/sites/default/files/standards/documents/DSP8011_1.0.0a.json",
            "ArchiveFile": null
        }
    ]
}
```
4.71.1.2 Intel RackScale Registry

Request:
GET /redfish/v1/Registries/Intel_RackScale
Content-Type: application/json

Response:
{
  "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
  "@odata.id": "/redfish/v1/Registries/Intel_RackScale",
  "@odata.type": "#MessageRegistryFile.v1_1_0.MessageRegistryFile",
  "Id": "Intel_RackScale.1.0.0",
  "Name": "Intel RackScale Message Registry File",
  "Description": "Message Registry File for Intel RackScale Message Registry",
  "Languages": [
    "en"
  ],
  "Registry": "Intel_RackScale.1.0.0",
  "Location": [
    {
      "Language": "en",
      "Uri": "/registries/Intel_RackScale.1.0.0.json",
      "ArchiveUri": null,
      "PublicationUri": null,
      "ArchiveFile": null
    }
  ],
  "Oem": {}
}

4.71.2 PUT
Operation is not allowed on this resource.

4.71.3 PATCH
Operation is not allowed on this resource.

4.71.4 POST
Operation is not allowed on this resource.

4.71.5 DELETE
Operation is not allowed on this resource.

4.72 Telemetry Service
Property details are available in in Intel_RackScaleTelemetryService_v1.xml metadata file.
### Table 142. TelemetryService Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>MaxReports</td>
<td>Edm.Int64</td>
<td>True</td>
<td>If present, the value shall specify the maximum number of metric collectors that can be supported by this service.</td>
</tr>
<tr>
<td>MinCollectionInterval</td>
<td>Edm.String</td>
<td>True</td>
<td>If present, the value shall be an ISO 8601 duration specifying the minimum time between collections.</td>
</tr>
<tr>
<td>SupportedCollectionFunctions</td>
<td>Collection(Intel_RackScale.TelemetryService.v1_0_0.CollectionFunction)</td>
<td>True</td>
<td>If present, the value shall define the function to apply over the collection duration.</td>
</tr>
<tr>
<td>Actions</td>
<td>Intel_RackScale.TelemetryService.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions object contains the available custom actions on this resource.</td>
</tr>
<tr>
<td>MetricDefinitions</td>
<td>Intel_RackScale.MetricDefinitionCollection.MetricDefinitionCollection</td>
<td>True</td>
<td>The entries of shall be resources of type MetricDefinitionCollection.</td>
</tr>
<tr>
<td>Triggers</td>
<td>Intel_RackScale.TriggersCollection.TriggersCollection</td>
<td>True</td>
<td>The value shall be a link to a resource of type TriggersCollection.</td>
</tr>
</tbody>
</table>

### 4.72.1 Operations

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

#### 4.72.1.1 GET

**Request:**

GET /redfish/v1/Oem/Intel_RackScale/TelemetryService

**Content-Type: application/json**

**Response:**

```json
{
   "@odata.context": "/redfish/v1/$metadata#Intel_RackScale.TelemetryService.TelemetryService",
   "@odata.type": "#Intel_RackScale.TelemetryService.v1_0_0.TelemetryService",
   "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService",
   "Id": "TelemetryService",
   "Status": {
      "State": "OK",
      "HealthCode": 0,
      "HealthMessage": "Healthy"
   }
}
```
"Name": "Telemetry Service",
"Status": {
    "State": "Enabled",
    "Health": "OK"
},
"MetricDefinitions": {
    "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions"
}

4.72.1.2 PUT
Operation is not allowed on this resource.

4.72.1.3 PATCH
Operation is not allowed on this resource.

4.72.1.4 POST
Operation is not allowed on this resource.

4.72.1.5 DELETE
Operation is not allowed on this resource.

4.73 Metric Definition Collection
Properties details available in Intel_RackScaleMetricDefinitionCollection_v1.xml metadata file.

Table 143. MetricDefinitionCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Intel_RackScale.MetricDe</td>
<td>True</td>
<td>Contains the members</td>
</tr>
<tr>
<td></td>
<td>finition.MetricDefinition)</td>
<td></td>
<td>of this collection.</td>
</tr>
</tbody>
</table>

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

4.73.1.1 GET
Request:
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions
Content-Type: application/json

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

4.73.1.2 PUT
Operation is not allowed on this resource.

4.73.1.3 PATCH
Operation is not allowed on this resource.

4.73.1.4 POST
Operation is not allowed on this resource.

4.73.1.5 DELETE
Operation is not allowed on this resource.

4.74 Metric Definition
Properties details are available in Intel_RackScaleMetricDefinition_v1.xml metadata file. Metric Definition describes either Metric associated with physical sensor (for example, exposed by BMC) or metric associated with specific resource (for example, statistics of Ethernet Switch Port). This resource is optional for metrics and required for sensors.

Table 144: MetricDefinition Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation</td>
<td>Intel_RackScale.MetricDefinition.v1_0_0.ImplmentationType</td>
<td>True</td>
<td>The value of this property shall designate how the sensor is implemented.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Calculable</td>
<td>Intel_RackScale.MetricDefinition.v1_0_0.Calculable</td>
<td>True</td>
<td>The value shall define the calculability of this metric.</td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td>The value shall be consistent with the case sensitive Unified Code for Units of Measure as defined at <a href="http://unitsofmeasure.org/ucum.html">http://unitsofmeasure.org/ucum.html</a>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Note:</strong> The units of measure are not covered in UCUM.</td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>Edm.String</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>MetricType</td>
<td>Intel_RackScale.MetricDefinition.v1_0_0.MetricType</td>
<td>True</td>
<td>The value of this property shall designate the type of metric provided.</td>
</tr>
<tr>
<td>Wildcards</td>
<td>Collection(Intel_RackScale.MetricDefinition.v1_0_0.Wildcard)</td>
<td>True</td>
<td>The property shall contain an array of wildcards and their replacements strings, which are to applied to the AppliesTo or Calculates array.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MetricProperties</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>Each value may contain one or more <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#wildcard-names">Wildcard names</a> enclosed in curly braces. <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#wildcard-value">Wildcard value</a> entries shall be substituted for each <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#wildcard-name">Wildcard name</a> found. If two or more wildcard names are found, the same <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#wildcard-index">Wildcard index</a> is used for each in one substitution pass. After substituting the <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#wildcard-values">Wildcard values</a> entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding <a href="https">MetricDefinition</a>.</td>
</tr>
<tr>
<td>CalculationParameters</td>
<td>Collection(Intel_RackScale.MetricDefinition.v1_0_0.CalculationParamsType)</td>
<td>True</td>
<td>The value of each list element shall be a reference to the resource property which is characterized by this definition.</td>
</tr>
<tr>
<td>PhysicalContext</td>
<td>PhysicalContext.v1_0_0.PhysicalContext</td>
<td>True</td>
<td>The value of this property shall designate the physical context of the sensor.</td>
</tr>
<tr>
<td>SensorType</td>
<td>LogEntry.v1_0_0SensorType</td>
<td>True</td>
<td>The value of this property shall describe the type of sensor.</td>
</tr>
<tr>
<td>SensingInterval</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of the property shall specify the time interval between metric or sensor reading updates. The value shall be in the format specified in ISO 8601.</td>
</tr>
<tr>
<td>DiscreteValues</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>The values of the property shall specify the possible values of the discrete metric. This property shall have values when the <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#metric-type">MetricType</a> property has the value 'Discrete'.</td>
</tr>
<tr>
<td>Precision</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of the property shall specify the number of significant digits in the metric reading described by the <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#metric-properties">MetricProperties</a> field. A value shall not be present if the <a href="https://docs.microsoft.com/en-us/azure/active-directory-b2b/services/what-is-b2b#metric-type">MetricType</a> is Discrete.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of the property shall be the percent error +/- of the measured vs. actual values. A value shall not be present if MetricType is Discrete.</td>
</tr>
<tr>
<td>Calibration</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value shall be the value which has been added to the Reading value to make the reading more accurate. The value shall have the units specified in the property Units. A value shall not be present if MetricType is Discrete.</td>
</tr>
<tr>
<td>TimeStampAccuracy</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of property shall specify the expected + or - variability of the timestamp. The format of the property shall conformant to ISO 8601 duration format.</td>
</tr>
<tr>
<td>MinReadingRange</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>If present, the value shall indicate the lowest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is Discrete.</td>
</tr>
<tr>
<td>MaxReadingRange</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>If present, the value shall indicate the highest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is Discrete.</td>
</tr>
<tr>
<td>CalculationAlgorithm</td>
<td>Intel_RackScale.MetricDefinition.v1_0_0.CalculationAlgorithmEnum</td>
<td>True</td>
<td>The value of this property shall specify the calculation which is performed on a source metric to obtain the metric being defined.</td>
</tr>
<tr>
<td>CalculationTimeInterval</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of the property shall specify the time interval over which a calculated metric algorithm is performed. The value shall be in the format specified in ISO 8601.</td>
</tr>
</tbody>
</table>
Table 145. MetricDefinition attributes extending the WIP model

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CalculationPrecision</td>
<td>Edm.Double</td>
<td>True</td>
<td>The value of the property shall specify the precision of a calculated metric (calculated metric shall be aligned to a value specified by this property)</td>
</tr>
<tr>
<td>DiscreteMetricType</td>
<td>Intel.Oem.MetricValueType</td>
<td>True</td>
<td>The values of the property shall specify type of the discrete metric. It specifies whether single or multiple values defined in DiscreteValues array are valid for specific metric, metric property shall be defined accordingly. This property shall be defined only when the MetricType property has the value 'Discrete'.</td>
</tr>
</tbody>
</table>

### 4.74.1 Operations

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

#### 4.74.1.1 GET (Metric Definition for Discrete Sensor)

**Request:**

GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth

Content-Type: application/json

**Response:**

```
{
    "@odata.context": "/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
    "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth",
    "@odata.type": ":#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
    "Id": "CPUHealth1",
    "Name": "CPU1 IPMI Health Sensor",
    "MetricType": "Discrete",
    "SensorType": "PhysicalSensor",
    "Implementation": "PhysicalSensor",
    "SensingInterval": "PT1S",
    "PhysicalContext": "CPU",
    "DiscreteValues": [
        "OK",
        "Internal Error",
        "Thermal Trip",
        "FRB1 BIST Failure",
        "FRB2 Hang in Post",
        "FRB3 Startup Failure",
        "Config Error",
        "SMBIOS Uncorrectable Error",
        "Processor Presence Detected"
    ]
}
```
4.74.1.2 GET (Metric Definition for Numeric Sensor)

Request:
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUTemperature

Response:
{
   "@odata.context": "'/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
   "@odata.id": "'/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUTemperature",
   "@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
   "Description": "CPU1 Temperature MetricDefinition",
   "Name": "Temperature MetricDefinition",
   "Id": "TEMP1",
   "SensorType": "Temperature",
   "Implementation": "Physical",
   "SensingInterval": "PT1S",
   "MetricType": "Numeric",
   "PhysicalContext": "CPU",
   "Units": "Cel",
   "MinReadingRange": 0,
   "MaxReadingRange": 80,
   "Precision": 1,
   "Calibration": 2,
   "MetricProperties": [
      "'/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureCelsius"
   ]
}

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

Request:
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUBandwidth

Response:

"@odata.context": "/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
"@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUBandwidth",
"@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
"Id": "CPUBandwidth",
"Name": "CPU Bandwidth type",
"MetricType": "Numeric",
"Implementation": "DigitalMeter",
"PhysicalContext": "CPU",
"SensingInterval": "PT1S",
"Units": "%",
"MinReadingRange": 0,
"MaxReadingRange": 100,
"MetricProperties": [
    "/redfish/v1/Systems/System1/Metrics#/ProcessorBandwidthPercent"
],
"Oem": {
    "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.MetricDefinition",
        "CalculationPrecision": 5
    }
}

4.74.1.4 PUT
Operation is not allowed on this resource.

4.74.1.5 PATCH
Operation is not allowed on this resource.

4.74.1.6 POST
Operation is not allowed on this resource.

4.74.1.7 DELETE
Operation is not allowed on this resource.

4.75 Metric Report Definition Collection
Property details are available in MetricReportDefinitionCollection_v1.xml metadata file.

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
</table>

4.75.1 Operations
The following sections specify the HTTP methods available on this endpoint.
4.75.1.1 GET
Request:
GET /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions
Content-Type: application/json

Response:
{
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions",
  "Name": "MetricReportDefinition Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPUMetrics"
    }
  ]
}

4.75.1.2 PUT
Operation is not allowed on this resource.

4.75.1.3 PATCH
Operation is not allowed on this resource.

4.75.1.4 POST
Request:
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions
Content-Type: application/json

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

Response:
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/1
((created resource body))

4.75.15 DELETE
Operation is not allowed on this resource.

4.76 Metric Report Definition

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>Schedule.v1_1_0.Schedule</td>
<td>True</td>
<td>If present, metric values are collected starting at each scheduled interval and for the time specified by Duration. No more than Schedule.MaxOccurrences values shall be collected for this metric. If not present, the corresponding metric values shall be collected when the related metric report is retrieved.</td>
</tr>
<tr>
<td>MetricReportType</td>
<td>MetricReportDefinition.v1_0_0.MetricReportType</td>
<td>True</td>
<td>The value shall specify the collection type for the corresponding metric values.</td>
</tr>
<tr>
<td>CollectionTimeScope</td>
<td>MetricReportDefinition.v1_0_0.CollectionTimeScope</td>
<td>True</td>
<td>The value shall specify the time scope for collecting the corresponding metric values.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ReportActions</td>
<td>Collection(MetricReportDefinition.v1_0_0.ReportActionEnum)</td>
<td>False</td>
<td>The value of this property shall specify the action to perform when the metric report is generated. When a metric report is generated, place the metric information in the resource specified by the MetricReport property. The Volatile property will specify the behavior if MetricReport resource already exists.</td>
</tr>
<tr>
<td>Volatile</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>If the Volatile property is true, the value in the Metric report is overwritten with the latest value. If the Volatile property is “false”, metric values are appended to the metric value collection. Then metric value collection shall have no more than the value of the Schedule.MaxOccurrences property. A management application may establish a time series by retrieving the metric value collection and sorting them according to their TimeStamp.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Wildcards</td>
<td>Collection(MetricReportDefinition.v1_0_0.Wildcard)</td>
<td>True</td>
<td>The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array property.</td>
</tr>
</tbody>
</table>
4.76.1 Operations

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

4.76.1.1 GET

Request:

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

Response:

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

4.76.1.2 PUT
Operation is not allowed on this resource.

4.76.1.3 PATCH
In current PSME implementation PATCH operation is not implemented.

4.76.1.4 POST
Operation is not allowed on this resource.

4.76.1.5 DELETE
Request:
DELETE
redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricReportDefinitions/CPUEventPublication

Response:
HTTP/1.1 204 No Content

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


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

Table 148. MetricReport Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetricValues</td>
<td>Collection(Intel_RackScale.MetricReport_v1_0_0.MetricValue)</td>
<td>True</td>
<td>The values shall be metric values for this MetricReport.</td>
</tr>
<tr>
<td>MetricReportDefinition</td>
<td>Intel_RackScale.MetricReportDefinition_v1_0_0.MetricReportDefinition</td>
<td>False</td>
<td>The value shall be reference to the definition for this metric.</td>
</tr>
</tbody>
</table>

4.77.1 Operations

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

4.77.1.1 GET

Operation is not allowed on this resource.

4.77.1.2 PUT

Operation is not allowed on this resource.

4.77.1.3 PATCH

Operation is not allowed on this resource.

4.77.1.4 POST

Operation is not allowed on this resource.

4.77.1.5 DELETE

Operation is not allowed on this resource.

4.78 Triggers Collection

Properties details available in Intel_RackScaleTriggersCollection_v1.xml metadata file.

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

Table 149. TriggersCollection Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(Intel_RackScale.Triggers.Triggers)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.78.1 Operations

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

4.78.1.1 GET

Request:

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

Response:

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

4.78.1.2 PUT

Operation is not allowed on this resource.

4.78.1.3 PATCH

Operation is not allowed on this resource.

4.78.1.4 POST (Numeric Trigger)

**Note:** The MetricDefinition property associated with the given Metric within POST request on Trigger resource.
can be **null**, which means the Intel® RSD software has to complete this property upon creation.

**Request:**

```
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Content-Type: application/json
{
   "Name": "Triggers for Processor Temperature Malfunction",
   "Status": {
      "State": "Enabled",
      "Health": "OK"
   },
   "MetricType": "Numeric",
   "TriggerActions": [
      "Transmit"
   ],
   "NumericTriggers": [
      {
         "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
         "DirectionOfCrossing": "Increasing",
         "Value": "72",
         "DwellTimeMsec": "1"
      },
      {
         "Name": "CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD",
         "DirectionOfCrossing": "Decreasing",
         "Value": "12",
         "DwellTimeMsec": "4"
      }
   ],
   "MetricProperties": [
      "/redfish/v1/Systems/System1/Processors/CPU0/Oem/Intel_RackScale/Metrics#/TemperatureCelsius",
      "/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/TemperatureCelsius"
   ]
}
```

**Response:**

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/1
{(created_resource_body)}
```

### 4.78.1.5 POST (Discrete Trigger)

**Note:** MetricDefinition property associated with given Metric within POST request on Trigger resource can be **null**, which means RSD SW has to complete this property upon creation.

**Request:**

```
POST /redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers
Content-Type: application/json
{
   "Name": "Trigger for Processor Machine Check Error",
   "Description": "Triggers for System1 Processor Machine Check Error",
   "Status": {
      "State": "Enabled",
      "Health": "OK"
   }
}
```
"MetricType": "Discrete",
"TriggerActions": [ 
  "Transmit"
],
"DiscreteTriggerCondition": "Specified",
"DiscreteTriggers": [ 
  
  
  ],
"MetricProperties": [ 

"/redfish/v1/Systems/System1/Processors/CPU0/Oem/Intel_RackScale/Metrics#/CPUHealth",
"/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth"
] } }

Response:

HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/2
((created resource body))

4.78.1.6 DELETE

Operation is not allowed on this resource.

4.79 Triggers

Properties details available in Intel_RackScaleTriggers_v1.xml metadata file.

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

Table 150. Triggers Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetricType</td>
<td>Intel_RackScale.Triggers.v1_0_0.MetricTypeEnum</td>
<td>True</td>
<td>The value of this property shall specify the type of trigger.</td>
</tr>
<tr>
<td>TriggerActions</td>
<td>Collection(Intel_RackScale.Triggers.v1_0_0.TriggerActionEnum)</td>
<td>False</td>
<td>The value of this property shall specify the action to perform when the MetricTrigger occurs.</td>
</tr>
<tr>
<td>NumericTriggers</td>
<td>Collection(Intel_RackScale.Triggers.v1_0_0.NumericTrigger)</td>
<td>False</td>
<td>This property shall contain list of triggers to which a sensor reading will be compared.</td>
</tr>
<tr>
<td>DiscreteTriggerCondition</td>
<td>Intel_RackScale.Triggers.v1_0_0.DiscreteTriggerConditionEnum</td>
<td>True</td>
<td>The value of this property shall specify the type of trigger.</td>
</tr>
</tbody>
</table>
### Attribute | Type | Nullable | Description
--- | --- | --- | ---
DiscreteTriggers | Collection(Intel_RackScale.Triggers.v1_0_0.DiscreteTrigger) | False | This property shall contains a list of value to which a sensor reading will be compared. This property shall be present when the DiscreteTriggerCondition property has a value of “Specified”. |
Status | Resource.Status | False | - |
Wildcards | Collection(Intel_RackScale.Triggers.v1_0_0.Wildcard) | True | The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array. |
MetricProperties | Collection(Edm.String) | True | Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding MetricDefinition. |

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

#### 4.79.1.1 GET (Numeric Trigger)

**Request:**

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
```

**Content-Type:** application/json

**Response:**

```json
{
  "@odata.context": "/redfish/v1/$metadata#Intel_RackScale.Trigger.Trigger",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorTemperature",
  "@odata.type": ">#Intel_RackScale.Trigger.v1_0_0.Trigger",
  "Id": "ProcessorTemperature",
  "Name": "Triggers for Processor Temperature Malfunction",
}
```
4.79.1.2 GET (Discrete Trigger)

Request:

GET
/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError

Content-Type: application/json

Response:

```json

[{
  "@odata.context": "/redfish/v1/$metadata#/Intel_RackScale.Trigger.Trigger",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError",
  "@odata.type": "+Intel_RackScale.Trigger.v1_0_0.Trigger",
  "Id": "ProcessorMachineCheckError",
  "Name": "CPU_MACHINE_CHECK_ERROR",
  "Description": "Triggers for System1/CPUs Processor Machine Check Error",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  }
}]
```
4.79.1.3 PUT
Operation is not allowed on this resource.

4.79.1.4 PATCH (Numeric Trigger)
Request:

```
PATCH /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
{
   "PollingIntervalMilliSeconds": "8000",
   "NumericTriggers": [
      {
         "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
         "DirectionOfCrossing": "Increasing",
         "Value": "72"
      }
   ],
   "Links": {
      "Metrics": [
         {
            "MetricValue": {
               "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
            },
            "MetricDefinition": {
               "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/TemperatureCelsius"
            }
         }
      ]
   }
}
```
4.79.1.5 PATCH (Discrete Trigger)

Request:

PATCH
/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
{
  "PollingIntervalMilliSeconds": "6000",
  "DiscreteTriggers": [
    "Machine Check Exception",
    "Correctable Machine Check Error"
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/Oem/Intel_RackScale/Metrics#/CPUHealth"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/CPUHealth"
        }
      }
    ]
  }
}

Response:

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

4.79.1.6 POST

Operation is not allowed on this resource.

4.79.1.7 DELETE

Request:

DELETE
/redfish/v1/Oem/Intel_RackScale/TelemetryService/Triggers/ProcessorMachineCheckError

Response:

HTTP/1.1 204 No Content

Or (when a task is created):

HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": ":Task.v1_0_0.Task",
  "Id": "1",
}
Power

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

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

Table 151. Power Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerControl</td>
<td>Collection(Power.v1_0_0.PowerControl)</td>
<td>True</td>
<td>These properties shall be the definition for power control (power reading and limiting) for a Redfish* implementation.</td>
</tr>
<tr>
<td>Voltages</td>
<td>Collection(Power.v1_0_0.Voltage)</td>
<td>True</td>
<td>These properties shall be the definition for voltage sensors for a Redfish* implementation.</td>
</tr>
<tr>
<td>PowerSupplies</td>
<td>Collection(Power.v1_0_0.PowerSupply)</td>
<td>True</td>
<td>This object shall contain details of the power supplies associated with this system or device.</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Collection(Redundancy.Redundancy)</td>
<td>True</td>
<td>Redundancy information for the power subsystem of this system or device.</td>
</tr>
<tr>
<td>Actions</td>
<td>Power.v1_3_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

Table 152. PowerControl Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the Voltage sensor.</td>
</tr>
<tr>
<td>PowerConsumedWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the actual power being consumed (in watts) by the chassis.</td>
</tr>
<tr>
<td>PowerRequestedWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the amount of power (in watts) that the chassis resource is currently requesting be budgeted to it for future use.</td>
</tr>
</tbody>
</table>
### Power Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerAvailableWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the amount of power capacity (in watts) not already allocated and shall equal PowerCapacityWatts - PowerAllocatedWatts.</td>
</tr>
<tr>
<td>PowerCapacityWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the total power capacity that is available for allocation to the chassis resources.</td>
</tr>
<tr>
<td>PowerAllocatedWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall represent the total power currently allocated to chassis resources.</td>
</tr>
<tr>
<td>PowerMetrics</td>
<td>Power.v1_0_0.PowerMetric</td>
<td>False</td>
<td>This object shall contain power metrics for power readings (interval, min/max/ave power consumption) for the chassis.</td>
</tr>
<tr>
<td>PowerLimit</td>
<td>Power.v1_0_0.PowerLimit</td>
<td>False</td>
<td>This object shall contain power limit status and configuration information for this chassis.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>RelatedItem</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is being limited.</td>
</tr>
</tbody>
</table>

### Voltage Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the Voltage sensor.</td>
</tr>
<tr>
<td>SensorNumber</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a numerical identifier for this voltage sensor that is unique within this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ReadingVolts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the present reading of the voltage sensor's reading.</td>
</tr>
<tr>
<td>UpperThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is above the normal range but is not critical. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>NonCritical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UpperThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is above the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>Critical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UpperThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is above the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>Fatal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LowerThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is below the normal range but is not critical. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>NonCritical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LowerThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is below the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>Critical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LowerThreshold</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the present reading is below the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>Fatal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------</td>
<td>----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MinReadingRange</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the lowest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>MaxReadingRange</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the highest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.</td>
</tr>
<tr>
<td>PhysicalContext</td>
<td>PhysicalContext.PhysicalContext</td>
<td>False</td>
<td>The value of this property shall be a description of the affected device or region within the chassis to which this voltage measurement applies.</td>
</tr>
<tr>
<td>RelatedItem</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the areas or devices to which this voltage measurement applies.</td>
</tr>
</tbody>
</table>

**Table 154. PowerSupply Attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain a descriptive name for the associated power supply.</td>
</tr>
<tr>
<td>PowerSupplyType</td>
<td>Power.v1_0_0.PowerSupplyType</td>
<td>True</td>
<td>This property shall contain the input power type (AC or DC) of the associated power supply.</td>
</tr>
<tr>
<td>LineInputVoltageType</td>
<td>Power.v1_0_0.LineInputVoltageType</td>
<td>True</td>
<td>This property shall contain the type of input line voltage supported by the associated power supply.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LineInputVoltage</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain the value in Volts of the line input voltage (measured or configured for) that the power supply has been configured to operate with or is currently receiving.</td>
</tr>
<tr>
<td>PowerCapacityWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain the maximum amount of power, in Watts, that the associated power supply is rated to deliver.</td>
</tr>
<tr>
<td>LastPowerOutputWatts</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>This property shall contain the average power output, measured, in watts, of the associated power supply.</td>
</tr>
<tr>
<td>Model</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the model information as defined by the manufacturer for the associated power supply.</td>
</tr>
<tr>
<td>FirmwareVersion</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the firmware version as defined by the manufacturer for the associated power supply.</td>
</tr>
<tr>
<td>SerialNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the serial number as defined by the manufacturer for the associated power supply.</td>
</tr>
<tr>
<td>PartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the part number as defined by the manufacturer for the associated power supply.</td>
</tr>
<tr>
<td>SparePartNumber</td>
<td>Edm.String</td>
<td>True</td>
<td>This property shall contain the spare or replacement part number as defined by the manufacturer for the associated power supply.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>RelatedItem</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is being limited.</td>
</tr>
</tbody>
</table>
### Table 155. Redundancy Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redundancy</td>
<td>Collection(Reundancy.Redundancy)</td>
<td>True</td>
<td>The values of the properties in this array shall be used to show redundancy for power supplies and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.</td>
</tr>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>False</td>
<td>This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.</td>
</tr>
<tr>
<td>Mode</td>
<td>Redundancy.v1_0_0.RedundancyMode</td>
<td>True</td>
<td>The value of this property shall contain the information about the redundancy mode of this subsystem.</td>
</tr>
<tr>
<td>MaxNumSupported</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the maximum number of members allowed in the redundancy group.</td>
</tr>
<tr>
<td>MinNumNeeded</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>RedundancySet</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.</td>
</tr>
</tbody>
</table>
4.80.1 Operations

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

4.80.1.1 GET (Rack Level Power Metrics)

Request:

```
GET /redfish/v1/Chassis/Rack1/Power
Content-Type: application/json
```

Response:

```
{
   "@odata.context": "/redfish/v1/$metadata#Power.Power",
   "@odata.id": "/redfish/v1/Chassis/Rack1/Power",
   "@odata.type": "#Power.v1_5_0.Power",
   "Id": "Power",
   "Name": "Power",
   "PowerControl": [
      {
         "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/PowerControl/0",
         "MemberId": "0",
         "Name": "System Power Control",
         "PowerConsumedWatts": 8000,
         "PowerRequestedWatts": 8500,
         "PowerAvailableWatts": 8500,
         "PowerCapacityWatts": 10000,
         "PowerAllocatedWatts": 8500,
         "PowerMetrics": {
            "IntervalInMin": 30,
            "MinConsumedWatts": 7500,
            "MaxConsumedWatts": 8200,
            "AverageConsumedWatts": 8000
         },
         "PowerLimit": {
            "LimitInWatts": 9000,
            "LimitException": "LogEventOnly",
            "CorrectionInMs": 42
         },
         "RelatedItem": [
            {
               "@odata.id": "/redfish/v1/Chassis/Drawer1"
            },
            {
               "@odata.id": "/redfish/v1/Systems/System1"
            }
         ]
      }
   ]
}
```
"Status": {
  "State": "Enabled",
  "Health": "OK",
  "HealthRollup": "OK"
},
"Oem": {}},
"Voltages": [
  {
    "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/Voltages/0",
    "MemberId": "0",
    "Name": "VRM1 Voltage",
    "SensorNumber": 11,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingVolts": 12,
    "UpperThresholdNonCritical": 12.5,
    "UpperThresholdCritical": 13,
    "UpperThresholdFatal": 15,
    "LowerThresholdNonCritical": 11.5,
    "LowerThresholdCritical": 11,
    "LowerThresholdFatal": 10,
    "MinReadingRange": 0,
    "MaxReadingRange": 20,
    "PhysicalContext": "VoltageRegulator",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Systems/System1"
      }
    ]
  }
],
"PowerSupplies": [
  {
    "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/PowerSupplies/0",
    "MemberId": "0",
    "Name": "Power Supply Bay 1",
    "Status": {
      "State": "Enabled",
      "Health": "Warning"
    },
    "Oem": {}},
    "PowerSupplyType": "DC",
    "LineInputVoltageType": "DCNeg48V",
    "LineInputVoltage": -48,
    "PowerCapacityWatts": 400,
    "LastPowerOutputWatts": 192,
    "Model": "499253-B21",
    "Manufacturer": "ManufacturerName",
    "FirmwareVersion": "1.00",
    "SerialNumber": "1z0000001",
    "PartNumber": "1z0000001A3a",
    "SparePartNumber": "0000001A3a",
    "InputRanges": [
      {
        "InputType": "DC",
        "MinimumVoltage": -47,
        "MaximumVoltage": -49,
      }
    ]
  }
]
"OutputWattage": 400,
"MinimumFrequencyHz": 50,
"MaximumFrequencyHz": 60,
"Oem": {}
]
],
"IndicatorLED": "Off",
"RelatedItem": [

{ "@odata.id": "/redfish/v1/Chassis/Rack1"
}
],
"Redundancy": [

{ "@odata.id": "/redfish/v1/Chassis/1/Power#/Redundancy/0"
}
]
],
"Redundancy": [

{ "@odata.id": "/redfish/v1/Chassis/Rack1/Power#/Redundancy/0",
"MemberId": "0",
"Name": "PowerSupply Redundancy Group 1",
"Mode": "Failover",
"MaxNumSupported": 2,
"MinNumNeeded": 1,
"RedundancySet": [

{ "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/0"
}
],
"Status": {

"State": "Offline",
"Health": "OK"
}
],
"Oem": {}
]

4.80.1.2 GET (SLED Level Power Metrics)

Request:

GET /redfish/v1/Chassis/Sled1/Power
Content-Type: application/json

Response:

{

"@odata.context": "/redfish/v1/$metadata#Power.Power",
"@odata.id": "/redfish/v1/Chassis/Sled1/Power",
"@odata.type": "#Power.v1_5_0.Power",
"Id": "Power",
"Name": "Power",
"PowerControl": [

{ "@odata.id": "/redfish/v1/Chassis/Sled1/Power#/PowerControl/0",
"MemberId": "0",
"Name": "System Power Control",
}]

}
"PowerConsumedWatts": 8000,
"RelatedItem": [
  {
    "@odata.id": "/redfish/v1/Chassis/Sled1"
  },
  {
    "@odata.id": "/redfish/v1/Systems/System1"
  }
],
"Status": {
  "State": "Enabled",
  "Health": "OK",
  "HealthRollup": "OK"
},
"Oem": {}]

4.80.1.3 PUT
Operation is not allowed on this resource.

4.80.1.4 PATCH
Operation is not allowed on this resource.

4.80.1.5 POST
Operation is not allowed on this resource.

4.80.1.6 DELETE
Operation is not allowed on this resource.

4.81 Thermal
Thermal metrics resource. It represents the properties for Temperature and Cooling.

Detailed info about this resource properties can be obtained from metadata file: Thermal_v1.xml. OEM extensions details available in IntelRackScaleOem_v1.xml.

Table 156. Thermal Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Temperatures</td>
<td>Collection(Thermal.v1_0_0.Temperature)</td>
<td>True</td>
<td>These properties shall be the definition for temperature sensors for a Redfish implementation.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fans</td>
<td>Collection(Thermal.v1_0_0.Fan)</td>
<td>True</td>
<td>These properties shall be the definition for fans for a Redfish* implementation.</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Collection(Redundancy.Redundancy)</td>
<td>True</td>
<td>The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.</td>
</tr>
<tr>
<td>Actions</td>
<td>Thermal.v1_3_0.ThermalActions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

### Table 157. Temperature Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the temperature sensor.</td>
</tr>
<tr>
<td>SensorNumber</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be a numerical identifier for this temperature sensor that is unique within this resource.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>ReadingCelsius</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall be the current value of the temperature sensor's reading.</td>
</tr>
<tr>
<td>UpperThresholdNon Critical</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is above the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>UpperThresholdCritical</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is above the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>UpperThresholdFatal</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is above the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>LowerThresholdNonCritical</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is below the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>LowerThresholdCritical</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is below the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>LowerThresholdFatal</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the ReadingCelsius is below the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
<tr>
<td>MinReadingRangeTemp</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the lowest possible value for ReadingCelsius. The units shall be the same units as the related ReadingCelsius property.</td>
</tr>
</tbody>
</table>
### Table 158. Fan Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxReadingRangeTemp</td>
<td>Edm.Decimal</td>
<td>True</td>
<td>The value of this property shall indicate the highest possible value for ReadReadingCelsiusingCelsius. The units shall be the same units as the related ReadReadingCelsius property.</td>
</tr>
<tr>
<td>PhysicalContext</td>
<td>PhysicalContext.PhysicalContext</td>
<td>False</td>
<td>The value of this property shall be a description of the affected device or region within the chassis to which this temperature measurement applies.</td>
</tr>
<tr>
<td>RelatedItem</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall the array of IDs of areas or devices to which this temperature measurement applies.</td>
</tr>
<tr>
<td>PhysicalContext</td>
<td>PhysicalContext.PhysicalContext</td>
<td>False</td>
<td>The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>Reading</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the current value of the fan sensor's reading.</td>
</tr>
<tr>
<td>UpperThresholdNonCritical</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is above the normal range, but is not critical. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>UpperThresholdCritical</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is above the normal range, but is not yet fatal. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>UpperThresholdFat al</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is above the normal range, and is fatal. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>LowerThresholdNon Critical</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is below the normal range, but is not critical. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>LowerThresholdCri tical</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is below the normal range, but is not yet fatal. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>LowerThresholdFat al</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the reading is below the normal range, and is fatal. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>MinReadingRange</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the lowest possible value for reading. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>MaxReadingRange</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall indicate the highest possible value for reading. The units shall be the same units as the related Reading property.</td>
</tr>
<tr>
<td>RelatedItem</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that are being serviced by this fan.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Collection(Reundancy.Redundancy)</td>
<td>True</td>
<td>The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.</td>
</tr>
</tbody>
</table>

Table 159. Redundancy Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>False</td>
<td>This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.</td>
</tr>
<tr>
<td>Mode</td>
<td>Redundancy.v1_0_0.RedundancyMode</td>
<td>True</td>
<td>The value of this property shall contain the information about the redundancy mode of this subsystem.</td>
</tr>
<tr>
<td>MaxNumSupported</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the maximum number of members allowed in the redundancy group.</td>
</tr>
<tr>
<td>MinNumNeeded</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>RedundancySet</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.</td>
</tr>
<tr>
<td>RedundancyEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether the redundancy is enabled.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Actions</td>
<td>Redundancy.v1_2_0.Actions</td>
<td>False</td>
<td>The <code>Actions</code> property shall contain the available actions for this resource.</td>
</tr>
<tr>
<td>Name</td>
<td>Edm.String</td>
<td>False</td>
<td>This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <code>Name</code>.</td>
</tr>
<tr>
<td>Mode</td>
<td>Redundancy.v1_0_0.RedundancyMode</td>
<td>True</td>
<td>The value of this property shall contain the information about the redundancy mode of this subsystem.</td>
</tr>
<tr>
<td>MaxNumSupported</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the maximum number of members allowed in the redundancy group.</td>
</tr>
<tr>
<td>MinNumNeeded</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.</td>
</tr>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>False</td>
<td>-</td>
</tr>
<tr>
<td>RedundancySet</td>
<td>Collection(Resource.Item)</td>
<td>True</td>
<td>The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.</td>
</tr>
<tr>
<td>RedundancyEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether the redundancy is enabled.</td>
</tr>
<tr>
<td>Actions</td>
<td>Redundancy.v1_2_0.Actions</td>
<td>false</td>
<td>The <code>Actions</code> property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

### 4.81.1 Operations

The following sections specify the HTTP methods available on this endpoint.
4.81.1.1 GET (Rack level Thermal Metrics)

Request:
GET /redfish/v1/Chassis/Rack1/Thermal
Content-Type: application/json

Response:

```json
{
    "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
    "@odata.id": "/redfish/v1/Chassis/DRower1/Thermal",
    "@odata.type": "#Thermal.v1_4_0.Thermal",
    "Id": "Thermal",
    "Name": "Thermal",
    "Description": "Thermal Subsystem",
    "Temperatures": [
        {
            "MemberId": "0",
            "Name": "Drawer inlet Temp",
            "SensorNumber": 42,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "ReadingCelsius": 21,
            "PhysicalContext": "Intake",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Chassis/DRower1"
                }
            ]
        }
    ],
    "Fans": [
        {
            "MemberId": "0",
            "Name": "BaseBoard System Fan",
            "PhysicalContext": "Backplane",
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "Reading": 2100,
            "ReadingUnits": "RPM",
            "Redundancy": [
                {
                    "@odata.id": "/redfish/v1/Chassis/DRower1/Thermal#/Redundancy/0"
                }
            ],
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Chassis/DRower1"
                }
            ]
        }
    ],
    "Redundancy": [
        {
            "MemberId": "0",
            "Name": "BaseBoard System Fans",
            "RedundancyEnabled": false,
```
"RedundancySet": [
  {
    "@odata.id": "/redfish/v1/Chassis/Drawer1/Thermal#/Fans/0"
  }
],
"Mode": "N+m",
"Status": {
  "State": "Disabled",
  "Health": "OK"
},
"MinNumNeeded": 1,
"MaxNumSupported": 2
]

4.81.1.2 GET (SLED level Thermal Metrics)

SLED level Thermal Metrics differ from Rack level Thermal metrics, therefore metadata definition file Thermal_v1.xml contain superset of all available Thermal metrics.

Request:

GET /redfish/v1/Chassis/Rack1/Thermal
Content-Type: application/json

Response:

{
"@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
"@odata.id": "/redfish/v1/Chassis/Sled1/Thermal",
"@odata.type": "#Thermal.v1_4_0.Thermal",
"Id": "Thermal",
"Name": "Thermal",
"Temperatures": [
  {
    "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/0",
    "MemberId": "0",
    "Name": "SLED inlet Temp",
    "SensorNumber": 42,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingCelsius": 21,
    "UpperThresholdNonCritical": 42,
    "UpperThresholdCritical": 42,
    "UpperThresholdFatal": 42,
    "LowerThresholdNonCritical": 42,
    "LowerThresholdCritical": 5,
    "LowerThresholdFatal": 42,
    "MinReadingRangeTemp": 0,
    "MaxReadingRangeTemp": 200,
    "PhysicalContext": "Intake",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Chassis/Sled1"
      }
    ]
  },
  {
    "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/1",
  }
]
"MemberId": "0",
"Name": "SLED Outlet Temp",
"SensorNumber": 43,
"Status": {
  "State": "Enabled",
  "Health": "OK"
},
"ReadingCelsius": 44,
"UpperThresholdNonCritical": 55,
"UpperThresholdCritical": 55,
"UpperThresholdFatal": 55,
"LowerThresholdNonCritical": 55,
"LowerThresholdCritical": 5,
"LowerThresholdFatal": 4,
"MinReadingRangeTemp": 0,
"MaxReadingRangeTemp": 200,
"PhysicalContext": "Exhaust",
"RelatedItem": [
  {
    "@odata.id": "/redfish/v1/Chassis/Sled1"
  }
],
"Oem": {
  "Intel_RackScale": {
    "VolumetricAirFlowCfm": 12
  }
}

4.81.1.3 PUT
Operation is not allowed on this resource.

4.81.1.4 PATCH
Operation is not allowed on this resource.

4.81.1.5 POST
Operation is not allowed on this resource.

4.81.1.6 DELETE
Operation is not allowed on this resource.

4.82 Network Interface Collection
Properties' details available in NetworkInterfaceCollection_v1.xml metadata file.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(NetworkInterface.NetworkInterface)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>
4.82.1 Operations

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

4.82.1.1 GET

Request:

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

Response:

```json
{
   "@odata.context": "/redfish/v1/$metadata#NetworkInterfaceCollection.NetworkInterfaceCollection",
   "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces",
   "@odata.type": "+NetworkInterfaceCollection.NetworkInterfaceCollection",
   "Name": "Network Interface Collection",
   "Description": "description-as-string",
   "Members@odata.count": 1,
   "Members": [
   {
      "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1"
   }
   ]
}
```

4.82.1.2 PUT

Operation is not allowed on this resource.

4.82.1.3 PATCH

Operation is not allowed on this resource.

4.82.1.4 POST

Operation is not allowed on this resource.

4.82.1.5 DELETE

Operation is not allowed on this resource.

4.83 Network Interface

NetworkInterface contains references linking NetworkDeviceFunction resources and represents the network functionality available to the containing system.

Table 161. NetworkInterface Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>Links</td>
<td>NetworkInterface.v1_0_0.Links</td>
<td>False</td>
<td>Links for this controller.</td>
</tr>
</tbody>
</table>
NetworkPorts | NetworkPortCollection.NetworkPortCollection | False | Contains the members of this collection.

NetworkDeviceFunctions | NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection | False | Contains the members of this collection.

Actions | NetworkInterface.v1_1_0.Actions | False | The Actions property shall contain the available actions for this resource.

### 4.83.1 Operations

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

#### 4.83.1.1 GET

**Request:**

```plaintext
GET /redfish/v1/Systems/System1/NetworkInterfaces/1
Content-Type: application/json
```

**Response:**

```json
{
   "@odata.context": "/redfish/v1/$metadata#NetworkInterface.NetworkInterface",
   "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1",
   "@odata.type": ":#NetworkInterface.v1_1_0.NetworkInterface",
   "Id": "1",
   "Name": "Network Device View",
   "Description": "Network Device View",
   "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollUp": "OK"
   },
   "NetworkDeviceFunctions": {
      "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions"
   },
   "Links": {},
   "Oem": {}
}
```

#### 4.83.1.2 PUT

Operation is not allowed on this resource.

#### 4.83.1.3 PATCH

Operation is not allowed on this resource.

#### 4.83.1.4 POST

Operation is not allowed on this resource.
### 4.83.1.5 DELETE

Operation is not allowed on this resource.

### 4.84 Network Device Function Collection


<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>Collection(NetworkDeviceFunction.NetworkDeviceFunction)</td>
<td>True</td>
<td>Contains the members of this collection.</td>
</tr>
</tbody>
</table>

### 4.84.1 Operations

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

#### 4.84.1.1 GET

Request:

GET /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions

Content-Type: application/json

Response:

```json
{
   "@odata.context": "/redfish/v1/$metadata#NetworkDeviceFunctionCollection. NetworkDeviceFunctionCollection",
   "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions",
   "@odata.type": ":NetworkDeviceFunctionCollection. NetworkDeviceFunctionCollection",
   "Name": "Network Device Function Collection",
   "Members@odata.count": 1,
   "Members": [
      {
         "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1"
      }
   ]
}
```

#### 4.84.1.2 PUT

Operation is not allowed on this resource.

#### 4.84.1.3 PATCH

Operation is not allowed on this resource.

#### 4.84.1.4 POST

Operation is not allowed on this resource.
4.84.1.5 DELETE
Operation is not allowed on this resource.

4.85 Network Device Function

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

Property details are available in NetworkDeviceFunction_v1.xml metadata file.

Table 163. NetworkDeviceFunction Attributes

<p>| Attribute               | Type                                                                 | Nullable | Description                                                                 |
|-------------------------|                                                                     |          |                                                                            |
| Status                  | Resource.Status                                                     | True     |                                                                             |
| NetDevFunc Type         | NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology                | True     | The value of this property shall be the configured capability of this network device function. |
| DeviceEnabled           | Edm.Boolean                                                         | True     | The value of this property shall be a Boolean indicating whether the network device function is enabled. Disabled network device functions shall not be enumerated or seen by the operating system. |
| NetDevFunc Capabilities | Collection(NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology)    | True     | This object shall contain an array of capabilities of this network device function. |
| Ethernet                | NetworkDeviceFunction.v1_0_0.Ethernet                               | True     | This object shall contain Ethernet capabilities, status, and configuration values for this network device function. |
| iSCSIBoot               | NetworkDeviceFunction.v1_0_0.iSCSIBoot                              | True     | This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function. |
| FibreChannel            | NetworkDeviceFunction.v1_0_0.FibreChannel                           | True     | This object shall contain Fibre Channel capabilities, status, and configuration values for this network device function. |</p>
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BootMode</td>
<td>NetworkDeviceFunction.v1_0_0.BootMode</td>
<td>True</td>
<td>The value of this property shall be the boot mode configured for this network device function. If the value is not &quot;Disabled&quot;, this network device function shall be configured for boot using the specified technology.</td>
</tr>
<tr>
<td>VirtualFunctionsEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether Single Root I/O Virtualization (SR-IOV) Virtual Functions (VFs) are enabled for this Network Device Function.</td>
</tr>
<tr>
<td>MaxVirtualFunctions</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the number of virtual functions (VFs) that are available for this Network Device Function.</td>
</tr>
<tr>
<td>Links</td>
<td>NetworkDeviceFunction.v1_0_0.Links</td>
<td>False</td>
<td>Links for this NetworkDeviceFunction.</td>
</tr>
<tr>
<td>AssignablePhysicalPorts</td>
<td>Collection(NetworkPort.NetworkPort)</td>
<td>True</td>
<td>The value of this property shall be an array of physical port references that this network device function may be assigned to.</td>
</tr>
<tr>
<td>PhysicalPortAssignment</td>
<td>NetworkPort.NetworkPort</td>
<td>False</td>
<td>The value of this property shall be the physical port that this network device function is currently assigned to. This value shall be one of the AssignablePhysicalPorts array members.</td>
</tr>
<tr>
<td>Actions</td>
<td>NetworkDeviceFunction.v1_1_0.Actions</td>
<td>False</td>
<td>The Actions property shall contain the available actions for this resource.</td>
</tr>
</tbody>
</table>

**4.85.1.1 Operations**

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

Note: Because of confidential nature of CHAP secret fields, it won't be shown in GET request, null will be shown instead.

Request:

GET /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1
Content-Type: application/json

Response:

```json
{
   "@odata.context": "/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
   "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1",
   "@odata.type": "#NetworkDeviceFunction.v1_2_1.NetworkDeviceFunction",
   "Id": "1",
   "Name": "Network Device Function View",
   "Description": "Network Device Function View",
   "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollUp": "OK"
   },
   "DeviceEnabled": true,
   "Ethernet": {
      "MACAddress": "00:0C:29:9A:98:ED"
   },
   "iSCSIBoot": {
      "IPAddressType": "IPv4",
      "InitiatorIPAddress": "10.0.10.10",
      "InitiatorName": "iqn.2017-03.com.intel:workload-server",
      "InitiatorDefaultGateway": "10.0.10.1",
      "InitiatorNetmask": "255.255.255.0",
      "TargetInfoViaDHCP": false,
      "PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
      "PrimaryTargetIPAddress": "10.0.10.254",
      "PrimaryTargetTCPPort": 3260,
      "PrimaryLUN": 1,
      "PrimaryVLANEnable": true,
      "PrimaryVLANId": 4088,
      "PrimaryDNS": null,
      "SecondaryTargetName": null,
      "SecondaryTargetIPAddress": null,
      "SecondaryTargetTCPPort": null,
      "SecondaryLUN": null,
      "SecondaryVLANEnable": null,
      "SecondaryVLANId": null,
      "SecondaryDNS": null,
      "IPMaskDNSViaDHCP": false,
      "RouterAdvertisementEnabled": false,
      "AuthenticationMethod": "CHAP",
      "CHAPUsername": "user",
      "CHAPSecret": null,
      "MutualCHAPUsername": "mutualuser",
      "MutualCHAPSecret": null
   },
   "Links": {},
   "Oem": {}
}
```
4.85.2.1 PUT
Operation is not allowed on this resource.

4.85.2.2 PATCH
The PATCH method should be used to enable iSCSI boot of compute node. After patching this resource, one needs to set BootSourceOverrideTarget to RemoteDrive and submit PATCH to ComputerSystem.Reset action.

The following properties can be updated by the PATCH operation:

Table 164. NetworkDeviceFunction Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>NetworkDeviceFunction.v1_0_0.Ethernet</td>
<td>True</td>
<td>This object shall contain Ethernet capabilities, status, and configuration values for this network device function.</td>
</tr>
<tr>
<td>iSCSIBoot</td>
<td>NetworkDeviceFunction.v1_0_0.iSCSIBoot</td>
<td>True</td>
<td>This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function.</td>
</tr>
</tbody>
</table>

Table 165. Ethernet Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PermanentMACAddress</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the Permanent MAC Address of this network device function (physical function). This value is typically programmed during the manufacturing time. This address is not assignable.</td>
</tr>
<tr>
<td>MACAddress</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the effective current MAC Address of this network device function. If an assignable MAC address is not supported, this is a read only alias of the PermanentMACAddress.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MTUSize</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The Maximum Transmission Unit (MTU) configured for this Network Device Function. This value serves as a default for the OS driver when booting. The value only takes-effect on boot.</td>
</tr>
</tbody>
</table>

### Table 166. iSCSIBoot Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAddress Type</td>
<td>NetworkDeviceFunction.v1_0_0.IPAddressType</td>
<td>True</td>
<td>The value of this property shall be the type of IP address (IPv6 or IPv4) being populated in the iSCSIBoot IP address fields. Mixing of IPv6 and IPv4 addresses on the same network device function shall not be permissible.</td>
</tr>
<tr>
<td>Initiator IPAddress</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IPv6 or IPv4 address of the iSCSI boot initiator.</td>
</tr>
<tr>
<td>Initiator Name</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the iSCSI boot initiator name. The value of this property should match formats defined in Internet Small Computer Systems Interface (iSCSI) or Internet Small Computer Systems Interface (iSCSI) Naming and Discovery (refer to Table 2).</td>
</tr>
<tr>
<td>Initiator DefaultGateway</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IPv6 or IPv4 iSCSI boot default gateway.</td>
</tr>
<tr>
<td>Initiator Netmask</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IPv6 or IPv4 netmask of the iSCSI boot initiator.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------</td>
<td>----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TargetInfoViaDHCP</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.</td>
</tr>
<tr>
<td>PrimaryTargetName</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the primary iSCSI boot target. The value of this property should match formats defined in Internet Small Computer Systems Interface (iSCSI) or Internet Small Computer Systems Interface (iSCSI) Naming and Discovery (refer to Table 2).</td>
</tr>
<tr>
<td>PrimaryTargetIPAddress</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IP address (IPv6 or IPv4) for the primary iSCSI boot target.</td>
</tr>
<tr>
<td>PrimaryTargetTCPPort</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the TCP port for the primary iSCSI boot target.</td>
</tr>
<tr>
<td>PrimaryLUN</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the logical unit number (LUN) for the primary iSCSI boot target.</td>
</tr>
<tr>
<td>PrimaryVLANEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be used to indicate if this VLAN is enabled for the primary iSCSI boot target.</td>
</tr>
<tr>
<td>PrimaryVLANId</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the primary target. This VLAN ID is only used if PrimaryVLANEnable is true.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PrimaryDN S</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.</td>
</tr>
<tr>
<td>Secondary TargetName</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the name of the secondary iSCSI boot target. The value of this property should match formats defined in Internet Small Computer Systems Interface (iSCSI) or Internet Small Computer Systems Interface (iSCSI) Naming and Discovery (refer to Table 2).</td>
</tr>
<tr>
<td>Secondary TargetIPAd</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IP address (IPv6 or IPv4) for the secondary iSCSI boot target.</td>
</tr>
<tr>
<td>Secondary TargetTCP</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the TCP port for the secondary iSCSI boot target.</td>
</tr>
<tr>
<td>Secondary LUN</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the logical unit number (LUN) for the secondary iSCSI boot target.</td>
</tr>
<tr>
<td>Secondary VLANEnable</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be used to indicate if this VLAN is enabled for the secondary iSCSI boot target.</td>
</tr>
<tr>
<td>Secondary VLANId</td>
<td>Edm.Int64</td>
<td>True</td>
<td>The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the secondary target. This VLAN ID is only used if SecondaryVLANEnable is true.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Type</td>
<td>Nullable</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Secondary DNS</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.</td>
</tr>
<tr>
<td>IPMaskDNS ViaDHCP</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask.</td>
</tr>
<tr>
<td>RouterAdvertisementEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether IPv6 router advertisement is enabled for the iSCSI boot target. This setting shall only apply to IPv6 configurations.</td>
</tr>
<tr>
<td>AuthenticationMethod</td>
<td>NetworkDeviceFunction.v1_0_0.AuthenticationMethod</td>
<td>True</td>
<td>The value of this property shall be the iSCSI boot authentication method for this network device function.</td>
</tr>
<tr>
<td>CHAPUsername</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the username for CHAP authentication.</td>
</tr>
<tr>
<td>CHAPSecret</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the shared secret for CHAP authentication.</td>
</tr>
<tr>
<td>MutualCHAPUsername</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the CHAP Username for 2-way CHAP authentication.</td>
</tr>
<tr>
<td>MutualCHAPSecret</td>
<td>Edm.String</td>
<td>True</td>
<td>The value of this property shall be the CHAP Secret for 2-way CHAP authentication.</td>
</tr>
</tbody>
</table>

Request:

```
PATCH /redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions/1
Content-Type: application/json
{
"Ethernet": {
  "MACAddress": "00:0C:29:9A:98:ED"
},
"iSCSIBoot": {
  "IPAddressType": "IPv4",
```
```
"InitiatorIPAddress": "10.0.10.10",
"InitiatorName": "iqn.2017-03.com.intel:workload-server",
"InitiatorDefaultGateway": "10.0.10.1",
"InitiatorNetmask": "255.255.255.0",
"TargetInfoViaDHCP": false,
"PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
"PrimaryTargetIPAddress": "10.0.10.254",
"PrimaryTargetTCPPort": 3260,
"PrimaryLUN": 1,
"PrimaryVLANEnable": true,
"PrimaryVLANId": 4088,
"PrimaryDNS": null,
"SecondaryTargetName": null,
"SecondaryTargetIPAddress": null,
"SecondaryTargetTCPPort": null,
"SecondaryLUN": null,
"SecondaryVLANEnable": null,
"SecondaryVLANId": null,
"SecondaryDNS": null,
"IPMaskDNSViaDHCP": false,
"RouterAdvertisementEnabled": false,
"AuthenticationMethod": "CHAP",
"CHAPUsername": "user",
"CHAPSecret": "userpassword",
"MutualCHAPUsername": "mutualuser",
"MutualCHAPSecret": "mutualpassword"
}
}

Response:

HTTP/1.1 204 No Content

Or:

HTTP/1.1 200 OK
(updated resource body)

Or:

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

4.85.2.3 POST

Operation is not allowed on this resource.

4.85.2.4 DELETE

Operation is not allowed on this resource.
4.86 Update Service

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

Note: In current release this functionality is not implemented.

Table 167. UpdateService Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Resource.Status</td>
<td>True</td>
<td>-</td>
</tr>
<tr>
<td>ServiceEnabled</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>The value of this property shall be a Boolean indicating whether this service is enabled.</td>
</tr>
<tr>
<td>Actions</td>
<td>UpdateService.v1_0_0.Actions</td>
<td>False</td>
<td>The Actions object contains the available custom actions on this resource.</td>
</tr>
<tr>
<td>FirmwareInventory</td>
<td>SoftwareInventoryCollection.SoftwareInventoryCollection</td>
<td>True</td>
<td>The value of this property shall be a link to a resource of type SoftwareInventoryCollection.</td>
</tr>
<tr>
<td>SoftwareInventory</td>
<td>SoftwareInventoryCollection.SoftwareInventoryCollection</td>
<td>True</td>
<td>The value of this property shall be a link to a resource of type SoftwareInventoryCollection.</td>
</tr>
<tr>
<td>HttpPushUri</td>
<td>Edm.String</td>
<td>False</td>
<td>This property shall contain a URI at which the UpdateService supports an HTTP or HTTPS POST of a software image for the purpose of installing software contained within the image.</td>
</tr>
<tr>
<td>HttpPushUriTargets</td>
<td>Collection(Edm.String)</td>
<td>True</td>
<td>This property shall contain zero or more URIs indicating the targets for applying the update image when using HttpPushUri to push a software image. If this property is not present, the Service shall determine where to apply the software image.</td>
</tr>
<tr>
<td>HttpPushUriTargetsBusy</td>
<td>Edm.Boolean</td>
<td>True</td>
<td>This property shall be a Boolean that is set by client when the HttpPushUriTargets property is being used by a client for firmware updates. It shall provide multiple clients a way to negotiate its ownership. This will help clients to know if a firmware update using HttpPushUriTargets is used by another client.</td>
</tr>
</tbody>
</table>

4.86.1 Operations

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

Request:

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

Response:

```
{
    "@odata.type": "#UpdateService.v1_0_2.UpdateService",
    "Id": "UpdateService",
    "Name": "Update service",
    "Status": {
        "State": "Disabled",
        "Health": null,
        "HealthRollup": null
    },
    "ServiceEnabled": false,
    "Actions": {
        "#UpdateService.SimpleUpdate": {
            "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
            "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
        },
        "Oem": {}
    },
    "Oem": {},
    "@odata.context": "/redfish/v1/$metadata#UpdateService/$entity"
}
```

4.86.1.2 PUT

Operation is not allowed on this resource.

4.86.1.3 PATCH

Operation is not allowed on this resource.

4.86.1.4 POST

4.86.1.4.1 Simple Update Action

Operation is not allowed on this resource.

4.86.1.5 DELETE

Operation is not allowed on this resource.

4.87 Action Info

ActionInfo describes the parameters and other information necessary to perform a Redfish* Action to a particular Action target. As parameter, support may differ between implementations and even among instances of a resource. This data can be used to ensure Action requests from applications contain supported parameters.
Table 168.  ActionInfo Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Collection(ActionInfo.v1_0_0.Parameters)</td>
<td>False</td>
<td>This property shall contain a list of parameters associated with a Redfish Action associated with this resource.</td>
</tr>
</tbody>
</table>

4.87.1  Operations

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

4.87.1.1 GET (UpdateService SimpleUpdate Action)

Request:

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

Response:

```
{
  "@odata.type": "#ActionInfo.v1_0_0.ActionInfo",
  "Parameters": [
    {
      "Name": "ImageURI",
      "Required": true,
      "DataType": "String"
    },
    {
      "Name": "TransferProtocol",
      "Required": false,
      "DataType": "String",
      "AllowableValues": []
    },
    {
      "Name": "Targets",
      "Required": false,
      "DataType": "StringArray",
      "AllowableValues": []
    }
  ],
  "Oem": {},
  "@odata.context": "/redfish/v1/$metadata#ActionInfo.ActionInfo",
  "@odata.id": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
}
```

4.87.1.2  PUT

Operation is not allowed on this resource.

4.87.1.3 PATCH

Operation is not allowed on this resource.

4.87.1.4 POST

Operation is not allowed on this resource.
4.87.1.5 DELETE

Operation is not allowed on this resource
5.0 **Required Resources Per Service Type**

Below table show what types of resources are required per service type:

R – Required

O – Optional/recommended

<table>
<thead>
<tr>
<th>Table 169. Required Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resource</strong></td>
</tr>
<tr>
<td>$metadata.xml</td>
</tr>
<tr>
<td>AccountService_v1.xml</td>
</tr>
<tr>
<td>Chassis_v1.xml</td>
</tr>
<tr>
<td>ChassisCollection_v1.xml</td>
</tr>
<tr>
<td>ComposedNode_v1.xml</td>
</tr>
<tr>
<td>ComposedNodeCollection_v1.xml</td>
</tr>
<tr>
<td>ComputerSystem_v1.xml</td>
</tr>
<tr>
<td>ComputerSystemCollection_v1.xml</td>
</tr>
<tr>
<td>ComputerSystemMetrics_v1.xml</td>
</tr>
<tr>
<td>Drive_v1.xml</td>
</tr>
<tr>
<td>Endpoint_v1.xml</td>
</tr>
<tr>
<td>EndpointCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetInterface_v1.xml</td>
</tr>
<tr>
<td>EthernetInterfaceCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitch_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchVACL_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchVACLCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchVACLRule_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchVACLRuleCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchMetrics_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchPort_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchPortCollection_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchPortMetrics_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchStaticMAC_v1.xml</td>
</tr>
<tr>
<td>EthernetSwitchStaticMACCollection_v1.xml</td>
</tr>
<tr>
<td>Event_v1.xml</td>
</tr>
<tr>
<td>EventDestination_v1.xml</td>
</tr>
<tr>
<td>EventDestinationCollection_v1.xml</td>
</tr>
<tr>
<td>EventService_v1.xml</td>
</tr>
<tr>
<td>Fabric_v1.xml</td>
</tr>
<tr>
<td>FabricCollection_v1.xml</td>
</tr>
<tr>
<td>IntelRackScaleOem_v1.xml</td>
</tr>
<tr>
<td>Manager_v1.xml</td>
</tr>
<tr>
<td>ManagerAccount_v1.xml</td>
</tr>
<tr>
<td>ManagerAccountCollection_v1.xml</td>
</tr>
<tr>
<td>ManagerCollection_v1.xml</td>
</tr>
<tr>
<td>Resource</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>ManagerNetworkProtocol_v1.xml</td>
</tr>
<tr>
<td>Memory_v1.xml</td>
</tr>
<tr>
<td>MemoryCollection_v1.xml</td>
</tr>
<tr>
<td>MemoryMetrics_v1.xml</td>
</tr>
<tr>
<td>Message_v1.xml</td>
</tr>
<tr>
<td>MessageRegistry_v1.xml</td>
</tr>
<tr>
<td>MessageRegistryCollection_v1.xml</td>
</tr>
<tr>
<td>MessageRegistryFile_v1.xml</td>
</tr>
<tr>
<td>MessageRegistryFileCollection_v1.xml</td>
</tr>
<tr>
<td>MetricDefinition_v1.xml</td>
</tr>
<tr>
<td>MetricDefinitionCollection_v1.xml</td>
</tr>
<tr>
<td>MetricReport_v1.xml</td>
</tr>
<tr>
<td>MetricReportDefinition_v1.xml</td>
</tr>
<tr>
<td>MetricReportDefinitionCollection_v1.xml</td>
</tr>
<tr>
<td>PCIeDevice_v1.xml</td>
</tr>
<tr>
<td>PCIeFunction_v1.xml</td>
</tr>
<tr>
<td>Port_v1.xml</td>
</tr>
<tr>
<td>PortCollection_v1.xml</td>
</tr>
<tr>
<td>PortMetrics_v1.xml</td>
</tr>
<tr>
<td>Power_v1.xml</td>
</tr>
<tr>
<td>Privileges_v1.xml</td>
</tr>
<tr>
<td>Processor_v1.xml</td>
</tr>
<tr>
<td>ProcessorCollection_v1.xml</td>
</tr>
<tr>
<td>ProcessorMetrics_v1.xml</td>
</tr>
<tr>
<td>Role_v1.xml</td>
</tr>
<tr>
<td>RoleCollection_v1.xml</td>
</tr>
<tr>
<td>ServiceRoot_v1.xml</td>
</tr>
<tr>
<td>Session_v1.xml</td>
</tr>
<tr>
<td>SessionCollection_v1.xml</td>
</tr>
<tr>
<td>SessionService_v1.xml</td>
</tr>
<tr>
<td>Storage_v1.xml</td>
</tr>
<tr>
<td>StorageCollection_v1.xml</td>
</tr>
<tr>
<td>StorageService_v1.xml</td>
</tr>
<tr>
<td>StorageServiceCollection_v1.xml</td>
</tr>
<tr>
<td>Switch_v1.xml</td>
</tr>
<tr>
<td>SwitchCollection_v1.xml</td>
</tr>
<tr>
<td>Task_v1.xml</td>
</tr>
<tr>
<td>TaskCollection_v1.xml</td>
</tr>
<tr>
<td>TaskService_v1.xml</td>
</tr>
<tr>
<td>TelemetryService_v1.xml</td>
</tr>
<tr>
<td>Thermal_v1.xml</td>
</tr>
<tr>
<td>Triggers_v1.xml</td>
</tr>
<tr>
<td>TriggersCollection_v1.xml</td>
</tr>
<tr>
<td>UpdateService_v1.xml</td>
</tr>
<tr>
<td>VLanNetworkInterface_v1.xml</td>
</tr>
</tbody>
</table>
## Required Resources Per Service Type

<table>
<thead>
<tr>
<th>Resource</th>
<th>PSME Compute</th>
<th>PSME Storage</th>
<th>PSME Network</th>
<th>PSME PNC</th>
<th>PSME RMM</th>
<th>PSME FPGA-oF</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLANNetworkInterfaceCollection_v1.xml</td>
<td></td>
<td>R</td>
<td></td>
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<td>R</td>
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</tr>
<tr>
<td>Volume_v1.xml</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>VolumeCollection_v1.xml</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zone_v1.xml</td>
<td>-</td>
<td>R</td>
<td>-</td>
<td>R</td>
<td>-</td>
<td>R</td>
</tr>
<tr>
<td>ZoneCollection_v1.xml</td>
<td>-</td>
<td>R</td>
<td>-</td>
<td>R</td>
<td>-</td>
<td>R</td>
</tr>
<tr>
<td>$metadata.xml</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>
6.0 Common Property Description

6.1 Status

Table 170. Status Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>String</td>
<td>Yes</td>
<td>This indicates the known state of the resource, such as if it is enabled.</td>
</tr>
<tr>
<td>Health</td>
<td>String</td>
<td>Yes</td>
<td>This represents the health state of this resource in the absence of its dependent resources. Allowed values: refer to Section 6.3.</td>
</tr>
<tr>
<td>HealthRollup</td>
<td>String</td>
<td>Yes</td>
<td>This represents the overall health state from the view of this resource. Allowed values: refer to Section 6.3.</td>
</tr>
</tbody>
</table>

6.2 Status->State

- **Enabled**: This function or resource has been enabled
- **Disabled**: This function or resource has been disabled
- **StandbyOffline**: This function or resource is enabled, but awaiting an external action to activate it
- **StandbySpare**: This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it.
- **InTest**: This function or resource is under doing testing
- **Starting**: This function or resource is starting
- **Absent**: This function or resource is not installed
- **UnavailableOffline**: This function or resource is present but cannot be used
- **Deferring**: The element will not process any commands but will queue new requests.
- **Quiesced**: The element is enabled but only processes a restricted set of commands.
- **Updating**: The element is updating and may be unavailable or degraded.

6.3 Status->Health

- **OK**: Normal
- **Warning**: A condition exists that requires attention
- **Critical**: A critical condition exists that requires immediate attention

6.4 ComputerSystem.Reset

- **On**: Turn the system on
- **ForceOff**: Turn the system off immediately (non-graceful) shutdown
- **GracefulRestart**: Perform a graceful system shutdown followed by a restart of the system
- **ForceRestart**: Perform an immediate (non-graceful) shutdown, followed by a restart of the system
- **Nmi**: Generate a non-maskable interrupt to cause an immediate system halt
Common Property Description

- **ForceOn**: Turn the system on immediately
- **PushPowerButton**: Simulate the pressing of the physical power button on this system
- **GracefulShutd**: Perform a graceful system shutdown and power off

### 6.5 BootSourceOverrideTarget/Supported

- **None**: Boot from the normal boot device
- **Pxe**: Boot from the preboot execution (PXE) environment
- **Floppy**: Boot from the floppy disk drive
- **Cd**: Boot from the CD/DVD disc
- **USB**: Boot from a USB device as specified by the system BIOS
- **HDD**: Boot from a hard drive
- **BiosSetup - Boot to the BIOS Setup Utility**
- **Utilities**: Boot the manufacturer’s Utilities programs
- **Diags**: Boot the manufacturer’s Diagnostics program
- **UefiShell**: Boot to the UEFI Shell
- **UefiTarget**: Boot to the UEFI Device specified in the **UefiTargetBootSourceOverride** property
- **SDCard**: Boot from an SD Card
- **UefiHttp**: Boot from a UEFI HTTP network location
- **RemoteDrive**: Boot from a remote drive (for example iSCSI)