Intel® Rack Scale Design PSME REST

API Specification
Software Version 1.2

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Table of Contents

Figures

Tables

Revision History

Revision	Description	Date
0.8	External review comments addressed	February 18, 2016
0.6	Review comments incorporated	January 8, 2016
0.3	Ready for initial review	December 16, 2015
0.1	First internal draft (aligned to Chinook extensions to Redfish)	December 11, 2015

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1 Introduction

1.1 Scope

This specification defines the interface to the PSME module to support the discovery, composability, and manageability of Intel® Rack Scale Design drawers. It covers the functionality designed and implemented in Intel® Rack Scale Design Software 1.2 Release for the Bulldog Creek SDV.

The Intel® Rack Scale Design API and schema has been built on top of the Redfish/SPMF API version 1.0 with Chinook extensions to Redfish. Refer to *http://www.dmtf.org/standards/redfish* for details of Redfish.

1.2 Intended audience

The intended audiences for this document include:

- Software vendors (for example, ISVs) of pod management software, who make use of the PSME API to discover, compose and manage Intel® Rack Scale Design drawers, regardless of the hardware vendor and/or manage drawers in a multivendor environment.
- Software Vendors (for example, OxM) of PSME firmware that will implement of PSME firmware for their hardware platforms, providing Intel® Rack Scale Design compliant systems.

1.3 Terminology

Table 1 Terminology

Term	Definition
BMC	Baseboard management controller
HTTP	Hypertext Transfer Protocol
JSON	JavaScript object notation
NIC	Network interface card
OData	Open Data Protocol
POD	A physical collection of multiple racks
PODM	POD Manager
PSME	Pooled System Management Engine
REST	Representational state transfer
SDV	Software development vehicle
URI	Uniform resource identifier
UUID	Universally unique identifier

1.4 References

Table 2 Reference documents

Doc ID	Title	Location
332868	Intel® Rack Scale Design GAMI API Specification	*http://intel.com/intelRSD*
332869	Intel® Rack Scale Design Pod Manager REST API Specification	*http://intel.com/intelRSD*
332870	Intel® Rack Scale Design Pod Manager Release Notes	*http://intel.com/intelRSD*
332871	Intel® Rack Scale Design Pod Manager User Guide	*http://intel.com/intelRSD*
332873	Intel® Rack Scale Design PSME REST API Specification	*http://intel.com/intelRSD*
332872	Intel® Rack Scale Design PSME Release Notes	*http://intel.com/intelRSD*
332874	Intel® Rack Scale Design PSME User Guide	*http://intel.com/intelRSD*

Doc ID	Title	Location
332877	Intel® Rack Scale Design RMM REST API Specification	*http://intel.com/intelRSD*
332876	Intel® Rack Scale Design RMM Release Notes	*http://intel.com/intelRSD*
332875	Intel® Rack Scale Design RMM User Guide	*http://intel.com/intelRSD*
332878	Intel® Rack Scale Design Storage Services API Specification	*http://intel.com/intelRSD*
332936	Intel® Rack Scale Design BIOS/BMC Tech Guide	*http://intel.com/intelRSD*
332937	Intel® Rack Scale Design Architectural Requirements Specification	*http://intel.com/intelRSD*
334611	Intel® Rack Scale Design Getting Started Guide	*http://intel.com/intelRSD*
n/a	Scalable Platforms Management API	*http://dmtf.org/standards/redfish*

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2 PSME API

2.1 PSME API structure and relations

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

2.1.1 PSME API physical resource hierarchy

Figure 1 PSME REST API hierarchy

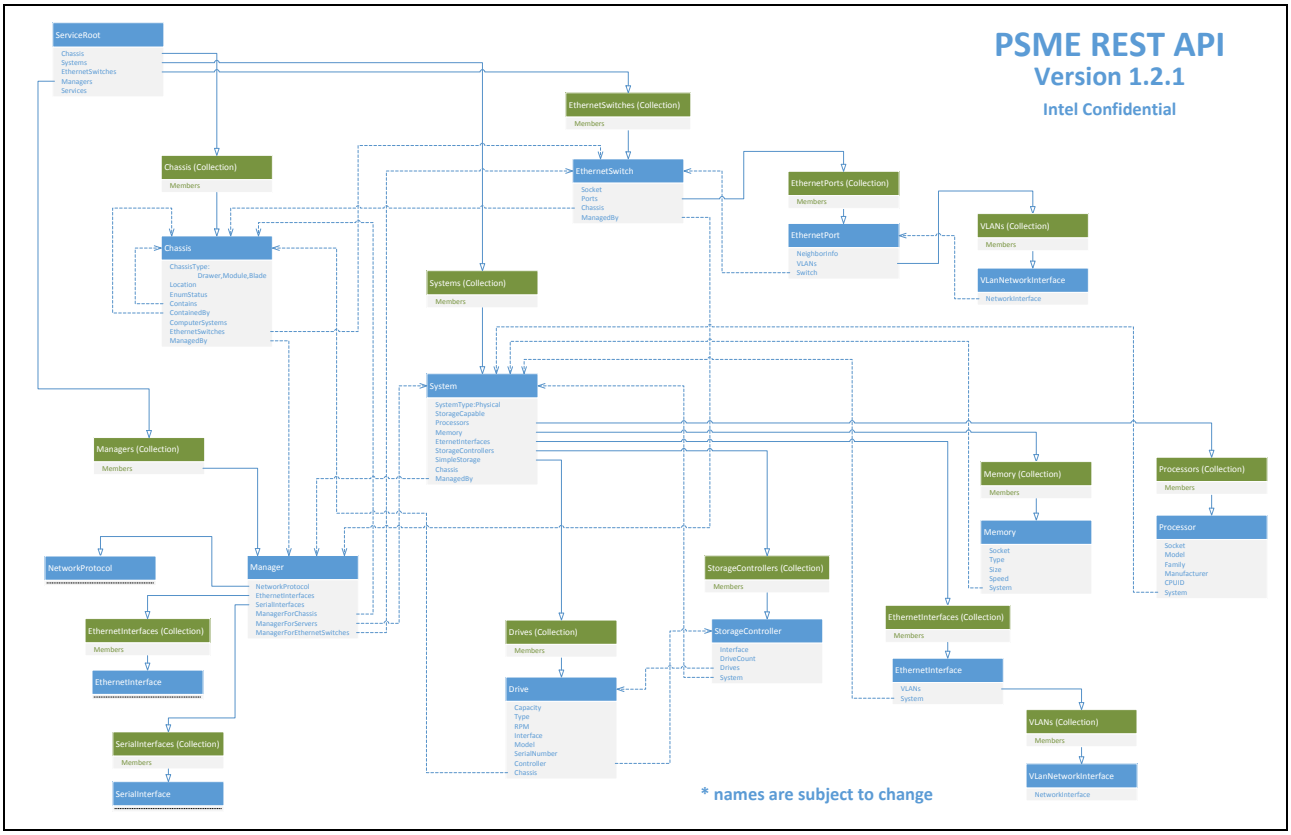

Table 3 Resources and URIs

Resource	URI
Service Root	/redfish/v1
Chassis Collection	/redfish/v1/Chassis
Chassis	/redfish/v1/Chassis/{chassisID}
Computer System Collection	/redfish/v1/Systems
Computer System	/redfish/v1/Systems/{systemID}
Processors Collection	/redfish/v1/Systems/{systemID}/Processors
Processor	/redfish/v1/Systems/{systemID /Processors/{processorID}
Memory Collection	/redfish/v1/Systems/{systemID}/Memory
Memory	/redfish/v1/Systems/{systemID}/Memory/{memoryID}

Resource	URI
Memory Chunk Collection	/redfish/v1/Systems/{systemID}/MemoryChunk
Memory Chunk	/redfish/v1/Systems/{systemID}/MemoryChunk/{chunkID}
Storage Adapter Collection	/redfish/v1/Systems/{systemID}/Adapters
Storage Adapter	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}
Devices Collection	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}/Devices
Devices	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}/Devices/{deviceID}
Manager Collection	/redfish/v1/Managers
Manager	/redfish/v1/Managers/{managerID}
Network Protocol	/redfish/v1/Managers/{managerID}/NetworkProtocol
Ethernet Interface Collection	/redfish/v1/Systems/{systemID}/EthernetInterfaces /redfish/v1/Managers/{managerID}/EthernetInterfaces
Ethernet Interface	/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}
Ethernet Switch Collection	/redfish/v1/EthernetSwitches
Ethernet Switch	/redfish/v1/EthernetSwitches/{switchID}
Fabric Switch Port Collection	/redfish/v1/EthernetSwitches/{switchID}/Ports
Fabric Switch Port	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}
VLAN Network Interface Collection	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs
VLAN Network Interface	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs/{vlanID} /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs/{vlanID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs/{vlanID}
EventService	/redfish/v1/EventService
Event Subscription Collection	/redfish/v1/Subscriptions
Event Subscription	/redfish/v1/Subscriptions/{subscriptionID}

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3 PSME REST API Error Codes

This chapter contains descriptions of all error codes that may be returned by the REST calls implemented in the PSME REST API of the Intel® Rack Scale Design software v1.1 release.

3.1 API error response

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

HTTP response status codes alone often do not provide enough information to enable deterministic error semantics. PSME REST API return extended error information as a JSON object with single property named “error”. The value of this property shall be a JSON object with the properties shown in Table 4.

Table 4 API error response attributes

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

3.1.1 Message Object

Message Objects provide additional information about an object, property, or error response.

Messages are represented as a JSON object with the following properties:

Table 5 API error response attributes

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

3.1.2 Example error JSON object

```
{
    "error": {
        "code": "Base.1.0.GeneralError",
        "message": "A general error has occurred. See ExtendedInfo for more
information.",
        "@Message.ExtendedInfo": [
            {
                "@odata.type" :
"/redfish/v1/$metadata#Message.1.0.0.Message",
                "MessageId": "Base.1.0. MalformedJSON",
                "Message": "The request body submitted was malformed JSON and
could not be parsed by the receiving service",
```

```
                "Severity": "Error"
            }
            {
                "@odata.type" :
"/redfish/v1/$metadata#Message.1.0.0.Message",
                "MessageId": "Base.1.0.PropertyNotWriteable",
                "RelatedProperties": [
                    "#/Name"
                ],
                "Message": "The property Name is a read only property and
cannot be assigned a value",
                "MessageArgs": [
                    "Name"
                ],
                "Severity": "Warning",
                "Resolution": "Remove the property from the request body and
resubmit the request if the operation failed"
            }
        ]
    }
}
```

3.2 API error codes

In general, if an error is not described in any of the following tables, it is to be mapped into HTTP 500 Internal Error code.

3.2.1 General error codes

Table 6 General error codes

Error code	Description	HTTP status code
`UnknownException`	A generic error message, given when an unexpected condition was encountered and no more specific message is suitable.	500 Internal Error
`ServiceUnavailable`	The server is currently unable to handle the request due to temporary overloading or maintenance of the server	503 Service Unavailable

3.2.2 Request error codes

Table 7 Request error codes

Error code	Description	HTTP status code
`InvalidEndpoint`	Invalid endpoint	404 Not Found
`InvalidPayload`	Request payload is invalid or missing	400 Bad Request
`MalformedUri`	Malformed URI	400 Bad Request
`Conflict`	Request could not be completed, because it would cause a conflict in the current state of the resources.	409 Conflict

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4 PSME REST API Definition

4.1 Odata support

Intel® Rack Scale Design support Odata v4.0 as it is defined in Redfish specification.

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

4.2 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 changed in a backward incompatible way.
- *MinorVersion* = integer: a minor update. New functionality may have been added but nothing removed. Compatibility will be preserved with previous minorversions.
- *Errata* = integer: something in the prior version was broken and needed to be fixed.

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

4.2.1 Operations

4.2.1.1 GET

Request:

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

Response:

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

4.3 Service root

Service root resource – entry point.

Table 8 Service root attributes

Name	Service root				
Type URI	/redfish/v1/				
Attribute	Type	Redfish Required	Intel® Rack Scale Design Required	Nullable	Description
Id	String	No		No	Resource identifier
Name	String	Yes		No	Name of service root
Description	String	No			Provides a description of this resource and is used for commonality in the schema definitions
UUID	String	No			Unique identifier for a service instance – must be constant for particular drawer. The format of this string shall be a 32-byte value in the form 8-4-4-4-12
RedfishVersion	String	No		No	The version of the Redfish service in format Major.Minor.Errata
EventService	Object	No			This is the schema definition for the Event Service. It represents the properties for the service itself and has links to the actual list of subscriptions.
Chassis	Object	No			Link to chassis collection (Drawers)
Systems	Object	No			Link to Computer Systems collection (logical server nodes)
Services	Object	No			Link to services collection
Managers	Object	No			Link to Managers collection
EthernetSwitches	Object	No			Link to Ethernet Switches collection
Nodes	Object	No			Link to Composed Nodes collection **(not supported in PSME implementation)**
Oem	Object	No			Oem extension object "Intel_RackScale" extensions: Attribute: ApiVersion; Type: String; Description: Version of Intel® Rack Scale Design API in format: Major.minor.errata
Links	Object	Yes		No	Link sections

4.3.1 Operations

4.3.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#ServiceRoot.ServiceRoot",
    "@odata.id": "/redfish/v1/",
    "@odata.type": "#ServiceRoot.1.0.0.ServiceRoot",
    "Id": "RootService",
    "Name": "Root Service",
```

```
    "RedfishVersion": "1.0.0",
    "UUID": "92384634-2938-2342-8820-489239905423",
    "Systems": {
        "@odata.id": "/redfish/v1/Systems"
    },
    "Chassis": {
        "@odata.id": "/redfish/v1/Chassis"
    },
    "Managers": {
        "@odata.id": "/redfish/v1/Managers"
    },
    "EventService": {
        "@odata.id": "/redfish/v1/EventService"
    },
    "Services": {
        "@odata.id": "/redfish/v1/Services"
    },
    "EthernetSwitches": {
        "@odata.id": "/redfish/v1/EthernetSwitches"
    },
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.ServiceRoot",
            "ApiVersion": "1.2.0",
        }
    },
    "Links": {}
}
```


4.3.1.2 PUT

Operation is not allowed on this resource.

4.3.1.3 PATCH

Operation is not allowed on this resource.

4.3.1.4 POST

Operation is not allowed on this resource.

4.3.1.5 DELETE

Operation is not allowed on this resource.

4.4 Chassis collection

Chassis collection resource. Figure 2 illustrates the relationship between various chassis component in example Intel® Rack Scale Design rack.

Figure 2 Chassis relations

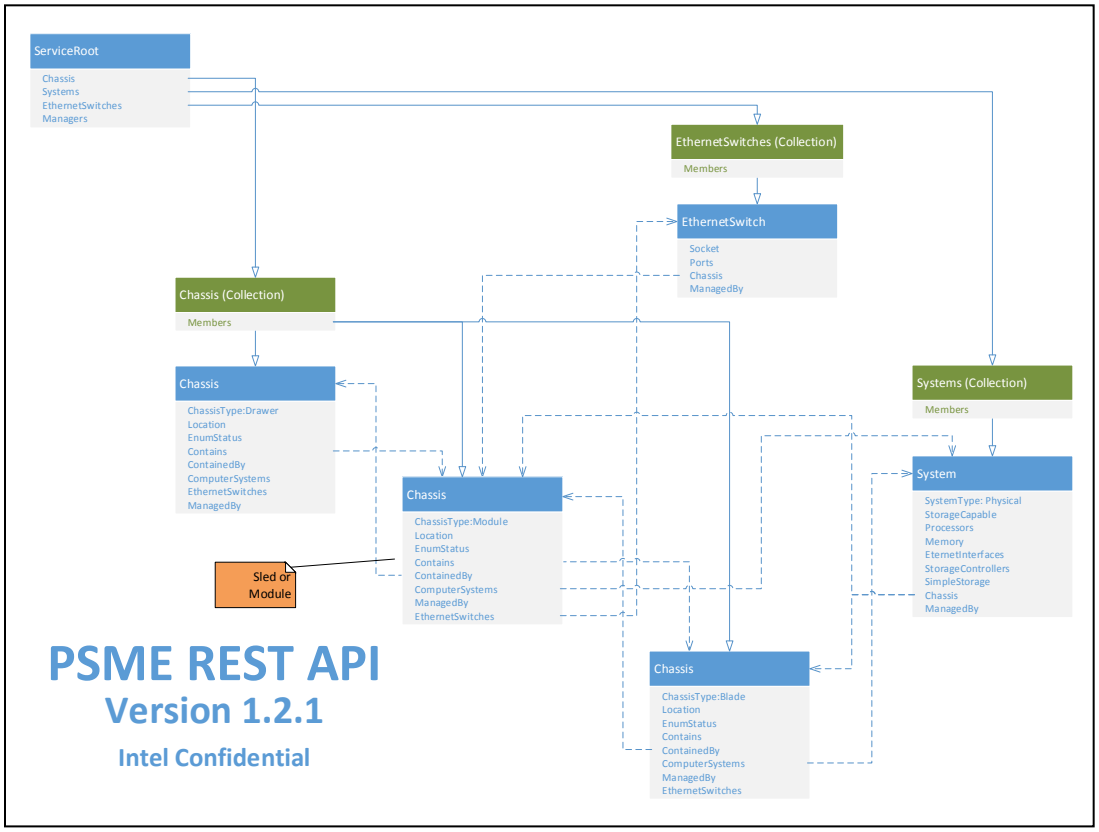

Table 9 Chassis collection attributes

Name	Chassis		
Type URI	/redfish/v1/Chassis		
Attribute	**Type**	**Required**	**Description**
`Name`	String	Yes	Name of collection
`Members@odata.count`	Number	No	Collection members count
`Members`	Array	No	Contains the members of this collection.

4.4.1 Operations

4.4.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#Chassis",
    "@odata.id": "/redfish/v1/Chassis",
    "@odata.type": "#ChassisCollection.ChassisCollection",
    "Name": "Chassis Collection",
    "Members@odata.count": 4,
```

```
    "Members": [
        {
            "@odata.id": "/redfish/v1/Chassis/Drawer1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/FabricModule1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Blade1"
        }
    ]
}
```

4.4.1.2 PUT

Operation is not allowed on this resource.

4.4.1.3 PATCH

Operation is not allowed on this resource.

4.4.1.4 POST

Operation is not allowed on this resource.

4.4.1.5 DELETE

Operation is not allowed on this resource.

4.5 Chassis

This is the schema definition for the Chassis resource. It represents the properties for physical components for any system. This one object 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.

Table 10 Chassis attributes

Name	Chassis				
Type URI	/redfish/v1/Chassis/{chassisId}				
Attribute	**Type**	**Redfish Required**	**Intel® Rack Scale Design Required**	**Nullable**	**Description**
Id	String	No		No	Resource identifier
Name	String	Yes		No	Name of service root
Description	String	No			Provides a description of this resource and is used for commonality in the schema definitions
ChassisType	String	Yes		No	ChassisType shall indicate the physical form factor for the type of chassis. Allowed values: "Blade" - An enclosed or semi-enclosed, typically vertically-oriented, system chassis which must be plugged into a multi-system chassis to function normally

					"Enclosure" - A generic term for a chassis that does not fit any other description "RackMount" - A single system chassis designed specifically for mounting in an equipment rack "Expansion" - A chassis which expands the capabilities or capacity of another chassis "Zone" - A logical division or portion of a physical chassis that contains multiple devices or systems that cannot be physically separated "Sled" - An enclosed or semi-enclosed, system chassis which must be plugged into a multi-system chassis to function normally similar to a blade type chassis "Shelf" - An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which must be plugged into a multi-system chassis to function normally "Drawer" - An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which may be slid into a multi-system chassis "Module" - A small, typically removable, chassis or card which contains devices for a particular subsystem or function "Other" - A chassis that does not fit any of these definitions
`Manufacturer`	String	No			This is the manufacturer of this chassis
`Model`	String	No			This is the model number for the chassis
`SKU`	String	No			This is the SKU for this chassis
`SerialNumber`	String	No			The serial number for this chassis
`PartNumber`	String	No			The part number for this chassis
`AssetTag`	String	No			The user assigned asset tag for this chassis
`IndicatorLED`	String	No			The state of the indicator LED, used to identify the chassis. Allowed values: "Lit" "Blinking" "Off" "Unknown"
`Status`	Object	No			See chapter 5.1 for resource status.
`Oem`	Object	No			Oem extension object "Intel_RackScale" extensions: **Attribute** / **Type** / **Description** `Location` / Object / Property that show this chassis ID and its parent. Contains following properties: **"Id"** – string containing physical location ID of this chassis **"ParentId"** – string containing physical location ID of parent chassis
`Actions`	Object	No		No	Chassis actions.
`Links`	Object	No		No	Link sections

Attribute	Type	Description
ComputerSystems	Array	An array of references to the computer systems contained in this chassis. This will only reference ComputerSystems that are directly and wholly contained in this chassis
Switches	Array	An array of references to the Ethernet switches contained in this chassis.
ManagedBy	Array	An array of references to the managers contained in this chassis
ManagersInChassis	Array	An array of references to the managers located in this chassis
ContainedBy	Link object	A reference to the chassis that this chassis is contained by
Contains	Array	An array of references to any other chassis that this chassis has in it
Oem	Object	Oem defined object containing links related to this chassis

4.5.1 Operations

4.5.1.1 GET

Request:

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

Response:

```
{
       "@odata.context": "/redfish/v1/$metadata#Chassis/Members/$entity",
       "@odata.id": "/redfish/v1/Chassis/Blade1",
       "@odata.type": "#Chassis.1.1.0.Chassis",
       "Id": "Blade1",
       "ChassisType": "Blade",
       "Name": "name-as-string",
```

```
        "Description": "description-as-string",

        "Manufacturer": "Intel Corporation",
        "Model": "model-as-string",
        "SKU": "sku-as-string",
        "SerialNumber": "serial-number-as-string",
        "PartNumber": "part-number-as-string",

        "AssetTag": null,

        "IndicatorLED": null,
        "Status": {
                "State": "Enabled",
                "Health": "OK"
                "HealthRollup": "OK"
        },

        "Oem": {
                "Intel_RackScale": {
                      "@odata.type": "#Intel.Oem.Chassis",
                      "Location": {
                          "Id": "Blade1",
                          "ParentId": "Sled1"
                      }
                }
        },
        "Links": {
                "Contains": [],
                "ContainedBy": {
                      "@odata.id": "/redfish/v1/Chassis/Sled1"
                },
                "ComputerSystems": [{
                      "@odata.id": "/redfish/v1/Systems/System1"
                }],
                "Switches": [],
                "ManagedBy": [{
                      "@odata.id": "/redfish/v1/Managers/VirtualBMC1"
                }],
                "ManagersInChassis ": [{
                      "@odata.id": "/redfish/v1/Managers/Manager1"
                }],
                "Oem": {}
        }
}
```

4.5.1.2 PUT

Operation is not allowed on this resource.

4.5.1.3 PATCH

Operation is not allowed on this resource.

4.5.1.4 POST

Operation is not allowed on this resource.

4.5.1.5 DELETE

Operation is not allowed on this resource.

4.6 Computer systems collection

Table 11 Computer systems collection attributes

Name	Systems		
Type URI	/redfish/v1/Systems		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.6.1 Operations

4.6.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#ComputerSystemCollection.ComputerSystemCollection",
    "@odata.id": "/redfish/v1/Systems",
    "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
    "Name": "Computer System Collection",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Systems/System1"
        }
    ]
}
```

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 Computer system

Table 12 Computer system attributes

Name	System				
Type URI	/redfish/v1/Systems/{systemId}				
Attribute	**Type**	**Redfish Required**	**Intel® Rack Scale Design Required** (Same as Redfish if not specified.)	**Nullable** (Yes if not specified.)	**Description**
`Id`	String	No		No	Resource identifier
`Name`	String	Yes		No	Name of service root
`Description`	String	No			Provides a description of this resource and is used for commonality in the schema definitions
`SystemType`	String	No		No	The type of computer system represented by this resource Allowed values: "Physical" - A computer system
`Manufacturer`	String	No			This is the manufacturer of this chassis
`Model`	String	No			This is the model number for the chassis
`SKU`	String	No			This is the SKU for this chassis
`SerialNumber`	String	No			The serial number for this chassis
`PartNumber`	String	No			The part number for this chassis
`AssetTag`	String	No			The user assigned asset tag for this chassis
`IndicatorLED`	String	No			The state of the indicator LED, used to identify the chassis. Allowed values: "Lit" "Blinking" "Off" "Unknown"
`UUID`	String	No			The universal unique identifier (UUID) for this system
`HostName`	String	No			The DNS Host Name, without any domain information
`PowerState`	String	No			This is the current power state of the system "On" - The system is powered on "Off" - The system is powered off, although some components may continue to have AUX power such as management controller "PoweringOn" - A temporary state between Off and On. This temporary state can be very short. "PoweringOff" - A temporary state between On and Off. The power off action can take time while the OS is in the shutdown process
`Status`	Object	No			See chapter 5.1 for resource status.
`BiosVersion`	String	No			The version of the system BIOS or primary system firmware
`Boot`	Object	No		No	Information about the boot settings for this system

Attribute	**Type**	**Description**
`BootSourceOverrideEnabled`	String, null	Describes the state of the Boot Source Override feature. Allowed values: "Disabled" - The system will boot as normal

							"Once" - On its next boot cycle, the system will boot (one time) to the Boot Source Override Target "Continuous" - The system will boot to the target specified in the BootSourceOverrideTarget until this property is set to Disabled
					BootSourceOverrideTarget	String, null	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is true. Allowed values are shown using annotation @Redfish.AllowableValues which include: "None" - Boot from the normal boot device "Pxe" - Boot from the Pre-Boot EXecution (PXE) environment "Hdd" - Boot from a hard drive Actual list is implementation specific – can include all or some of above values.
Oem	Object	No			Oem extension object "Intel_RackScale" extensions – contained in "Intel_RackScale" object:		
					Attribute	**Type**	**Description**
					Adapters	Link Object, null	Link to Adapters (storage) collection
					PciDevices	Array	Array of this Computer System PCI connected devices in format: VendorId (string) DeviceId (string)
					DiscoveryState	String, null	State of discovery: "None" – discovery process results are not known "Basic" – basic discovery was finished "DeepInProgress" – discovery process is in progress. "Deep" – results of Deep Discovery are shown In resource properties "DeepFailed" – Deep Discovery failed and cannot be completed
					ProcessorSockets	Number, null	Number of CPU sockets in this computer system

					MemorySockets: Number, null — Number of memory slots available in this computer system.
ProcessorSummary	Object	No		No	Summary of processor information: Attribute: Count — Type: Number, null — Description: The number of processors in the system Attribute: Model — Type: String, null — Description: The processor model for the primary or majority of processors in this system Attribute: Status — Type: Object — Description: See chapter 5.1 for resource status.
MemorySummary	Object	No		No	Summary of memory information: Attribute: TotalSystemMemoryGiB — Type: Number, null — Description: The total installed, operating system-accessible memory (RAM), measured in GiB Attribute: Status — Type: Object — Description: See chapter 5.1 for resource status.
Actions	Object	No		No	Chassis actions. Available actions: • *Reset* action with following values: o On - Turn the system on o ForceOff - Turn the system off immediately (non-graceful) shutdown o GracefulRestart - Perform a graceful system shutdown followed by a restart of the system o ForceRestart - Perform an immediate (non-graceful) shutdown, followed by a restart of the system o Nmi - Generate a Diagnostic Interrupt (usually an NMI on x86 systems) to cease normal operations, perform diagnostic actions and typically halt the system. o ForceOn - Turn the system on immediately o PushPowerButton - Simulate the pressing of the physical power button on this system ▪ GracefulShutdown – initiate a soft-shutdown of OS via ACPI Oem object: - contain actions described in Table 13
Processors	Object	No			A reference to the collection of Processors associated with this system
EthernetInterfaces	Object	No			A reference to the collection of Ethernet interfaces associated with this system
SimpleStorage	Object	No			A reference to the collection of storage devices associated with this system (not supported in current PSME implementation)
Memory	Object	No			A reference to the collection of memory modules associated with this system
MemoryChunks	Object	No			A reference to the collection of Memory Chunks associated with this system
Links	Object	No		No	Link section. Attribute: Chassis — Type: Array — Description: An array of references to the chassis in which this system is contained

					ManagedBy	Array	An array of references to the Managers responsible for this system
					Oem	Object, null	Oem specific links

Table 13 Oem actions

Action name	Parameter	Description
StartDeepDiscovery	N/A	**Available only on Pod Manager.** Start Deep Discovery process. After execution, "DiscoveryState" will change to "DeepInProgress". After successfully finish "DiscoveryState" will change into "Deep". In case of any failure, "DiscoveryState" will change into "DeepFailed".

4.7.1 Operations

4.7.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#Systems/Members/$entity",
    "@odata.id": "/redfish/v1/Systems/System1",
    "@odata.type": "#ComputerSystem.1.0.0.ComputerSystem",

    "Id": "System1",
    "Name": "My Computer System",
    "SystemType": "Physical",
    "AssetTag": "free form asset tag",
    "Manufacturer": "Manufacturer Name",
    "Model": "Model Name",
    "SKU": "SKU",
    "SerialNumber": "2M220100SL",
    "PartNumber": "Computer1",
    "Description": "Description of server",
    "UUID": "00000000-0000-0000-0000-000000000000",
    "HostName": null,
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollUp": "OK"
    },
    "IndicatorLED": "Off",
    "PowerState": "On",
    "Boot": {
        "BootSourceOverrideEnabled": "Once",
        "BootSourceOverrideTarget": "Pxe",
        "BootSourceOverrideTarget@Redfish.AllowableValues": ["None",
        "Pxe",
        "Hdd"],
    },
    "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,
        "Status": {
            "State": "Enabled",
            "Health": "OK",
            "HealthRollUp": "OK"
        }
    },
    "Processors": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors"
    },
    "EthernetInterfaces": {
        "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces"
    },
    "SimpleStorage": {},
    "Memory": {
        "@odata.id": "/redfish/v1/Systems/System1/Memory"
    },
    "MemoryChunks": {
        "@odata.id": "/redfish/v1/Systems/System1/MemoryChunks"
    },
    "Links": {
        "Chassis": [{
            "@odata.id": "/redfish/v1/Chassis/4"
        }],
        "ManagedBy": [{
            "@odata.id": "/redfish/v1/Managers/1"
        }],
        "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_RackScale": {
                "#ComputerSystem.StartDeepDiscovery" : {
```

```
                    "target":
"/redfish/v1/Systems/System1/Actions/ComputerSystem.StartDeepDiscovery"
                }
            }
        }
    },
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.ComputerSystem",
            "Adapters": {
                "@odata.id": "/redfish/v1/Systems/System1/Adapters"
            },
            "PciDevices": [{
                "VendorId": "0x8086",
                "DeviceId": "0x1234"
            }],
            "DiscoveryState": "Basic",
            "ProcessorSockets": 8,
            "MemorySockets": 8
        }
    }
}
```

4.7.1.2 PUT

Operation is not allowed on this resource.

4.7.1.3 PATCH

Currently only “Boot” property is patchable. Following table describe “Boot” properties that can be patched:

Attribute	Type	Required	Description
BootSourceOverrideEnabled	String	No	Describes the state of the Boot Source Override feature. Allowed values (please refer to annotation @Redfish.AllowableValues for actual list of supported values): “Disabled” - The system will boot as normal “Once” - On its next boot cycle, the system will boot (one time) to the Boot Source Override Target “Continuous” - The system will boot to the target specified in the BootSourceOverrideTarget until this property is set to Disabled
BootSourceOverrideTarget	String	No	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is true. Supported values: “None” - Boot from the normal boot device “Pxe” - Boot from the Pre-Boot EXecution (PXE) environment “Hdd” - Boot from a hard drive

```
PATCH /redfish/v1/Systems/System1
Content-Type: application/json
{
       “Boot”: {
               “BootSourceOverrideEnabled”: “Once”,
               “BootSourceOverrideTarget”: “Pxe”
       }
}
```

Response:

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

4.7.1.4 POST

Request:

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

Response:

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

In case of PODM StartDeepDiscovery action following responses can be expected:

- DeepDiscovery process already started, or resource is allocated for composed node.

```
HTTP/1.1 409 Conflict
```

4.7.1.5 DELETE

Operation is not allowed on this resource.

4.8 Processor collection

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

Table 14 Processor collection attributes

Name	Processors		
Type URI	/redfish/v1/Systems/{systemID}/Processors		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.8.1 Operations

4.8.1.1 GET

Request:

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

Response:

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

4.8.1.2 PUT

Operation is not allowed on this resource.

4.8.1.3 PATCH

Operation is not allowed on this resource.

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 Processor

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

Table 15 Processor attributes

Name	Processor				
Type URI	/redfish/v1/Systems/{systemId}/Processors/{processorID}				
Attribute	**Type**	**Redfish Required**	**Intel® Rack Scale Design Required**	**Nullable**	**Description**
Id	String	No		No	Resource identifier
Name	String	Yes		No	Name of service root
Description	String	No			Provides a description of this resource and is used for commonality in the schema definitions
Socket	String	No	Yes		The socket or location of the processor
ProcessorType	String	No			The type of processor. Available values: “CPU” - A Central Processing Unit “OEM” – An OEM-defined Processing Unit “GPU” - A Graphics Processing Unit “FPGA” - A Field Programmable Gate Array “DSP” - A Digital Signal Processor “Accelerator” - An Accelerator
ProcessorArchitecture	String	No			The architecture of the processor. Available values: “x86” - x86 or x86-64 “IA-64” - Intel Itanium “ARM*” – ARM architecture “MIPS” – MIPS architecture “OEM” – OEM-defined
InstructionSet	String	No			The instruction set of the processor. Available values: “x86” – x86 32-bit “x86-64” – x86 64-bit “IA-64” – Intel IA-64 “ARM-A32” – ARM 32-bit “ARM-A64” – ARM 64-bit “MIPS32” – MIPS 32-bit “MIPS64” – MIPS 64-bit “OEM” – OEM-defined
Manufacturer	String	No			The processor manufacturer

<table>
<tr><td>Model</td><td>String</td><td>No</td><td></td><td></td><td>The product model number of this device</td></tr>
<tr><td>MaxSpeedMHz</td><td>Number</td><td>No</td><td></td><td></td><td>The maximum clock speed of the processor</td></tr>
<tr><td>TotalCores</td><td>Number</td><td>No</td><td></td><td></td><td>The total number of cores contained in this processor</td></tr>
<tr><td>TotalThreads</td><td>Number</td><td>No</td><td></td><td></td><td>The total number of execution threads supported by this processor</td></tr>
<tr><td>ProcessorId</td><td>Object</td><td>No</td><td></td><td>No</td><td>Identification information for this processor
<table>
<tr><th>Attribute</th><th>Type</th><th>Description</th></tr>
<tr><td>VendorId</td><td>String, null</td><td>The Vendor Identification for this processor</td></tr>
<tr><td>IdentificationRegisters</td><td>String, null</td><td>The contents of the Identification Registers (CPUID) for this processor</td></tr>
<tr><td>EffectiveFamily</td><td>String, null</td><td>The effective Family for this processor</td></tr>
<tr><td>EffectiveModel</td><td>String, null</td><td>The effective Model for this processor</td></tr>
<tr><td>Step</td><td>String, null</td><td>The Step value for this processor</td></tr>
<tr><td>MicrocodeInfo</td><td>String, null</td><td>The Microcode Information for this processor</td></tr>
</table></td></tr>
<tr><td>Status</td><td>Object</td><td>No</td><td></td><td></td><td>See chapter 5.1 for resource status.</td></tr>
<tr><td>Oem</td><td>Object</td><td>No</td><td></td><td></td><td>Oem extension object
Intel® Rack Scale Design extensions (“Intel_RackScale” object):
<table>
<tr><th>Attribute</th><th>Type</th><th>Description</th></tr>
<tr><td>Brand</td><td>String</td><td>Processor brand string.
Available values:
Xeon family: E3, E5, E7
SoC/Atom family: X3 (Avoton), X5 (Broadwell-DE), X7
Core family: I3, I5, I7
“Unknown” – discovered processor is unknown</td></tr>
<tr><td>Capabilities</td><td>Array</td><td>Array of strings describing processor capabilities (like reported in /proc/cpuinfo flags), such as:
“sse” - Streaming SIMD Extensions
“avx” - Advanced Vector Extensions
...</td></tr>
<tr><td>ContainedBy</td><td>Object</td><td>Reference to Computer System containing this CPU</td></tr>
</table></td></tr>
</table>

4.9.1 Operations

4.9.1.1 GET

Request:

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

Response:


```
{
	"@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/Processors/Members/$entity",
	"@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1",
	"@odata.type": "#Processor.1.0.0.Processor",
	"Name": "Processor",
	"Id": "CPU1",
	"Socket": "CPU 1",
	"ProcessorType": "CPU",
	"ProcessorArchitecture": "x86",
	"InstructionSet": "x86-64",
	"Manufacturer": "Intel(R) Corporation",
	"Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
	"ProcessorId": {
		"VendorId": "GenuineIntel",
		"IdentificationRegisters": "0x34AC34DC8901274A",
		"EffectiveFamily": "0x42",
		"EffectiveModel": "0x61",
		"Step": "0x1",
		"MicrocodeInfo": "0x429943"
	},
	"MaxSpeedMHz": 3700,
	"TotalCores": 8,
	"TotalThreads": 16,
	"Status": {
		"State": "Enabled",
		"Health": "OK",
		"HealthRollup": null
	},
	"Oem": {
		"Intel_RackScale": {
			"@odata.type": "#Intel.Oem.Processor",
			"Brand": "E5",
			"Capabilities": [
				"sse",
				"sse2",
				"sse3"
			],
			"ContainedBy": {
				"@odata.id": "/redfish/v1/Systems/System1"
			}
		}
	}
}
```

4.9.1.2 PUT

Operation is not allowed on this resource.

4.9.1.3 PATCH

Operation is not allowed on this resource.

4.9.1.4 POST

Operation is not allowed on this resource.

4.9.1.5 DELETE

Operation is not allowed on this resource.

4.10 Memory collection

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

Table 16 Memory collection attributes

Name	Memory		
Type URI	/redfish/v1/Systems/{systemID}/Memory		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.10.1 Operations

4.10.1.1 GET

Request:

```
GET /redfish/v1/Systems/{systemID}/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",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1"
        }
    ]
}
```

4.10.1.2 PUT

Operation is not allowed on this resource.

4.10.1.3 PATCH

Operation is not allowed on this resource.

4.10.1.4 POST

Operation is not allowed on this resource.

4.10.1.5 DELETE

Operation is not allowed on this resource.

4.11 Memory

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

Table 17 Memory attributes

Name	Memory			
Type URI	/redfish/v1/Systems/{systemId}/Memory/{memoryID}			
Attribute	**Type**	**Required**	**Nullable**	**Description**
Id	String	No	No	Resource identifier
Name	String	Yes	No	Name of service root
Description	String	No		Provides a description of this resource and is used for commonality in the schema definitions
MemoryType	String	No		The type of DIMM: “DRAM” “NVDIMM_N” “NVDIMM_F” “NVDIMM_P”
MemoryDeviceType	String	No		Type details of DIMM: “DDR” “DDR2” “DDR3” “DDR4” “DDR4_SDRAM” “DDR4E_SDRAM” “LPDDR4_SDRAM” “DDR3_SDRAM” “LPDDR3_SDRAM” “DDR2_SDRAM” “DDR2_SDRAM_FB_DIMM” “DDR2_SDRAM_FB_DIMM_PROBE” “DDR_SGRAM” “DDR_SDRAM” “ROM” “SDRAM” “EDO” “FastPageMode” “PipelinedNibble”
BaseModuleType	String	No		The base module type of DIMM: “RDIMM” “UDIMM” “SO_DIMM” “LRDIMM” “Mini_RDIMM”

				"Mini_UDIMM" "SO_RDIMM_72b" "SO_UDIMM_72b" "SO_DIMM_16b" "SO_DIMM_32b"
MemoryMedia	Array	No		Media of this DIMM: "DRAM" "NAND" "Prioprietary"
CapacityMiB	Number	Yes		DIMM Capacity in MiB
DataWidthBits	Number	No		Data Width in bits
BusWidthBits	Number	No		Bus Width in bits
Manufacturer	String	No		The DIMM manufacturer
SerialNumber	String	No		The product serial number of this device
PartNumber	String	No		The product part number of this device
AllowedSpeedsMHz	Array	No		Speed bins supported by this DIMM (numbers)
FirmwareRevision	String	No		Revision of firmware on the DIMM controller
FirmwareApiVersion	String	No		Version of API supported by the firmware
FunctionClasses	Array	No		Function Classes by the DIMM: "Volatile" "Block" "Persistent"
VendorID	String	No		Vendor ID
DeviceID	String	No		Device ID
RankCount	Number	No		Number of ranks available in the DIMM
DeviceLocator	String	No		Location of the DIMM in the platform, typically marked in the silk screen
MemoryLocation	Object	No		Property describing Dimm location with respect to processor and memory controller **Attribute** / **Type** / **Description** Socket / Number, null / Socket number in which DIMM is connected MemoryController / Number, null / Memory controller number in which DIMM is connected Channel / Number, null / Channel number in which DIMM is connected Slot / Number, null / Slot number in which DIMM is connected
ErrorCorrection	String	No		Error correction scheme supported for this memory: "NoECC" - No ECC available "SingleBitECC" - Single bit error can be corrected by ECC "MultiBitECC" - Multiple bits of errors can be corrected by ECC "AddressParity" - Address Parity errors can be corrected
OperatingSpeedMhz	Number	No		Operating speed of DIMM in MHz
Regions	Array	No		Memory regions information with in the DIMM **Attribute** / **Type** / **Description**

<table>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>RegionId</td><td>String, null</td><td>Unique region ID representing a specific region within the DIMM</td></tr>
<tr><td>MemoryClassification</td><td>String, null</td><td>Type of memory occupied by the given memory region
“Volatile”
“Block”
“Persistent”</td></tr>
<tr><td>OffsetMiB</td><td>Number, null</td><td>Offset with in the DIMM that corresponds to the starting of this memory region in MiB</td></tr>
<tr><td>SizeMiB</td><td>Number, null</td><td>Size of this memory region in MiB</td></tr>
</table>
</td></tr>
<tr><td>OperatingMemoryModes</td><td>Array</td><td>No</td><td></td><td>Memory modes supported by the DIMM. Available values:
“Volatile” - Volatile memory
“PMEM” - Persistent memory, byte accessible through system address space
“Block” - Block accessible system memory</td></tr>
<tr><td>Status</td><td>Object</td><td>No</td><td></td><td>See chapter 5.1 for resource status.</td></tr>
<tr><td>Oem</td><td>Object</td><td>No</td><td></td><td>Oem extension object
Intel Rack Scale Design extensions (“Intel_RackScale” object):
<table>
<tr><th>Attribute</th><th>Type</th><th>Description</th></tr>
<tr><td>VoltageVolt</td><td>Number, null</td><td>DIMM operating voltage</td></tr>
</table>
</td></tr>
</table>

4.11.1 Operations

4.11.1.1 GET

Request:

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

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
       "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
       "@odata.type": "#Memory.1.0.0.Memory",
       "Name": "DIMM",
       "Id": "Dimm1",
       "MemoryType": "DRAM",
       "MemoryDeviceType": "DDR4",
       "BaseModuleType": "LRDIMM",
       "MemoryMedia": [
              "DRAM"
       ],
```


```
        "CapacityMiB": 16384,
        "DataWidthBits": 64,
        "BusWidthBits": 72,
        "Manufacturer": "Contoso",
        "SerialNumber": "1A2B3B",
        "PartNumber": "1A2B3D",
        "AllowedSpeedsMHz": [
                2133,
                2400,
                2667
        ],
        "FirmwareRevision": "RevAbc",
        "FirmwareApiVersion": "ApiAbc",
        "FunctionClasses": [
                "Volatile"
        ],
        "VendorID": "vendorX",
        "DeviceID": "deviceX",
        "RankCount": 1,
        "DeviceLocator": "PROC 1 DIMM 1",
        "MemoryLocation": {
                "Socket": 1,
                "MemoryController": 1,
                "Channel": 1,
                "Slot": 1
        },
        "ErrorCorrection": "MultiBitECC",
        "Status": {
                "State": "Enabled",
                "Health": "OK",
               "HealthRollup": null
        },
        "OperatingSpeedMhz": 2400,
        "Regions": [{
                "RegionId": "1",
                "MemoryClassification": "Volatile",
                "OffsetMiB": 0,
                "SizeMiB": 16384,
        }],
        "OperatingMemoryModes": [
                "Volatile"
        ],
        "Oem": {
                "Intel_RackScale": {
                      "@odata.type": "#Intel.Oem.Memory",
                      "VoltageVolt": 1.35
                }
        }
}
```


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 Memory chunks collection

Memory Chunks collection resource – provides collection of all memory chunks in a computer system.

Table 18 DIMM Config collection attributes

Name	Memory Chunks collection		
Type URI	/redfish/v1/Systems/{systemID}/MemoryChunks		
Attribute	**Type**	**Required**	**Description**
`Name`	String	Yes	Name of collection
`Members@odata.count`	Number	Yes	Collection members count
`Members`	Array	Yes	Contains the members of this collection.

4.12.1 Operations

4.12.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/MemoryChunks/$entity",
    "@odata.id": "/redfish/v1/Systems/System1/MemoryChunks",
    "@odata.type": "#MemoryChunkCollection.MemoryChunkCollection",
    "Name": "Memory Chunks Collection",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Systems/System1/MemoryChunks/Chunk1"
        }
    ]
}
```

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 Memory chunk

Memory chunk resource – provides detailed information about a single memory chunk identified by {chunkID}.

Table 19 Memory attributes

Name	Memory chunk			
Type URI	/redfish/v1/Systems/{systemId}/MemoryChunks/{chunkID}			
Attribute	**Type**	**Required**	**Nullable**	**Description**
Id	String	No	No	Resource identifier
Name	String	Yes	No	Name of service root
Description	String	No		Provides a description of this resource and is used for commonality in the schema definitions
MemoryChunkName	String	No		Name for the memory chunk
MemoryChunkUID	Number	No		MemoryChunkUID
MemoryChunkSizeMiB	Number	No		Size of the memory chunk in MiB
AddressRangeType	String	No		Memory type of this memory chunk: “Volatile” “Block” “Persistent”
IsMirrorEnabled	Boolean	No		Mirror Enabled status
IsSpare	Boolean	No		Spare Enabled status
Status	Object	No		See chapter 5.1 for resource status.
InterleaveSets	Array	No		Interleave set information
Oem	Object	No		Oem extension object

Attribute	**Type**	**Description**
@odata.id	String, null	URL of the DIMM
RegionId	String, null	DIMM region identifier

4.13.1 Operations

4.13.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/MemoryChunks/Chunk1
Content-Type: application/json
```

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/MemoryChunks/$entity",
       "@odata.id": "/redfish/v1/Systems/System1/MemoryChunks/Chunk1",
```

```
        "@odata.type": "#MemoryChunk.1.0.0.MemoryChunk",
        "Name": "Memory Chunk 1",
        "Description": "description-as-string",
        "Id": "Chunk1",
        "MemoryChunkName": "Volatile",
        "MemoryChunkUID": 1,
        "MemoryChunkSizeMiB": 8192,
        "AddressRangeType": "Volatile",
        "IsMirrorEnabled": false,
        "IsSpare": false,
        "Status": {
                "State": "Enabled",
                "Health": "OK",
               "HealthRollup": null
        },
        "InterleaveSets": [{
                "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
                "RegionId": "1"
        }],
        "Oem": {}
}
```


4.13.1.2 PUT

Operation is not allowed on this resource.

4.13.1.3 PATCH

Operation is not allowed on this resource.

4.13.1.4 POST

Operation is not allowed on this resource.

4.13.1.5 DELETE

Operation is not allowed on this resource.

4.14 Storage adapters collection

Storage adapters collection resource – provides collection of all storage adapters available in a blade.

Table 20 Storage adapters collection attributes

Name	Storage adapters		
Type URI	/redfish/v1/Systems/{systemID}/Adapters		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.14.1 Operations

4.14.1.1 GET

Request:

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

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#Systems/Members/System1/Adapters",
    "@odata.id": "/redfish/v1/Systems/System1/Adapters",
    "@odata.type": "#AdapterCollection.AdapterCollection",
    "Name": "Adapters Collection",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Systems/System1/Adapters/Adapter1"
        }
    ]
}
```

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 Storage adapter

Storage adapter resource – provides detailed information about a single storage adapter identified by {adapterID}.

Table 21 Storage adapter attributes

Name	Storage adapter		
Type URI	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}		
Attribute	**Type**	**Intel® Rack Scale Design Required**	**Description**
`Id`	String	Yes	Resource identifier
`Name`	String	Yes	Name of module
`Description`	String, null	No	Resource description
`Interface`	String	Yes	Controller interface: “SATA” “SAS” “PCIe*” “Unknown”
`Manufacturer`	String	No	Manufacturer of this controller
`Model`	String	No	Controller model.
`Status`	Object, null	No	See chapter 5.1 for resource status.
`BusInfo`	String, null	Yes	Information about physically bus connection for this controller.

Oem	Object	No	OEM defined object
Links	Object	No	Links to related resources **Name** / **Type** / **Required** / **Description** ContainedBy / Object / Yes / Link to computer system containing this storage controller Oem / Object, null / No / Oem defined links
Devices	Object	Yes	Link to drive collection connected to this controller

4.15.1 Operations

4.15.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#Systems/Members/System1/Adapters/Members/$entity",
    "@odata.id": "/redfish/v1/Systems/System1/Adapters/Adapter1",
    "@odata.type": "#Adapter.1.0.0.Adapter",
    "Id": "Adapter1",
    "Name": "Storage Adapter",
    "Interface": "SATA",
    "Manufacturer": "Intel Corporation",
    "Model": "Wellsburg AHCI Controller",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "BusInfo": "pci@0000:01:00.0",
    "Oem": {},
    "Devices": {
        "@odata.id": "/redfish/v1/Systems/System1/Adapters/Adapter1/Devices"
    },
    "Links": {
        "ContainedBy": {
            "@odata.id": "/redfish/v1/Systems/System1"
        },
        "Oem": {}
    }
}
```

4.15.1.2 PUT

Operation is not allowed on this resource.

4.15.1.3 PATCH

Operation is not allowed on this resource.

4.15.1.4 POST

Operation is not allowed on this resource.

4.15.1.5 DELETE

Operation is not allowed on this resource.

4.16 Device collection

Device collection resource – provides collection of all storage devices available in a storage adapter.

Table 22 Device collection attributes

Name	Devices		
Type URI	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}/Devices		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.16.1 Operations

4.16.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#Systems/Members/System1/Adapters/Members/Adapter1/Devi
ces",
    "@odata.id": "/redfish/v1/Systems/System1/Adapters/Adapter1/Drives",
    "@odata.type": "#DeviceCollection.DeviceCollection",
    "Name": "Devices Collection",
    "Members@odata.count": 1,
    "Members": [
        {
            "@odata.id":
"/redfish/v1/Systems/System1/Adapters/Adapter1/Devices/Device1"
        }
    ]
}
```

4.16.1.2 PUT

Operation is not allowed on this resource.

4.16.1.3 PATCH

Operation is not allowed on this resource.

4.16.1.4 POST

Operation is not allowed on this resource.

4.16.1.5 DELETE

Operation is not allowed on this resource.

4.17 Device

Device resource – provides detailed information about a single storage device identified by {deviceID}.

Table 23 Device attributes

Name	Device		
Type URI	/redfish/v1/Systems/{systemID}/Adapters/{adapterID}/Devices/{deviceID}		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Name of module
Description	String, null	No	Description of this resource
Interface	String (enum)	Yes	Controller interface “SAS” “SATA” “PCIe”
CapacityGiB	Number	Yes	Drive capacity in GibiBytes
Type	String	No	Drive type “HDD” “SSD” “NVMe”
RPM	Number	No	For traditional drive, rotation per minute
Manufacturer	String	No	Drive manufacturer name
Model	String	No	Drive model
SerialNumber	String	Yes	Drive serial number
FirmwareVersion	String	No	Drive firmware version
Status	Object, null	No	See chapter 5.1 for resource status.
BusInfo	String, null	Yes	Information about physical bus connection.
Oem	Object	No	OEM defined object
Links	Object	No	Object containing resource related links:

Name	Type	Required	Description
ContainedBy	Object	Yes	Link to storage controller under which this drive is contained
Oem	Object	No	OEM related links

4.17.1 Operations

4.17.1.1 GET

Request:

```
GET "/redfish/v1/Systems/System1/Adapters/Adapter1/Devices/Device1
Content-Type: application/json
```

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#Systems/Members/System1/Adapters/Members/Adapter1/Devi
ces/Members/$entity",
```


```
    "@odata.id":
"/redfish/v1/Systems/System1/Adapters/Adapter1/Devices/Device",
    "@odata.type": "#Device.1.0.0.Device",
    "Id": "Device1",
    "Name": "HDD",
    "Interface": "SATA",
    "CapacityGiB": 500,
    "Type": "HDD",
    "RPM": 0,
    "Manufacturer": "Intel",
    "Model": "S3710",
    "SerialNumber": "XYZ123456789",
    "FirmwareVersion": "0002",
    "BusInfo": "scsi@0:0.0.0",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": null
    },
    "Oem": {},
    "Links": {
        "ContainedBy": {
            "@odata.id": "/redfish/v1/Systems/System1/Adapters/Adapter1"
        },
        "Oem": {}
    }
}
```


4.17.1.2 PUT

Operation is not allowed on this resource.

4.17.1.3 PATCH

Operation is not allowed on this resource.

4.17.1.4 POST

Operation is not allowed on this resource.

4.17.1.5 DELETE

Operation is not allowed on this resource.

4.18 System network interface

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

Table 24 Network interface attributes

Name		Blade Network Interface		
Type URI		/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}		
Attribute	**Type**	**Required**	**Patchable**	**Description**
Id	String	Yes	No	Resource identifier
Name	String	Yes	No	Resource name
Description	String, null	No	No	Resource description

Name		Blade Network Interface		
Type URI		/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}		
Attribute	**Type**	**Required**	**Patchable**	**Description**
Status	Object, null	No	No	See chapter 5.1 for resource status.
InterfaceEnabled	Bool, null	No	No	This indicates whether this interface is enabled
Oem	Object	No	No	OEM defined object
PermanentMACAddress	String, null	No	No	Permanent MAC Address of this interface (port). This value is typically programmed during the manufacturing time. This address is not assignable.
MACAddress	String, null	No	No	This is the currently configured MAC address of the (logical port) interface
SpeedMbps	Number	No	No	This is the current speed in Mbps of this NIC.
AutoNeg	Boolean, null	No	No	Indicates if the speed and duplex is automatically configured by the NIC
FullDuplex	Boolean	No	No	Indicates if the NIC is in Full Duplex mode or not
MTUSize	Number, null	No	No	This is the currently configured Maximum Transmission Unit (MTU) in bytes on this interface.
HostName	String, null	No	No	DNS Host Name, without any domain information
FQDN	String, null	No	No	Fully qualified domain name obtained by DNS for this interface
MaxIPv6StaticAddresses	Number, null	No	No	Indicates the maximum number of Static IPv6 addresses that can be configured on this interface
VLAN	Object, Null	No	No	If this Network Interface supports more than one VLAN, this property will not be present and the client should look for VLANs collection in the link section of this resource

Name	Type	Required	Description
VLANEnable	Boolean	No	This indicates if this VLAN is enabled
VLANId	Number	No	This indicates the VLAN identifier for this VLAN.

Name	Blade Network Interface			
Type URI	/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}			
Attribute	Type	Required	Patchable	Description
IPv4Addresses	Array	No	No	Name / Type / Required / Description Address / String, null / No / IP address SubnetMask / String, null / No / IP subnet mask AddressOrigin / String, null / No / Indicates how address was determined "Static" - A static address as configured by the user "DHCP" - Address is provided by a DHCPv4 service "BOOTP" - Address is provided by a BOOTP service "IPv4LinkLocal" - Address is valid only for this network segment (link) Gateway / String, null / No / IPv4 gateway for this address Oem / Object / No / Oem defined object
IPv6AddressPolicyTable	Array	No	No	Name / Type / Required / Description Prefix / String / Yes / IPv6 Address Prefix for this table entry Precedence / Number / No / Precedence value for this table entry Label / Number / No / Label value for this table entry
IPv6StaticAddresses	Array	No	No	Name / Type / Required / Description Address / String, null / Yes / IPv6 address PrefixLength / Number, null / Yes / IPv6 Address Prefix Length
IPv6Addresses	Array	No	No	Name / Type / Required / Description Address / String, null / No / IPv6 address PrefixLength / Number, null / No / IPv6 Address Prefix Length AddressOrigin / String, null / No / Indicates how address was determined

Name		Blade Network Interface		
Type URI		/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}		
Attribute	Type	Required	Patchable	Description
				"Static" - A static address as configured by the user "DHCP" - Address is provided by a DHCPv6 service "LinkLocal" - Address is valid only for this network segment (link) "SLAAC" - Address is provided by a Stateless Address AutoConfiguration (SLAAC) service
				`AddressState` — String (enum), null — No — Current state of this address
				`Oem` — Object — No — Oem defined object
`IPv6DefaultGateway`	String, null	No	No	Default gateway address that is currently in use on this interface
`NameServers`	String array	No	No	DNS name servers for this interface
`VLANs`	Object, null	No	No	Reference to a collection of VLANs and is only used if the interface supports more than one VLANs.
`Links`	Object, null	No	No	Links section `Oem` — Object — No — Oem references to related resources. Please see table Table 25 for "Intel_RackScale" object.

Table 25 EthernetInterface -> Links -> Oem -> "Intel_RackScale" object properties

Name	Type	Required	Description
NeighborPort	Object(link), null	No	Reference to EthernetSwitch port connected to this interface

4.18.1 Operations

4.18.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
    "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1",
    "@odata.type": "#EthernetInterface.1.0.0.EthernetInterface",
    "Id": "LAN1",
    "Name": "Ethernet Interface",
    "Description": "System NIC 1",
```


```
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": null
    },
    "InterfaceEnabled": true,
    "PermanentMACAddress": "AA:BB:CC:DD:EE:FF",
    "MACAddress": "AA:BB:CC:DD:EE:FF",
    "SpeedMbps": 100,
    "AutoNeg": true,
    "FullDuplex": true,
    "MTUSize": 1500,
    "HostName": "web483",
    "FQDN": "web483.redfishspecification.org",
    "IPv6DefaultGateway": "fe80::3ed9:2bff:fe34:600",
    "MaxIPv6StaticAddresses": null,
    "NameServers": [
        "names.redfishspecification.org"
    ],
    "IPv4Addresses": [
        {
            "Address": "192.168.0.10",
            "SubnetMask": "255.255.252.0",
            "AddressOrigin": "Static",
            "Gateway": "192.168.0.1"
        }
    ],
    "IPv6Addresses": [
        {
            "Address": "fe80::1ec1:deff:fe6f:1e24",
            "PrefixLength": 64,
            "AddressOrigin": "Static",
            "AddressState": "Preferred"
        }
    ],
    "IPv6StaticAddresses": [
    ],
    "VLAN": null,
    "Oem": {}
  "Links" : {
    "Oem" : {
      "Intel_RackScale" : {
        "@odata.type" : "#Intel.Oem.EthernetInterface",
       "NeighborPort" : {
          "@odata.id" : "/redfish/v1/EthernetSwitches/1/Ports/1"
        }
      }
    }
  }
}
```


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 Manager collection

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

Table 26 Manager collection attributes

Name	Managers		
Type URI	/redfish/v1/Managers		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.19.1 Operations

4.19.1.1 GET

Request:

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

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#Managers",
        "@odata.id": "/redfish/v1/Managers",
        "@odata.type": #Manager.1.0.0.ManagerCollection",
        "Name": "Manager Collection",
        "Members@odata.count": 3,
        "Members": [
                {
                        "@odata.id": "/redfish/v1/Managers/BMC1"
                },
                {
                        "@odata.id": "/redfish/v1/Managers/BMC2"
                },
                {
                        "@odata.id": "/redfish/v1/Managers/PSME"
                }
        ]
}
```

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 Manager

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

Table 27 Manager attributes

Name	Manager		
Type URI	/redfish/v1/Managers/{managerID}		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Name of resource
ManagerType	String (enum)	No	Type of manager "ManagementController" - A controller used primarily to monitor or manage the operation of a device or system "EnclosureManager" - A controller which provides management functions for a chassis or group of devices or systems "BMC" - A controller which provides management functions for a single computer system "RackManager" - A controller which provides management functions for a whole or part of a rack "AuxiliaryController" - A controller which provides management functions for a particular subsystem or group of devices
Description	String, null	No	Description of resource.
Model	String, Null	No	Manager model
UUID	String, null	No	The Universal Unique Identifier (UUID) for this Manager
DateTime	String, null	No	The current DateTime (with offset) for the manager, used to set or read time.
DateTimeLocalOffset	String, null	No	The time offset from UTC that the DateTime property is set to in format: +06:00 .
ServiceEntryPointUUID	String	No	The UUID of the Redfish Service Entry Point provided by this manager
Status	Object, null	No	See chapter 5.1 for resource status.
FirmwareVersion	String, null	No	The firmware version of this Manager
Oem	Object, null	No	OEM defined object
GraphicalConsole	Object, null	No	**Name** / **Type** / **Required** / **Description** ServiceEnabled / Boolean / Yes / Console availability

<table>
<tr><td>Name</td><td colspan="4">Manager</td></tr>
<tr><td>Type URI</td><td colspan="4">/redfish/v1/Managers/{managerID}</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Required</td><td colspan="2">Description</td></tr>
<tr><td></td><td></td><td></td><td colspan="2">
<table>
<tr><td>MaxConcurrentSessions</td><td>Number</td><td>No</td><td>Number of session that can be established at the same time</td></tr>
<tr><td>ConnectTypesSupported</td><td>Array</td><td>No</td><td>Supported types of connection:
"KVMIP" - The controller supports a Graphical Console connection using a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol
“Oem” - The controller supports a Graphical Console connection using an OEM-specific protocol</td></tr>
</table>
</td></tr>
<tr><td>SerialConsole</td><td>Object</td><td>No</td><td colspan="2">
<table>
<tr><th>Name</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>ServiceEnabled</td><td>Boolean</td><td>No</td><td>Console availability</td></tr>
<tr><td>MaxConcurrentSessions</td><td>Number</td><td>No</td><td>Number of session that can be established at the same time</td></tr>
<tr><td>ConnectTypesSupported</td><td>Array</td><td>No</td><td>Supported types of connection:
“SSH” - The controller supports a Serial Console connection using the SSH protocol
“Telnet” - The controller supports a Serial Console connection using the Telnet protocol"
“IPMI” - The controller supports a Serial Console connection using the IPMI Serial-over-LAN (SOL) protocol
“Oem” - The controller supports a Serial Console connection using an OEM-specific protocol</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>Name</td><td colspan="3">Manager</td></tr>
<tr><td>Type URI</td><td colspan="3">/redfish/v1/Managers/{managerID}</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>CommandShell</td><td>Object, null</td><td>No</td><td>
<table>
<tr><th>Name</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>ServiceEnabled</td><td>Boolean</td><td>No</td><td>Console availability</td></tr>
<tr><td>MaxConcurrent Sessions</td><td>Number</td><td>No</td><td>Number of session that can be established at the same time</td></tr>
<tr><td>ConnectTypes Supported</td><td>Array</td><td>No</td><td>Supported types of connection:
“SSH” - The controller supports a Command Shell connection using the SSH protocol
“Telnet” - The controller supports a Command Shell connection using the Telnet protocol"
“IPMI” - The controller supports a Command Shell connection using the IPMI Serial-over-LAN (SOL) protocol
“Oem” - The controller supports a Command Shell connection using an OEM-specific protocol</td></tr>
</table>
</td></tr>
<tr><td>Links</td><td>Object</td><td>Yes</td><td>Object containing links to related resources
<table>
<tr><th>Name</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>ManagerForChassis</td><td>Array</td><td>No</td><td>Array containing links to chassis (Pod, Drawer) managed by this manager</td></tr>
<tr><td>ManagerForServers</td><td>Array</td><td>No</td><td>Array of references to the systems that this manager has control over</td></tr>
<tr><td>ManagerInChassis</td><td>Object, null</td><td>No</td><td>This property is a reference to the chassis that this manager is located in</td></tr>
<tr><td>ManagerForSwitches</td><td>Array</td><td>No</td><td>Array containing links to Ethernet switches managed by this manager</td></tr>
<tr><td>Oem</td><td>Object</td><td>No</td><td>Oem defined links for resources related to this manager.
Intel® Rack Scale Design defined links shown in Table 28</td></tr>
</table>
</td></tr>
<tr><td>EthernetInterfaces</td><td>Object</td><td>No</td><td colspan="2">This is a reference to a collection of NICs that this manager uses for network communication. It is here that clients will find NIC configuration options and settings.</td></tr>
<tr><td>NetworkProtocol</td><td>Object</td><td>No</td><td colspan="2">Link to Network Protocol object containing list of all protocols supported by this manager</td></tr>
</table>

Table 28 Manager Oem links

Name	Type	Required	Description
ManagerForServices	Array	No	Link to collection of services managed by this resource

4.20.1 Operations

4.20.1.1 GET

Request:

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

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
        "@odata.id": "/redfish/v1/Managers/PSME",
        "@odata.type": "#Manager.1.0.1.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"
        },
        "GraphicalConsole": {
                "ServiceEnabled": true,
                "MaxConcurrentSessions": 2,
                "ConnectTypesSupported": ["KVMIP"]
        },
        "SerialConsole": {
                "ServiceEnabled": true,
                "MaxConcurrentSessions": 1,
                "ConnectTypesSupported": ["Telnet",
                "SSH",
                "IPMI"]
        },
        "CommandShell": {
                "ServiceEnabled": true,
                "MaxConcurrentSessions": 4,
                "ConnectTypesSupported": ["Telnet",
                "SSH"]
        },
        "FirmwareVersion": "1.00",
        "NetworkProtocol": {
                "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol"
        },
        "EthernetInterfaces": {
```


```
                "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces"
        },
        "Links": {
                "ManagerForServers": [],
                "ManagerForSwitches": [],
                "ManagerForChassis": [{
                        "@odata.id": "/redfish/v1/Chassis/FabricModule1"
                }],
                "ManagerInChassis": {
                        "@odata.type": "#Manager.1.2.0.Links",
                        "@odata.id": "/redfish/v1/Chassis/Drawer1"
                },
                "Oem": {
                        "Intel_RackScale": {
                                "@odata.type": "#Intel.Oem.Manager",
                                "ManagerForServices": [{
                                                "@odata.id":
"/redfish/v1/Services/RSS1"
                                }]
                        }
                }
        },
        "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 Ethernet switch collection

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

Table 29 Switch collection attributes

Name	Switch collection		
Type URI	/redfish/v1/EthernetSwitches		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.21.1 Operations

4.21.1.1 GET

Request:

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

Response:

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

4.21.1.2 PUT

Operation is not allowed on this resource.

4.21.1.3 PATCH

Operation is not allowed on this resource.

4.21.1.4 POST

Operation is not allowed on this resource.

4.21.1.5 DELETE

Operation is not allowed on this resource.

4.22 Switch

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

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

4.22.1 Operations

4.22.1.1 GET

Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1",
```


```
  "@odata.type": "#EthernetSwitch.1.0.0.EthernetSwitch",
  "Id": "Switch1",
  "SwitchId": "unique switch id",
  "Name": "Switch1",
  "Description": "description-as-string",
  "Manufacturer": "Quanta",
  "Model": "ly8_rangley",
  "ManufacturingDate": "02/21/2015 00:00:00",
  "SerialNumber": "2M220100SL",
  "PartNumber": "1LY8UZZ0007",
  "FirmwareName": "ONIE",
  "FirmwareVersion": "1.1",
  "Role": "TOR",
  "MaxACLNumber": 4,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {},
  "Ports": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports"
  },
  "ACLs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs"
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/PSME"
      }
    ],
    "Oem": {}
  }
}
```


4.22.1.2 PUT

Operation is not allowed on this resource.

4.22.1.3 PATCH

Operation is not allowed on this resource.

4.22.1.4 POST

Operation is not allowed on this resource.

4.22.1.5 DELETE

Operation is not allowed on this resource.

4.23 Switch port collection

Switch port collection resource – provides collection of all switch port available in a switch.

Table 30 Switch ports collection attributes

Name	Switch port collection		
Type URI	/redfish/v1/EthernetSwitches/Switch1/Ports		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection

4.23.1 Operations

4.23.1.1 GET

Request:

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

Response:

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

4.23.1.2 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

Request:

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

```
                                    "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port11"
                        }
                ]
        }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Lag1
```

4.23.1.5 DELETE

Operation is not allowed on this resource.

4.24 Switch port

Switch port resource – provides detailed information about a switch port identified by {portID}.

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

4.24.1 Operations

4.24.1.1 GET

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.1.0.0.EthernetSwitchPort",
        "Id": "Port1",
        "Name": "RSA Switch Port",
        "Description": "description-as-string",
        "PortId": "sw0p10",
        "Status": {
                "State": "Enabled",
                "Health": "OK",
                "HealthRollup": null
        },
        "LinkType": "Ethernet",
        "OperationalState": "Up",
        "AdministrativeState": "Up",
        "LinkSpeedMbps": 10000,
        "NeighborInfo": {
                "SwitchId": "unique switch id",
                "PortId": "11",
                "CableId": "CustomerWritableThing"
        },
        "NeighborMAC": "00:11:22:33:44:55",
```

```
        "FrameSize": 1520,
        "Autosense": true,
        "FullDuplex": true,
        "MACAddress": "2c:60:0c:72:e6:33",
        "IPv4Addresses": [{
                "Address": "192.168.0.10",
                "SubnetMask": "255.255.252.0",
                "AddressOrigin": "Static",
                "Gateway": "192.168.0.1"
        }],
        "IPv6Addresses": [{
                "Address": "fe80::1ec1:deff:fe6f:1e24",
                "PrefixLength": 64,
                "AddressOrigin": "Static",
                "AddressState": "Preferred"
        }],
        "PortClass": "Logical",
        "PortMode": "LinkAggregationStatic",
        "PortType": "Upstream",
        "Oem": {

        },
        "VLANs": {
                "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs"
        },
    "StaticMACs": {
                "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs"
    }
        "Links": {
                "PrimaryVLAN": {
                        "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
                },
                "Switch": {
                        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
                },
                "MemberOfPort": {
                        "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/LAG1"
                },
                "PortMembers": [],
                "ActiveACLs": [{
                        "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
                }],
                "Oem": {
      "Intel:RackScale" : {
        "@odata.type" : "#Intel.Oem.EthernetSwitchPort",
        "NeighborInterface" : {
          "@odata.id" : "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
        }
      }
    }
```

```
                }
        }
}
```

4.24.1.2 PUT

Operation is not allowed on this resource.

4.24.1.3 PATCH

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1
Content-Type: application/json
{
        “AdministrativeState”: “Up”,
        “LinkSpeedMbps”: 1000,
        “FrameSize”: 1500,
        “Autosense”:false,
        “Links”: {
            "PrimaryVLAN": {
             "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
         },
                “PortMembers”: [
                        {
                                “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port10”
                        },
                        {
                                “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port12”
                        }
                ]
    }
}
```

Response:

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

Note: PortMembers array is optional parameter. If not present in PATCH request, list of port members shall not be changed.

4.24.1.4 POST

Operation is not allowed on this resource.

4.24.1.5 DELETE

Request:

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

Response:

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

4.25 Switch ACL collection

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

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

4.25.1 Operations

4.25.1.1 GET

Request:

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

Response:

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

4.25.1.2 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

POST action is used to create new clean Access Control List (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
```

4.25.1.5 DELETE

Operation is not allowed on this resource.

4.26 Switch ACL

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

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

4.26.1 Operations

4.26.1.1 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.1.0.0.EthernetSwitchACL",
  "Id": "ACL1",
  "Name": "Ethernet Switch Access Control List",
  "Description": "Switch ACL",
  "Oem": {},
  "Rules": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules"
  },
  "Links": {
    "BoundPorts": [{
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"
    }],
    "Oem": {}
  }
    "Actions": {
        "#EthernetSwitchACL.Bind": {
            "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bin
d",
            "Port@Redfish.AllowableValues": [
            {"@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"},
            {"@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p3"}
            ]
        },
        "#EthernetSwitchACL.Unbind": {
            "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Unb
ind",
            "Port@Redfish.AllowableValues": [
            {"@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"}
            ]
        },

}
```

4.26.1.2 PUT

Operation is not allowed on this resource.

4.26.1.3 PATCH

Operation is not allowed on this resource.

4.26.1.4 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

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

```
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
```

4.26.1.5 DELETE

Request:

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

Response:

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

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

4.27 Switch ACL rule collection

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

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

4.27.1 Operations

4.27.1.1 GET

Request:

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

Response:

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

4.27.1.2 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

Attributes of POST action to create new ACL rule"

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

Table 31 ACL Rule Condition attributes

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

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

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules
```

```
Content-Type: application/json
{
       "RuleId": 1,
       "Action": "Deny",
       "ForwardMirrorInterface": null,
       "MirrorPortRegion": [],
       "MirrorType": null,
       "Condition": {
              "IPSource": {
                     "IPv4Address": "192.168.8.0",
                     "Mask": "0.0.0.255"
              },
              "IPDestination": null,
              "MACSource":  null,
             "MACDestination": null,
              "VLANId": null,
              "L4SourcePort": null,
              "L4DestinationPort": null,
              "L4Protocol": null
       }
}
```

Response:

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

4.27.1.5 DELETE

Operation is not allowed on this resource.

4.28 Switch ACL rule

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

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

4.28.1 Operations

4.28.1.1 GET

Request:

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

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/Rules/Me
mbers/$entity",
       "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1",
       "@odata.type": "#EthernetSwitchACLRule.1.0.0.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": {
        }
}
```

4.28.1.2 PUT

Operation is not allowed on this resource.

4.28.1.3 PATCH

Attributes of ACL Rule that can be modified by PATCH method:

Attribute	Type	Required	Description
RuleId	Number	No	This is ACL rule ID which determine rule priority.
Action	String (enum)	No	Action that will be executed when rule condition will be met. Available actions: Permit – packets meeting condition will be allowed

			Deny – deny packets meeting condition Forward – forwards packets to selected interface Mirror – mirrors traffic on selected interface
ForwardMirrorInterface	Link object	Yes for "Forward" and "Mirror" actions	This is link to interface where traffic will be mirrored/forwarded.
MirrorPortRegion	Array of link objects	Yes for "Mirror" action	Array of links to Ethernet interfaces which traffic should be mirrored on *"ForwardMirrorInterface"*
MirrorType	String (enum)	Yes for "Mirror" action	Type of mirroring traffic. Available values: Egress - Mirror egressing traffic on the mirrored port to the mirror destination port Ingress - Mirror ingressing traffic on the mirrored port to the mirror destination port Bidirectional - Mirror ingressing and egressing traffic on the mirrored port to the mirror destination port Redirect - Mirror ingress traffic to the mirror destination port and drop the traffic ingressing the mirror ports
Condition	Object	No	Provides all conditions that must be met to trigger rule action. List of available properties is described in table below.

Table 32 ACL Rule Condition attributes

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

<table>
<tr><td>MACSource</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet source MAC address:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>MACAddress</td><td>String</td><td>Yes</td><td>IPv4 address</td></tr>
<tr><td>Mask</td><td>String, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
<tr><td>MACDestination</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet destination MAC address:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>MACAddress</td><td>String</td><td>Yes</td><td>IPv4 address</td></tr>
<tr><td>Mask</td><td>String, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
<tr><td>VLANId</td><td>Object</td><td>No</td><td>Yes</td><td>Provides packet VLAN tag ID:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>Id</td><td>Number</td><td>Yes</td><td>VLAN Id tag</td></tr>
<tr><td>Mask</td><td>Number, null</td><td>No</td><td>The mask selects which bits in corresponding value property are relevant for matching for a frame (a zero bit in the mask indicates a don't care bit in the value). Null value means all bits are relevant.</td></tr>
</table></td></tr>
<tr><td>L4SourcePort</td><td>Object</td><td>No</td><td>Yes</td><td>IP layer 4 Source port. Contains following properties:
<table>
<tr><th>Attribute</th><th>Type</th><th>Required</th><th>Description</th></tr>
<tr><td>Port</td><td>Number</td><td>Yes</td><td>Port numeric value</td></tr>
</table></td></tr>
</table>

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

Request:

```
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/1.1 204 No Content
```

4.28.1.4 POST

Operation is not allowed on this resource.

4.28.1.5 DELETE

Request:

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

4.29 Switch port static MAC collection

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

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

4.29.1 Operations

4.29.1.1 GET

Request:

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

Response:

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

4.29.1.2 PUT

Operation is not allowed on this resource.

4.29.1.3 PATCH

Operation is not allowed on this resource.

4.29.1.4 POST

Attributes of POST action to create new static MAC entry

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

Request:

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

Response:

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

4.29.1.5 DELETE

Operation is not allowed on this resource.

4.30 Switch port static MAC

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

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

4.30.1 Operations

4.30.1.1 GET

Request:

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

Response:

```
{
       "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticM
ACs/Members/$entity",
       "@odata.id":
"/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1",
       "@odata.type": "#StaticMAC.1.0.0.StaticMAC",
       "Id": "1",
       "Name": "StaticMAC",
       "Description": "description-as-string",
    "MACAddress": "00:11:22:33:44:55",
    "VLANId": 112,
```

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

4.30.1.2 PUT

Operation is not allowed on this resource.

4.30.1.3 PATCH

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

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

Request:

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

Response:

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

4.30.1.4 POST

Operation is not allowed on this resource.

4.30.1.5 DELETE

Request:

```
DELETE /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
Response:
HTTP/1.1 204 No Content
```

4.31 Network protocol

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

Table 33 Network service attributes

Name	Network service		
Type URI	/redfish/v1/Managers/{managerID}/NetworkProtocol		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Resource name
Description	String, null	No	Resource description
Status	Object, null	No	See chapter 5.1 for resource status.
Oem	Object	No	OEM defined object

<table>
<tr><td>Name</td><td colspan="3">Network service</td></tr>
<tr><td>Type URI</td><td colspan="3">/redfish/v1/Managers/{managerID}/NetworkProtocol</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>HostName</td><td>String, null</td><td>No</td><td>Provides information about host name</td></tr>
<tr><td>FQDN</td><td>String, null</td><td>No</td><td>Fully Qualified Domain Name</td></tr>
<tr><td>HTTP</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>HTTPS</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>SNMP</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>VirtualMedia</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>Telnet</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>SSDP</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
<tr><td>NotifyMulticastIntervalSeconds</td><td>Number, null</td><td>No</td><td>Indicates how often the Multicast is done from this service for SSDP</td></tr>
<tr><td>NotifyTTL</td><td>Number, null</td><td>No</td><td>Indicates the time to live hop count for SSDPs Notify messages.</td></tr>
<tr><td>NotifyIPv6Scope</td><td>String, null</td><td>No</td><td>Indicates the scope for the IPv6 Notify messages for SSDP</td></tr>
</table></td></tr>
<tr><td>IPMI</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>SSH</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
<tr><td>Port</td><td>Number, null</td><td>No</td><td>Indicates the protocol port</td></tr>
</table></td></tr>
<tr><td>KVMIP</td><td>Object</td><td>No</td><td><table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>ProtocolEnabled</td><td>Boolean, null</td><td>No</td><td>Availability of protocol</td></tr>
</table></td></tr>
</table>

Name	Network service					
Type URI	/redfish/v1/Managers/{managerID}/NetworkProtocol					
Attribute	Type	Required	Description			
			Port	Number, null	No	Indicates the protocol port

4.31.1 Operations

4.31.1.1 GET

Request:

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

Response:

```
{
    "@odata.context":
"/redfish/v1/$metadata#ManagerNetworkProtocol.ManagerNetworkProtocol",
    "@odata.id": "/redfish/v1/Managers/BMC1/NetworkProtocol",
    "@odata.type": "#ManagerNetworkProtocol.1.0.0.ManagerNetworkProtocol",
    "Id": "NetworkProtocol",
    "Name": "Manager Network Protocol",
    "Description": "Manager Network Service Status",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "HostName": "mymanager",
    "FQDN": "mymanager.mydomain.com",
    "HTTP": {
        "ProtocolEnabled": true,
        "Port": 80
    },
    "HTTPS": {
        "ProtocolEnabled": true,
        "Port": 443
    },
    "IPMI": {
        "ProtocolEnabled": true,
        "Port": 623
    },
    "SSH": {
        "ProtocolEnabled": true,
        "Port": 22
    },
    "SNMP": {
        "ProtocolEnabled": true,
        "Port": 161
    },
    "VirtualMedia": {
        "ProtocolEnabled": true,
        "Port": 17988
    },
    "SSDP": {
        "ProtocolEnabled": true,
```

```
        "Port": 1900,
        "NotifyMulticastIntervalSeconds": 600,
        "NotifyTTL": 5,
        "NotifyIPv6Scope": "Site"
    },
    "Telnet": {
        "ProtocolEnabled": true,
        "Port": 23
    },
    "KVMIP": {
        "ProtocolEnabled": true,
        "Port": 5288
    },
    "Oem": {}
}
```

4.31.1.2 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

Operation is not allowed on this resource.

4.31.1.5 DELETE

Operation is not allowed on this resource.

4.32 Ethernet interface collection

Ethernet interface collection resource – provides collection of all Ethernet interfaces supported by a manager identified by {managerID} or included in a blade identified by {bladeID}.

Table 34 Ethernet interface collection attributes

Name	Ethernet interfaces		
Type URI	/redfish/v1/Systems/{systemID}/EthernetInterfaces /redfish/v1/Managers/{managerID}/EthernetInterfaces		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.32.1 Operations

4.32.1.1 GET

Request:

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

Response:

```
{
```

```
        "@odata.context":
"/redfish/v1/$metadata#Managers/Members/1/EthernetInterfaces/$entity",
        "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces",
        "@odata.type":
"#EthernetNetworkInterface.1.0.0.EthernetNetworkInterfaceCollection",
        "Name": "Ethernet Network Interface Collection",
        "Members@odata.count": 1,
        "Members": [
                {
                        "@odata.id":
"/redfish/v1/Managers/1/EthernetInterfaces/1"
                }
        ]
}
```

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

Operation is not allowed on this resource.

4.32.1.5 DELETE

Operation is not allowed on this resource.

4.33 Ethernet interface

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

For current API version this resource is identical with System network interface.

4.34 VLAN network interface collection

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

Table 35 VLAN network interface collection attributes

Name	VLAN network interfaces		
Type URI	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/ VLANs		
Attribute	**Type**	**Required**	**Description**
`Name`	String	Yes	Name of collection
`Members@odata.count`	Number	Yes	Collection members count
`Members`	Array	Yes	Contains the members of this collection.

4.34.1 Operations

4.34.1.1 GET

Request:

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

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

Response:

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

4.34.1.2 PUT

Operation is not allowed on this resource.

4.34.1.3 PATCH

Operation is not allowed on this resource.

4.34.1.4 POST

Attribute	Type	Required	Description
Name	String	No	Resource name. If not provided, service will use default name for newly created resource.
Oem	Object	Yes	OEM defined object “Intel_RackScale” extensions: **Attribute** / **Type** / **Description** Tagged / Boolean / Indicates if VLAN is tagged (as defined in IEEE* 802.1Q) – required property.
VLANEnable	Boolean	Yes	Indicates if this VLAN is enabled
VLANId	Number	Yes	VLAN identifier for this NIC

Request:

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

```
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN
2
```

4.34.1.5 DELETE

Operation is not allowed on this resource.

4.35 VLAN network interface

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

Table 36 VLAN network interface attributes

Name		VLAN Network Interface	
Type URI		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs/{vlanID}	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Resource name
Description	String, null	No	Resource description
Oem	Object	No	OEM defined object “Intel_RackScale” extensions: **Attribute** / **Type** / **Description** Tagged / Boolean, null / Indicates if VLAN is tagged (as defined in IEEE 802.1Q) Status / Object, null / See chapter 5.1 for resource status.
VLANEnable	Boolean, null	Yes (on create)	Indicates if this VLAN is enabled
VLANId	Number	Yes (on create)	VLAN identifier for this NIC

4.35.1 Operations

4.35.1.1 GET

Request:

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

Response:

```
{
       “@odata.id”:
“/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1”,
    "@odata.context":
"/redfish/v1/$metadata#VLanNetworkInterface.VLanNetworkInterface",
    "@odata.type": "#VLanNetworkInterface.1.0.0.VLanNetworkInterface",
    "Id": "VLAN1",
```

```
    "Name": "VLAN Network Interface",
    "Description": "System NIC 1 VLAN",
    "VLANEnable": true,
    "VLANId": 101,
    "Oem": {
        "Intel_RackScale": {
            "@odata.type": "#Intel.Oem.VLanNetworkInterface",
            "Tagged": false
           "Status": {
               "State": "Enabled",
               "Health": "OK"
           },
        }
    }
}
```

4.35.1.2 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

Operation is not allowed on this resource.

4.35.1.5 DELETE

Request:

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

Response:

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

4.36 Event service

Event service resource responsible for sending events to subscribers.

Table 37 Event service attributes

Name		Event service	
Type URI		/redfish/v1/EventService	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Resource name
Description	String, null	No	Resource description
Status	Object, null	No	See chapter 5.1 for resource status.
Oem	Object, null	No	OEM defined object
ServiceEnabled	Boolean, Null	No	This indicates whether this service is enabled.
DeliveryRetryAttempts	Number	No	This is the number of attempts an event posting is retried before the subscription is terminated.
DeliveryRetryIntervalSeconds	Number	No	This represents the number of seconds between retry attempts for sending any given Event

Name		Event service	
Type URI		/redfish/v1/EventService	
Attribute	**Type**	**Required**	**Description**
EventTypesForSubscription	Array	Yes	This is the types of Events that can be subscribed to. Available event types: - *StatusChange* - The status of this resource has changed - *ResourceUpdated* – The value of this resource has been updated. - *ResourceAdded* – A resource has been added - *ResourceRemoved* – A resource has been removed - *Alert* – A condition exist which requires attention.
Subscriptions	Object, null	Yes	This is a reference to a collection of Event Destination resources.
Actions	Object	No	The Actions object contains the available custom actions on this resource. Available actions: - SendTestEvent – sends specified event type to subscribers. Allowed event types are the same as in EventTypesForSubscription.

4.36.1 Operations

4.36.1.1 GET

Request:

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

Response:

```
{
    „@odata.context”: „/redfish/v1/$metadata#EventService”,
    „@odata.id”: „/redfish/v1/EventService”,
    „@odata.type”: „#EventService.1.0.0.EventService”,
    „Id”: „EventService”,
    „Name”: „Event Service”,
    „Description”: „Event Service”,
    „Status”: {
        „State”: „Enabled”,
        „Health”: „OK”
    },
    „ServiceEnabled”: true,
    „DeliveryRetryAttempts”: 3,
    „DeliveryRetryIntervalSeconds”: 60,
    „EventTypesForSubscription”: [
        „StatusChange”,
        „ResourceUpdated”,
        „ResourceAdded”,
        „ResourceRemoved”,
        „Alert”
    ],
    „Subscriptions”: {
        „@odata.id”: „/redfish/v1/EventService/Subscriptions”
    },
    „Actions”: {
        „#EventService.SendTestEvent”: {
            „target”:
„/redfish/v1/EventService/Actions/EventService.SendTestEvent”,
```

```
            „EventType@Redfish.AllowableValues”: [
                „StatusChange”,
                „ResourceUpdated”,
                „ResourceAdded”,
                „ResourceRemoved”,
                „Alert”
            ]
        },
        „Oem”: {}
    },
    „Oem”: {}
}
```

4.36.1.2 PUT

Operation is not allowed on this resource.

4.36.1.3 PATCH

Operation is not allowed on this resource.

4.36.1.4 POST

Operation is not allowed on this resource.

4.36.1.5 DELETE

Operation is not allowed on this resource.

4.37 Event subscription collection

This is a collection of Event Destination resources.

Table 38 Event subscription collection attributes

Name	Event subscription collection		
Type URI	/redfish/v1/EventService/Subscriptions		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection
Members	Array	Yes	Array of resource members
Members@odata.count	Number	Yes	Collection members count
Members	Array	Yes	Contains the members of this collection.

4.37.1 Metadata

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

4.37.2 Operations

4.37.2.1 GET

Request:

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

Response:

```
{
```

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

4.37.2.2 PUT

Operation is not allowed on this resource.

4.37.2.3 PATCH

Operation is not allowed on this resource.

4.37.2.4 POST

Request:

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

Response:

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

4.37.2.5 DELETE

Operation is not allowed on this resource.

4.38 Event subscription

Event subscription contains information about type of events user subscribed for and should be sent.

Table 39 Event subscription attributes

Name		Event subscription	
Type URI		/redfish/v1/EventService/Subscriptions/{destinationID}	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	No	Resource name
Description	String	No	Resource description
Oem	Object	No	OEM defined object

Name		Event subscription	
Type URI		/redfish/v1/EventService/Subscriptions/{destinationID}	
Attribute	**Type**	**Required**	**Description**
Destination	String	Yes	The URI of the destination Event Service.
EventTypes	Array	Yes	This is the types of Events that can be subscribed to. Available event types: - *StatusChange* - The status of this resource has changed - *ResourceUpdated* – The value of this resource has been updated. - *ResourceAdded* – A resource has been added - *ResourceRemoved* – A resource has been removed - *Alert* – A condition exist which requires attention.
Context	String	Yes	A client-supplied string that is stored with the event destination subscription.
Protocol	String (enum)	Yes	The protocol type of the event connection. Available protocols: - "Redfish" - event type shall adhere to that defined in the Redfish specification.

4.38.1 Metadata

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

4.38.2 Operations

4.38.2.1 GET

Request:

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

Response:

```
{
    „@odata.context”:
„/redfish/v1/$metadata#EventService/Members/Subscriptions/Members/$entity”,
    „@odata.id”: „/redfish/v1/EventService/Subscriptions/1”,
    „@odata.type”: „#EventService.1.0.0.EventDestination”,
    „Id”: „1”,
    „Name”: „EventSubscription 1”,
    „Description”: „EventSubscription”,
    „Destination”: „http://192.168.1.1/Destination1”,
    „EventTypes”: [
        „ResourceAdded”,
        „ResourceRemoved”
    ],
    „Context”: „My Event”,
    „Protocol”: „Redfish”
}
```

4.38.2.2 PUT

Operation is not allowed on this resource.

4.38.2.3 PATCH

Operation is not allowed on this resource.

4.38.2.4 POST

Operation is not allowed on this resource.

4.38.2.5 DELETE

Request:

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

Response:

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

4.39 Event array

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

Table 40 Event array attributes

Name		Event array	
Type URI		n/a	
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	No	Resource name
Description	String	No	Resource description
Oem	Object	No	OEM defined object
Events	Array	Yes	Array of events – see _Table 41 Event attributes

Table 41 Event attributes

Attribute	**Type**	**Required**	**Description**
EventType	String (enum)	Yes	This is the types of Events that can be subscribed to. Available event types: - *StatusChange* - The status of this resource has changed - *ResourceUpdated* – The value of this resource has been updated. - *ResourceAdded* – A resource has been added - *ResourceRemoved* – A resource has been removed - *Alert* – A condition exist which requires attention.
EventId	String	No	This is a unique instance identifier of an event.
EventTimestamp	String	No	This is time the event occurred.
Severity	String	No	This is the severity of the event.
Message	String	No	This is the human readable message, if provided.
MessageId	String	Yes	This is the key for this message which can be used to look up the message in a message registry.
MessageArgs	Array of strings	No	This array of message arguments are substituted for the arguments in the message when looked up in the message registry.
Context	String	Yes	A context can be supplied at subscription time. This property is the context value supplied by the subscriber.
OriginOfCondition	Object	Yes	This indicates the resource that originated the condition that caused the event to be generated.

4.39.1 Metadata

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

4.39.2 Operations

4.39.2.1 POST

Request:

```
POST http://192.168.1.1/Destination1
Content-Type: application/json
{
    „@odata.context”: „/redfish/v1/$metadata#EventService/Members/Events/1”,
    „@odata.id”: „/redfish/v1/EventService/Events/1”,
    „@odata.type”: „#EventService.1.0.0.Event”,
    „Id”: „1”,
    „Name”: „Event Array”,
    „Description”: „Events”,
    „Events”: [
        {
            „EventType”: „ResourceRemoved”,
            „EventId”: „ABC132489713478812346”,
            „Severity”: „Info”,
            „EventTimestamp”: „2015-02-23T14:44:44+00:00”,
            „Message”: „The Blade was removed”,
            „MessageId”: „Info.1.0.BladeRemoved”,
            „MessageArgs”: [
                „ Xeon Compute Module”,
                „/redfish/v1/Systems/System1”
            ],
            „OriginOfCondition”: {
                „@odata.id”: „/redfish/v1/Systems/System1”
            },
            „Context”: „HotSwap event”
        }
    ]
}
```

Response:

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

4.39.2.2 PUT

Operation is not allowed on this resource.

4.39.2.3 PATCH

Operation is not allowed on this resource.

4.39.2.4 GET

Operation is not allowed on this resource.

4.39.2.5 DELETE

Operation is not allowed on this resource.

§

5 Common Property Description

5.1 Status

Attribute	Type	Nullable	Description
State	String	Yes	This indicates the known state of the resource, such as if it is enabled. Allowed values: See chapter 5.2.
Health	String	Yes	This represents the health state of this resource in the absence of its dependent resources. Allowed values: See chapter 5.3.
HealthRollup	String	Yes	This represents the overall health state from the view of this resource. Allowed values: See chapter 5.3.

5.2 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
- InTest: This function or resource is undergoing testing
- Starting: This function or resource is starting
- Absent: This function or resource is not installed
- UnavailableOffline - This function or resource is present but cannot be used
- StandbySpare - This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it

5.3 Status -> Health

- OK: Normal
- Warning: A condition exists that requires attention
- Critical: A critical condition exists that requires immediate attention

5.4 ComputerSystem.Reset

- On: Turn the system on
- ForceOff: Turn the system off immediately (nongraceful) 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 nonmaskable interrupt to cause an immediate system halt
- ForceOn: Turn the system on immediately
- PushPowerButton: Simulate the pressing of the physical power button on this system

5.5 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

§