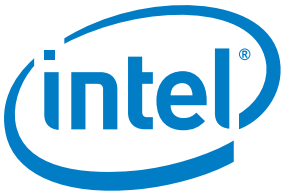

Intel® Rack Scale Design (RSD) Rack Management Module (RMM) Representational State Transfer (REST)

API Specification
Software v2.4

April 2019

Revision 001

Document Number: 608494-001

Contents

Figures

Tables

Revision History

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

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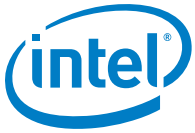


1.0 Introduction

This document defines the interface of the Intel® Rack Scale Design (Intel® RSD) Rack Management Module (RMM) Software v2.4.

1.1 Scope

The interface specified in this document is based on the *Distributed Management Task Force's (DMTF) Redfish* Scalable Platforms API Specification (DSP0266 v1.5.0) and Redfish API Schema Readme v2018.*1 (DSP8010 v2018.1) (refer to Table 2).

1.2 Intended Audience

The intended audience for this document includes designers and engineers working with the Software v2.4 release, porting this software to hardware platforms.

1.3 Conventions

The keywords/phrases "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in Key words for use in RFCs to *Indicate Requirement Levels, March 1997*, RFC 2119 (refer to Table 2).

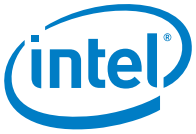
1.4 Notes and Symbol Convention

Symbol and note convention is similar to typographical conventions used in Cloud Infrastructure Management *Interface 6 (CIMI) Model and RESTful HTTP-based Protocol 7 an Interface for Managing Cloud Infrastructure*, RFC 2119 (refer to Table 2).

Notation used in JavaScript Object Notation* (JSON*) serialization description:

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

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



1.5 JSON* Serialization Convention

An object is an unordered set of name/value pairs. An object begins with { (left brace) and ends with } (right brace). Each name is followed by a : (colon) and the name/value pairs are separated by a, (comma).

An array is an ordered collection of values. An array begins with [(left bracket) and ends with] (right bracket). Values are separated by a : (comma).

A value can be a string in double quotes, or a number; or true or false or null; or an object or an array. These structures can be nested.

A string is a sequence of zero or more Unicode characters, wrapped in double quotes, using backslash escapes. A character is represented as a single character string. A string is very much like a C or Java* string.

A number is very much like a C or Java number, except that the octal and hexadecimal formats are not used.

1.6 HTTP Response Codes

The HTTP Response Codes are listed in *Scalable Platforms Management API Specification*, DSP0266, Section 6.5.2 (refer to Table 2).

1.7 Terminology

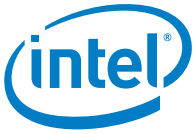
Table 1. Terminology

Term	Definition
API	Application Programming Interface
BMC	Baseboard Management Controller
CIMI	Cloud Infrastructure Management Interface
CM	Controller Module
OEM	Original Equipment Manufactures
POD	A physical collection of multiple racks
PODM	POD Manager
HTTP	Hypertext Transfer Protocol
Intel® RSD	Intel® Rack Scale Design
JSON*	JavaScript Object Notation*
MBP	Management Backplane
PSME	Pooled System Management Engine
PSU	Power Supply Unit
REST	Representational State Transfer
RMC	Rack Management Controller
RMM	Rack Management Module
SSDP	Simple Service Directory Protocol
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UUID	Universally Unique Identifier

1.8 Reference Documents

Table 2. Reference Documents and Resources

Doc ID	Title	Location
608486	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) User Guide Software v2.4*	Note: https://www.intel.com/content/www/us/en/architecture-and-technology/rack-scale-design/rack-scale-design-resources.html
608487	*Intel® Rack Scale Design (Intel® RSD) Conformance and Software Reference Kit Getting Started Guide v2.4*	
608488	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Release Notes Software v2.4*	
608490	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management (PSME) Release Notes Software v2.4*	
608491	*Intel® Rack Scale Design Storage Services API Specification Software v2.4*	
608492	*Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.4*	
608493	*Intel® Rack Scale Design (Intel® RSD) Pod Manager (PODM) Representational State Transfer (REST) API Specification Software v2.4*	
608495	*Intel® Rack Scale Design (Intel® RSD) Generic Assets Management Interface (GAMI) API Specification v2.4*	
608496	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) REST API Specification Software v2.4*	
608497	*Intel® Rack Scale Design (Intel® RSD) Conformance Test Suite (CTS) Release Notes*	
608489	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) User Guide Software v2.4*	
N/A	*Field Programmable Gate Array (FPGA) over Fabric Protocol Architecture Specification*	https://cdrdv2.intel.com/v1/dl/getContent/608298
N/A	*Intel® Rack Scale Design (Intel® RSD) for Cascade Lake Platform Firmware Extension Specification*	https://cdrdv2.intel.com/v1/dl/getContent/596167
DSP0263	*Cloud Infrastructure Management Interface 6 (CIMI) Model and RESTful HTTP-based Protocol 7 An Interface for Managing Cloud Infrastructure*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0263_1.0.0.pdf*
DSP0266	*Redfish* Scalable Platforms Management API Specification v1.5.0*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.5.0.pdf*
DSP8010	*Redfish* API Schema Readme v2018.1*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.1.zip*
RFC2119	*Keywords for use in RFCs to Indicate Requirement Levels, March 1997*	*https://ietf.org/rfc/rfc2119.txt*
RFC5789	*IETF PATCH Method for HTTP*	https://tools.ietf.org/html/rfc5789



Doc ID	Title	Location
RFC7230	*Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing*	*https://www.rfc-editor.org/rfc/pdfrfc/rfc7230.txt.pdf*
N/A	*Redfish Base Registry v1.0.0*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8011_1.0.0a.json*

NOTE: Copies of documents having an order number, referenced in this document, which cannot be accessed may be obtained by calling 1 800 548 4725 or by visiting *www.intel.com/design/literature.htm* and download a copy.

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2.0 Overview

The Intel® RSD RMM REST API v2.4 provides the REST-based interface that allows for full management of the RMM, including asset discovery and configuration.

2.1 API Structure and Relation

Table 3 provides the resources and uniform resource identifiers (URIs).

Table 3. Resources and Uniform Resource Identifiers (URIs)

Resource	Schema Version	URI
Service Root	v1_3_1	/redfish/v1
Chassis Collection	-	/redfish/v1/Chassis Collection
Chassis	V1_7_0	/redfish/v1/Chassis/{chassisID}
Power	V1_5_0	/redfish/v1/Chassis/{chassisID}/Power
Thermal	V1_4_0	/redfish/v1/Chassis/{chassisID}/Thermal
Managers Collection	-	/redfish/v1/Managers
Manager	V1_4_0	/redfish/v1/Managers/{managerID}
Network Protocol	V1_2_0	/redfish/v1/Managers/{managerID}/NetworkProtocol
Ethernet Interfaces Collection	-	/redfish/v1/Managers/{managerID}/EthernetInterfaces
Ethernet Interfaces	V1_4_0	/redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}
VLAN Network Interfaces Collection	-	/redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs
VLANs Network Interfaces	V1_1_0	/redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs/{vlanID}
EventService	V1_1_0	/redfish/v1/EventService
Event Subscriptions Collection	-	/redfish/v1/EventService/Subscriptions
Event Subscription	V1_3_0	/redfish/v1/EventService/Subscriptions/{subscriptionID}
TaskService	V1_1_0	/redfish/v1/TaskService
Task Collection	-	/redfish/v1/TaskService/Tasks
Task	V1_2_0	/redfish/v1/TaskService/Tasks/{taskID}
TelemetryService	WIP	/redfish/v1/Oem/Intel_RackScale/TelemetryService
MetricDefinitions Collection	WIP	/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions
MetricDefinitions	WIP	/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/{metricDefinitionId}
UpdateService	V1_2_1	/redfish/v1/UpdateService
ActionInfo	V1_0_3	/redfish/v1/UpdateService/SimpleUpdateActionInfo
Account Service	V1_3_0	/redfish/v1/AccountService
Role	V1_2_1	/redfish/v1/AccountService/Roles/Administrator
Session Service	V1_1_3	/redfish/v1/SessionService
Session	V1_1_0	/redfish/v1/SessionService/Sessions/Session1
Manager Account	V1_1_2	/redfish/v1/AccountService/Accounts/Account1

2.2 Rack Management Model and Definitions

Figure 1 illustrates typical rack components managed by the Intel® RMM API Specification Software v2.4.

Figure 1. Typical Rack Components

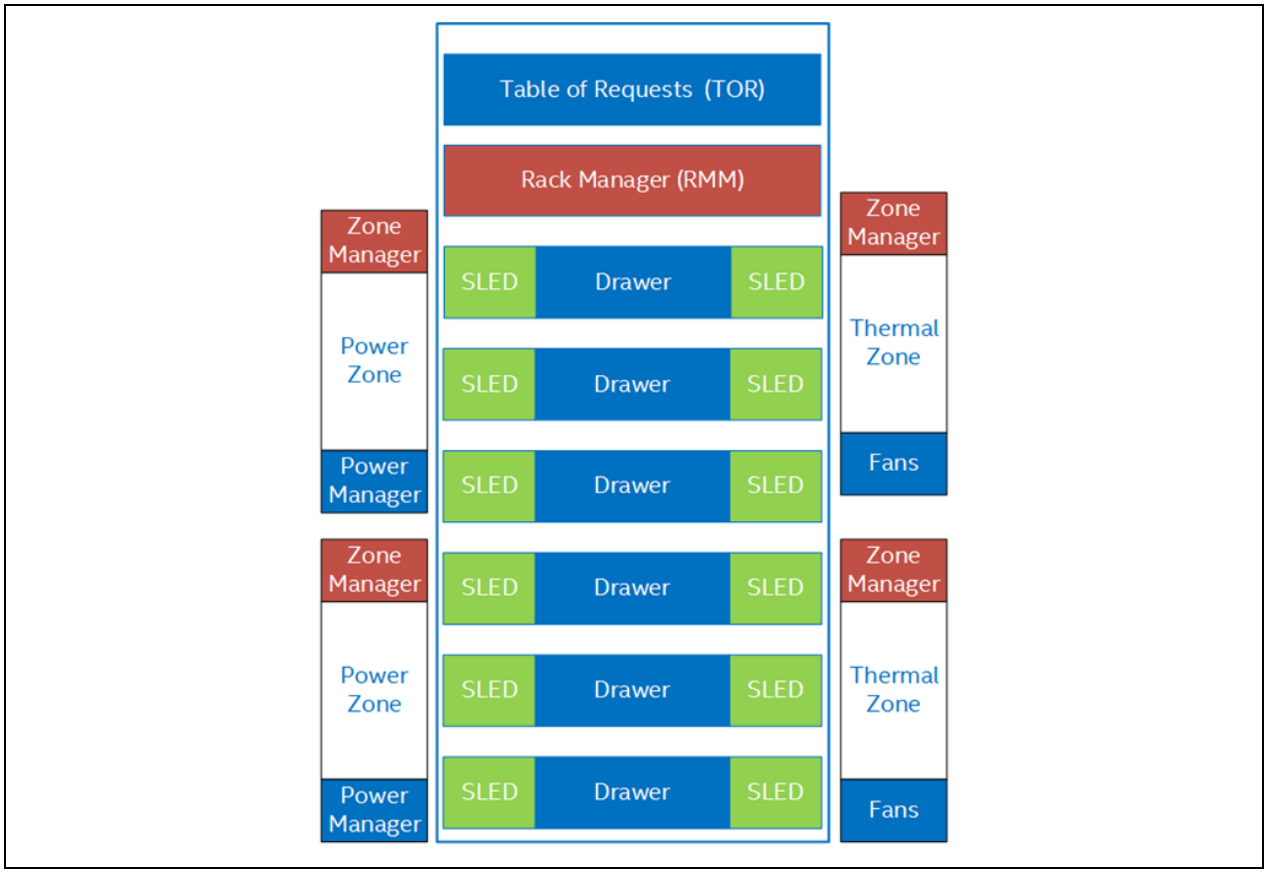

Table 4. Rack Management Definitions

Term	Definition
Rack	Includes one or multiple Power and Thermal Zones.
Power Zone	The Power Zone is one power management domain; the servers in a power zone share the same Power Supply Units (PSUs), including a power shelf and a number of trays powered by that power shelf.
Thermal Zone	The Thermal Zone is one thermal management domain; the servers in a thermal zone share the same cooling devices (Fans). The devices in the zone cool multiple trays.
Tray/Drawer	Includes one or multiple server modules.
RMM	Rack Management Module (RMM) is the rack controller exposing, managing power, and thermal resources. Figure 1 shows the logical concept of the RMM. The rack in Figure 1 contains one RMM.
CM or MBP	Controller Module (CM) or Management Backplane (MBP). The RMM contains 0 to n CM/MBP.

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3.0 RMM REST API Error Code

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

3.1 API Error Response

In case of an error, the Pooled System Management Engine (PSME) REST API responds with an Hypertext Transfer Protocol (HTTP) status code, as defined by the *Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing*, RFC7230, (refer to Table 2) 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. The PSME REST API returns extended error information as a JSON object with a single property named error. The value of the attribute shall be a JSON object with the attributes shown in Table 5.

Table 5. API Error Response Attributes

Attribute	Description
`code`	A string indicating a specific `MessageId` from the message registry. `"Base.1.0.GeneralError"` should be used only when no other message is better.
`message`	A human-readable error message is 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 attributes shown in Table 6.

Table 6. API Error Response Attributes

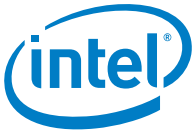
Attribute	Description
`MessageId`	A string indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.
`Message`	A human-readable error message indicating the semantics associated with the error. This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

3.1.2 Error Message Definitions

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

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

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



3.1.3 Intel® RackScale Message Registry

The registry contains two RSD-specific error messages.

Request:

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

Response:

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

3.1.4 Example Error JSON Object

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

```
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_0.Message",
                "MessageId": "Base.1.0.MalformedJSON",
                "Message": "The request body submitted was malformed JSON and could
not be parsed by the receiving service",
                "Severity": "Error"
            }
            {
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_0.Message",
                "MessageId": "Base.1.0.PropertyNotWriteable",
                "RelatedProperties": [
                    "#/Name"
                ],
                "Message": "The property Name is a read 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

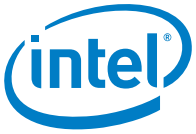
In general, if an error is not described in any of the following tables, it is mapped to an HTTP 500 Internal Error Code.

3.2.1 General Error Codes

For a detailed list of Error Codes, refer to *Redfish* Scalable Platforms Management API Specification*, Section 6.5.2 (refer to Table 2). The client should be prepared to handle the error codes shown in Table 7.

Table 7. HTTP Error Status Codes

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



3.2.2 PATCH Method Error Codes

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

- **400 Bad Request** – malformed JSON in the request (values not in range, unknown property, and so on). The code, message and extended information within the error response explain why a request was rejected.
  Of special concern are the RSD-specific messages from the Intel_RackScale registry.
  `PropertyNotModifiable` is returned when a PATCH request was sent for a property which, while writable according to metadata, is read-only on the RMM REST API. `PropertyValueRestricted` is returned when a PATCH request contains a value for a property that is compliant with metadata, but the service has additional restrictions on the acceptable values for that property which were not met by request.
- **405 Method Not Allowed** – the resource does not support the PATCH method.
- **409 Conflict** – Update cannot be executed at this moment. The user might be able to resolve the conflict and resubmit the request.
- **501 Not Implemented** - Resource supports PATCH method, but current implementation does not.
- **500 Internal Server Error** - All other situations in which the previous codes do not fit. Specifically, this response is returned if the Resource supports the PATCH request, but one of the PATCH-ed properties cannot be updated, for instance, if underlying layers do not allow the execution of a particular request.

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4.0 Rack Management Module API Definition

The JSON examples in this document are informative, not normative. Metadata files that are referenced by this specification are normative.

4.1 Odata* Support

Intel® RSD supports the Odata* v4.0 as defined in the *Redfish* Scalable Platforms Management API Specification* (refer to Table 2).

All resources within this *Intel® RSD RMM REST API Specification* are identified by a unique identifier property named "`@odata.id`." Resource Identifiers are represented in JSON payloads as Uniform Resource Locator (URL) paths relative to the Redfish Schema portion of the URI. For example, the resource identifiers 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 Asynchronous Operations

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

The use of HTTP Response codes enables a client to determine if the operation was completed synchronously or asynchronously. Use of the HTTP Response codes prepares clients to handle both synchronous and asynchronous responses for requests using HTTP DELETE, POST, PATCH and PUT methods.

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

4.3 Protocol Version

The protocol version is separate from the version of the resources, or the version of the *Redfish* Schema v2018.1*, DSP8010, listed in Table 2, supported by them.

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

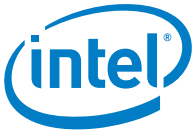
The root URI for this version of the Redfish protocol is"`/redfish/v1/`".

While the primary 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 is preserved with previous minor versions.
- **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, will conform to the same version of the protocol supported by the root service.

4.3.1 Operations

4.3.1.1 GET

Request:

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

Response:

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

4.4 Odata Service Document

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

4.4.1 Operations

4.4.1.1 GET

Request:

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

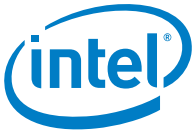
Response:

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

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


4.5 Intel® RSD OEM Extensions

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



4.6 Service Root

Service Root resource – entry point.

Properties' details are available in the `ServiceRoot_v1.xml` metadata file.

4.6.1 Operations

4.6.1.1 GET

Request:

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

Response:

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

```
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ServiceRoot",
      "ApiVersion": "2.4.0",
      "EthernetSwitches": {
        "@odata.id": "/redfish/v1/EthernetSwitches"
      },
      "TelemetryService": {
        "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService"
      }
    }
  }
  "Links": {}
}
```


4.6.1.2 PUT

The PUT operation is not allowed on the service root resource.

4.6.1.3 PATCH

Service Root operation is not allowed on this resource.

4.6.1.4 POST

Service Root operation is not allowed on this resource.

4.6.1.5 DELETE

Service Root operation is not allowed on this resource.

4.7 Manager Collection

The Manager Collection resource provides a collection of all managers available in a rack, manageable through the RMM.

Metadata file: `ManagerCollection_v1.xml`

4.7.1 Operations

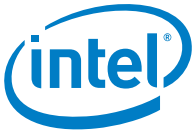
4.7.1.1 GET

Request:

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

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerCollection.ManagerCollection",
  "@odata.id": "/redfish/v1/Managers",
  "@odata.type": "#ManagerCollection.ManagerCollection",
  "Name": "Manager Collection",
  "Description": "description-as-string",
  "Members@odata.count": 2,
  "Members": [
    {
```



```
      "@odata.id": "/redfish/v1/Managers/RackManager"
    },
    {
      "@odata.id": "/redfish/v1/Managers/ZoneManager"
    }
  ]
}
```

4.7.1.2 PUT

Manager Collection operation is not allowed on this resource.

4.7.1.3 PATCH

Manager Collection operation is not allowed on this resource.

4.7.1.4 POST

Manager Collection operation is not allowed on this resource.

4.7.1.5 DELETE

Manager Collection operation is not allowed on this resource.

4.8 Manager

The Manager is a systems management entity, which may implement or provide access to a Redfish service. Examples of managers are Baseboard Management Controllers (BMCs), Enclosure Managers, Management Controllers, and other subsystems that assign manageability functions. There can be multiple Managers in implementation, and they may or may not be directly accessible through a Redfish-defined interface.

Properties' details are available in the `Manager_v1.xml` metadata file.

4.8.1 Operations

4.8.1.1 GET

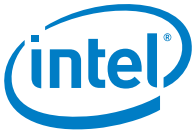
Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.id": "/redfish/v1/Managers/RMM",
  "@odata.type": "#Manager.v1_2_0.Manager",
  "Id": "1",
  "Name": "Manager",
  "ManagerType": "RackManager",
  "Description": "RackScale RMC",
  "ServiceEntryPointUUID": "11384622-2938-2342-8820-489239905423",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "Model": "Joo Janta 200",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
```

```
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "GraphicalConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 2,
    "ConnectTypesSupported": [
      "KVMIP"
    ]
  },
  "SerialConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 1,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH",
      "IPMI"
    ]
  },
  "CommandShell": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 4,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH"
    ]
  },
  "FirmwareVersion": "1.00",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/RackManager1/NetworkProtocol"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/RackManager1/EthernetInterfaces"
  },
  "Links": {
    "ManagerForServers": [],
    "ManagerForChassis": [{
      "@odata.id": "/redfish/v1/Chassis/Rack1"
    }],
    "ManagerInChassis": {
      "@odata.id": "/redfish/v1/Chassis/Rack1"
    },
    "ManagerForSwitches": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "Intel.Oem.ManagerLinks",
        "ManagerForServices":[],
        "ManagerForFabrics": [],
        "ManagerForEthernetSwitches": []
      }
    }
  },
  "Oem": {},
  "PowerState": "On",
  "Actions": {
    "#Manager.Reset": {
      "target": "/redfish/v1/Managers/RackManager/Actions/Manager.Reset",
      "ResetType@Redfish.AllowableValues": ["GracefulRestart"]
    },
```



```
    "Oem": {
      "#Intel_RackScale.LoadFactoryDefaults": {
        "target":
"/redfish/v1/Managers/RackManager/Actions/Oem/Intel_RackScale.LoadFactoryDefaults"
      }
    }
  }
}
```

4.8.1.2 PUT

The manager operation is not allowed on this resource.

4.8.1.3 PATCH

The manager operation is not allowed on this resource.

4.8.1.4 POST

The manager operation is not allowed on this resource.

4.8.1.4.1 Manager Reset

Manager Reset can be initiated using the action below.

Request:

```
POST /redfish/v1/Managers/RackManager/Actions/Manager.Reset
Content-Type: application/json

{
        "ResetType": "GracefulRestart"
}
```

Response:

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

Or (when task is created)

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

4.8.1.4.2 Reset to Factory Defaults

The Rack manager may support a Reset to Factory Defaults. The following request action performs such a reset.

Request:

```
POST /redfish/v1/Managers/RackManager/Actions/Oem/Intel_RackScale.LoadFactoryDefault
Content-Type: application/json
{
}
```

Response:

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

Or (when task is created)

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

4.8.1.5 DELETE

Reset to factory defaults operation is not allowed on this resource.

4.9 Metric Definition Collection

Property details are available in `Intel_RackScaleMetricDefinitionCollection_v1.xml` metadata file.

4.9.1 Operations

4.9.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinitionCollection.MetricDefinitionColl
ection ",
  "@odata.id": "/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions",
  "@odata.type":
"#Intel_RackScale.MetricDefinitionCollection.MetricDefinitionCollection",
  "Name": "Metric Definitions Collection",
  "Description": "description-as-string",
  "Members@odata.count": 2,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/FanSpeedRPM"
    },
```

```
    {
      "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/RackTemperature"
    }
  ]
}
```

4.9.1.2 PUT

Metric definition collection operation is not allowed on this resource.

4.9.1.3 PATCH

Metric definition collection operation is not allowed on this resource.

4.9.1.4 POST

Metric definition collection operation is not allowed on this resource.

4.9.1.5 DELETE

Metric definition collection operation is not allowed on this resource.

4.10 Metric Definition

Property details are available in the `Intel_RackScaleMetricDefinition_v1.xml` metadata file. `MetricDefinition` describes either metric associated with a physical sensor (e.g., exposed by BMC) or metric associated with the specific resource (e.g., statistics of Rack Power Module). This resource is optional for metrics and required for sensors.

4.10.1 Operations

4.10.1.1 GET

Request:

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

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Intel_RackScale.MetricDefinition.MetricDefinition",
  "@odata.id":
"/redfish/v1/Oem/Intel_RackScale/TelemetryService/MetricDefinitions/SLEDTemperatures",
  "@odata.type": "#Intel_RackScale.MetricDefinition.v1_0_0.MetricDefinition",
  "Description": "PSU Temperature MetricDefinition",
  "Name": "Power Supply Unit Temperature definition",
  "Id": "SLEDTemp1",
  "SensorType": "Temperature",
  "Implementation": "Physical",
  "SensingInterval": "PT1S",
  "MetricType": "Numeric",
  "PhysicalContext": "Backplane",
  "Units": "Cel",
  "MinReadingRange": 0,
```

```
  "MaxReadingRange": 110,
  "Precision": 1,
  "MetricProperties": [
    "/redfish/v1/Chassis/Zone1/Thermal#/Temperatures/0/ReadingCelsius"
  ]
}
```

4.10.1.2 PUT

Metric definition operation is not allowed on this resource.

4.10.1.3 PATCH

Metric definition operation is not allowed on this resource.

4.10.1.4 POST

Metric definition operation is not allowed on this resource.

4.10.1.5 DELETE

Metric definition operation is not allowed on this resource.

4.11 TelemetryService

Property details are available in the `Intel_RackScaleTelemetryService_v1.xml` metadata file.

4.11.1 Operations

4.11.1.1 GET

Request:

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

Response:

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

4.11.1.2 PUT

The `TelemetryService` operation is not allowed on this resource.

4.11.1.3 PATCH

The `TelemetryService` operation is not allowed on this resource.

4.11.1.4 POST

The `TelemetryService` operation is not allowed on this resource.

4.11.1.5 DELETE

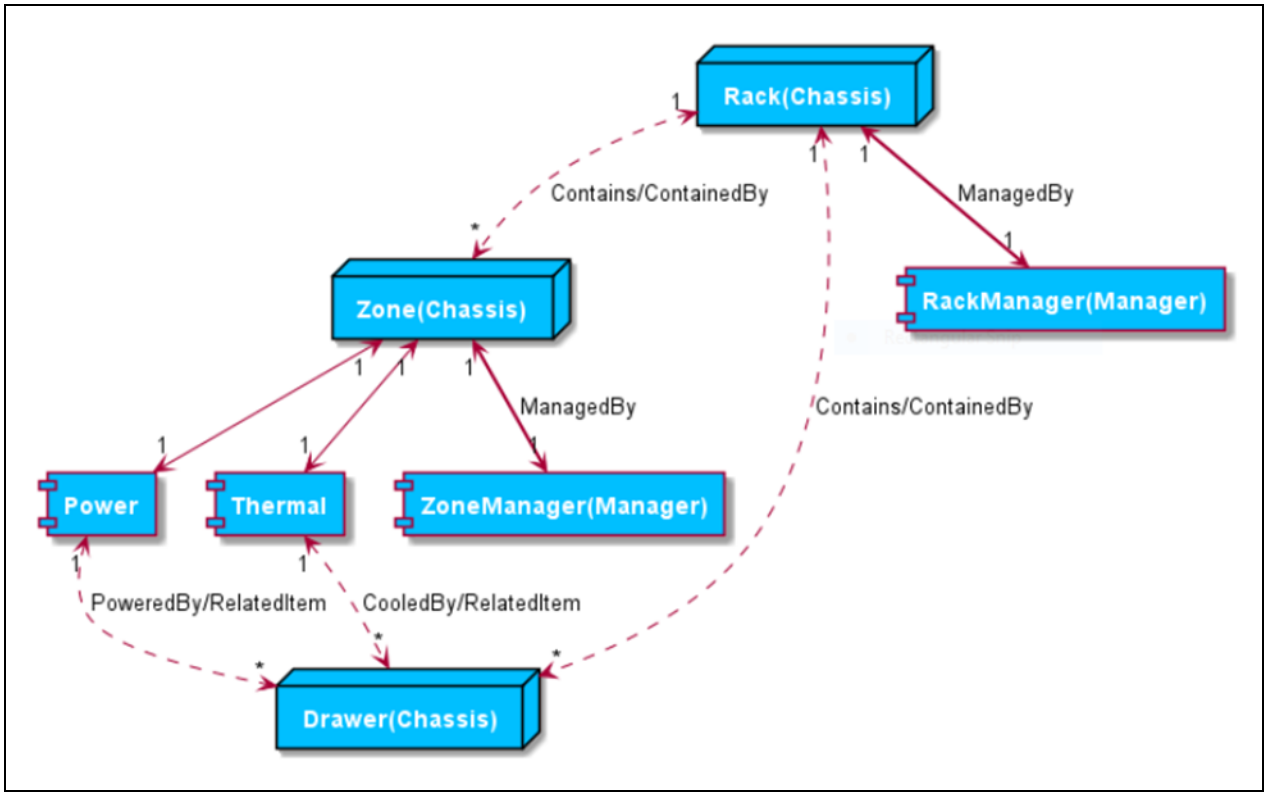
The `TelemetryService` operation is not allowed on this resource.

4.12 ChassisCollection

The `ChassisCollection` resource shown in Figure 2 illustrates the relationship between various chassis components in the Intel® RSD Rack.

Property details are available in the `ChassisCollection_v1.xml` metadata file.

Figure 2. Chassis Collection Relationship between Components



Note: In Figure 2, the numbers represent a one-to-one or to-many relationship between components, "*" denotes zero or more.

4.12.1 Operations

4.12.1.1 GET

Request:

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

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#Chassis",
    "@odata.id": "/redfish/v1/Chassis",
    "@odata.type": "#ChassisCollection.ChassisCollection",
    "Name": "Chassis Collection",
    "Description": "description-as-string",
    "Members@odata.count": 3,
    "Members": [
        {
            "@odata.id": "/redfish/v1/Chassis/Rack1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Zone1"
        },
        {
            "@odata.id": "/redfish/v1/Chassis/Drawer1"
        }
    ]
}
```

4.12.1.2 PUT

The `ChassisCollection` operation is not allowed on this resource.

4.12.1.3 PATCH

The `ChassisCollection` operation is not allowed on this resource.

4.12.1.4 POST

The `ChassisCollection` operation is not allowed on this resource.

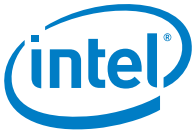
4.12.1.5 DELETE

The `ChassisCollection` operation is not allowed on this resource.

4.13 Chassis

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

Details of this resource are described in the metadata file: `Chassis_v1.xml`.



4.13.1 Operations

4.13.1.1 GET

Request:

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

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis/Members/$entity",
  "@odata.id": "/redfish/v1/Chassis/R1",
  "@odata.type": "#Chassis.v1_7_0.Chassis",
  "Id": "1",
  "ChassisType": "Rack",
  "Name": "name-as-string",
  "Description": "description-as-string",
  "Manufacturer": "Intel Corporation",
  "Model": "RackScale_Rack",
  "SKU": "sku-as-string",
  "SerialNumber": "serial-number-as-string",
  "PartNumber": "part-number-as-string",
  "AssetTag": null,
  "IndicatorLED": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "Intel.Oem.RackChassis",
      "Location": {
        "Id": "Rack1",
        "ParentId": null
      },
      "RackSupportsDisaggregatedPowerCooling": false,
      "GeoTag": "1.234234, 54.234234"
    }
  },
  "Links": {
    "@odata.type": "#Chassis.v1_7_0.Links",
    "Contains": [{
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    }, {
      "@odata.id": "/redfish/v1/Chassis/Zone1"
    }
      ],
    "ContainedBy": [],
    "ComputerSystems": [],
    "ManagedBy": [{
      "@odata.id": "/redfish/v1/Managers/RackManager1"
    }],
    "ManagersInChassis": [{
      "@odata.id": "/redfish/v1/Managers/RackManager1"
    }],
    "PoweredBy": [],
    "CooledBy": [],
    "Storage": [],
```

```
    "Drives": [],
    "Switches": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.ChassisLinks",
        "EthernetSwitches": []
      }
    }
  },
  "PowerState": "On",
  "Thermal": {
    "@odata.id": "/redfish/v1/Chassis/Rack1/Thermal"
  },
  "Power": {
    "@odata.id": "/redfish/v1/Chassis/Rack1/Power"
  },
  "UUID": "123-124-134-234-13423534",
  "Actions": {
    "#Chassis.Reset": {
      "target": "/redfish/v1/Chassis/Rack1/Actions/Chassis.Reset",
      "ResetType@Redfish.AllowableValues": [
      ]
    }
  }
}
```


4.13.1.2 PUT

Chassis operation is not allowed on this resource.

4.13.1.3 PATCH

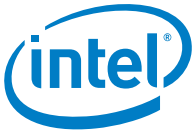
The PATCH operation can update the properties listed in Table 8.

Table 8. Chassis Properties

Attribute	Type	Required	Description
AssetTag	String	No	The user assigned asset tag for this chassis.
Oem->Intel_RackScale->Location	Object	No	The object is representing the physical location of the chassis. Valid only for resource type "Rack." Following properties can be patched: "Id" - String containing physical location ID of this chassis.
Oem->Intel_RackScale->GeoTag	String	No	GeoTag – only for Rack chassis.

Request:

```
PATCH /redfish/v1/Chassis/1
Content-Type: application/json
{
    "AssetTag": "My rack"
    "Oem": {
        "Intel_RackScale": {
          "Location": {
            "Id": "Rack_1"
          }
        }
    }
}
```



Response:

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

Or:

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

4.13.1.4 POST

`Chassis.reset` can be initiated using the action below:

Request:

```
POST /redfish/v1/Chassis/Drawer1/Actions/Chassis.Reset
Content-Type: application/json
{
        "ResetType": "ForceRestart"
}
```

Response:

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

Or (when task is created)

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

4.13.1.5 DELETE

The chassis operation is not allowed on this resource.

4.14 Power

Power metrics resource represents the properties of Power Consumption and Power Limiting.

Detailed information about this property can be obtained from the metadata file: `Power_v1.xml`

4.14.1 Operations

4.14.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Zone1/Power
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Power.Power",
  "@odata.id": "/redfish/v1/Chassis/Zone1/Power",
  "@odata.type": "#Power.v1_5_0.Power",
  "Id": "Power",
  "Name": "Power",
  "Description": "Power",
  "PowerControl": [ {
    "@odata.id": "/redfish/v1/Chassis/Zone1/Power#/PowerControl/0",
    "MemberId": "0",
    "Name": "System Power Control",
    "PowerConsumedWatts": 8000,
    "PowerRequestedWatts": 8500,
    "PowerAvailableWatts": 8500,
    "PowerCapacityWatts": 10000,
    "PowerAllocatedWatts": 8500,
    "PowerMetrics": {
      "IntervalInMin": null,
      "MinConsumedWatts": null,
      "MaxConsumedWatts": null,
      "AverageConsumedWatts": null
    },
    "PowerLimit": {
      "LimitInWatts": null,
      "LimitException": null,
      "CorrectionInMs": null
    },
    "RelatedItem": [ {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    } ],
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    },
    "Oem": {
    }
  } ],
  "Voltages": [ {
    "@odata.id": "/redfish/v1/Chassis/Zone1/Power#/Voltages/0",
    "MemberId": "0",
    "Name": "VRM1 Voltage",
    "SensorNumber": 11,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingVolts": 12,
    "UpperThresholdNonCritical": null,
    "UpperThresholdCritical": null,
    "UpperThresholdFatal": null,
    "LowerThresholdNonCritical": null,
    "LowerThresholdCritical": null,
    "LowerThresholdFatal": null,
    "MinReadingRange": null,
    "MaxReadingRange": null,
    "PhysicalContext": "VoltageRegulator",
    "RelatedItem": [ {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
```


```
    } ]
  } ],
  "PowerSupplies": [ {
    "@odata.id": "/redfish/v1/Chassis/Zone1/Power#/PowerSupplies/0",
    "MemberId": "0",
    "Name": "Power Supply Bay 1",
    "Status": {
      "State": "Enabled",
      "Health": "Warning"
    },
    "Oem": {
    },
    "PowerSupplyType": "DC",
    "LineInputVoltageType": "DCNeg48V",
    "LineInputVoltage": -48,
    "PowerCapacityWatts": 400,
    "LastPowerOutputWatts": 192,
    "Model": "499253-B21",
    "Manufacturer": "ManufacturerName",
    "FirmwareVersion": "1.00",
    "SerialNumber": "1z0000001",
    "PartNumber": "1z0000001A3a",
    "SparePartNumber": "0000001A3a",
    "InputRanges": [
                {
                    "InputType": "DC",
                    "MinimumVoltage": -47,
                    "MaximumVoltage": -49,
                    "OutputWattage": 400,
                    "MinimumFrequencyHz": 50,
                    "MaximumFrequencyHz": 60,
                    "Oem": {}
                }
            ],
    "IndicatorLED": "Off",
    "RelatedItem": [ {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    } ]
  } ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Power",
      "Actions": {
        "#Intel.Oem.RequestPowerSupplyStateChange": {
          "target":
"/redfish/v1/Chassis/Zone1/Power/Oem/Intel_RackScale/Actions/Intel.Oem.RequestPowerSup
plyStateChange",
          "State@AllowableValues": ["Enabled", "Disabled"],
          "MemberId@AllowableValues": ["0"]
        }
      }
    }
  }
}
```


4.14.1.2 PUT

The power operation is not allowed on this resource.

4.14.1.3 PATCH

The power operation is not allowed on this resource.

4.14.1.4 POST

Power supplies can be enabled/disabled using the following action.

Request:

```
POST
/redfish/v1/Chassis/Zone1/Power/Oem/Intel_RackScale/Actions/Intel.Oem.RequestPowerSupp
lyStateChange
Content-Type: application/json
{
        "State": "Disabled",
        "MemberId”: "0"
}
```

Response:

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

Or (when task is created)

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

4.14.1.5 DELETE

The power operation is not allowed on this resource.

4.15 Thermal

Thermal metrics resource represents the properties of Temperature and Cooling.

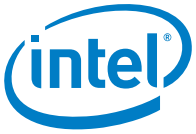
Detailed information about the resource's properties can be obtained from the metadata file: `Thermal_v1.xml`

4.15.1 Operations

4.15.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Zone1/Thermal
Content-Type: application/json
```



Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.id": "/redfish/v1/Chassis/Zone1/Thermal",
  "@odata.type": "#Thermal.v1_4_0.Thermal",
  "Id": "Thermal",
  "Name": "Thermal",
  "Description": "Thermal",
  "Temperatures": [ {
    "@odata.id": "/redfish/v1/Chassis/Zone1/Thermal#/Temperatures/0",
    "MemberId": "0",
    "Name": "Drawer inlet Temp",
    "SensorNumber": 42,
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "ReadingCelsius": 21,
    "UpperThresholdNonCritical": null,
    "UpperThresholdCritical": null,
    "UpperThresholdFatal": null,
    "LowerThresholdNonCritical": null,
    "LowerThresholdCritical": null,
    "LowerThresholdFatal": null,
    "MinReadingRangeTemp": null,
    "MaxReadingRangeTemp": null,
    "PhysicalContext": "Intake",
    "RelatedItem": [ {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    } ]
  } ],
  "Fans": [ {
    "@odata.id": "/redfish/v1/Chassis/Zone1/Thermal#/Fans/0",
    "MemberId": "0",
    "Name": "BaseBoard System Fan",
    "PhysicalContext": "Backplane",
    "Status": {
      "State": "Enabled",
      "Health": "OK"
    },
    "Reading": 2100,
    "ReadingUnits": "RPM",
    "UpperThresholdNonCritical": null,
    "UpperThresholdCritical": null,
    "UpperThresholdFatal": null,
    "LowerThresholdNonCritical": null,
    "LowerThresholdCritical": null,
    "LowerThresholdFatal": null,
    "MinReadingRange": null,
    "MaxReadingRange": null,
    "RelatedItem": [ {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    } ]
  } ],
```

```
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Thermal",
      "VolumetricAirflowCfm": 100,
      "DesiredSpeedPwm": 50
    }
  }
}
```

4.15.1.2 PUT

Thermal operation is not allowed on this resource.

4.15.1.3 PATCH

The PATCH operation can update the following properties:

Table 9. Desired Fan Speed Properties

Attribute	Type	Required	Description
`Oem->Intel_RackScale->DesiredSpeedPwm`	Number	No	This property represents the desired speed of all FANs in the current chassis as a percentage of maximum fan speed. Allowed values are in the range from 0 to 100 percent.

Request:

```
PATCH /redfish/v1/Chassis/1
Content-Type: application/json
{
    "AssetTag": "My rack"
    "Oem": {
        "Intel_RackScale": {
          "DesiredSpeedPwm": 90
        }
    }
}
```

Response:

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

Or:

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

4.15.1.4 POST

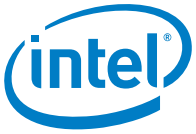
The PATCH operation is not allowed on this resource.

4.15.1.5 DELETE

The PATCH operation is not allowed on this resource.

4.16 UpdateService

`UpdateService` resource represents the properties required to invoke the software/firmware update.



Note: In this current release, only the Manager Resources can be updated.

4.16.1 Operations

4.16.1.1 GET

Request:

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

Response:

```
{
  "@odata.type": "#UpdateService.v1_0_2.UpdateService",
  "Id": "UpdateService",
  "Name": "Update service",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "ServiceEnabled": true,
  "Actions": {
    "#UpdateService.SimpleUpdate": {
      "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
      "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
    },
    "Oem": {}
  },
  "Oem": {},
  "@odata.context": "/redfish/v1/$metadata#UpdateService/$entity",
}
```

4.16.1.2 PUT

The `UpdateService` operation is not allowed on this resource.

4.16.1.3 PATCH

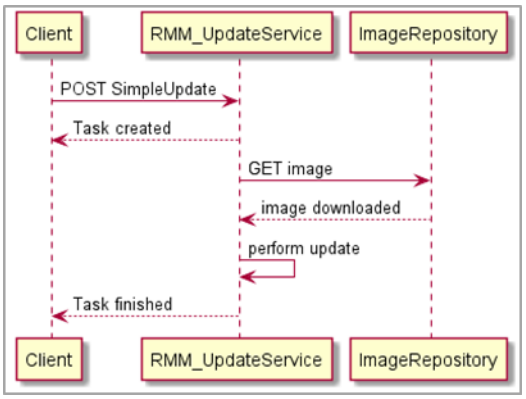
The `UpdateService` operation is not allowed on this resource.

4.16.1.4 POST

4.16.1.4.1 SimpleUpdate Action

The software/firmware update can be initiated using `SimpleUpdate` action. Figure 3 illustrates the interaction between components.

Figure 3. SimpleUpdate Action Component Interactions



Request:

```
POST /redfish/v1/UpdateService/Actions/SimpleUpdate
Content-Type: application/json

{
        "ImageURI": "http://10.0.0.1/images/rmm_image.deb",
        "Targets": [
          "/redfish/v1/Managers/RackManager"
        ],
        "TransferProtocol": "HTTP"
}
```

Response:

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

Or (when task is created)

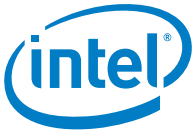
```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
    "@odata.context": "/redfish/v1/$metadata#Task.Task",
    "@odata.id": "/redfish/v1/TaskService/Tasks/1",
    "@odata.type": "#Task.v1_0_0.Task",
    "Id": "1",
    "Name": "Task 1",
    "TaskState":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

4.16.1.5 DELETE

The `SimpleUpdate` action operation is not allowed on this resource.

4.17 ActionInfo

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



4.17.1 Operations

4.17.1.1 GET (UpdateService/SimpleUpdateActionInfo)

Request:

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

Response:

```
{
  "@odata.type": "#ActionInfo.v1_0_0.ActionInfo",
  "Parameters": [
    {
      "Name": "ImageURI",
      "Required": true,
      "DataType": "String"
    },
    {
      "Name": "TransferProtocol",
      "Required": false,
      "DataType": "String",
      "AllowableValues": [ "HTTP", "HTTPS", "FTP" ]
    },
    {
      "Name": "Targets",
      "Required": false,
      "DataType": "StringArray",
      "AllowableValues": ["RackManager", "ZoneManager"]
    }
  ],
  "Oem": {},
  "@odata.context": "/redfish/v1/$metadata#ActionInfo.ActionInfo",
  "@odata.id": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
}
```

4.17.1.2 PUT

The `UpdateService/SimpleUpdateActionInfo` operation is not allowed on this resource.

4.17.1.3 PATCH

The PATCH operation is not allowed on `UpdateService/SimpleUpdateActionInfo` resource.

4.17.1.4 POST

The `UpdateService/SimpleUpdateActionInfo` operation is not allowed on this resource.

4.17.1.5 DELETE

The UpdateService/SimpleUpdateActionInfo operation is not allowed on this resource.

4.18 RMM – PSME Common Resources

Resources mentioned in Table 10 are shared in the *Intel® RSD PSME REST API* and *Intel® RSD RMM REST API Specifications* as common resources. Refer to the *Intel® RSD PSME REST API Specification* for resource definition, Table 158, Required Resources per Service Type (refer to Table 2).

Table 10. RMM - PSME Common Resources

Resource Name	Supported Operations				
	GET	PATCH	POST	DELETE	Actions
EventService	X				
EventDestinationCollection	X		X		
EventDestination	X			X	
MetricDefinition	X				
MetricDefinitionCollection	X				
MessageRegistryFile	X				
Ethernet Interfaces	X				
Network Protocol	X				
Registries	X				
Task	X				
TaskCollection	X				
TaskService	X				
TelemetryService	X				
VLAN	X				
ManagerAccountCollection	X				
ManagerAccount	X				
RoleCollection	X				
Role	X				
AccountService	X				
SessionCollection	X		X		
Session	X			X	
SessionService	X	X			

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