



# Lenovo XClarity Controller 3 REST API Guide



**Note:** Before using this information, read the general information in [“Notices”](#) on page ccxcv.

First Edition (January 2025)

© Copyright Lenovo 2025.

**LIMITED AND RESTRICTED RIGHTS NOTICE:** If data or software is delivered pursuant to a General Services Administration (GSA) contract, use, reproduction, or disclosure is subject to restrictions set forth in Contract No. GS-35F-05925.

---

# Contents

## Contents . . . . . i

### Chapter 1. Introduction . . . . . 1

Authentication Methods . . . . .	1
Lenovo Extended Registries . . . . .	2
Tools for Redfish . . . . .	2

### Chapter 2. Service Root . . . . . 5

Resource ServiceRoot . . . . .	5
GET – Service root properties . . . . .	5

### Chapter 3. Session Management . . . . . 9

Resource SessionService . . . . .	9
GET – Session management properties. . . . .	9
PATCH – Update timeout property . . . . .	10
Resource Session . . . . .	10
GET – Collection for sessions. . . . .	10
GET – Session properties . . . . .	11
POST – Create a session. . . . .	12
DELETE – Delete a session . . . . .	13

### Chapter 4. Account Management . . . . . 15

Resource AccountService . . . . .	15
GET – Account management properties . . . . .	15
PATCH – Update global account lockout properties and LDAP properties. . . . .	18
Resource ManagerAccount . . . . .	19
GET – Collection for accounts . . . . .	19
GET – Account properties . . . . .	20
GET – HostBootStrap account properties . . . . .	22
POST – Create an account. . . . .	23
PATCH – Update account properties. . . . .	25
DELETE – Delete an account . . . . .	26
Resource Role . . . . .	26
GET – Collection for roles . . . . .	26
GET – Role properties . . . . .	27
POST – Create a custom role. . . . .	31
PATCH – Update custom role privileges . . . . .	32
DELETE – Delete a Role . . . . .	32
Resource Key . . . . .	33
GET – Collection for Key . . . . .	33
GET – Key properties . . . . .	34
PATCH – Update user description . . . . .	34
DELETE – Delete a Key . . . . .	35

### Chapter 5. Chassis Management . . . . . 37

Resource Chassis . . . . .	37
----------------------------	----

GET – Collection for chassis . . . . .	37
GET – Chassis properties . . . . .	38
PATCH – Update chassis properties . . . . .	43
Resource Enclosure . . . . .	44
GET – Collection for Enclosure . . . . .	44
GET – Enclosure properties . . . . .	45
PATCH – Update enclosure properties . . . . .	46
Resource Chassis (Retimer) . . . . .	47
GET – Retimer properties . . . . .	47
Resource Chassis (Drive backplane). . . . .	48
GET – Drive backplane properties . . . . .	48
Resource Chassis (I/O board or PCIe riser) . . . . .	49
GET – I/O Board or PCIe riser properties . . . . .	49
Resource EnvironmentMetrics (Chassis) . . . . .	50
GET – EnvironmentMetrics properties . . . . .	50
Resource Sensor . . . . .	52
GET – Collection of Sensors . . . . .	52
GET – Sensor properties . . . . .	53

### Chapter 6. Network Adapter Devices . . . . . 57

Resource NetworkAdapters . . . . .	57
GET – Collection of Network adapters . . . . .	57
GET – Network adapter properties. . . . .	58
Resource Port . . . . .	61
GET – Collection of ports . . . . .	61
GET – Port properties. . . . .	62
Resource NetworkDeviceFunction . . . . .	65
GET – Collection of Network device function . . . . .	65
GET – Network device functions . . . . .	66
Resource DedicatedNetworkPorts . . . . .	70
GET – Collection of dedicated network ports . . . . .	70
GET – Dedicated network port properties . . . . .	71

### Chapter 7. Power, thermal and redundancy . . . . . 73

Resource Power (Rack servers). . . . .	73
GET – Power management properties . . . . .	73
PATCH – Update power management properties . . . . .	81
Resource PowerSupply. . . . .	82
GET – Collection of Power Supplies . . . . .	82
GET – Power Supply properties . . . . .	83
Resource PowerSupply Metrics . . . . .	85
GET – PowerSupplyMetrics properties . . . . .	85

Resource PowerSubsystem . . . . .	86
GET – PowerSubsystem properties . . . . .	87
Resource Control . . . . .	89
GET – Systems PowerLimit properties . . . . .	89
PATCH – Update System PowerLimit properties . . . . .	90
Resource Thermal . . . . .	90
GET – Thermal management properties. . . . .	90
Resource ThermalSubsystem . . . . .	94
GET – Thermal Subsystem properties . . . . .	94
Resource ThermalMetrics . . . . .	95
GET – Thermal Metrics properties . . . . .	95
Resource Fan . . . . .	97
GET – Collection of Fans . . . . .	97
GET – Fan properties . . . . .	98
<b>Chapter 8. BMC Management. . . . .</b>	<b>101</b>
Resource Manager . . . . .	101
GET – BMC management properties . . . . .	101
Resource LicenseService . . . . .	105
GET – LicenseService properties . . . . .	105
Resource License . . . . .	106
GET – Collection of License . . . . .	106
GET – License Properties . . . . .	107
DELETE – Delete a License . . . . .	108
<b>Chapter 9. Network management. . . . .</b>	<b>111</b>
Resource EthernetInterface (BMC NIC). . . . .	111
GET – Collection of BMC ethernet interface properties . . . . .	111
GET – BMC Ethernet properties. . . . .	112
PATCH – Update BMC Ethernet configurations . . . . .	117
PATCH – Update BMC Ethernet over USB configurations . . . . .	119
Resource EthernetInterface (Server NIC) . . . . .	119
GET – Collection of server network interfaces . . . . .	120
GET – Server Ethernet interface properties . . . . .	121
GET – Server Ethernet over USB properties . . . . .	122
Resource NetworkInterfaces (Server NIC). . . . .	124
GET – Collection of server network interfaces . . . . .	124
GET – Server network interface properties . . . . .	125
Resource HostInterface. . . . .	126
GET – Collection of host interface . . . . .	126
GET – Collection of ethernet interface . . . . .	127
GET – Host interface properties. . . . .	128
PATCH – Enable/disable host interface . . . . .	129
Resource ManagerNetworkProtocol. . . . .	130
GET – BMC network services. . . . .	130

PATCH – Update BMC network service configurations . . . . .	133
---	-----

## **Chapter 10. Serial Interface Management . . . . .135**

Resource SerialInterface . . . . .	135
GET – BMC serial interface properties . . . . .	135

## **Chapter 11. Virtual Media Management . . . . .137**

Resource VirtualMedia . . . . .	137
GET – Collection of virtual media . . . . .	137
GET – Virtual media properties . . . . .	138
PATCH – Insert/Eject a virtual media . . . . .	140

## **Chapter 12. Server Management . . .143**

Resource ComputerSystem . . . . .	143
GET – Collection for server. . . . .	143
GET – Server properties. . . . .	144
PATCH – Update next-one-time boot configurations and other properties . . . . .	151
POST – Server reset operations. . . . .	151
GET – The pending System settings . . . . .	152
PATCH – Update pending System settings . . . . .	153

## **Chapter 13. Log Service and Event Log . . . . .155**

Resource LogService . . . . .	155
GET – Collection of BMC log services . . . . .	155
GET – Service for BMC Active logs . . . . .	156
GET – Service for BMC Platform event logs. . . . .	157
GET – Service for BMC Audit event logs . . . . .	159
GET – Service for BMC Maintenance event logs. . . . .	160
GET – Service for BMC Service Advisor event logs. . . . .	161
GET – Service for IPMI SEL log . . . . .	163
GET – Service for BMC Diagnostic logs. . . . .	164
POST – Clear event logs . . . . .	165
POST – Collect BMC diagnostic Data . . . . .	166
Resource LogEntry . . . . .	166
GET – Collection of BMC log entries . . . . .	167
GET – BMC Active log entries . . . . .	168
GET – BMC Platform event log entries . . . . .	169
GET – BMC Audit event log entries . . . . .	171
GET – BMC Maintenance event log entries . . . . .	172
GET – BMC Service Advisor event log entries. . . . .	173
GET – BMC Diagnostic log entries (MPFA) . . . . .	174
GET – BMC Diagnostic log entries (DebugLog). . . . .	175

GET – BMC Diagnostic log entries (DebugLog2) . . . . .	176
GET – BMC Diagnostic log entries (ServiceDataLog) . . . . .	177
GET – BMC Chassis maintenance log entries. . . . .	178

**Chapter 14. Server Inventory . . . . .179**

Resource Memory . . . . .	179
GET – Collection of server memories. . . . .	179
GET – Memory properties . . . . .	180
Resource PCIeDevice . . . . .	182
GET – Collection of PCIe Devices . . . . .	182
GET – Server PCIe devices . . . . .	183
Resource PCIeFunction. . . . .	185
GET – Collection of PCIe functions . . . . .	186
GET – Functions of server PCIe functions . . . . .	187
Resource PCIeSlot . . . . .	188
GET – Server PCIe slots . . . . .	188
Resource Processor . . . . .	190
GET – Collection of Processors . . . . .	190
GET – Processor properties . . . . .	191
Resource ProcessorMetric . . . . .	194
GET – Processor summary metric properties . . . . .	194
GET – Processor metric properties . . . . .	194
Resource Memory Metrics . . . . .	195
GET – memory metrics properties in MemorySummary . . . . .	195
GET – memory metrics properties in Memory . . . . .	196

**Chapter 15. Storage Management . . . . .197**

Resource Storage . . . . .	197
GET – Collection of storage controllers . . . . .	197
GET – Storage controller properties . . . . .	198
Resource Drive . . . . .	202
GET – Drives managed by storage controller . . . . .	202
Resource Volume . . . . .	205
GET – Collection of Volumes managed by storage controller . . . . .	205
GET – Volumes managed by storage controller . . . . .	206
POST – Create a Volume . . . . .	209
POST – Initialize Volume . . . . .	210
PATCH – Update Volume settings . . . . .	210
DELETE – Delete a Volume . . . . .	211
Resource StoragePool . . . . .	211
GET – Collection of StoragePool managed by storage controller . . . . .	212

GET – StoragePool managed by storage controller . . . . .	212
Resource Battery . . . . .	214
GET – Collection of Batteries . . . . .	215
GET – Battery properties . . . . .	215

**Chapter 16. BIOS Setting and Boot Management . . . . .219**

Resource Bios . . . . .	219
GET – Resource for BIOS . . . . .	219
POST – Change BIOS password settings . . . . .	221
POST – Reset BIOS operation . . . . .	222
GET – The pending BIOS settings . . . . .	222
PATCH – Update pending BIOS settings . . . . .	223
Resource AttributeRegistry . . . . .	224
GET – BIOS attribute registries . . . . .	224
Resource SecureBoot . . . . .	229
GET – Secure boot properties . . . . .	229
PATCH – Update secure boot properties . . . . .	230
POST – Reset secure boot keys. . . . .	232
Resource BootOption . . . . .	234
GET – Collection of Boot options . . . . .	234
GET – Boot options . . . . .	235

**Chapter 17. Firmware Inventory and Update Service. . . . .237**

Resource UpdateService . . . . .	237
GET – Properties for firmware update service . . . . .	237
PATCH– Update verify remote server certificate property. . . . .	239
POST – Simple update for firmware . . . . .	240
POST – Multipart HTTP Push update for firmware . . . . .	241
POST – Start update firmware . . . . .	242
Resource FirmwareInventory. . . . .	242
GET – Collection for firmware inventories on the server . . . . .	242
GET – Firmware inventory properties. . . . .	243

**Chapter 18. Task Management . . . . .247**

Resource TaskService . . . . .	247
GET – Task service properties . . . . .	247
Resource Task . . . . .	248
GET – Task properties . . . . .	248
DELETE – Delete a task . . . . .	250

**Chapter 19. Event Service. . . . .251**

Resource EventService . . . . .	251
GET – Event service properties . . . . .	251
PATCH– Update event service properties . . . . .	254
POST – Submit a test event . . . . .	255

Resource Event Subscription . . . . .	255
GET – Collection of event subscriptions . . . . .	256
GET – Event subscriptions . . . . .	257
GET – Event subscriptions for SMTP- <b>{N}</b> . . . . .	259
GET – Event subscriptions for SNMPv1- <b>{N}</b> . . . . .	259
GET – Event subscriptions for SNMPv2c- <b>{N}</b> . . . . .	260
GET – Event subscriptions for SNMPv3- <b>{N}</b> - <b>{M}</b> . . . . .	261
POST – Create a subscription . . . . .	261
DELETE – Delete a subscription. . . . .	263
GET – SSE subscription . . . . .	264
Event . . . . .	264
Event properties. . . . .	264

**Chapter 20. Telemetry Management . . . . . 267**

Resource TelemetryService . . . . .	267
GET – Telemetry service properties . . . . .	267
GET – Action info of SubmitTestMetricReport . . . . .	268
POST – Submit a test Metric Report . . . . .	270
Resource MetricReportDefinition . . . . .	270
GET – Collection of MetricReportDefinition . . . . .	271
GET – MetricReportDefinition properties . . . . .	272
Resource MetricReport . . . . .	273
GET – Collection of MetricReport . . . . .	274
GET – MetricReport properties . . . . .	275
Resource MetricDefinition . . . . .	276

GET – Collection of MetricDefinition . . . . .	276
GET – MetricDefinition inventory properties . . . . .	277

**Chapter 21. Job Management . . . . . 281**

Resource JobService . . . . .	281
GET - Job management properties . . . . .	281
Resource Job . . . . .	282
GET – Power schedule job properties . . . . .	282
PATCH – Update power schedule job properties . . . . .	284
GET – Firmware update job properties . . . . .	285

**Chapter 22. Certificate Management . . . . . 287**

Resource CertificateService . . . . .	287
GET – Certificate service properties . . . . .	287
POST – Generate CSR . . . . .	288
POST – Replace Certificate . . . . .	290
Resource CertificateLocations . . . . .	290
GET – Certificate locations properties . . . . .	290
Resource Certificate . . . . .	292
GET – Certificate properties . . . . .	292
POST – Rekey . . . . .	293
POST – Renew . . . . .	294
Notices . . . . .	ccxcv
Trademarks . . . . .	ccxcvi

**Index . . . . . 297**

---

## Chapter 1. Introduction

The Lenovo XClarity Controller (XCC3) provides support for the industry standard Redfish Scalable Platforms Management API. The Redfish API can be used to access XCC3 data and services from applications running outside of the XCC3. This allows for easy integration of Lenovo XCC3 capabilities into Lenovo or 3rd party software. Redfish uses RESTful interface semantics and JSON resource payload to perform system management via the HTTPS protocol. It is suitable for a wide range of servers, from stand-alone servers to rack mount and bladed environments, and scales equally well for large scale cloud environments.

The XClarity Controller 3 currently supports Redfish Specification 1.16.0 and Redfish Schema Bundle 2022.2. This document explains how to use the Redfish functions of the XClarity Controller on ThinkSystem servers.

For more information on the Redfish industry standard, please refer to the following resources:

- **DMTF Redfish Forum:** <http://dmf.org/redfish>
  - Schemas, Specs, Mockups, White Papers, FAQ, Educational Material & more.
- **DMTF Redfish Developer Portal:** <http://redfish.dmtf.org>
  - Educational material, Hosted Schema files, documentation & other links.
- **DMTF Redfish Tools:** <http://github.com/dmtf>
  - Open source tools and libraries to help developers get started with Redfish.
- **Redfish User Forum:** <http://www.redfishforum.com>
  - DMTF forum for questions, suggestions and discussion of all Redfish topics.

---

## Authentication Methods

Redfish requires the use of a compliant TLS connection to transport the data. XCC3 Redfish interface supports both “Basic Authentication” and “Session Login Authentication”. Per Redfish specification, the only resource that can be accessed without requiring authentication is the service root “/redfish/v1/”.

HTTP Basic Authentication (as defined by RFC7235) uses HTTP "Authorization" header field to authenticate requests from a user agent or client (like a web browser) to XCC3 Redfish service. The value of this header consists of credentials containing the authentication information of the user agent for the realm of the resource being requested. Below is an example of doing this operation in curl:

```
curl https://10.10.0.128/redfish/v1/Systems/1 -X GET -k -H "Content-type: application/json"  
-H "Authorization: Basic VVNFUKLE0LBBU1NXMFJE"
```

The credentials in this example are base64 encoding string of “USERID:PASSWORD”, which can be generated by command:

```
echo -n "USERID:PASSWORD" | base64.
```

A client or user agent can also create a Redfish login session via the Session management interface described in “Session Management” section of this guide. The client creating login session should save “session-auth-token” returned from the HTTP response header field “X-Auth-Token”. The “session-auth-token” is used to authenticate subsequent requests by setting the HTTP request header “X-Auth-Token” with the “session-auth-token”. Below is an example of doing this operation in curl:

```
curl https://10.10.0.128/redfish/v1/Systems/1 -X GET -k -H "Content-type: application/json"  
-H "X-Auth-Token: session-auth-token"
```

The maximum open session count is set to 16 and session could have timeout.

---

## Lenovo Extended Registries

Registry resources assist in interpreting Redfish resources beyond what is defined in the Redfish Schema. Examples of registries include Message Registries, Event Registries and BIOS Attribute Registries.

Registries are themselves resources which provide static, read-only JSON encoded information. Standard registries published by DMTF are available for download from <https://redfish.dmtf.org/registries>. The XCC3 Redfish service provides a collection of Registries at "/redfish/v1/Registries", which contain DMTF standard registries as well as Lenovo extended registries.

- **Message Registry**

- In addition to the standard base message registry "Base.1.16.0.json", XCC3 provides the OEM registry "ExtendedError.1.2.2.json" to extend messages used by XCC3 Redfish service. The URIs for the registries are "/redfish/v1/schemas/registries/ExtendedError.1.2.2.json", and "/redfish/v1/Registries/LenovoExtendedWarning.1.0.0".

The registry for resource event ("/redfish/v1/Registries/ResourceEvent.1.3.0") defines messages to use for related changes on Redfish resources. The registry for task event ("/redfish/v1/Registries/TaskEvent.1.0.3") defines the messages to use to present changes related to a Redfish task.

In firmware update processes, there are messages to present the update progress or errors encountered. Refer to the Lenovo Firmware Update Message Register (/redfish/v1/schemas/registries/LenovoFirmwareUpdateRegistry.1.0.0.json) to get messages defined and know resolutions.

- **Event Registry**

- XCC3 Redfish events reference messages that are defined in various message registries. There are two types of events in XCC3:
  - "platform events" that are detected by hardware and software. This is a superset of the events corresponding to IPMI SEL. These events use the Redfish registry "/redfish/v1/schemas/registries/EventRegistry.1.0.0.json".
  - "audit events" that record actions performed by users. Audit events uses the same registry EventRegistry.1.0.0.json as above.

- **Bios Attribute Registry**

- BIOS attributes use attribute registry file "/redfish/v1/schemas/registries/BiosAttributeRegistry.1.0.0.json". The registry file contains inventory and configuration attribute information provided by Lenovo UEFI.

- **Privilege Registry**

- The Redfish resources have access control according to privileges of an account requesting Redfish service. The privilege registry defines the required privileges to access a resource. In the registry there are mappings between required privileges and operation types permitted.

---

## Tools for Redfish

Since Redfish is a REST API, standard REST clients can be used to interact with the service. This includes popular tools such as curl, as well as native access from scripting languages like Python and PowerShell. Postman is another example of an easy to use HTTP REST client tool. The tool is available from <https://www.getpostman.com/>.

Lenovo provides some Python and PowerShell sample scripts to use Redfish. These are available as open source code on Lenovo's Github page <http://github.com/lenovo/>



- **Lenovo Python Redfish Scripts:** <https://github.com/lenovo/python-redfish-lenovo>
- **Lenovo PowerShell Redfish Scripts:** <https://github.com/lenovo/powershell-redfish-lenovo>

These scripts utilize Redfish API to manage Lenovo ThinkSystem servers. The list of scripts is growing over time. Currently, the scripts support hardware/firmware inventory, basic management of configuration and control, firmware updates, and alerts/eventing. The scripts can be used both remotely (out-of-band to the XCC3 Network) and locally (in-band on the ThinkSystem server, connecting to the XCC3 local host Network interface).

Other open source tools that support Redfish include Ansible, which added support for Redfish starting with version 2.7, in the form of three modules for Remote Hardware Management. These modules are tested on Lenovo ThinkSystem servers:

- **redfish\_facts:** [https://docs.ansible.com/ansible/latest/modules/redfish\\_facts\\_module.html](https://docs.ansible.com/ansible/latest/modules/redfish_facts_module.html)
- **redfish\_command:** [https://docs.ansible.com/ansible/latest/modules/redfish\\_command\\_module.html](https://docs.ansible.com/ansible/latest/modules/redfish_command_module.html)
- **redfish\_config:** [https://docs.ansible.com/ansible/latest/modules/redfish\\_config\\_module.html](https://docs.ansible.com/ansible/latest/modules/redfish_config_module.html)

In addition, DMTF provides some open source tools for Redfish development and support. And the Redfish toolsets of DMTF grow and gain version updates over time. These are available at the DMTF Github page: <https://github.com/DMTF>

DMTF Redfish Tool	Description of Tool
<a href="#">Redfish Mockup Creator</a>	A python3.4 program that creates a Redfish Mockup folder structure from a real live Redfish service.
<a href="#">Redfish Service Validator</a>	The Redfish Service Validator is a Python3 tool for checking conformance of any "device" with a Redfish service interface against Redfish CSDL schema.
<a href="#">Redfish Tool</a>	A Python34 program that implements a command line tool for accessing the Redfish API.
<a href="#">Redfish Interface Emulator</a>	The Redfish Interface Emulator can emulate a Redfish-based interface statically (GET) or dynamically (POST, PATCH, DELETE).
<a href="#">Redfish Mockup Server</a>	A simple Python 3.4 program that can be copied into a folder at the top of any Redfish mockup and can serve Redfish requests on the specified IP/port.
<a href="#">Python Redfish Library</a>	Python library for interacting with devices which support a Redfish Service.



---

## Chapter 2. Service Root

---

### Resource ServiceRoot

The resource represents the root of the Redfish service. All other resources accessible through the Redfish interface on the XCC are linked directly or indirectly from the Service Root.

Number of Resources	1
Resource Path	/redfish/v1/
Schema file	ServiceRoot

### GET – Service root properties

Use the GET method to retrieve properties in Service Root (/redfish/v1/) for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/

#### Request body

None

#### Response body

Field	Type	Description
AccountService	Link	A reference link to account service resource.
CertificateService	Link	A reference link to certificate service resource.
Chassis	Link	A reference link to chassis resource.
Description	String	This resource is used to represent a service root for a Redfish implementation.
EventService	Link	A reference link to event service resource.
Id	String	RootService
JobService	Link	A reference link to job service resource.
JsonSchemas	Link	A reference link to Json Schema resource.
Links	Object	Expanded.
Sessions	Link	A reference link to a collection of sessions.
Managers	Link	A reference link to a collection of managers.
Name	String	Root Service
ProtocolFeaturesSupported	Object	Expanded.
DeepOperations	Object	Expanded.
DeepPATCH	Boolean	An indication of whether the service supports the deep PATCH operation.
DeepPOST	Boolean	An indication of whether the service supports the deep POST operation.

Field	Type	Description
ExcerptQuery	Boolean	Indicates whether the "excerpt" query parameter is supported.
FilterQuery	Boolean	Indicates whether the \$filter query parameter is supported.
OnlyMemberQuery	Boolean	Indicates whether the "only" query parameter is supported.
SelectQuery	Boolean	Indicates whether the \$select query parameter is supported.
ExpandQuery	Object	Expanded.
ExpandAll	Boolean	Indicates whether the \$expand support of asterisk (expand all entries) is supported.
Levels	Boolean	Indicates whether the expand support of the \$levels qualifier is supported by the service.
Links	Boolean	Indicates whether the \$expand support of tilde (expand only entries in the Links section) is supported.
MaxLevels	Integer	Indicates the maximum number value of the \$levels qualifier in \$expand operations.
NoLinks	Boolean	Indicates whether the \$expand support of period (only expand entries not in the Links section) is supported.
RedfishVersion	String	Version of the implemented Redfish service.
Registries	Link	A reference link to a collection of registries.
SessionService	Link	A reference link to session service resource.
Systems	Link	A reference link to a collection of systems.
Tasks	Link	A reference link to a collection of tasks.
TelemetryService	Link	A reference link to telemetry service resource.
UUID	String	Unique identifier for the service instance.
UpdateService	Link	A reference link to update service resource.
LicenseService	Link	A reference link to license service resource.
Vendor	String	Lenovo

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"119D810A\"",
  "@odata.id": "/redfish/v1",
  "@odata.type": "#ServiceRoot.v1_15_0.ServiceRoot",
  "AccountService": {
    "@odata.id": "/redfish/v1/AccountService"
  },
  "AggregationService": {
    "@odata.id": "/redfish/v1/AggregationService"
  },
}
```

```

"CertificateService": {
  "@odata.id": "/redfish/v1/CertificateService"
},
"Chassis": {
  "@odata.id": "/redfish/v1/Chassis"
},
>Description": "This resource is used to represent a service
                root for a Redfish implementation.",
"EventService": {
  "@odata.id": "/redfish/v1/EventService"
},
"Id": "RootService",
"JobService": {
  "@odata.id": "/redfish/v1/JobService"
},
"JsonSchemas": {
  "@odata.id": "/redfish/v1/JsonSchemas"
},
"LicenseService": {
  "@odata.id": "/redfish/v1/LicenseService"
},
"Links": {
  "Sessions": {
    "@odata.id": "/redfish/v1/SessionService/Sessions"
  }
},
"Managers": {
  "@odata.id": "/redfish/v1/Managers"
},
>Name": "Root Service",
"ProtocolFeaturesSupported": {
  "DeepOperations": {
    "DeepPATCH": false,
    "DeepPOST": false
  },
  "ExcerptQuery": false,
  "ExpandQuery": {
    "ExpandAll": true,
    "Levels": true,
    "Links": true,
    "MaxLevels": 2,
    "NoLinks": true
  },
  "FilterQuery": true,
  "OnlyMemberQuery": true,
  "SelectQuery": true
},
"RedfishVersion": "1.17.0",
"Registries": {
  "@odata.id": "/redfish/v1/Registries"
},
"SessionService": {
  "@odata.id": "/redfish/v1/SessionService"
},
"Systems": {
  "@odata.id": "/redfish/v1/Systems"
},
"Tasks": {
  "@odata.id": "/redfish/v1/TaskService"
},
"TelemetryService": {

```

```
    "@odata.id": "/redfish/v1/TelemetryService"  
  },  
  "UUID": "FE57AA52-E969-4448-9C0B-045179900052",  
  "UpdateService": {  
    "@odata.id": "/redfish/v1/UpdateService"  
  },  
  "Vendor": "Lenovo"  
}
```

---

## Chapter 3. Session Management

---

### Resource SessionService

The resource represents a collection of sessions for the Redfish service. All session resources accessible through the interface link from the SessionService resource.

Number of Resources	1
Resource Path	/redfish/v1/SessionService
Schema file	SessionService

### GET – Session management properties

Use the GET method to retrieve properties in SessionService resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/SessionService

#### Request body

None

#### Response body

Field	Type	Description
Id	String	SessionService
Name	String	SessionService
Description	String	This string is used to represent the Session Service Properties for a Redfish implementation.
Sessions	Object	This property shall contain the link to a collection of Sessions.
ServiceEnabled	Boolean	The value of this property shall be a boolean indicating whether this service is enabled. The default value is true.
SessionTimeout	Number	This is the number of seconds of inactivity that a session may have before the session service closes the session due to inactivity. The value should be between 30 and 86400. The default value is 300.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionService.SessionService",
  "@odata.etag": "\"07B0137C\"",
  "@odata.id": "/redfish/v1/SessionService/",
  "@odata.type": "#SessionService.v1_1_8.SessionService",
```

```

    "Description": "This resource is used to represent a session
                  service for a Redfish implementation.",
    "Id": "SessionService",
    "Name": "SessionService",
    "Oem": {
        ...
    },
    "ServiceEnabled": true,
    "SessionTimeout": 300,
    "Sessions": {
        "@odata.id": "/redfish/v1/SessionService/Sessions"
    }
}

```

## PATCH – Update timeout property

Use the PATCH method to update timeout property in SessionService resource for Redfish service

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/SessionService](https://<BMC_IPADDR>/redfish/v1/SessionService)

### Request body

Properties to be updated are shown as bellow

Field	Type	Description
SessionTimeout	Number	The value should be between 30 and 86400.

### Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource Session

The resource represents a session implementation for the Redfish service. XCC3 allows at most 16 Redfish sessions at the same time.

Number of Resources	Number of all established sessions, including Redfish sessions, web GUI sessions, Manager Console sessions, etc...
Resource Path	/redfish/v1/SessionService/Sessions/{1...N}
Schema file	Session

## GET – Collection for sessions

Use the GET method to retrieve properties in session collection for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/SessionService/Sessions](https://<BMC_IPADDR>/redfish/v1/SessionService/Sessions)



## Request body

None

## Response body

Field	Type	Description
Description	String	A collection of Session resource instances.
Name	String	SessionCollection
Members	Array	Items: links Item count: 0~26
Members[N]	Link	Links to user role resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON responses are returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionCollection.SessionCollection",
  "@odata.etag": "\"0941AA1E\"",
  "@odata.id": "/redfish/v1/SessionService/Sessions/",
  "@odata.type": "#SessionCollection.SessionCollection",
  "Description": "A collection of Session resource instances.",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "SessionCollection"
}
```

## GET – Session properties

Use the GET method to retrieve properties in Session resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/SessionService/Sessions/{1...N}

### Request body

None

### Response body

Field	Type	Description
Id	String	A session id value.
Name	String	A session id value.
Description	String	Manager user session.
UserName	String	The username who creates this session.
Password	String	This property is used in a POST to specify a password when creating a new session. This property is null on a GET.

Field	Type	Description
SessionType	String	Session Type string and it is depended on the session type (ex. Redfish, WebGUI, ManagerConsole ... etc.)
CreatedTime	String	The time when created this session.
Context	String	The additional context of this session.
ClientOriginIPAddress	String	Original IP address of the client.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST– Create a session

Create a session resource for further access authentications.

### Request URL

POST `https://<BMC_IPADDR>/redfish/v1/SessionService/Sessions`

### Request body

Field	Type	Description
UserName	String	The username who creates this session.
Password	String	This property is used in a POST to specify a password when creating a new session. This property is null on a GET.
Context	String	Optional. The additional context of this session.

### Response body

Field	Type	Description
UserName	String	The username who creates this session.
Password	String	This property is used in a POST to specify a password when creating a new session. This property is null on a POST response.
Session-Type	String	"Redfish"
Name	String	A session id value
Id	String	A session id value

### Response header

Field	Description
Location	Link to the session resource created.
X-Auth-Token	An authentication code is generated when a new session is created.

**Status code**

HTTP Status Code	Error Message ID
201	Created
401	AccessDenied
503	SessionLimitExceeded
500	InternalError

**DELETE – Delete a session**

Use the DELETE method to delete sessions with a SessionType of Redfish. Remove the session established for client access.

**Request URL**

DELETE https://<BMC\_IPADDR>/redfish/v1/SessionService/Sessions/{1...N}

**Request body**

None

**Response**

None

**Status code**

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError



---

## Chapter 4. Account Management

---

### Resource AccountService

The resource represents a collection of accounts and roles for the Redfish service. All existing sessions and roles resources accessible through the interface link from the AccountService resource.

Number of Resources	1
Resource Path	/redfish/v1/AccountService
Schema file	AccountService

### GET – Account management properties

Use the GET method to retrieve properties in AccountService resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService

#### Request body

None

#### Response body

Field	Type	Description
Id	String	AccountService
Name	String	Account Service
Description	String	This resource is used to represent a management account service for a Redfish implementation.
AccountLockoutDuration	Number	The time in seconds an account is locked after the account lockout threshold is met. If the value is 0, the property will show null, otherwise it is 60~172800.
AccountLockoutThreshold	Number	The number of failed login attempts before a user account is locked for a specified duration. The value should be between 0 and 10.
MaxPasswordLength	Number	The maximum password length that the implementation will allow a password to be set to. The value is 255 and cannot be modified.
MinPasswordLength	Number	The minimum password length that the implementation will allow a password to be set to. By default, this value is 10.
ServiceEnabled	Boolean	The value of this property shall be a boolean indicating whether this service is enabled. The value is "True" and cannot be modified.
Accounts	Object	This property shall contain the link to a collection of type ManagerAccount.
Roles	Object	This property shall contain the link to a collection of type Role.
LDAP	Object	The first LDAP external account provider this AccountService supports.
Authentication	Object	This property contains the authentication information for the external account provider.

Field		Type	Description
	AuthenticationType	String	This property contains the type of authentication used to connect to the external account provider.
	Username	String	This property contains the username of authentication used to connect to the external account provider.
	Password	String	This property contains the password of authentication used to connect to the external account provider.
	Certificates	Link	The value of this property is a URI reference to a collection of certificates.
	LDAPService	Object	This property contains additional mapping information needed to parse a generic LDAP service.
	SearchSettings	Object	This property contains the settings needed to search an external LDAP service.
	BaseDistinguishedNames	String	The base distinguished names to use when searching the LDAP service.
	GroupNameAttribute	String	The attribute name that contains the name of the Group on the group LDAP entry.
	GroupsAttribute	String	The attribute name that contains the Groups for a user on the user LDAP entry.
	UsernameAttribute	String	The attribute name that contains the Username on the user LDAP entry.
	PasswordSet	Boolean	This property shall be true when a non-empty value was provided to the Password property, otherwise it shall be false.
	RemoteRoleMapping	Array	This property shall contain a collection of the mapping rules to convert the external account providers account information to the local Redfish Role.
	RemoteRoleMapping[N]	Object	Expanded.
	LocalRole	String	The value of this property shall contain the value of the RoleId property within a Role resource on this Redfish service in which to map the remote user or group.
	RemoteGroup	String	The value of this property shall contain the name of the remote group (or in the case of a Redfish Service, remote role) that will be mapped to the local role referenced by this entity.
	ServiceAddresses	String	This property contains the addresses of the user account providers this resource references. The format of this field depends on the Type.
	ServiceEnabled	Boolean	LDAP enablement
	LocalAccountAuth	String	This property shall govern how the service uses the Accounts collection within this AccountService as part of authentication. Details about each of the modes are found in the description of the enum values.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"12759A41\"",
  "@odata.id": "/redfish/v1/AccountService",
  "@odata.type": "#AccountService.v1_10_0.AccountService",
  "AccountLockoutDuration": 3600,
  "AccountLockoutThreshold": 5,
  "Accounts": {
    "@odata.id": "/redfish/v1/AccountService/Accounts"
  },
  "Description": "Account Service",
  "Id": "AccountService",
  "LDAP": {
    "Authentication": {
      "AuthenticationType": "UsernameAndPassword",
      "Password": null,
      "Username": ""
    },
    "Certificates": {
      "@odata.id": "/redfish/v1/AccountService/LDAP/Certificates"
    },
    "LDAPService": {
      "SearchSettings": {
        "BaseDistinguishedNames": [
          ""
        ],
        "GroupNameAttribute": "memberOf",
        "GroupsAttribute": "",
        "UsernameAttribute": "sAMAccountName"
      }
    },
    "PasswordSet": false,
    "RemoteRoleMapping": [
      {
        "LocalRole": "",
        "RemoteGroup": ""
      },
      ...
      {
        "LocalRole": "",
        "RemoteGroup": ""
      }
    ],
    "ServiceAddresses": [
      "0.0.0.0:389",
      "",
      "",
      ""
    ],
    "ServiceEnabled": true
  },
  "LocalAccountAuth": "Enabled",
  "MaxPasswordLength": 255,
  "MinPasswordLength": 10,
  "Name": "Account Service",
  "OAuth2": {
    "OAuth2Service": {
      "Audience": [

```

```

        "143a6ac8-96ac-427c-8a71-c842b30d80b8"
    ],
    "Issuer": "",
    "Mode": "Offline",
    "OAuthServiceSigningKeys": ""
  },
  "ServiceEnabled": true
},
"Oem": {
  ...
}
},
"Roles": {
  "@odata.id": "/redfish/v1/AccountService/Roles"
},
"ServiceEnabled": true
}

```

## PATCH – Update global account lockout properties and LDAP properties

Use the PATCH method to update properties in AccountService resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/AccountService](https://<BMC_IPADDR>/redfish/v1/AccountService)

### Request body

Properties to be updated are shown as bellow.

Field	Type	Description
AccountLockoutDuration	Number	The time in seconds an account is locked after the account lockout threshold is met. The range of this value is 60~172800.
AccountLockoutThreshold	Number	The number of failed login attempts before a user account is locked for a specified duration. The value should be between 0 and 10.
MinPasswordLength	Number	The minimum password length that the implementation will allow a password to be set to. By default, this value is 10.
LDAP	Object	The first LDAP external account provider this AccountService supports.
ServiceAddresses	String	This property contains the addresses of the user account providers this resource references. The format of this field depends on the Type.
LDAPService	Object	This property contains additional mapping information needed to parse a generic LDAP service.
SearchSettings	Object	This property contains the settings needed to search an external LDAP service.
BaseDistinguishedNames	String	The base distinguished names to use when searching the LDAP service.
GroupNameAttribute	String	The attribute name that contains the name of the Group on the group LDAP entry.
GroupsAttribute	String	The attribute name that contains the Groups for a user on the user LDAP entry.
UsernameAttribute	String	The attribute name that contains the Username on the user LDAP entry.



Field	Type	Description
Authentication	Object	This property contains the authentication information for the external account provider.
Username	String	This property contains the username of authentication used to connect to the external account provider.
Password	String	This property contains the password of authentication used to connect to the external account provider.
LocalAccountAuth	String	This property shall govern how the service uses the Accounts collection within this AccountService as part of authentication. Details about each of the modes are found in the description of the enum values.

### Response body

The response returns the same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource ManagerAccount

The resource represents an account implementation for the Redfish service.

Number of Resources	Number of accounts created (1-15)
Resource Path	/redfish/v1/AccountService/Accounts/{1...14} /redfish/v1/AccountService/Accounts/HostBootStrap
Schema file	ManagerAccount

## GET – Collection for accounts

Use the GET method to retrieve properties in account collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService/Accounts

### Request body

None

### Response body

Field	Type	Description
Name	String	ManagerAccountCollection
Members	Array	Items: A reference link to an element of accounts.
Description	String	A collection of ManagerAccount resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerAccountCollection.ManagerAccountCollection",
  "@odata.etag": "\"865C400F\"",
  "@odata.id": "/redfish/v1/AccountService/Accounts",
  "@odata.type": "#ManagerAccountCollection.ManagerAccountCollection",
  "Description": "A collection of ManagerAccount resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Accounts/1"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/Accounts/2"
    }
  ],
  "Members@odata.count": 2,
  "Name": "ManagerAccountCollection"
}
```

## GET – Account properties

Use the GET method to retrieve properties in Account resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService/Accounts/{1..14}

### Request body

None

### Response body

Field	Type	Description
Id	String	"1" ~ "14"
Name	String	The format is UserX (X=1~14).
Description	String	This resource is used to represent an account for the manager for a Redfish implementation.
UserName	String	The value of this property is the user name for this account.
Password	String	The password of the account. Display null on a GET.
RoleId	String	The value of this property is the ID of the role for this account.
AccountTypes	Array	This property contains an array of the various manager services that the account is allowed to access.  Items: string Item count: 5

Field	Type	Description
AccountTypes[N]	String	"Redfish", "SNMP", "ManagerConsole", "IPMI", "WebUI"
AccountTypes@Redfish.AllowableValues	Array	Items: string Item count: 5
AccountTypes@Redfish.AllowableValues[N]	String	"Redfish", "SNMP", "ManagerConsole", "IPMI", "WebUI"
Enabled	Boolean	Indicates if this account is enabled.
PasswordChangeRequired	Boolean	The value of this property is true if the password for this account must be changed before further access is allowed.
Locked	Boolean	This property indicates that the account has been auto-locked by the account service because the lockout threshold has been exceeded. When set to true, the account is locked. The account service will unlock it once the lockout duration period has passed.
HostBootstrapAccount	Boolean	Indicates whether this account is a bootstrap account for the host interface. Always set to false.
Links	Object	Expanded.
Role	Link	Link to the Role instance which this account is mapped to.
Keys	Link	/redfish/v1/AccountService/Accounts/{X}/Keys
SNMP	Object	Expanded. This property contains the SNMP settings for this account when AccountTypes contains "SNMP".
AuthenticationProtocol	String	This value indicates authentication conforms to the authentication protocol.
EncryptionKey	String	The secret authentication key for SNMPv3. Display null on a GET.
EncryptionKeySet	Boolean	The value of this property is true if a valid value was provided for the AuthenticationKey property. Otherwise, the value is false.
EncryptionProtocol	String	This value indicates encryption conforms to the encryption protocol.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerAccount.ManagerAccount",
  "@odata.etag": "\"20B1B6F4\"",
  "@odata.id": "/redfish/v1/AccountService/Accounts/1",
  "@odata.type": "#ManagerAccount.v1_9_0.ManagerAccount",
  "AccountTypes": [
    "Redfish",
    "ManagerConsole",
    "WebUI"
  ],
  "AccountTypes@Redfish.AllowableValues": [
    "WebUI",

```

```

    "Redfish",
    "ManagerConsole",
    "IPMI",
    "SNMP"
  ],
  "Description": "This resource is used to represent an account
                 for the manager for a Redfish implementation.",
  "Enabled": true,
  "HostBootstrapAccount": false,
  "Id": "1",
  "Keys": {
    "@odata.id": "/redfish/v1/AccountService/Accounts/1/Keys"
  },
  "Links": {
    "Role": {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  },
  "Locked": false,
  "Name": "User1",
  "Oem": {
    ...
  },
  "Password": null,
  "PasswordChangeRequired": false,
  "PasswordExpiration": null,
  "RoleId": "Administrator",
  "SNMP": {
    "AuthenticationProtocol": "HMAC_SHA96",
    "EncryptionKey": null,
    "EncryptionKeySet": false,
    "EncryptionProtocol": "CFB128_AES128"
  },
  "UserName": "USERID"
}

```

## GET – HostBootstrap account properties

Use the GET method to retrieve properties in HostBootstrap Account resource for Redfish service. HostBootstrap account follows DMTF defined “Redfish Host Interface Specification” to implement, please refer to DSP0270\_1.3.0 for how to create it and more details.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/HostBootstrap](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/HostBootstrap)

### Request body

None

### Response body

Field	Type	Description
Id	String	HostBootstrap
Name	String	Host Boot Strap Account
Description	String	This resource is used to represent an account for the manager for a Redfish implementation.

Field	Type	Description
UserName	String	The value of this property is the user name for this account.
Password	String	The password of the account. Display null on a GET.
RoleId	String	The value of this property is the ID of the Role resource that configured for this account.
Enabled	Boolean	Indicates if this account is enabled.
PasswordChangeRequired	Boolean	The value of this property is true if the password for this account must be changed before further access is allowed.  Always set to false.
PasswordExpiration	String	This property indicates the date and time when this account password expires. If the value is null, the account password never expires.  Always set to null.
Locked	Boolean	This property indicates that the account has been auto-locked by the account service because the lockout threshold has been exceeded. When set to true, the account is locked. The account service will unlock it once the lockout duration period has passed.
Links	Object	Expanded.
Role	Link	Link to the Role instance which this account is mapped to.
AccountTypes	Array	This property contains an array of the various manager services that the account is allowed to access.  Items: string Item count: 5
AccountTypes[N]	String	“Redfish”, “SNMP”, “ManagerConsole”, “IPMI”, “WebUI”
AccountTypes@Redfish.AllowableValues	Array	Items: string Item count: 5
AccountTypes@Redfish.AllowableValues[N]	String	[“Redfish”, “SNMP”, “ManagerConsole”, “IPMI”, “WebUI”]
HostBootstrapAccount	Boolean	Indicates whether this account is a bootstrap account for the host interface.  Always set to true.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Create an account

Create an account resource for Redfish service by HTTP POST method.

**Note:** Before creating an account, please make sure the new account name and password follow the rules in AccountService, such as length, password complexity, changing interval, etc.

## Request URL

POST https://<BMC\_IPADDR>/redfish/v1/AccountService/Accounts

## Request body

Field	Type	Description
UserName	String	The new account name.
Password	String	The new account password.
RoleId	String	Role ID for new account.
AccountTypes	Array	The various manager services that the new account is allowed to access.
AccountTypes[N]	String	“Redfish”, “SNMP”, “ManagerConsole”, “IPMI”, “WebUI” <b>Note:</b> If the account has IPMI access right, the password should be set to equal to or less than 20 characters. If the account has SNMP access right, the EncryptionKey should be set to equal to or less than 32 characters. In addition, if EncryptionProtocol is not “none”, AuthenticationProtocol should not be “none” either.
Enabled	Boolean	Indicates if this account is enabled.
SNMP	Object	Expanded. <b>Note:</b> This setting is not available when AccountTypes does not contain “SNMP”.
AuthenticationProtocol	String	This value indicates authentication conforms to the authentication protocol.
EncryptionKey	String	The secret authentication key for SNMPv3.
EncryptionProtocol	String	The value indicates encryption conforms to the encryption protocol.

## Response body

The response returns the same content as GET operation with updated properties.

## Status code

HTTP Status Code	Error Message ID
500	InternalError
400	CreateFailedMissingReqProperties PropertyValueTypeError PropertyValueFormatError ResourceChangeRequired NotRecommandedOperation ForbiddenOperation ResourceAlreadyExists PropertyMissing PasswordChangeRequired

## PATCH – Update account properties

Use the PATCH method to update properties in Account resource for Redfish service.

### Request URL

PATCH `https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}`

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
UserName	String	The user name for this account.
Password	String	The password of the account. Display null on a PATCH response.
RoleId	String	The ID of the Role resource that configured for this account.
AccountTypes	Array	The various manager services that this account is allowed to access.
AccountTypes[N]	String	“Redfish”, “SNMP”, “ManagerConsole”, “IPMI”, “WebUI”  <b>Note:</b> If the account has IPMI access right, the password should be set to equal to or less than 20 characters.  If the account has SNMP access right, the EncryptionKey should be set to equal to or less than 32 characters. In addition, if EncryptionProtocol is not “none”, AuthenticationProtocol should not be “none” either.
Enabled	Boolean	Enable this account or not.
SNMP	Object	Expanded.  <b>Note:</b> This setting is not available when AccountTypes does not contain “SNMP”.
AuthenticationProtocol	String	Authentication conforms to the authentication protocol.
EncryptionProtocol	String	Encryption conforms to the encryption protocol.
EncryptionKey	String	The secret authentication key for SNMPv3.

### Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError
400	PropertyValueTypeError PropertyValueFormatError ResourceChangeRequired NotRecommendedOperation ForbiddenOperation ResourceAlreadyExists PropertyMissing PasswordChangeRequired

## DELETE – Delete an account

Delete an account resource for Redfish service by HTTP DELETE method.

### Request URL

DELETE [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/{1...14})  
DELETE [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/HostBootStrap](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/HostBootStrap)

### Request body

None.

### Response body

None.

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

---

## Resource Role

The resource represents a role implementation for the Redfish service.

Number of Resources	Number of roles presented (3-32)
Resource Path	/redfish/v1/AccountService/Roles/{Administrator, Operator, ReadOnly and \$RoleId}
Schema file	Role

## GET – Collection for roles

Use the GET method to retrieve properties in role collection for Redfish service.



## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService/Roles

## Request body

None

## Response body

Field	Type	Description
Name	String	RoleCollection
Description	String	A collection of Role resource instances.
Members	Array	Items: links Item count: 3~32 for non-edge platforms, or 4~32 for edge platforms.
Members[N]	Link	Links to user role resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#RoleCollection.RoleCollection",
  "@odata.etag": "\"6AF4EDA7\"",
  "@odata.id": "/redfish/v1/AccountService/Roles",
  "@odata.type": "#RoleCollection.RoleCollection",
  "Description": "A collection of Role resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Operator"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/ReadOnly"
    }
  ],
  "Members@odata.count": 3,
  "Name": "RoleCollection"
}
```

## GET – Role properties

Use the GET method to retrieve properties in Role resource for Redfish service.

## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService/Roles/{Administrator,Operator,ReadOnly and \$RoleId}

## Request body

None

## Response body

Field	Type	Description
Name	String	<ul style="list-style-type: none"><li>Pre-defined roles: "Administrator", "Operator", and "ReadOnly"</li><li>Custom roles: determined by user when a role is created.</li></ul>
Id	String	<ul style="list-style-type: none"><li>Pre-defined roles: "Administrator", "Operator", and "ReadOnly"</li><li>Custom roles: determined by user when a role is created.</li></ul>
RoleId	String	<ul style="list-style-type: none"><li>Pre-defined roles: "Administrator", "Operator", and "ReadOnly"</li><li>Custom roles: determined by user when a role is created.</li></ul>
Description	String	This resource is used to represent a user role for the user account for a Redfish implementation.
OemPrivileges	Array	Items: string Item count: 1~11
OemPrivileges[N]	String	The value of this property is a set of OEM privileges that this role includes. For pre-defined roles, this property shall be readOnly. The values can be <ul style="list-style-type: none"><li>Supervisor</li><li>ReadOnly</li><li>Configuration_NetworkingAndSecurity</li><li>UserAccountManagement</li><li>RemoteConsoleAccess</li><li>RemoteConsoleAndVirtualMediaAccess</li><li>RemoteServerPowerRestartAccess</li><li>Configuration_Basic</li><li>AbilityClearEventLogs</li><li>Configuration_Advanced</li><li>Configuration_UEFISecurity</li></ul>
OemPrivileges@Redfish.AllowableValues	Array	Items: string Item count: 9  The OEM privileges allowable for UPDATE operation. This property is displayed in custom roles and hidden for Administrator, Operator and ReadOnly.

Field	Type	Description
OemPrivileges@Redfish.AllowableValues[N]	String	The values are : <ul style="list-style-type: none"> <li>• UserAccountManagement</li> <li>• RemoteConsoleAccess</li> <li>• RemoteConsoleAndVirtualMediaAccess</li> <li>• RemoteServerPowerRestartAccess</li> <li>• AbilityClearEventLogs</li> <li>• Configuration_Basic</li> <li>• Configuration_NetworkingAndSecurity</li> <li>• Configuration_Advanced</li> <li>• Configuration_UEFI Security</li> </ul>
IsPredefined	Boolean	This role is pre-defined or not. <b>Note:</b> The pre-defined roles are Administrator, Operator, ReadOnly.
AssignedPrivileges	Array	The standard defined privileges for this role.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON responses are returned:

Resource /AccountService/Roles/Administrator:

```
{
  "@odata.context": "/redfish/v1/$metadata#Role.Role",
  "@odata.etag": "\"28A490BB\"",
  "@odata.id": "/redfish/v1/AccountService/Roles/Administrator",
  "@odata.type": "#Role.v1_2_2.Role",
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "Description": "This resource is used to represent a user role
    for the user account for a Redfish implementation.",
  "Id": "Administrator",
  "IsPredefined": true,
  "Name": "Administrator",
  "OemPrivileges": [
    "Supervisor"
  ],
  "OemPrivileges@Redfish.AllowableValues": [
    "UserAccountManagement",
    "RemoteConsoleAccess",
    "RemoteConsoleAndVirtualMediaAccess",
    "RemoteServerPowerRestartAccess",
    "AbilityClearEventLogs",
    "Configuration_Basic",
    "Configuration_NetworkingAndSecurity",

```

```

        "Configuration_Advanced",
        "Configuration_UEFI_Security"
    ],
    "RoleId": "Administrator"
}

```

#### Resource /AccountService/Roles/Operator:

```

{
    "@odata.context": "/redfish/v1/$metadata#Role.Role",
    "@odata.etag": "\"21190B2E\"",
    "@odata.id": "/redfish/v1/AccountService/Roles/Operator",
    "@odata.type": "#Role.v1_2_2.Role",
    "AssignedPrivileges": [
        "Login",
        "ConfigureSelf",
        "ConfigureComponents"
    ],
    "Description": "This resource is used to represent a user role
        for the user account for a Redfish implementation.",
    "Id": "Operator",
    "IsPredefined": true,
    "Name": "Operator",
    "OemPrivileges": [
        "Configuration_NetworkingAndSecurity",
        "RemoteServerPowerRestartAccess",
        "Configuration_Basic",
        "AbilityClearEventLogs",
        "Configuration_Advanced"
    ],
    "OemPrivileges@Redfish.AllowableValues": [
        "UserAccountManagement",
        "RemoteConsoleAccess",
        "RemoteConsoleAndVirtualMediaAccess",
        "RemoteServerPowerRestartAccess",
        "AbilityClearEventLogs",
        "Configuration_Basic",
        "Configuration_NetworkingAndSecurity",
        "Configuration_Advanced",
        "Configuration_UEFI_Security"
    ],
    "RoleId": "Operator"
}

```

#### Resource /AccountService/Roles/ReadOnly:

```

{
    "@odata.context": "/redfish/v1/$metadata#Role.Role",
    "@odata.etag": "\"5B3EB132\"",
    "@odata.id": "/redfish/v1/AccountService/Roles/ReadOnly",
    "@odata.type": "#Role.v1_2_2.Role",
    "AssignedPrivileges": [
        "Login",
        "ConfigureSelf"
    ],
    "Description": "This resource is used to represent a user role for
        the user account for a Redfish implementation.",
    "Id": "ReadOnly",
    "IsPredefined": true,
    "Name": "ReadOnly",
}

```

```

    "OemPrivileges": [
      "ReadOnly"
    ],
    "OemPrivileges@Redfish.AllowableValues": [
      "UserAccountManagement",
      "RemoteConsoleAccess",
      "RemoteConsoleAndVirtualMediaAccess",
      "RemoteServerPowerRestartAccess",
      "AbilityClearEventLogs",
      "Configuration_Basic",
      "Configuration_NetworkingAndSecurity",
      "Configuration_Advanced",
      "Configuration_UEFIsecurity"
    ],
    "RoleId": "ReadOnly"
  }
}

```

## POST – Create a custom role

Use the POST method to create a custom role for Redfish service.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Roles](https://<BMC_IPADDR>/redfish/v1/AccountService/Roles)

### Request body

Field	Type	Description
RoleId	String	A value not duplicated with Pre-defined roles.
OemPrivileges	Array	The value of this property is a set of OEM privileges that this role includes. The values can be <ul style="list-style-type: none"> <li>• Supervisor</li> <li>• ReadOnly</li> <li>• Configuration_NetworkingAndSecurity</li> <li>• UserAccountManagement</li> <li>• RemoteConsoleAccess</li> <li>• RemoteConsoleAndVirtualMediaAccess</li> <li>• RemoteServerPowerRestartAccess</li> <li>• Configuration_Basic</li> <li>• AbilityClearEventLogs</li> <li>• Configuration_Advanced</li> <li>• Configuration_UEFIsecurity</li> </ul>

### Response body

The response returns the same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## PATCH – Update custom role privileges

Use the PATCH method to update properties in Role resource for Redfish service.

### Request URL

PATCH `https://<BMC_IPADDR>/redfish/v1/AccountService/Roles/$RoleId`

### Request body

Properties to be updated are shown as below, all of these properties can be changed individually.

Field	Type	Description
OemPrivileges	Array	<p>The value of this property is a set of OEM privileges that this role includes. For pre-defined roles, this property shall be readOnly. The values can be</p> <ul style="list-style-type: none"><li>• Supervisor</li><li>• ReadOnly</li><li>• Configuration_NetworkingAndSecurity</li><li>• UserAccountManagement</li><li>• RemoteConsoleAccess</li><li>• RemoteConsoleAndVirtualMediaAccess</li><li>• RemoteServerPowerRestartAccess</li><li>• Configuration_Basic</li><li>• AbilityClearEventLogs</li><li>• Configuration_Advanced</li><li>• Configuration_UEFISecurity</li></ul>

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## DELETE – Delete a Role

Delete a role resource for Redfish service by HTTP DELETE method.

### Request URL

DELETE `https://<BMC_IPADDR>/redfish/v1/AccountService/Roles/$RoleId`

### Request body

None.

### Response body

None.

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

## Resource Key

The resource represents a collection of keys for the Redfish service.

Number of Resources	0~14*4
Resource Path	/redfish/v1AccountService/Accounts/{ManagerAccountId}/Keys/{KeyId}
Schema file	Key KeyCollection

## GET – Collection for Key

Use the GET method to retrieve properties in key collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}/Keys

### Request body

None

### Response body

Field	Type	Description
Description	String	A collection of SSH Key resource instances
Name	String	Keys
Members	Array	Items: links Item count: 1~4
Members[N]	Link	Reference Key schema for instance number.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#KeyCollection.KeyCollection",
  "@odata.etag": "\"1C1EA1FE\"",
  "@odata.id": "/redfish/v1/AccountService/Accounts/1/Keys",
  "@odata.type": "#KeyCollection.KeyCollection",
  "Description": "A collection of SSH Key resource instances."
}
```

```

    "Members": [],
    "Members@odata.count": 0,
    "Name": "Keys"
}

```

## GET – Key properties

Use the GET method to retrieve properties in Key resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/{ManagerAccountId}/Keys/{KeyId}](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/{ManagerAccountId}/Keys/{KeyId})

### Request body

None

### Response body

Field	Type	Description
Id	String	SSH_Key_{key_index}
Name	String	SSH_Key_{key_index}
Description	String	This resource is used to represent a SSH Key for a Redfish implementation.
KeyString	String	The string for the key.
KeyType	String	SSH
UserDescription	String	A user-defined string to describe this key.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## PATCH – Update user description

Use the PATCH method to update user description in Key resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}/Keys/{1...4}](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}/Keys/{1...4})

### Request body

Properties to be updated are shown as below, all of these properties can be changed individually.

Field	Type	Description
UserDescription	String	A user-defined string to describe this key.

### Response

The response returns same content as GET operation with updated properties.



**Status code**

HTTP Status Code	Error Message ID
500	InternalError

**DELETE – Delete a Key**

Delete a key resource for Redfish service by HTTP DELETE method.

**Request URL**

DELETE [https://<BMC\\_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}/Keys/{1...4}](https://<BMC_IPADDR>/redfish/v1/AccountService/Accounts/{1...14}/Keys/{1...4})

**Request body**

None.

**Response body**

None.

**Status code**

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError



---

## Chapter 5. Chassis Management

---

### Resource Chassis

This resource is used to represent a chassis for a Redfish implementation.

Number of Resources	1 ~ N
Resource Path	/redfish/v1/Chassis/1
Schema file	Chassis LenovoChassis

### GET – Collection for chassis

Use the GET method to retrieve properties in Chassis collection for Redfish service.

#### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis`

#### Request body

None

#### Response body

Field	Type	Description
Name	String	ChassisCollection
Members	Array	Item count: 1~2
Members[N]	Link	Links to Chassis resource instances.
Description	String	A collection of Chassis resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis.Chassis",
  "@odata.etag": "\"DB289E8A\"",
  "@odata.id": "/redfish/v1/Chassis/Drive_Backplane_L1HF43W0002",
  "@odata.type": "#Chassis.v1_21_0.Chassis",
  "ChassisType": "StorageEnclosure",
  "Description": "This resource is used to represent a chassis or
    other physical enclosure for a Redfish implementation.",
  "Id": "Drive_Backplane_L1HF43W0002",
  "Manufacturer": "LNVO",
  "Name": "M.2 Backplane",
}
```

```

    "Oem": {
      ...
    },
    "PartNumber": "SR17B82561",
    "SKU": "XXXXXXX",
    "SerialNumber": "L1HF43W0002"
  }
}

```

## GET – Chassis properties

Use the GET method to retrieve properties in Chassis resource for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/1`

### Request body

None

### Response body

Field	Type	Description
AssetTag	String	The user assigned asset tag for this chassis.
ChassisType	String	This property indicates the type of physical form factor of this resource. Valid values include: <ul style="list-style-type: none"> <li>• RackMount. The server is a rack-mounted server.</li> <li>• Blade. The server is a blade-based server.</li> <li>• StandAlone. The server is a tower-based server.</li> </ul>
Description	String	Provides a description of this chassis resource.
EnvironmentalClass	String	The ASHRAE Environmental Class for this chassis.
HeightMn	Number	The height of the chassis.
Id	String	Uniquely identifies the resource within the collection of Chassis.  For the Chassis resource for the server, the Id is "1".
IndicatorLED	String	The state of the indicator LED, used to identify the chassis. Valid values include: <ul style="list-style-type: none"> <li>• Off. The Indicator LED is off.</li> <li>• Lit. The Indicator LED is lit.</li> <li>• Blinking. The Indicator LED is blinking.</li> </ul>
PCleDevices	Link	A reference link to the PCIe devices located in this chassis.
Links	Object	Expanded.
ComputerSystems	Array	An array of references to the computer systems contained in this chassis.
ComputerSystems[0]	Link	A reference link to a resource of computer system.
Fans	Array	An array of IDs of resources that cool this chassis.
Fans[0]	Link	A reference link to a resource of cooling device.
Drives	Array	An array of resources to disk drives of in this chassis.

Field	Type	Description
ManagedBy	Array	An array of references to the managers responsible for managing this chassis.
ManagedBy[0]	Link	A reference link to a resource of manager responsible for managing this chassis.
ManagersInChassis	Array	An array of references to the managers contained in this chassis.
ManagerInChassis[0]	Link	A reference link to a resource of manager.
PCleDevices	Array	An array of references to the PCIe devices located in this chassis.
PCleDevices[N]	Link	A reference link to a resource of PCIe device located in this chassis.
PowerSupplies	Array	An array of IDs of resources that power this chassis.
PowerSupplies[N]	Link	A reference link to a resource of power device.
Processors	Array	An array of references to the processors located in this chassis.
Processors[N]	Link	A reference link to a resource of processors located in this chassis.
Storage	Array	An array of references to the storage subsystems connected to or inside this chassis.
Storage[N]	Link	A reference link to a resource of storage device inside this chassis.
Location	Object	The location of chassis.
Contacts	Array	An array of contact information.
Contacts[0]	Object	Expanded.
ContactName	String	Name of this contact.
PartLocation	Object	The part location within the placement.
Placement	Object	A place within the addressed location.
Rack	String	The name of a rack location within a row.
RackOffset	Integer	The vertical location of the item, in terms of RackOffsetUnits.
RackOffsetUnits	String	The type of rack units in use.
PostalAddress	Object	The postal address of the addressed Resource.
Building	String	The name of the building.
Location	String	The room designation or other additional information.
Name	String	The name of the system.
Room	String	The name or number of the room.
LogServices	Link	A reference link to the log services resource contained in this chassis.
Manufacturer	String	The manufacturer of this chassis. Always set to Lenovo or LNVO.
Model	String	The model number for the chassis.
Name	String	The name of the Chassis resource. Always set to "Chassis".
NetworkAdapters	Link	A reference link to a collection of network adapter resources contained in this chassis.
PartNumber	String	The part number of this chassis.

Field	Type	Description
PCleSlots	Link	A reference link to a collection of PCIe slot resources contained in this chassis.
Power	Link	A reference link to a resource of power device contained in this chassis.
PowerState	String	The current power state of this chassis. Valid values include: <ul style="list-style-type: none"> <li>• On</li> <li>• Off</li> </ul>
SKU	String	The SKU for this chassis.
Sensors	Link	A reference link to the sensor resource contained in this chassis.
SerialNumber	String	The serial number of this chassis.
Status	Object	Contains the following elements.
Health	String	The current health of this chassis as indicated by the entries in the event log. Valid values include: <ul style="list-style-type: none"> <li>• <b>OK</b>: Normal. No warning or critical events in the event log of this chassis.</li> <li>• <b>Critical</b>: A critical condition exists that requires immediate attention. At least one critical event in the event log of this chassis.</li> <li>• <b>Warning</b>: A condition exists that requires attention. At least one warning in the event log (but no critical events) of this chassis.</li> </ul>
HealthRollup	String	This represents the health state of this resource and its dependent resources.
Thermal	Link	A reference link to the thermal resource contained in this chassis.
UUID	String	The UUID for this chassis.
Memory	Link	A reference link to the memory resources located in this chassis.
ThermalSubsystem	Link	A reference link to the thermal subsystem resources located in this chassis.
PowerSubsystem	Link	A reference link to the power subsystem resources located in this chassis.
Controls	Link	A reference link to the controls resources located in this chassis.
EnvironmentMetrics	Link	A reference link to the environment metrics resources located in this chassis.
Version	String	The version for this chassis.
Oem	Object	Expanded.
Lenovo	Object	Expanded.
FanSpeedBoost	String	The value is either "Normal", "Low", "Medium", "High" or "Unknown".

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#Chassis.Chassis",
  "@odata.etag": "\"53E44803\"",
  "@odata.id": "/redfish/v1/Chassis/1",
  "@odata.type": "#Chassis.v1_21_0.Chassis",
  "AssetTag": "",
  "ChassisType": "RackMount",
  "Controls": {
    "@odata.id": "/redfish/v1/Chassis/1/Controls"
  },
  "Description": "This resource is used to represent a chassis or
    other physical enclosure for a Redfish implementation.",
  "EnvironmentMetrics": {
    "@odata.id": "/redfish/v1/Chassis/1/EnvironmentMetrics"
  },
  "EnvironmentalClass": "A4",
  "HeightMm": 88.9,
  "Id": "1",
  "IndicatorLED": "Off",
  "Links": {
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/1"
      }
    ],
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_0"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_1"
      }
    ],
    "Fans": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "ManagersInChassis": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "PCIeDevices": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot8_0xc60000"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000"
      }
    ],
    "PowerSupplies": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU2"
      }
    ]
  }
}

```

```

    }
  ],
  "Processors": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Processors/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Processors/1"
    }
  ],
  "Storage": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8"
    }
  ]
},
"Location": {
  "Contacts": [
    {
      "ContactName": ""
    }
  ],
  "PartLocation": {},
  "Placement": {
    "Rack": "",
    "RackOffset": 1,
    "RackOffsetUnits": "EIA_310"
  },
  "PostalAddress": {
    "Building": "",
    "Location": "",
    "Name": "",
    "Room": ""
  }
},
"LogServices": {
  "@odata.id": "/redfish/v1/Systems/1/LogServices"
},
"Manufacturer": "Lenovo",
"Memory": {
  "@odata.id": "/redfish/v1/Systems/1/Memory"
},
"Model": "7DGCC01WW",
"Name": "Chassis",
"NetworkAdapters": {
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters"
},
"Oem": {
  ...
}
},
"PCIeDevices": {
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices"
},
"PCIeSlots": {
  "@odata.id": "/redfish/v1/Chassis/1/PCIeSlots"
},
"PartNumber": "SB27C00442",
"Power": {
  "@odata.id": "/redfish/v1/Chassis/1/Power"
},
},

```



```

"PowerState": "On",
"PowerSubsystem": {
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem"
},
"SKU": "7DGCCT01WW",
"Sensors": {
  "@odata.id": "/redfish/v1/Chassis/1/Sensors"
},
"SerialNumber": "BHSFW2U005",
>Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Enabled"
},
"Thermal": {
  "@odata.id": "/redfish/v1/Chassis/1/Thermal"
},
"ThermalSubsystem": {
  "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem"
},
"UUID": "FE57AA52-E969-4448-9C0B-045179900052",
"Version": "5"
}

```

## PATCH – Update chassis properties

Use the PATCH method to update properties in Chassis resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1](https://<BMC_IPADDR>/redfish/v1/Chassis/1)

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
AssetTag	String	The user assigned asset tag for this chassis. Maximum string length of AssetTag is 32.
Location	Object	The location of chassis.
Contacts	Array	An array of contact information.
Contacts[0]	Object	Expanded.
ContactName	String	Name of this contact.
Placement	Object	A place within the addressed location.
Rack	String	The name of a rack location within a row.
RackOffset	Integer	The vertical location of the item, in terms of RackOffsetUnits.
PostalAddress	Object	The postal address of the addressed Resource.
Building	String	The name of the building.
Location	String	The room designation or other additional information.
Name	String	The name of the system.

Field	Type	Description
Room	String	The name or number of the room.
IndicatorLED	String	The state of the indicator LED, used to identify the chassis. Available value is either "Lit" or "Blinking" or "Off".
Oem	Object	Expanded.
Lenovo	Object	Expanded.
FanSpeedBoost	String	The value should be set to either "Normal", "Low", "Medium" or "High".

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource Enclosure

This resource is used to represent a Enclosure for a Redfish implementation.

This resource is only for systems with enclosures.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/Enclosure
Schema file	Chassis

## GET – Collection for Enclosure

Use the GET method to retrieve properties in Enclosure collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Enclosure

### Request body

None

### Response body

Field	Type	Description
Name	String	ChassisCollection
Members	Array	Items: A reference link to an element of Chassis.
Description	String	A collection of Chassis resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Enclosure properties

Use the GET method to retrieve properties in Enclosure resource for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/Enclosure`

### Request body

None

### Response body

Field	Type	Description
SerialNumber	String	The serial number of this chassis.
ChassisType	String	This property indicates the type of physical form factor of this resource.
Description	String	Provides a description of this chassis resource.
Links	Object	Expanded.
Contains	Array	An array of references to the chassis contained in this chassis.
Contains [N]	Link	The value of this property is a URI reference to the resource of chassis.
ComputerSystems	Array	Items: A reference link to an element of computer systems.
ManagedBy	Array	Items: A reference link to the managers responsible for managing this chassis.
Model	String	The model number for the chassis.
Id	String	Uniquely identifies the resource within the collection of Chassis. Always set to "2".
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
Name	String	The name of the Chassis resource. Always set to Chassis Enclosure.
Power	Link	A reference link to the power resource contained in this chassis.
PowerSubsystem	Link	A reference link to the power subsystem resource contained in this chassis.
PowerState	String	On
Manufacturer	String	The manufacturer of this chassis. Always set to Lenovo.
Location	Object	The location of chassis.
PartLocation	Object	The part location within the placement.
LocationOrdinalValue	Integer	The number that represents the location of the part. If LocationType is 'slot' and this unit is in slot 2, the LocationOrdinalValue is 2.

Field	Type	Description
LocationType	String	The type of location of the part, such as slot, bay and socket.
Placement	Object	A place within the addressed location.
UUID	String	Chassis UUID
Actions	Object	Expanded, only for platforms without SMM.
#LenovoChassis. NodeVirtualReset	Object	Expanded.
title	String	NodeVirtualReset
target	String	/redfish/v1/Chassis/Enclosure/Actions/Oem/LenovoChassis. NodeVirtualReset
Nodeid	Number	Node id in the chassis
ResetType	String	"ACPowerCycle" or "XCCReboot"
#LenovoChassis. SetMidplaneVpd	Object	Expanded.
title	String	SetMidplaneVpd
target	String	/redfish/v1/Chassis/Enclosure/Actions/Oem/LenovoChassis. SetMidplaneVpd
Model	String	Machine type of caretaker node.
SerialNumber	String	Serial number of caretaker node.
UUID	String	UUID of caretaker node.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## PATCH – Update enclosure properties

Use the PATCH method to update properties in enclosure resource for Redfish service.

#### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Chassis/Enclosure](https://<BMC_IPADDR>/redfish/v1/Chassis/Enclosure)

#### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
Oem	Object	Expanded.
Lenovo	Object	Expanded.
LANEnabled	String	"Enable" or "Disable".
Oem	Object	Expanded.
Lenovo	Object	Expanded.
IPMIEnabled	String	"Enable" or "Disable".

## Response

The response returns same content as GET operation with updated properties.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource Chassis (Retimer)

This resource is used to represent a retimer for a Redfish implementation.

Number of Resources	1 ~ N
Resource Path	/redfish/v1/Chassis/Retimer_{CFF Riser OCP SFF BP}_{N}
Schema file	Chassis

## GET – Retimer properties

Use the GET method to retrieve Retimer properties for Redfish service.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/Retimer_{CFF|Riser|OCP|SFF|BP}_{N}`

### Request body

None

### Response body

Field	Type	Description
Description	String	This resource is used to represent a retimer for a Redfish implementation.
Id	String	Retimer_{Adapter Type}_{slot}
Links	Object	Expanded.
ComputerSystems	Array	Items: A reference link to an element of computer systems.
ComputerSystems[0]	Link	The value of this property is a URI reference to a resource of the computer system.
ManagedBy	Array	Items: A reference link to the managers responsible for managing this chassis
ManagedBy[0]	Link	The value of this property is a URI reference to a resource of manager.
ChassisType	String	Card
Manufacturer	String	The manufacturer of this retimer.
Model	String	null
Name	String	Retimer_{Adapter Type}_{slot}
PartNumber	String	The part number of the retimer.
SerialNumber	String	The serial number of the retimer.

Field	Type	Description
SKU	Object	The SKU of the retimer.
Status	Object	Expanded.
Health	String	OK
State	String	Enabled

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource Chassis (Drive backplane)

Number of Resources	1 ~ N
Resource Path	/redfish/v1/Chassis/Drive_Backplane_{SerialNumber}
Schema file	Chassis

## GET – Drive backplane properties

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/Drive\_Backplane\_{SerialNumber}

#### Request body

None

#### Response body

Field	Type	Description
Description	String	This resource is used to represent a drive backplane for a Redfish implementation.
ChassisType	String	This property indicates the type of physical form factor of this resource.
Id	String	Drive_Backplane_{SN}, {SN} is the drive backplane serial number.
Manufacturer	String	The manufacturer of this drive backplane.
Name	String	The name of the drive backplane resource.
PartNumber	String	The part number of the drive backplane.
SKU	String	The SKU of the drive backplane.
SerialNumber	String	The serial number of this drive backplane.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis.Chassis",
  "@odata.etag": "\"DB289E8A\"",
  "@odata.id": "/redfish/v1/Chassis/Drive_Backplane_L1HF43W0002",
  "@odata.type": "#Chassis.v1_21_0.Chassis",
  "ChassisType": "StorageEnclosure",
  "Description": "This resource is used to represent a chassis or
                other physical enclosure for a Redfish implementation.",
  "Id": "Drive_Backplane_L1HF43W0002",
  "Manufacturer": "LNV0",
  "Name": "M.2 Backplane",
  "Oem": {
    ...
  },
  "PartNumber": "SR17B82561",
  "SKU": "XXXXXXX",
  "SerialNumber": "L1HF43W0002"
}
```

---

## Resource Chassis (I/O board or PCIe riser)

This resource is used to represent an I/O board or PCIe riser for a Redfish implementation.

Number of Resources	1 ~ N
Resource Path	/redfish/v1/Chassis/{IO_Board Rear_IO_Riser PCIe_Riser_{SN}}
Schema file	Chassis

## GET – I/O Board or PCIe riser properties

Use the GET method to retrieve I/O Board or PCIe riser properties for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/{IO\_Board|Rear\_IO\_Riser|PCIe\_Riser\_{SN}}

### Request body

None

### Response body

Field	Type	Description
Description	String	This resource is used to represent a I/O Board or PCIe riser for a Redfish implementation.
Id	String	IO_Board or Rear_IO_Riser or PCIe_Riser_{SN}
Name	String	IO Board or Rear IO Riser or PCIe Riser
ChassisType	String	“Module” if IO_Board or Rear_IO_Riser. “Card” if PCIe_Riser_{SN}.
Manufacturer	String	The manufacturer of this I/O Board or PCIe riser.

Field	Type	Description
PartNumber	String	The part number of the I/O Board or PCIe riser.
SerialNumber	String	The serial number of the I/O Board or PCIe riser.
Status	Object	Expanded.
Health	String	OK
State	String	Enabled

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis.Chassis",
  "@odata.etag": "\"2DA516E4\"",
  "@odata.id": "/redfish/v1/Chassis/IO_Board",
  "@odata.type": "#Chassis.v1_21_0.Chassis",
  "ChassisType": "Module",
  "Description": "This resource is used to represent vpd data
    of IO Board for a Redfish implementation.",
  "Id": "IO_Board",
  "Manufacturer": "LNV0",
  "Name": "SCM_Board",
  "Oem": {
    ...
  },
  "PartNumber": "STA7B99215",
  "SerialNumber": "L1HF48X0035"
}
```

## Resource EnvironmentMetrics (Chassis)

This resource is used to represent the EnvironmentMetrics for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/EnvironmentMetrics
Schema file	EnvironmentMetrics

## GET – EnvironmentMetrics properties

Use the GET method to retrieve properties in Environment metrics resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/EnvironmentMetrics](https://<BMC_IPADDR>/redfish/v1/Chassis/1/EnvironmentMetrics)

### Request body

None



## Response body

Field	Type	Description
Id	String	EnvironmentMetrics
Name	String	Chassis Environment Metrics
Description	String	This resource shall represent an environment metrics for a Redfish implementation.
FanSpeedsPercent	Array	Items: Fan sensors speeds (percent)
FanSpeedsPercent[N]	Object	Expanded.
DataSourceUri	String	Redfish fan sensor resource path.
Reading	Number	Equals to fan sensor reading.
Status	Object	Expanded.
Health	String	OK
State	String	Enabled
TemperatureCelsius	Object	Expanded.
DataSourceUri	String	Redfish sensor resource path of Ambient Temp sensor
Reading	Integer	Equals to Ambient Temp sensor reading.

## Example

```
{
  "@odata.context": "/redfish/v1/$metadata#EnvironmentMetrics.EnvironmentMetrics",
  "@odata.etag": "\"19EED723\"",
  "@odata.id": "/redfish/v1/Chassis/1/EnvironmentMetrics",
  "@odata.type": "#EnvironmentMetrics.v1_3_0.EnvironmentMetrics",
  "Description": "This resource shall represent an environment metrics for a Redfish implementation.",
  "FanSpeedsPercent": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/fantach_Fan6_Rear_Tach",
      "Reading": 72
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/fantach_Fan4_Rear_Tach",
      "Reading": 72
    },
    ...
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/fantach_Fan8_Front_Tach",
      "Reading": 72
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/fantach_Fan6_Front_Tach",
      "Reading": 72
    }
  ],
  "Id": "EnvironmentMetrics",
  "Name": "Chassis Environment Metrics",
  "TemperatureCelsius": {
    "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_Ambient_Temp",
    "Reading": 28
  }
}
```

---

## Resource Sensor

This resource is used to represent a sensor for a Redfish implementation.

Number of Resources	1+
Resource Path	/redfish/v1/Chassis/1/Sensors/Id
Schema file	Sensor SensorCollection

## GET – Collection of Sensors

Use the GET method to retrieve properties in sensor collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/Sensors

### Request body

None

### Response body

Field	Type	Description
Name	String	SensorsCollection
Members	Array	Items: A reference link to an element of sensors
Members@odata.count	Number	The number of sensor elements
Description	String	A collection of sensor resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

```
{
  "@odata.context": "/redfish/v1/$metadata#SensorCollection.SensorCollection",
  "@odata.etag": "\"71C3CA8A\"",
  "@odata.id": "/redfish/v1/Chassis/1/Sensors",
  "@odata.type": "#SensorCollection.SensorCollection",
  "Description": "Collection of Sensors for this Chassis",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/airflow_System_Airflow"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/fantach_Fan1_Front_Tach"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/fantach_Fan2_Front_Tach"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/power_PSU1_Input_Power"
    }
  ]
}
```

```

    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/power_PSU1_Output_Power"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/power_Sys_Fan_Power"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/power_Sys_Power"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_Ambient_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_CPU1_DTS_TMMargin"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_CPU2_DTS_TMMargin"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_CPU1_Die"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_CPU2_Die"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_DIMM_1_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_DIMM_7_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/temperature_exhaust_temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/Sensors/voltage_CMOS_Battery"
    }
  ],
  "Members@odata.count": 16,
  "Name": "Sensors"
}

```

## GET – Sensor properties

Use the GET method to retrieve properties in sensor resource.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/Sensors/{SesnoralType}\\_{SensorName}](https://<BMC_IPADDR>/redfish/v1/Chassis/1/Sensors/{SesnoralType}_{SensorName})

### Request body

None

## Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of Sensor.  The format of this value is <SensorNumber>L<OwnerLUN>, e.g. 244L0, 20L1, etc.  There are also some Redfish specified sensors, such as “PSU{N}_InputVol”, “GPU{N}_Power”.
Name	String	Sensor name, the value is obtained from SDR.
Description	String	Provides a description of this sensor resource.
Reading	Number	Sensor value.
ReadingRangeMax	Number	The maximum possible value for this sensor.
ReadingRangeMin	Number	The minimum possible value for this sensor.
ReadingType	String	Sensor type.
ReadingUnits	Number	The units of the reading and thresholds.
Status	Object	Expanded.
State	String	Valid values: Present, Enabled, or Absent.
Health	String	Valid values: Functional or Critical.
Thresholds	Object	Expanded.
LowerCaution	Object	Expanded.
Reading	Number	The value at which the Reading property is below normal range.
LowerCritical	Object	Expanded.
Reading	Number	The value at which the Reading property is below normal range but not yet fatal.
LowerFatal	Object	Expanded.
Reading	Number	The value at which the Reading property is below normal range and fatal.
UpperCaution	Object	Expanded.
Reading	Number	The value at which the Reading property is above normal range.
UpperCritical	Object	Expanded.
Reading	Number	The value at which the Reading property is above normal range but not yet fatal.
UpperFatal	Object	Expanded.
Reading	Number	The value at which the Reading property is above normal range and fatal.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

```
{
```

```
"@odata.context": "/redfish/v1/$metadata#Sensor.Sensor",
"@odata.etag": "\"3F45F789\"",
"@odata.id": "/redfish/v1/Chassis/1/Sensors/power_PSU1_Input_Power",
"@odata.type": "#Sensor.v1_2_0.Sensor",
"Description": "This resource is used to represent
                a sensor for a Redfish implementation",
"Id": "power_PSU1_Input_Power",
"Name": "PSU1 Input Power",
"Reading": 465.0,
"ReadingRangeMax": 3000.0,
"ReadingRangeMin": 0.0,
"ReadingType": "Power",
"ReadingUnits": "W",
"Status": {
    "Health": "OK",
    "State": "Enabled"
}
}
```



---

## Chapter 6. Network Adapter Devices

---

### Resource NetworkAdapters

This resource is used to represent network adapters for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/NetworkAdapters/Id
Schema file	NetworkAdapter NetworkAdapterCollection

### GET – Collection of Network adapters

Use the GET method to retrieve properties in NetworkAdapter collection for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters

#### Request body

None

#### Response body

Field	Type	Description
Name	String	NetworkAdaptersCollection
Members	Array	Items: A reference link to an element of NetworkAdapters.
Description	String	A collection of NetworkAdapter resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapterCollection.NetworkAdapterCollection",
  "@odata.etag": "\"BB7BA9DD\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters",
  "@odata.type": "#NetworkAdapterCollection.NetworkAdapterCollection",
  "Description": "Collection of Network Adapter",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot14_0xb40000"
    }
  ]
}
```

```

    ],
    "Members@odata.count": 2,
    "Name": "Network Adapter Collection"
}

```

## GET – Network adapter properties

Use the GET method to retrieve properties in NetworkAdapter resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/{Id}

### Request body

None

### Response body

Field	Type	Description
Id	String	slot_{N}_{PCIe_address}, N is the slot number.
Controllers	Array	The set of network controllers ASICs that make up this Network adapter.
Controllers[]	Object	Expanded.
Location	Object	The location of network adapter.
PartLocation	Object	The part location within the placement.
LocationOrdinalValue	Integer	The number that represents the location of the part. If LocationType is slot and this unit is in slot 2, the LocationOrdinalValue is 2.
LocationType	String	The type of location of network adapter.
ServiceLabel	String	The label of the part location, such as a silk-screened name or a printed label. PCIe X (X is the slot number).
FirmwarePackageVersion	String	The version of the user-facing firmware package
PCIeInterface	Object	Expanded.  <b>Note:</b> This object is not supported in AMD platform.
LanesInUse	Number	The number of PCIe lanes in use by this device.
MaxLanes	Number	The number of PCIe lanes supported by this device.
MaxPCleType	String	The highest version of the PCIe specification supported by this device.
PCleType	String	The version of the PCIe specification in use by this device.
Links	Object	Links for this controller.
PCIeDevices	Array	Items: link
PCIeDevices[]	Link	Link to related PCIeDevice.
Ports	Array	Items: link
Ports[]	Link	Link to related Ports.
NetworkDeviceFunctions	Array	Items: link



Field	Type	Description
NetworkDeviceFunctions[]	Link	Link to related NetworkDeviceFunctions.
ControllerCapabilities	Object	The capabilities of a controller.
NetworkPortCount	Number	The count of physical ports of this adapter.
NetworkDeviceFunctionCount	Number	The count of logical ports of this adapter.
DataCenterBridging	Object	Data center bridging (DCB) for this controller.
Capable	Boolean	An indication of whether this controller is capable of data center bridging (DCB).
NPAR	Object	Expanded.
NparCapable	Boolean	An indication of whether the controller supports NIC function partitioning.
NparEnabled	Boolean	An indication of whether NIC function partitioning is active on this controller.
VirtualizationOffload	Object	Expanded.
SRIOV	Object	Expanded.
SRIOWEPACapable	Boolean	An indication of whether this controller supports single root input/output virtualization (SR-IOV) in Virtual Ethernet Port Aggregator (VEPA) mode.
VirtualFunction	Object	Expanded.
DeviceMaxCount	Number	The maximum number of virtual functions supported by this controller.
MinAssignmentGroupSize	Number	The minimum number of virtual functions that can be allocated or moved between physical functions for this controller.
NetworkPortMaxCount	Number	The maximum number of virtual functions supported per network port for this controller.
Description	String	A NetworkAdapter represents the physical network adapter capable of connecting to a computer network.
Manufacturer	String	The manufacturer or OEM of this network adapter.
Model	String	The model string for this network adapter.
SKU	String	The manufacturer SKU for this network adapter.
Name	String	The card name for this network adapter.
PartNumber	String	The part number for this network adapter.
SerialNumber	String	The serial number for this network adapter.
Ports	Link	Link to related PortsCollection.
NetworkDeviceFunctions	Link	Link to related NetworkDeviceFunctionsCollection.
Status	Object	Expanded.
State	String	Enabled
Health	String	This represents the health state of this resource.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapter.NetworkAdapter",
  "@odata.etag": "\"7C8FCFF9\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000",
  "@odata.type": "#NetworkAdapter.v1_9_0.NetworkAdapter",
  "Controllers": [
    {
      "ControllerCapabilities": {
        "NetworkDeviceFunctionCount": 0,
        "NetworkPortCount": 2
      },
      "FirmwarePackageVersion": "4.07.04",
      "Links": {
        "NetworkDeviceFunctions": [],
        "PCIeDevices": [
          {
            "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000"
          }
        ],
        "Ports": [
          {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports/1"
          },
          {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports/2"
          }
        ]
      },
      "Location": {
        "PartLocation": {
          "LocationOrdinalValue": 3,
          "LocationType": "Slot",
          "ServiceLabel": "PCI 3"
        }
      },
      "PCIeInterface": {
        "LanesInUse": 8,
        "MaxLanes": 8,
        "MaxPCIeType": "Gen4",
        "PCIeType": "Gen4"
      }
    }
  ],
  "Description": "A NetworkAdapter represents the physical network adapter capable of connecting to a computer network.",
  "Id": "slot3_0xb0000",
  "Manufacturer": "QLogic",
  "Model": "QLE2772",
  "Name": "QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter",
  "NetworkDeviceFunctions": {
    "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/NetworkDeviceFunctions"
  }
}
```

```

    },
    "Oem": {
        ...
    },
    "PartNumber": "SN37A28357",
    "Ports": {
        "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports"
    },
    "SKU": "01KR591",
    "SerialNumber": "C1MP0630A9E",
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    }
}

```

## Resource Port

This resource is used to represent ports for a Redfish implementation.

Number of Resources	Number of ports
Resource Path	/redfish/v1/Chassis/1/NetworkAdapters/Id/Ports/Id
Schema file	Port PortCollection

## GET – Collection of ports

Use the GET method to retrieve properties in Port collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/Ports/

### Request body

None

### Response body

Field	Type	Description
Name	String	PortsCollection
Members	Array	Items: A reference link to an element of Ports
Description	String	A Collection of Port resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#PortCollection.PortCollection",
  "@odata.etag": "\"9F381EA5\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports",
  "@odata.type": "#PortCollection.PortCollection",
  "Description": "Collection of Network Adapter Port",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports/1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports/2"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Network Adapters Ports Collection"
}

```

## GET – Port properties

Use the GET method to retrieve properties in port resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/Ports/Id](https://<BMC_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/Ports/Id)

### Request body

None

### Response body

Field	Type	Description
Id	String	Port id is provided by hardware.
LinkNetworkTechnology	String	The link network technology capabilities of this port. The value can be Ethernet, InfiniBand, FibreChannel.
Ethernet	Object	Expanded. (If this is Ethernet, the below items will be displayed)
AssociatedMACAddresses	Array	Items: string The array of configured MAC addresses that are associated with this network port.
FlowControlConfiguration	String	The locally configured 802.3x flow control setting for this port.
FlowControlStatus	String	The 802.3x flow control behavior negotiated with the link partner for this port.
LLDPEnabled	Boolean	Enable/disable LLDP for this port.
LLDPReceive	Object	Expanded.
ChassisId	String	Link Layer Data Protocol (LLDP) chassis ID.
ManagementAddressIPv4	String	The IPv4 management address received from the remote partner across this link.
ManagementAddressMAC	String	The management MAC address received from the remote partner across this link.
SystemName	String	The system name to be transmitted from this endpoint.

Field	Type	Description
SystemDescription	String	The system description to be transmitted from this endpoint.
LLDPTransmit	Object	Expanded.
ChassisId	String	Link Layer Data Protocol (LLDP) chassis ID.
ChassisIdSubtype	String	The type of identifier used for the chassis ID.
ManagementAddressIPv4	String	The IPv4 management address to be transmitted from this endpoint.
ManagementAddressIPv6	String	The IPv6 management address to be transmitted from this endpoint.
ManagementAddressMAC	String	The management MAC address to be transmitted from this endpoint.
ManagementAddressVlanId	Number	The management VLAN ID to be transmitted from this endpoint.
PortId	String	A colon-delimited string of hexadecimal octets identifying a port to be transmitted from this endpoint.
PortIdSubtype	String	The port ID subtype to be transmitted from this endpoint.
WakeOnLANEnabled	Boolean	Indicates whether Wake on LAN (WoL) is enabled on this port.
Description	String	A Network Port represents a discrete physical port capable of connecting to a network.
Name	String	Physical Port X (X = the Id value).
CurrentSpeedGbps	Number	The current speed of this port.
FibreChannel	Object	Expanded. (If this is FibreChannel, the below items will be displayed).
AssociatedWorldWideNames	Array	Items: string  The array of configured World Wide Names (WWN) that are associated with this network port.
FunctionMaxBandwidth	Array	Items: Object  The array of minimum bandwidth allocation percentages for the Network Device Functions associated with this port.
FunctionMaxBandwidth[N]	Object	Expanded.
AllocationPercent	Number	The maximum bandwidth allocation percentage allocated to the corresponding network device function instance.
InfiniBand	Object	Expanded. (If this is InfiniBand, the below items will be displayed).
AssociatedNodeGUIDs	Array	Items: string  The array of configured node GUIDs that are associated with this network port.
AssociatedPortGUIDs	Array	Items: string  The array of configured port GUIDs that are associated with this network port.
AssociatedSystemGUIDs	Array	Items: string  The array of configured system GUIDs that are associated with this network port.

Field	Type	Description
LinkState	String	The state of the link between this port and its link partner.
LinkStatus	String	The status of the link between this port and its link partner.
LinkConfiguration	Array	The configuration of the link between this port and its link partner.
LinkConfiguration[]	Object	Link to related link configuration.
AutoSpeedNegotiationCapable	Boolean	An indication of whether the port is capable of autonegotiating speed.
AutoSpeedNegotiationEnabled	Boolean	Controls whether this port is configured to enable autonegotiating speed.
CapableLinkSpeedGbps	Array	The set of link speed capabilities of this port.
MaxSpeedGbps	Number	The maximum speed of this port as currently configured.
MaxFrameSize	Number	The maximum frame size of this port as currently configured.
MaximumMTU	Number	The maximum MTU of this port as currently configured.
PortProtocol	Number	The protocol being sent over this port.
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
HealthRollup	String	This represents the health state of this resource and its dependent resources.
SignalDetected	Boolean	An indication of whether a signal is detected on this interface.
SFP	Object	The small form-factor pluggable (SFP) device associated with this port.
Status	Object	Expanded.
State	String	Enabled
Health	String	This represents the health state of this resource in the absence of its dependent resources
HealthRollup	String	This represents the health state of this resource and its dependent resources.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.etag": "\"E67D9D87\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports/1",
  "@odata.type": "#Port.v1_7_0.Port",
  "CurrentSpeedGbps": 0.0,
  "Description": "A Network Port represents a discrete physical port"
}
```

```

        capable of connecting to a network.",
    "FibreChannel": {
        "AssociatedWorldWideNames": [
            "210034800D725642"
        ]
    },
    "Id": "1",
    "LinkNetworkTechnology": "FibreChannel",
    "LinkState": "Enabled",
    "LinkStatus": "LinkDown",
    "MaxFrameSize": 16384,
    "MaxSpeedGbps": 32,
    "MaximumMTU": 16384,
    "Name": "Physical Port 1",
    "Oem": {
        ...
    }
},
"PortProtocol": "FC",
>Status": {
    "Health": "OK",
    "State": "Enabled"
}
}

```

---

## Resource NetworkDeviceFunction

This resource is used to represent network device function for a Redfish implementation.

Number of Resources	Number of network device functions
Resource Path	/redfish/v1/Chassis/1/NetworkAdapters/Id/NetworkDeviceFunctions/{1-X}.{1-Y}
Schema file	NetworkDeviceFunction NetworkDeviceFunctionCollection

## GET – Collection of Network device function

Use the GET method to retrieve properties in NetworkDeviceFunction collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/NetworkDeviceFunctions/

### Request body

None

### Response body

Field	Type	Description
Name	String	NetworkDeviceFunctionCollection
Members	Array	Items: A reference link to an element of NetworkDeviceFunction.
Description	String	A collection of NetworkDeviceFunction resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"81EC0C4E\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions",
  "@odata.type": "#NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection",
  "Description": "Collection of Network Device Function",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions/3"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions/0"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions/1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions/2"
    }
  ],
  "Members@odata.count": 4,
  "Name": "Network Device Function Collection"
}
```

## GET – Network device functions

Use the GET method to retrieve properties in NetworkDeviceFunction resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/NetworkDeviceFunctions/{1-X}.{1-Y}](https://<BMC_IPADDR>/redfish/v1/Chassis/1/NetworkAdapters/Id/NetworkDeviceFunctions/{1-X}.{1-Y})

### Request body

None

### Response body

Field	Type	Description
Id	String	Physical port index + "." + the logical port index, for the associated NetworkPort resource.
AssignablePhysical-Ports	Array	Items: link
AssignablePhysical-Ports[N]	Link	Link to possible Ports
BootMode	String	The boot mode configured for this network device function.
Description	String	A Network Device Function represents a logical interface exposed by the network adapter.
DeviceEnabled	Boolean	True



Field	Type	Description
Ethernet	Object	Expanded. (If this is Ethernet, the below items will be displayed)
MACAddress	String	This is the currently configured MAC address of the (logical port) network device function.
MTUSize	Number	The Maximum Transmission Unit (MTU) configured for this network device function.
MTUSizeMaximum	Number	The largest maximum transmission unit (MTU) size supported for this network device function.
PermanentMACAd- dress	String	This is the permanent MAC address assigned to this network device function (physical function)
InfiniBand	Object	Expanded. (If this is InfiniBand, the below items will be displayed)
NodeGUID	String	The node GUID assigned to this network device function.
MTUSize	Number	The maximum transmission unit (MTU) configured for this network device function.
PermanentNode- GUID	String	The permanent node GUID assigned to this network device function.
PermanentPortGUID	String	The permanent port GUID assigned to this network device function.
PermanentSystem- GUID	String	The permanent system GUID assigned to this network device function.
PortGUID	String	The port GUID assigned to this network device function.
SystemGUID	String	The system GUID assigned to this network device function.
PermanentMACAd- dress	String	This is the permanent MAC address assigned to this network device function (physical function)
MACAddress	String	This is the currently configured MAC address of the (logical port) network device function.
MTUSize	Integer	The Maximum Transmission Unit (MTU) configured for this network device function.
Links	Object	Expanded.
PhysicalNetwork- PortAssignment	Link	Link to a related NetworkPort
MaxVirtualFunctions	Number	The number of virtual functions that are available for this network device function.
Name	String	"Logical Port" + " "+logical port index
NetDevFuncType	String	The configured capability of this network device function.
NetDevFuncCapabili- ties	Array	An array of capabilities for this network device function.
SAVIEEnabled	Boolean	Indicates if Source Address Validation Improvement (SAVI) is enabled for this network device function.
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
HealthRollup	String	This represents the health state of this resource and its dependent resources.

Field	Type	Description
VirtualFunctionsEnabled	Boolean	An indication of whether single root input/output virtualization (SR-IOV) virtual functions are enabled for this network device function.
@Redfish.Settings	Object	Expanded. This object is supported only when NetDevFuncType is iSCSI.
Messages	Array	Items: object
Messages[N]	Object	Expanded.
MessageId	String	"RebootRequired"
RelatedProperties	Array	Items: string
RelatedProperties[N]	String	The setting name of network device function. The format will be "#/iSCSIBoot/...".
Severity	String	"Warning"
Message	String	"Changes completed successfully, but these changes will not take effect until next reboot."
Resolution	String	"Reboot the computer system for the changes to take effect."
SettingsObject	Link	Link to the network device function settings pending resource.
Time	String	Indicate the time when the setting resource was last applied.
SupportedApplyTimes	Array	Items: string Item count: 1
SupportedApplyTimes[0]	String	"OnReset"
iSCSIBoot	Object	Expanded. This property is only supported when NetDevFuncType is "iSCSI".
AuthenticationMethod	String	The iSCSI boot authentication method for this network device function.
CHAPSecret	String	The shared secret for CHAP authentication. Only be present if AuthenticationMethod is CHAP.
CHAPUsername	String	The user name for CHAP authentication. Only be present if AuthenticationMethod is CHAP.
IPAddressType	String	The type of IP address being populated in the iSCSIBoot IP address fields. Valid values: "IPv4", "IPv6"
InitiatorDefaultGateway	String	The IPv6 or IPv4 iSCSI boot default gateway.
InitiatorIPAddress	String	The IPv6 or IPv4 iSCSI boot default gateway.
InitiatorName	String	The iSCSI initiator name.
InitiatorNetmask	String	The IPv6 or IPv4 netmask of the iSCSI boot initiator.
MutualCHAPSecret	String	The CHAP secret for two-way CHAP authentication. Only be present if AuthenticationMethod is MutualCHAP.
MutualCHAPUsername	String	The CHAP user name for two-way CHAP authentication. Only be present if AuthenticationMethod is MutualCHAP.

Field	Type	Description
PrimaryLUN	Number	The logical unit number (LUN) for the primary iSCSI boot target.
PrimaryTargetIPAd- dress	String	The IPv4 or IPv6 address for the primary iSCSI boot target.
PrimaryTargetName	String	The name of the iSCSI primary boot target.
PrimaryTargetTCP- Port	Number	The TCP port for the primary iSCSI boot target.
TargetInfoViaDHCP	Boolean	An indication of whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@Redfish.Settings": null,
  "@odata.context": "/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
  "@odata.etag": "\"BF57601A\"",
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/NetworkDeviceFunctions/0",
  "@odata.type": "#NetworkDeviceFunction.v1_8_0.NetworkDeviceFunction",
  "AssignablePhysicalNetworkPorts": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/Ports/1"
    }
  ],
  "BootMode": "PXE",
  "Description": "A Network Device Function represents a logical
    interface exposed by the network adapter.",
  "DeviceEnabled": true,
  "Ethernet": {
    "MACAddress": "c4:70:bd:62:32:58",
    "MTUSize": 1522,
    "MTUSizeMaximum": 10000,
    "PermanentMACAddress": "c4:70:bd:62:32:58"
  },
  "Id": "0",
  "Links": {
    "PhysicalNetworkPortAssignment": {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot4_0x330000/Ports/1"
    }
  },
  "MaxVirtualFunctions": 127,
  "Name": "NetworkDeviceFunction",
  "NetDevFuncCapabilities": [
    "Ethernet"
  ],
  "NetDevFuncType": "Ethernet",
  "SAVIEEnabled": false,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  }
}
```

```

    },
    "VirtualFunctionsEnabled": true,
    "iSCSIBoot": {}
}

```

## Resource DedicatedNetworkPorts

This resource is used to represent dedicated network ports for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1/DedicatedNetworkPorts/{Id}
Schema file	Port PortCollection

## GET – Collection of dedicated network ports

Use the GET method to retrieve properties in dedicated network port collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1/DedicatedNetworkPorts

### Request body

None

### Response body

Field	Type	Description
Name	String	DedicatedNetworkPortCollection
Members	Array	Items: A reference link to an element of DedicatedNetworkPortCollection.
Description	String	A Collection of DedicatedNetworkPortCollection resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#PortCollection.PortCollection",
  "@odata.etag": "\"6235B526\"",
  "@odata.id": "/redfish/v1/Managers/1/DedicatedNetworkPorts",
  "@odata.type": "#PortCollection.PortCollection",
  "Description": "A collection of dedicated Network Port resource instances of the manager.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/1/DedicatedNetworkPorts/nic1"
    }
  ],
  "Members@odata.count": 1,
}

```

```

    "Name": "DedicatedNetworkPortCollection"
  }

```

## GET – Dedicated network port properties

Use the GET method to retrieve properties in DedicatedNetworkPorts resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1/DedicatedNetworkPorts/{Id}

### Request body

None

### Response body

Field	Type	Description
Id	String	“nic1” or “nic2”
Description	String	A Dedicated Network Port represents a dedicated discrete physical port capable of connecting to a network.
Name	String	Dedicated Network Port X (X = the Id value)
Ethernet	Object	Expanded.
LLDPEnabled	Boolean	Enable or disable LLDP globally for an adapter.
LLDPTransmit	Object	Expanded.
ChassisId	String	Link Layer Data Protocol (LLDP) chassis ID.
ChassisIdSubtype	String	The type of identifier used for the chassis ID.
ManagementVlanId	String	The management VLAN ID to be transmitted from this endpoint.
ManagementAddressIPv4	String	The IPv4 management address to be transmitted from this endpoint.
ManagementAddressIPv6	String	The IPv6 management address to be transmitted from this endpoint.
ManagementAddressMAC	String	The management MAC address to be transmitted from this endpoint.
PortId	String	A colon-delimited string of hexadecimal octets identifying a port to be transmitted from this endpoint.
PortIdSubtype	String	The port ID subtype to be transmitted from this endpoint.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.etag": "\"00A1F15E\"",
  "@odata.id": "/redfish/v1/Managers/1/DedicatedNetworkPorts/nic1",

```

```

"@odata.type": "#Port.v1_8_0.Port",
>Description": "A Dedicated Network Port represents a dedicated discrete physical
                port capable of connecting to a network.",
>Ethernet": {
  "AssociatedMACAddresses": [
    "c4:c6:e6:88:bf:b6"
  ],
  "LLDPEnabled": true,
  "LLDPReceive": {
    "ChassisId": "",
    "ManagementAddressIPv4": null,
    "ManagementAddressMAC": null,
    "SystemDescription": "",
    "SystemName": ""
  },
  "LLDPTransmit": {
    "ChassisId": "c4:c6:e6:88:bf:b6",
    "ChassisIdSubtype": "MacAddr",
    "ManagementAddressIPv4": "10.245.22.181",
    "ManagementAddressIPv6": "fec0:bd02::c6c6:e6ff:fe88:bf:b6",
    "ManagementAddressMAC": "c4:c6:e6:88:bf:b6",
    "ManagementVlanId": 1,
    "PortId": "eth1",
    "PortIdSubtype": "LocalAssign"
  }
},
"Id": "nic1",
>Name": "Dedicated Network Port 1",
>Oem": {
  ...
}
}
}

```

---

## Chapter 7. Power, thermal and redundancy

---

### Resource Power (Rack servers)

This resource is used to represent power management for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/Power
Schema file	Power LenovoPower Redundancy LenovoRedundancy

### GET – Power management properties

Use the GET method to retrieve properties in Power resource for a server.

#### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/1/Power`

#### Request body

None

#### Response body

Field	Type	Description
Id	String	Power
Description	String	Power Consumption and Power Limiting
Name	String	The name of power resource. Always set to Power.
PowerControl	Array	This is the definition for power control function (power reading/limiting).
PowerControl[1]	Object	This is the base type for addressable members of PowerControl array.
MemberId	String	Index of this PowerControl array.
Name	String	Power Control Function name. Always set to "Server Power Control".
PhysicalContext	String	The area, device, or set of devices to which this power control applies.
PowerConsumedWatts	Number	The actual power being consumed by the chassis.
PowerCapacityWatts	Number	The total amount of power available to the chassis for allocation. This may be the power supply capacity, or power budget assigned to the chassis from an upstream chassis.
PowerMetrics	Object	Power readings for this chassis.  <b>Note:</b> If the tier level of this system is less than 2, this object will be hidden.

Field	Type	Description
IntervallnMin	Number	The time interval (or window) in which the PowerMetrics are measured over. Always set to 1.
MinConsumedWatts	Number	The lowest power consumption level over the measurement window (the last IntervallnMin minutes).
MaxConsumedWatts	Number	The highest power consumption level that has occurred over the measurement window (the last IntervallnMin minutes).
AverageConsumedWatts	Number	The average power level over the measurement window (the last IntervallnMin minutes).
PowerLimit	Object	Power limit status and configuration information for this chassis.  <b>Note:</b> If the tier level of this system is less than 3 or AMD system, this object will be hidden.
LimitInWatts	Number	The Power limit in watts. Set to null to disable power capping.
LimitException	String	The action that is taken if the power cannot be maintained below the LimitInWatts. Always set to "NoAction".
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of the resource, such as if it is enabled. Always set to "Enabled".
Health	String	"OK"
RelatedItem	Array	An array of links to resource of chassis.
RelatedItem[1]	Link	A reference link to a resource of chassis.
PowerControl[2]	Object	This is the base type for addressable members of PowerControl array.
MemberId	String	Index of this PowerControl array.
Name	String	Power Control Function name. Always set to "CPU Sub-system Power".
PhysicalContext	String	The area, device, or set of devices to which this power control applies. Always set to "CPUSubsystem".
PowerConsumedWatts	Number	The actual power being consumed by the CPUSubsystem.
PowerMetrics	Object	Power readings for this CPUSubsystem.  <b>Note:</b> If the tier level of this system is less than 2, this object will be hidden.
IntervallnMin	Integer	The time interval (or window) in which the PowerMetrics are measured over. Always set to 1.
MinConsumedWatts	Number	The lowest power consumption level over the measurement window (the last IntervallnMin minutes).
MaxConsumedWatts	Number	The highest power consumption level that has occurred over the measurement window (the last IntervallnMin minutes).
AverageConsumedWatts	Number	The average power level over the measurement window (the last IntervallnMin minutes).
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of the resource, such as if it is enabled. Always set to "Enabled".



Field	Type	Description
Health	String	"OK"
RelatedItem	Array	An array of links to resource of Processors
RelatedItem[1]	Link	A reference link to a resource of Processor
PowerControl[3]	Object	This is the base type for addressable members of PowerControl array. <b>Note:</b> This object is not supported on AMD systems.
MemberId	String	Index of this PowerControl array.
Name	String	Power Control Function name. Always set to "Memory Sub-system Power".
PhysicalContext	String	The area, device, or set of devices to which this power control applies. Always set to "MemorySubsystem".
PowerConsumedWatts	Number	The actual power being consumed by the MemorySubsystem.
PowerMetrics	Object	Power readings for this MemorySubsystem. <b>Note:</b> If the tier level of this system is less than 2, this object will be hidden.
IntervalMin	Integer	The time interval (or window) in which the PowerMetrics are measured over. Always set to 1.
MinConsumedWatts	Number	The lowest power consumption level over the measurement window (the last IntervalMin minutes).
MaxConsumedWatts	Number	The highest power consumption level that has occurred over the measurement window (the last IntervalMin minutes).
AverageConsumedWatts	Number	The average power level over the measurement window (the last IntervalMin minutes).
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of the resource, such as if it is enabled. Always set to "Enabled".
Health	String	"OK"
RelatedItem	Array	An array of links to resource of chassis
RelatedItem[1]	Link	A reference link to a resource of chassis
Redundancy	Array	Redundancy information for the power subsystem of this system or device. Item count is always set to 1.
Redundancy[1]	Object	Details indicating power supplies redundancy.
Name	String	"PSU Redundancy"
MemberId	String	Index of this Redundancy array.
Mode	String	"N+m"
MaxNumSupported	Integer	Maximum number of members allowable for this particular redundancy group.
MinNumNeeded	Integer	Minimum number of members needed for this group to be redundant.  The value is 2
RedundancyEnabled	Boolean	Indicate whether redundancy is enabled.

Field	Type	Description
Status	Object	Describes the status and health of the resource and its children.
State	String	This indicates the known state of this redundancy. Valid values: <ul style="list-style-type: none"> <li>“Enabled”: This function or resource has been enabled</li> <li>“Disabled”: This function or resource has been disabled</li> <li>“Absent”: Indicates no PSU is installed in this PSU slot</li> </ul>
Health	String	This indicates the health state of this redundancy. Valid values: <ul style="list-style-type: none"> <li>“OK”: Normal</li> <li>“Warning”: A condition exists that requires attention</li> <li>“Critical”: A critical condition exists that requires immediate attention</li> </ul>
RedundancySet	Array	This is the definition for redundancy set.  Item count is the number of the Power’s PowerSupplies.
Redundancy-Set[N]	Link	The link to Power’s PowerSupplies.
PowerSupplies	Array	Details of the power supplies associated with this system or device. Items count is the number of installed power supplies in this system.
PowerSupplies[N]	Object	Details of the power supply associated with this system or device.
MemberId	String	This is the identifier for the member within the collection. The string is PSU ID, like “1”.
Name	String	The name of the Power Supply. The string starts with “PSU” and follows with PSU ID, like “PSU1”.
Location	Object	The location of the power supply.
PartLocation	Object	The part location within the placement.
ServiceLabel	String	The label of the part location, such as a silk-screened name or a printed label. Always set to “PSU” + psu_id.
LocationType	String	The type of location of the part, such as slot, bay and socket. Always set to “Slot”.
LocationOrdinalValue	Integer	The number that represents the location of the part. If LocationType is ‘slot’ and this unit is in slot 2, the LocationOrdinalValue is 2.
Model	String	The model number for this Power Supply.
FirmwareVersion	String	The firmware version for this Power Supply. The firmware string consists of primary firmware version and secondary firmware version, which are defined in PowerSupply OEM section.
SerialNumber	String	The serial number for this Power Supply.
PartNumber	String	The part number for this Power Supply.
PowerCapacity-Watts	Number	The maximum capacity of this Power Supply.
PowerInput-Watts	Number	The measured input power of this power supply.
PowerOutput-Watts	Number	The measured output power of this power supply.

Field	Type	Description
PowerSupply-Type	String	The Power Supply type (AC or DC). Valid values: <ul style="list-style-type: none"> <li>"Unknown": The power supply type cannot be determined</li> <li>"AC": Alternating Current (AC) power supply</li> <li>"DC": Direct Current (DC) power supply</li> <li>"ACorDC": Power Supply supports both DC or AC</li> </ul>
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of this power supply. Valid values: <ul style="list-style-type: none"> <li>"Enabled": This function or resource has been enabled</li> <li>"Disabled": This function or resource has been disabled</li> <li>"Absent": Indicates no PSU is installed in this PSU slot</li> </ul>
RelatedItem	Array	An array of links to resource of chassis.
RelatedItem[1]	Link	A reference link to a resource of chassis.
Manufacturer	String	The manufacturer of this Power Supply.
Voltages	Array	This is the definition for voltage sensors. Item count is the number of voltage sensors in this system.
Voltages[N]	Object	The definition for a voltage sensor.
MemberId	String	Index of this Voltage array
Name	String	Voltage sensor name.
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of this voltage sensor. Valid values: <ul style="list-style-type: none"> <li>"Enabled": This function or resource has been enabled</li> <li>"Disabled": This function or resource has been disabled</li> </ul>
Health	String	This indicates the health state of this voltage sensor. Valid values: <ul style="list-style-type: none"> <li>"OK": Normal</li> <li>"Warning": A condition exists that requires attention</li> <li>"Critical": A critical condition exists that requires immediate attention</li> </ul>
ReadingVolts	Number	The current value of the voltage sensor. If the State of this voltage sensor is "disabled", "ReadingVolts" will be hidden.
UpperThreshold-NonCritical	Number	Above normal range.
UpperThreshold-Critical	Number	Above normal range but not yet fatal.
UpperThreshold-Fatal	Number	Above normal range and is fatal.
LowerThreshold-NonCritical	Number	Below normal range.
LowerThreshold-Critical	Number	Below normal range but not yet fatal.
LowerThreshold-Fatal	Number	Below normal range and is fatal.

Field	Type	Description
MinReading-Range	Number	Minimum value for CurrentReading.
MaxReading-Range	Number	Maximum value for CurrentReading.
PhysicalContext	String	Describes the area or device to which this voltage measurement applies. Always set to "VoltageRegulator".  "VoltageRegulator": A voltage regulator device
RelatedItem	Array	Describes the areas or devices to which this temperature measurement applies. Item count is 2.
RelatedItem[1]	Link	/redfish/v1/Systems/1
RelatedItem[2]	Link	/redfish/v1/Chassis/1

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Power.Power",
  "@odata.etag": "\"54030DE7\"",
  "@odata.id": "/redfish/v1/Chassis/1/Power",
  "@odata.type": "#Power.v1_5_2.Power",
  "Description": "Power Consumption and Power Limiting",
  "Id": "Power",
  "Name": "Power",
  "PowerControl": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerControl/0",
      "MemberId": "0",
      "Name": "Server Power Control",
      "PhysicalContext": "Chassis",
      "PowerCapacityWatts": 2000,
      "PowerConsumedWatts": 545,
      "PowerLimit": {
        "LimitException": "NoAction",
        "LimitInWatts": null
      },
      "PowerMetrics": {
        "AverageConsumedWatts": 498,
        "IntervalInMin": 1,
        "MaxConsumedWatts": 500,
        "MinConsumedWatts": 497
      },
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/1"
        }
      ],
      "RelatedItem@odata.count": 1,
      "Status": {
```

```

        "Health": "OK",
        "State": "Enabled"
    }
},
{
    "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerControl/1",
    "MemberId": "1",
    "Name": "CPU Sub-system Power",
    "PhysicalContext": "CPUSubsystem",
    "PowerConsumedWatts": 193,
    "PowerMetrics": {
        "AverageConsumedWatts": 171,
        "IntervalInMin": 1,
        "MaxConsumedWatts": 171,
        "MinConsumedWatts": 171
    },
    "RelatedItem": [
        {
            "@odata.id": "/redfish/v1/Systems/1/Processors"
        }
    ],
    "RelatedItem@odata.count": 1,
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    }
},
{
    "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerControl/2",
    "MemberId": "2",
    "Name": "Memory Sub-system Power",
    "PhysicalContext": "MemorySubsystem",
    "PowerConsumedWatts": 27,
    "PowerMetrics": {
        "AverageConsumedWatts": 26,
        "IntervalInMin": 1,
        "MaxConsumedWatts": 26,
        "MinConsumedWatts": 26
    },
    "RelatedItem": [
        {
            "@odata.id": "/redfish/v1/Systems/1/Memory"
        }
    ],
    "RelatedItem@odata.count": 1,
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    }
}
],
"PowerControl@odata.count": 3,
"PowerSupplies": [
    {
        "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/0",
        "Id": "PSU1",
        "Location": {
            "PartLocation": {
                "LocationOrdinalValue": 1,
                "LocationType": "Slot"
            }
        }
    }
]
}

```

```

    },
    "MemberId": "0",
    "Name": "PSU1",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      }
    ],
    "Status": {
      "Health": "OK"
    }
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/1",
    "Id": "PSU2",
    "Location": {
      "PartLocation": {
        "LocationOrdinalValue": 2,
        "LocationType": "Slot"
      }
    },
    "MemberId": "1",
    "Name": "PSU2",
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      }
    ],
    "Status": {
      "Health": "OK"
    }
  }
],
"Redundancy": [
  {
    "@odata.id": "/redfish/v1/Chassis/1/Power#/Redundancy/0",
    "MaxNumSupported": 2,
    "MemberId": "0",
    "MinNumNeeded": 2,
    "Mode": "N+m",
    "Name": "PSU Redundancy",
    "RedundancyEnabled": true,
    "RedundancyGroup": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1"
      }
    ],
    "RedundancySet": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/0"
      },
      {
        "@odata.id": "/redfish/v1/Chassis/1/Power#/PowerSupplies/1"
      }
    ],
    "Status": {
      "Health": "OK",
      "State": "Enabled"
    }
  }
],

```

```

"Redundancy@odata.count": 1,
"Voltages": [
  {
    "@odata.id": "/redfish/v1/Chassis/1/Power#/Voltages/0",
    "@odata.type": "#Power.v1_0_0.Voltage",
    "LowerThresholdCritical": 2.249,
    "LowerThresholdNonCritical": 2.392,
    "MaxReadingRange": 3.4125035351104405,
    "MemberId": "0",
    "MinReadingRange": 0.0,
    "Name": "CMOS Battery",
    "PhysicalContext": "VoltageRegulator",
    "ReadingVolts": 3.1013,
    "RelatedItem": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1"
      }
    ],
    "Status": {
      "Health": "OK",
      "State": "Enabled"
    }
  }
]
}

```

## PATCH – Update power management properties

Use the PATCH method to update properties in Power resource for Redfish service.

**Note:** This setting is not supported on the below systems: AMD-based systems and systems without XCC3 Premier license installed.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/Power](https://<BMC_IPADDR>/redfish/v1/Chassis/1/Power)

### Request body

Properties to be updated are shown as below, all of these properties can be changed individually.

Field	Type	Description
PowerControl	Object	Expanded.
PowerLimit	Object	Expanded.
LimitInWatts	Number	The Power limit in watts. Null means power capping disabled

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
400	PropertyValueTypeError, Conflict
500	InternalError

## Resource PowerSupply

This resource is used to represent PowerSupply for a Redfish implementation.

Number of Resources	Depending on the max psu slot on the system.
Resource Path	/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU{psu_id}
Schema file	PowerSupply PowerSupplyCollection

## GET – Collection of Power Supplies

Use the GET method to retrieve properties in power supply collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies

### Request body

None

### Response body

Field	Type	Description
Description	String	A collection of power supplies resource instances.
Name	String	Power Supplies
Members	Array	Items: A reference link to an element of power supplies.
Members[N]	Link	Links to power supply instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

```
{
  "@odata.context": "/redfish/v1/$metadata#PowerSupplyCollection.PowerSupplyCollection",
  "@odata.etag": "\"F933E19D\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies",
  "@odata.type": "#PowerSupplyCollection.PowerSupplyCollection",
  "Description": "A collection of power supply resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1"
    }
  ]
}
```



```

    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU2"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Power Supplies"
}

```

## GET – Power Supply properties

Use the GET method to retrieve properties in Power Supply for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU{psu\\_id}](https://<BMC_IPADDR>/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU{psu_id})

### Request body

None

### Response body

Field	Type	Description
Id	String	PSU{psu_id}
Name	String	Power Supply {psu_id}
Description	String	This resource shall represent Power Supply {psu_id} of a chassis for a Redfish implementation.
FirmwareVersion	String	The version of firmware.
InputNominalVoltageType	String	AC200To240V, AC200To277V, DC240Vor null.
InputRanges	Array	Items: object Item count: 1
CapacityWatts	Number	Output label power.
NominalVoltageType	String	Same as InputNominalVoltageType.
Links	Object	Expanded.
PoweringChassis	Array	/redfish/v1/Chassis/1 /redfish/v1/Chassis/Enclosure
Location	Object	Expanded.
PartLocation	Object	Expanded.
LocationOrdinalValue	Integer	{psu_id}
LocationType	String	Slot
ServiceLabel	String	PSU{psu_id}
Manufacturer	String	Manufacturer of power supply
Model	String	Model number

Field	Type	Description
OutputRails	Array	Items: object Item count: 1
NominalVoltage	Number	12
PhysicalContext	String	SystemBoard
PartNumber	String	Part number of power supply.
PowerCapacity-Watts	Number	Same as CapacityWatts.
PowerInputWatts	Number	The measured input power of this power supply.
PowerOutputWatts	Number	The measured output power of this power supply.
PowerSupplyType	String	The type of power supply.
SerialNumber	String	Serial number of the system.
SparePartNumber	String	Number of Spare.
Status	Object	Expanded.
State	String	Enabled or Absent.
Health	String	OK, Warning" or Critical.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#PowerSupply.PowerSupply",
  "@odata.etag": "\"929EDF12\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1",
  "@odata.type": "#PowerSupply.v1_5_0.PowerSupply",
  "Description": "This resource shall represent Power Supply 1
    of a chassis for a Redfish implementation.",
  "FirmwareVersion": "3.50",
  "Id": "PSU1",
  "InputNominalVoltageType": "AC200To240V",
  "InputRanges": [
    {
      "CapacityWatts": 2000,
      "NominalVoltageType": "AC200To240V"
    }
  ],
  "Links": {
    "PoweringChassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      }
    ]
  },
  "Location": {
```

```

    "PartLocation": {
      "LocationOrdinalValue": 1,
      "LocationType": "Slot",
      "ServiceLabel": "PSU1"
    }
  },
  "Manufacturer": "LITE",
  "Metrics": {
    "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1/Metrics"
  },
  "Model": "PA-1202-5L7",
  "Name": "PSU1",
  "Oem": {
    ...
  },
  "OutputRails": [
    {
      "NominalVoltage": 12,
      "PhysicalContext": "SystemBoard"
    }
  ],
  "PartNumber": "SP57B68388",
  "PowerCapacityWatts": 2000,
  "PowerSupplyType": "AC",
  "SerialNumber": "L1DG49L228K",
  "SparePartNumber": "03LD404",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}

```

---

## Resource PowerSupply Metrics

This resource is used to represent PowerSupplyMetrics for a Redfish implementation.

Number of Resources	2 or 4. Depends on the max PSU slot on the system.
Resource Path	/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU{psu_id}/Metrics
Schema file	PowerSupplyMetrics

### GET – PowerSupplyMetrics properties

Use the GET method to retrieve properties in PowerSupplyMetrics for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/PowerSubsystem/PowerSupplies/PSU{psu\_id}/Metrics

#### Request body

None

## Response body

Field	Type	Description
Id	String	Metrics
Name	String	Metrics for PSU{psu_id}
Description	String	This resource shall represent metrics for Power Supply {psu_id} of a chassis for a Redfish implementation.
InputPowerWatts	Object	Expanded.
DataSourceUri	String	Redfish path of sensor "PSU {psu_id} AC In Pwr".
Reading	Number	Reading of sensor "PSU {psu_id} AC In Pwr".
OutputPowerWatts	Object	Expanded.
DataSourceUri	String	Redfish path of sensor "PSU {psu_id} DC Out Pwr".
Reading	Number	Same as the reading in "PSU {psu_id} DC Out Pwr".

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#PowerSupplyMetrics.PowerSupplyMetrics",
  "@odata.etag": "\"7692B51E\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1/Metrics",
  "@odata.type": "#PowerSupplyMetrics.v1_0_1.PowerSupplyMetrics",
  "Description": "This resource shall represent metrics for
    Power Supply of a chassis for a Redfish implementation.",
  "Id": "Metrics",
  "InputPowerWatts": {
    "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/power_PSU1_Input_Power",
    "Reading": 524
  },
  "Name": "Metrics for PSU1",
  "OutputPowerWatts": {
    "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/power_PSU1_Output_Power",
    "Reading": 495
  }
}
```

---

## Resource PowerSubsystem

This resource is used to represent PowerSubsystem for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/PowerSubsystem (Rack servers)
Schema file	PowerSubsystem

## GET – PowerSubsystem properties

Use the GET method to retrieve properties in PowerSubsystem for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/1/PowerSubsystem`

### Request body

None

### Response body

Field	Type	Description
Id	String	PowerSubsystem
Name	String	Power Subsystem
Description	String	This resource shall represent a power subsystem for a Redfish implementation.
PowerSupplies	Link	/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies
PowerSupplyRedundancy	Array	Items: object Item count: 1
PowerSupplyRedundancy[1]	Object	Expanded.
MaxSupportedInGroup	Number	2 or 4.
MinNeededInGroup	Number	2
RedundancyType	String	NPlusM or NotRedundant.
Status	Object	Expanded.
Health	String	The Health of the power system.
State	String	Enabled or Disabled
Status	Object	Expanded.
State	String	Enabled
Health	String	OK, Warning or Critical.
Actions	Object	Expanded.
#LenovoPowerSubsystem. GetPowerPolicy	Object	Expanded.
title	String	GetPowerPolicy
target	Link	The link of this action.
#LenovoPowerSubsystem. SetPowerPolicy	Object	Expanded.
title	String	SetPowerPolicy
target	Link	The link of this action.
PowerRestorePolicy	String	The same as “Oem/Lenovo/PowerRestorePolicy”
RandomDelay	Boolean	The same as “Oem/Lenovo/RandomDelay”

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#PowerSubsystem.PowerSubsystem",
  "@odata.etag": "\"0C23798E\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem",
  "@odata.type": "#PowerSubsystem.v1_1_0.PowerSubsystem",
  "Actions": {
    "Oem": {
      ...
    }
  },
  "CapacityWatts": 2000,
  "Description": "This resource shall represent a power subsystem
    for a Redfish implementation.",
  "Id": "PowerSubsystem",
  "Name": "Power Subsystem",
  "Oem": {
    ...
  },
  "PowerSupplies": {
    "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies"
  },
  "PowerSupplyRedundancy": [
    {
      "MaxSupportedInGroup": 2,
      "MinNeededInGroup": 2,
      "Oem": {
        ...
      },
      "RedundancyGroup": [
        {
          "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/PowerSupplies/PSU1"
        }
      ],
      "RedundancyType": "NPlusM",
      "Status": {
        "Health": "OK",
        "State": "Enabled"
      }
    }
  ],
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

---

## Resource Control

This resource shall represent system power limit of a chassis or a device for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/Controls/PowerLimit
Schema file	Control

### GET – Systems PowerLimit properties

Use the GET method to retrieve properties in PowerLimit resource for Redfish service.

#### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/Controls/PowerLimit](https://<BMC_IPADDR>/redfish/v1/Chassis/1/Controls/PowerLimit)

#### Request body

None

#### Response body

Field	Type	Description
Id	String	PowerLimit
Name	String	System Power Limit
Description	String	This resource shall represent system power limit of a chassis for a Redfish implementation.
ControlMode	String	Disabled or Manual.
ControlType	String	Power
Implementation	String	Programmable
Increment	Number	1
PhysicalContext	String	Chassis
RelatedItem	Array	An array of links to resources that this control services.
RelatedItem[N]	Link	/redfish/v1/Chassis/1 /redfish/v1/Chassis/1/PowerSubsystem
SetPoint	Number	The desired set point of the control.
SetPointType	String	Single
SetPointUnits	String	Watt
Status	Object	Expanded.
State	String	Enabled
Health	String	OK

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## PATCH – Update System PowerLimit properties

Use the PATCH method to update the PowerLimit resource properties.

**Note:** This setting is not supported on the following systems: AMD-based systems, systems without XCC3 Premier license installed.

### Request URL

PATCH `https://<BMC_IPADDR>/redfish/v1/Chassis/1/Controls/PowerLimit`

### Request body

Field	Type	Description
ControlMode	String	Disabled or Manual.
SetPoint	Number	The desired set point of the control. If both SetPoint and ControlMode are given, if SetPoint is a number then ControlMode must be Manual, and if SetPoint is null then ControlMode must be Disabled, and vice versa, otherwise 400 Conflict is returned.

### Response

The response returns same content as GET operation with PowerLimit properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

---

## Resource Thermal

This resource is used to represent thermal management for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/Thermal
Schema file	Thermal LenovoThermal

## GET – Thermal management properties

Use the GET method to retrieve properties in Thermal resource for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/1/Thermal`

### Request body

None



## Response body

Field	Type	Description
Description	String	Provides a description of the thermal resource.
Id	String	Thermal
Name	String	The name of thermal resource. Always sets to Thermal.
Status	Object	Expanded.
State	String	Enable
Health	String	OK
Temperatures	Array	Items: object. This is the definition for temperature sensors.
Temperatures[N]	Object	Expanded.
LowerThresholdCritical	Number	Below normal range but not yet fatal.
LowerThresholdFatal	Number	Below normal range and is fatal.
LowerThresholdNonCritical	Number	Below normal range.
UpperThresholdCritical	Number	Above normal range but not yet fatal.
UpperThresholdFatal	Number	Above normal range and is fatal.
UpperThresholdNonCritical	Number	Above normal range.
MemberId	String	This is the identifier for the member within the collection.
MinReadingRangeTemp	Number	Minimum value for ReadingCelsius.
MaxReadingRangeTemp	Number	Maximum value for ReadingCelsius.
Name	String	The name of this temperature sensor.
PhysicalContext	String	Describes the area or device to which this temperature measurement applies.
ReadingCelsius	Number	Temperature.
RelatedItem	Array	Items: link Item count: 2
RelatedItem[0]	Link	/redfish/v1/Systems/1
RelatedItem[1]	Link	/redfish/v1/Chassis/1
Status	Object	Expanded.
State	String	This indicates the known state of the resource, such as if it is enabled.
Health	String	This represents the health state of this resource in the absence of its dependent resources.
Fans	Array	Items: object Item count: sum of counts of fan device.
Fan[N]	Object	Expanded.
Location	Object	Expanded.

Field	Type	Description
PartLocation	Object	Expanded.
LocationOrdinalValue	Number	The number that represents the location of this fan.
LocationType	String	The type of location of the fan. Fixed value : "Slot"
ServiceLabel	String	The service label of the fan.
MemberId	String	This is the identifier for the member within the collection.
Name	String	Name of the fan.
MaxReadingRange	Number	Maximum value for Reading.
MinReadingRange	Number	Minimum value for Reading.
PhysicalContext	String	Describes the area or device associated with this fan. Fixed value : "Fan".
Reading	Number	Current fan speed.
ReadingUnits	String	Units in which the reading and thresholds are measured. Always set to "RPM".
RelatedItem	Array	Describes the areas or devices to which this temperature measurement applies.
RelatedItem[0]	Link	/redfish/v1/Systems/1
RelatedItem[1]	Link	/redfish/v1/Chassis/1
Status	Object	Expanded.
State	String	This indicates the known state of the resource, such as if it is enabled.
Health	String	This represents the health state of this resource in the absence of its dependent resources.
UpperThresholdCritical	Number	Above normal range but not yet fatal.
UpperThresholdFatal	Number	Above normal range and is fatal.
UpperThresholdNonCritical	Number	Above normal range.
LowerThresholdCritical	Number	Below normal range but not yet fatal.
LowerThresholdFatal	Number	Below normal range and is fatal.
LowerThresholdNonCritical	Number	Below normal range.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.etag": "\"615F2FE3\"",
  "@odata.id": "/redfish/v1/Chassis/1/Thermal",
```

```

"@odata.type": "#Thermal.v1_4_0.Thermal",
>Description": "It represents the properties for Temperature and Cooling.",
>Fans": [],
>Fans@odata.count": 0,
>Id": "Thermal",
>Name": "Thermal",
>Status": {
>  "Health": "OK",
>  "State": "Enabled"
},
>Temperatures": [
>  {
>    "@odata.id": "/redfish/v1/Chassis/1/Thermal#/Temperatures",
>    "@odata.type": "#Thermal.v1_3_0.Temperature",
>    "MaxReadingRangeTemp": 127.0,
>    "MinReadingRangeTemp": -128.0,
>    "Name": "Ambient Temp",
>    "PhysicalContext": "Board",
>    "ReadingCelsius": 25.0,
>    "RelatedItem": [
>      {
>        "@odata.id": "/redfish/v1/Chassis/1"
>      },
>      {
>        "@odata.id": "/redfish/v1/Systems/1"
>      }
>    ],
>    "Status": {
>      "Health": "OK",
>      "State": "Enabled"
>    },
>    "UpperThresholdCritical": 47.0,
>    "UpperThresholdFatal": 50.0,
>    "UpperThresholdNonCritical": 43.0
>  },
>  ...
>  {
>    "@odata.id": "/redfish/v1/Chassis/1/Thermal#/Temperatures",
>    "@odata.type": "#Thermal.v1_3_0.Temperature",
>    "MaxReadingRangeTemp": 127.0,
>    "MinReadingRangeTemp": -128.0,
>    "Name": "CPU2 Die",
>    "PhysicalContext": "CPU",
>    "ReadingCelsius": 39.954,
>    "RelatedItem": [
>      {
>        "@odata.id": "/redfish/v1/Chassis/1"
>      },
>      {
>        "@odata.id": "/redfish/v1/Systems/1"
>      }
>    ],
>    "Status": {
>      "Health": "OK",
>      "State": "Enabled"
>    }
>  },
> ],
>Temperatures@odata.count": 0
}

```

---

## Resource ThermalSubsystem

This resource is used to represent Thermal Subsystem for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/ThermalSubsystem
Schema file	ThermalSubsystem

### GET – Thermal Subsystem properties

Use the GET method to retrieve properties in ThermalSubsystem for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/ThermalSubsystem

#### Request body

None

#### Response body

Field	Type	Description
Id	String	ThermalSubsystem
Name	String	Thermal Subsystem
Description	String	This resource shall represent a thermal subsystem for a Redfish implementation.
Status	Object	Expanded.
State	String	This indicates the known state of the resource, such as if it is enabled. Always set to "Enabled".
Health	String	The worst value of Health of Fans.
ThermalMetrics	Link	Reference to the summary of thermal metrics for this subsystem.
Fans	Link	Reference to the collection of fans within this subsystem.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"0099620F\"",
  "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem",
  "@odata.type": "#ThermalSubsystem.v1_0_0.ThermalSubsystem",
  "Description": "This resource shall represent a thermal subsystem
                for a Redfish implementation.",
  "Fans": {
    "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans"
  },
  "Id": "ThermalSubsystem",
```

```

    "Name": "Thermal Subsystem",
    "Status": {
      "Health": "OK",
      "State": "Enabled"
    },
    "ThermalMetrics": {
      "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/ThermalMetrics"
    }
  }
}

```

## Resource ThermalMetrics

This resource is used to represent Thermal Metrics for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/ThermalSubsystem/ThermalMetrics
Schema file	ThermalMetrics

## GET – Thermal Metrics properties

Use the GET method to retrieve properties in ThermalMetrics for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/ThermalSubsystem/ThermalMetrics

### Request body

None

### Response body

Field	Type	Description
Id	String	ThermalMetrics
Name	String	Thermal Metrics
Description	String	This resource shall represent the thermal metrics of a chassis for a Redfish implementation.
TemperatureReadingsCelsius	Array	Items: object The temperatures (Celsius) from all related sensors for this device.
TemperatureReadingsCelsius[N]	Object	Expanded.
DataSourceUri	String	The URI of Sensor.
PhysicalContext	String	The area or device to which this sensor measurement applies.
Reading	Number	Sensor value.
Status	Object	Expanded.
Health	String	OK
State	String	Enable

Field	Type	Description
TemperatureSummaryCelsius	Object	Expanded. The summary temperature readings for this chassis.
Ambient	Object	Expanded. Map to the Sensor "Ambient Temp".
DataSourceUri	String	The URI of Sensor.
Reading	Number	Sensor value.
Exhaust	Object	Expanded. Map to the Sensor "Exhaust Temp".
DataSourceUri	String	The URI of Sensor.
Reading	Number	Sensor value.
Intake	Object	Expanded. Map to Sensor "Inlet Water Temp" or "Ambient Temp".
DataSourceUri	String	The URI of Sensor.
Reading	Number	Sensor value.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ThermalMetrics.ThermalMetrics",
  "@odata.etag": "\"F2A96003\"",
  "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/ThermalMetrics",
  "@odata.type": "#ThermalMetrics.v1_0_1.ThermalMetrics",
  "Description": "This resource shall represent the thermal metrics of a
    chassis for a Redfish implementation.",
  "Id": "ThermalMetrics",
  "Name": "ThermalMetrics",
  "TemperatureReadingsCelsius": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_Ambient_Temp",
      "PhysicalContext": "Board",
      "Reading": 25
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_DIMM_3_Temp",
      "PhysicalContext": "Memory",
      "Reading": 27
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_DIMM_1_Temp",
      "PhysicalContext": "Memory",
      "Reading": 27
    }
  ]
}
```

```

    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_CPU1_DTS_TMargin",
      "PhysicalContext": "CPU",
      "Reading": -64
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_CPU1_Die",
      "PhysicalContext": "CPU",
      "Reading": 36
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_CPU2_DTS_TMargin",
      "PhysicalContext": "CPU",
      "Reading": -61
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_CPU2_Die",
      "PhysicalContext": "CPU",
      "Reading": 39
    },
    {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_exhaust_temp",
      "PhysicalContext": "Board",
      "Reading": null
    }
  ],
  "TemperatureSummaryCelsius": {
    "Ambient": {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_Ambient_Temp",
      "Reading": 25
    },
    "Exhaust": {
      "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/temperature_exhaust_temp",
      "Reading": null
    }
  }
}

```

---

## Resource Fan

This resource is used to represent a fan for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Chassis/1/ThermalSubsystem/Fans/{Id}
Schema file	Fan FanCollection

## GET – Collection of Fans

Use the GET method to retrieve properties in fan collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/ThermalSubsystem/Fans

## Request body

None

## Response body

Field	Type	Description
Name	String	Fan Collection
Description	String	A collection of fan resource instances.
Members	Array	Items: A reference link to an element of fans.
Members	Link	Links to the instances of Fan schema.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

```
{
  "@odata.context": "/redfish/v1/$metadata#FanCollection.FanCollection",
  "@odata.etag": "\"AD2BD759\"",
  "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans",
  "@odata.type": "#FanCollection.FanCollection",
  "Description": "A collection of fan resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans/fantach_Fan1_Front_Tach"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans/fantach_Fan2_Front_Tach"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans/fantach_Fan1_Rear_Tach"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans/fantach_Fan2_Rear_Tach"
    }
  ],
  "Members@odata.count": 12,
  "Name": "Fan Collection"
}
```

## GET – Fan properties

Use the GET method to retrieve properties in fan resource.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/ThermalSubsystem/Fans/{Id}

### Request body

None



## Response body

Field	Type	Description
Description	String	It represents the properties for Temperature and Cooling.
HotPluggable	Boolean	Always set to true.
Id	String	Uniquely identifies the resource within the collection of Fans. Same as name, but replace " " (space) with "_" (under score).
Links	Object	Expanded.
CoolingChassis	Array	Item count: 1
CoolingChassis	Link	Refer to "/redfish/v1/Chassis/1"
Location	Object	Expanded.
PartLocation	Object	Expanded.
LocationOrdinalValue	Number	The number that represents the location of this fan.
LocationType	String	The type of location of the fan. Fixed value : "Slot"
ServiceLabel	String	The service label of the fan, same as Name.
Name	String	Sensor name.
PhysicalContext	String	Fixed value : "Fan"
SpeedPercent	Object	Expanded.
DataSourceUri	String	Related fan sensor in Redfish resource URI path.
Reading	Number	Sensor value.
Status	Object	Describes the status and health of a resource and its children.
State	String	This indicates the known state of this fan. Possible values are Enabled, Disabled and Absent".
Health	String	This represents the health state of this fan. Possible values are OK, Warning and Critical.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Fan.Fan",
  "@odata.etag": "\"F0C7EABC\"",
  "@odata.id": "/redfish/v1/Chassis/1/ThermalSubsystem/Fans/fantach_Fan1_Front_Tach",
  "@odata.type": "#Fan.v1_3_0.Fan",
  "Description": "This resource is used to represent a fan
    for a Redfish implementation",
  "HotPluggable": true,
```

```
"Id": "fantach_Fan1_Front_Tach",
"Links": {
  "CoolingChassis": [
    {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  ]
},
"Location": {
  "PartLocation": {
    "LocationOrdinalValue": 1,
    "LocationType": "Slot",
    "ServiceLabel": "Fan1 Front Tach"
  }
},
"Name": "Fan1 Front Tach",
"PhysicalContext": "Fan",
"SpeedPercent": {
  "DataSourceUri": "/redfish/v1/Chassis/1/Sensors/fantach_Fan1_Front_Tach",
  "Reading": 69
},
"Status": {
  "Health": "OK",
  "State": "Enabled"
}
}
```

---

## Chapter 8. BMC Management

---

### Resource Manager

This resource is used to represent manager for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1
Schema file	Manager LenovoManager

### GET – BMC management properties

Use the GET method to retrieve properties in manager resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1

#### Request body

None

#### Response body

Field	Type	Description
Actions	Object	Expanded.
#Manager.Reset	Object	Expanded.
target	String	/redfish/v1/Managers/1/Actions/Manager.Reset
title	String	Reset
ResetType@Redfish.AllowableValues	Array	GracefulRestart. It indicates BMC will be restart in a graceful way. ForceRestart. It indicates BMC will be restart right away.
#Manager.ResetToDefaults	Object	Expanded.
target	String	/redfish/v1/Managers/1/Actions/Manager.ResetToDefaults
title	String	Reset
ResetType@Redfish.AllowableValues	Array	ResetAll, PreserveNetwork, or PreserveNetworkAndUsers
AutoDSTEnabled	Boolean	True, False
CommandShell	Object	Expanded.
ServiceEnabled	Boolean	True, if SSH is enabled. False, if SSH is disabled.
MaxConcurrentSessions	Integer	2
ConnectTypesSupported	Array	SSH. Currently only SSH is supported.

Field	Type	Description
DateTime	String	The current DateTime (with offset) for the manager, used to set or read time.
DateTimeLocalOffset	String	The time offset from UTC that the DateTime property is set to in format: +06:00 .
Description	String	This resource is used to represent a management subsystem for a Redfish implementation.
EthernetInterfaces	Link	A link to a URI reference to collection of Ethernet interface. This is a reference to a collection of NICs that this manager uses for network communication.
FirmwareVersion	String	Firmware version of this Manager.
HostInterfaces	Link	A link to a URI reference to collection of host interface. This is a reference to a collection of NICs that host uses for network communication.
DedicatesNetworkPorts	Link	To the dedicated network port collection.
SerialInterfaces	Link	A link to a URI reference to collection of serial interface that this manager uses for serial and console communication.
Id	String	Always set to 1.
LastResetTime	String	The date and time of the last BMC reset.
Links	Object	References to resources that are related to, but not contained by (subordinate to) this resource.
ManagerForChassis	Array	An array of references to the chassis that this manager has control over."
ManagerForServers	Array	An array of references to the systems that this manager has control over.
ActiveSoftwareImage	Link	The value of this property is a URI reference to a resource of firmware inventory.
SoftwareImages	Array	Items: link Item count: 2
SoftwareImages[N]	Link	The value of this property is a URI reference to a resource of firmware inventory.
SecurityPolicy	Link	Link to Security Policy.
LogServices	Link	A link to a URI reference to collection of log service which is a collection of Logs used by the manager.
ManagerType	String	This property represents the type of manager that this resource represents. This property represents the type of manager that this resource represents. The value is "BMC (A controller which provides management functions for a single computer system)".
Model	String	The model information of this Manager as defined by the manufacturer. The value is "Lenovo XClarity Controller3".
Name	String	Manager
NetworkProtocol	Link	A link to a URI reference to collection of network protocol which is a reference to network services and their settings that the manager controls.

Field	Type	Description
PowerState	String	The value of this property indicates power state. It is always "On".
SerialConsole	Object	Expanded.
ConnectTypesSupported	Array	Items: string Item count: 2
ConnectTypesSupported[0]	String	IPMI
ConnectTypesSupported[1]	String	SSH
MaxConcurrentSessions	Integer	2
ServiceEnabled	Boolean	True, if SSH is enabled. False, if SSH is disabled.
ServiceEntryPointUUID	String	The value of this property indicates UUID of service entry point.
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
UUID	String	The value of this property indicates UUID of manager.
ServiceIdentification	String	Service identification.
ShareNetworkPorts	Link	To the shared network port collection.
VirtualMedia	Link	/redfish/v1/Systems/1/VirtualMedia

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.etag": "\"5A782CFB\"",
  "@odata.id": "/redfish/v1/Managers/1",
  "@odata.type": "#Manager.v1_16_0.Manager",
  "Actions": {
    "#Manager.Reset": {
      "@Redfish.ActionInfo": "/redfish/v1/Managers/1/ResetActionInfo",
      "ResetType@Redfish.AllowableValues": [
        "GracefulRestart",
        "ForceRestart"
      ],
      "target": "/redfish/v1/Managers/1/Actions/Manager.Reset",
      "title": "Reset"
    },
    "#Manager.ResetToDefaults": {
      "ResetType@Redfish.AllowableValues": [
        "ResetAll",
        "PreserveNetwork",

```

```

        "PreserveNetworkAndUsers"
    ],
    "target": "/redfish/v1/Managers/1/Actions/Manager.ResetToDefaults",
    "title": "ResetToDefaults"
},
"Oem": {
    ...
}
},
"AutoDSTEnabled": false,
"CommandShell": {
    "ConnectTypesSupported": [
        "SSH"
    ],
    "MaxConcurrentSessions": 2,
    "ServiceEnabled": true
},
"DateTime": "2024-12-04T04:46:17+00:00",
"DateTimeLocalOffset": "+00:00",
"DedicatedNetworkPorts": {
    "@odata.id": "/redfish/v1/Managers/1/DedicatedNetworkPorts"
},
>Description": "This resource is used to represent a management
                subsystem for a Redfish implementation.",
"EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces"
},
"FirmwareVersion": "IHX407Y 0.80 20241128",
"HostInterfaces": {
    "@odata.id": "/redfish/v1/Managers/1/HostInterfaces"
},
"Id": "1",
"LastResetTime": "2024-12-04T02:39:50+00:00",
"Links": {
    "ActiveSoftwareImage": {
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Primary"
    },
    "ManagerForChassis": [
        {
            "@odata.id": "/redfish/v1/Chassis/1"
        }
    ],
    "ManagerForChassis@odata.count": 1,
    "ManagerForServers": [
        {
            "@odata.id": "/redfish/v1/Systems/1"
        }
    ],
    "ManagerForServers@odata.count": 1,
    "SoftwareImages": [
        {
            "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Primary"
        },
        {
            "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup"
        }
    ],
    "SoftwareImages@odata.count": 2
},
"LogServices": {

```

```

    "@odata.id": "/redfish/v1/Systems/1/LogServices"
  },
  "ManagerType": "BMC",
  "Model": "Lenovo Xclarity Controller 3",
  "Name": "Manager",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/1/NetworkProtocol"
  },
  "Oem": {
    ...
  },
  "PowerState": "On",
  "SecurityPolicy": {
    "@odata.id": "/redfish/v1/Managers/1/SecurityPolicy"
  },
  "SerialConsole": {
    "ConnectTypesSupported": [
      "IPMI",
      "SSH"
    ],
    "MaxConcurrentSessions": 2,
    "ServiceEnabled": true
  },
  "SerialInterfaces": {
    "@odata.id": "/redfish/v1/Managers/1/SerialInterfaces"
  },
  "ServiceEntryPointUUID": "FE57AA52-E969-4448-9C0B-045179900052",
  "ServiceIdentification": "",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "UUID": "FE57AA52-E969-4448-9C0B-045179900052",
  "VirtualMedia": {
    "@odata.id": "/redfish/v1/Systems/1/VirtualMedia"
  }
}

```

---

## Resource LicenseService

This resource shall represent a license service and the properties that affect the service itself for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/LicenseService
Schema file	LicenseService

## GET – LicenseService properties

Use the GET method to retrieve properties in LicenseService resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/LicenseService](https://<BMC_IPADDR>/redfish/v1/LicenseService)

### Request body

None

## Response body

Field	Type	Description
Id	String	LicenseService
Name	String	License Service
Description	String	This resource is used to represent a License service for a Redfish implementation.
ServiceEnabled	Boolean	Always true
Licenses	Link	Link to LicenseCollection

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LicenseService.LicenseService",
  "@odata.etag": "\"66417B7F\"",
  "@odata.id": "/redfish/v1/LicenseService",
  "@odata.type": "#LicenseService.v1_0_0.LicenseService",
  "Description": "This resource is used to represent a License service
                 for a Redfish implementation.",
  "Id": "LicenseService",
  "Licenses": {
    "@odata.id": "/redfish/v1/LicenseService/Licenses"
  },
  "Name": "License Service",
  "Oem": {
    ...
  },
  "ServiceEnabled": true
}
```

---

## Resource License

This Resource is used to represent License for a Redfish implementation.

Number of Resources	0 ~ X
Resource Path	/redfish/v1/LicenseService/Licenses/BMC_Platinum
Schema file	LicenseCollection License

## GET – Collection of License

Use the GET method to retrieve the properties License collection resource for Redfish service.



## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/LicenseService/Licenses

## Request body

None

## Response body

Field	Type	Description
Description	String	A collection of Licenses resource instances.
Name	String	LicenseCollection
Members	Array	The members of this collection.
Members[N]	Link	Reference Licenses schema for instance number.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LicenseCollection.LicenseCollection",
  "@odata.etag": "\"283523E0\"",
  "@odata.id": "/redfish/v1/LicenseService/Licenses",
  "@odata.type": "#LicenseCollection.LicenseCollection",
  "Description": "A collection of Licenses resource instances.",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "LicenseCollection"
}
```

## GET – License Properties

Use the GET method to retrieve the XCC3\_Premier License info.

## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/LicenseService/Licenses/BMC\_Platinum

## Request body

None

## Response body

Field	Type	Description
Id	String	BMC_Platinum
Name	String	Lenovo XClarity Controller 3 Premier Upgrade
Description	String	This resource is used to represent a license for a Redfish implementation.
LicenseType	String	Production

Field	Type	Description
LicenseOrigin	String	Installed or BuiltIn
ExpirationDate	String	The expiration date of the license. If no constraints, show "null".
Removable	Boolean	The value is true, if "LicenseOrigin" equals to "Installed"; The value is false if "LicenseOrigin" equals to "BuiltIn".
Manufacturer	String	Lenovo
LicenseString	String	Null
EntitlementId	String	Machine type plus Serial No.
AuthorizationScope	String	"Service" for platinum and "Device" for VMD
RemainingUseCount	Integer	Always 0
DownloadURI	String	The URI from which to download the license file.
Status	Object	Expanded.
State	String	Mapping with Key status 0 : Enabled others: Disabled
Health	String	OK

#### Status code

HTTP Status Code	Error Message ID
400	BadRequest
500	InternalServerError

## DELETE – Delete a License

Use the DELETE method to delete a License.

#### Request URL

DELETE [https://<BMC\\_IPADDR>/redfish/v1/LicenseService/Licenses/BMC\\_Platinum](https://<BMC_IPADDR>/redfish/v1/LicenseService/Licenses/BMC_Platinum)

#### Request body

None.

#### Response

None.

#### Status code

HTTP Status Code	Error Message ID
400	BadRequest
500	InternalServerError

Buildin license could not be removed. Delete the buildin License, 500 error code returns.



---

## Chapter 9. Network management

---

### Resource EthernetInterface (BMC NIC)

This resource is used to represent the BMC Ethernet Interfaces for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1/EthernetInterfaces/{NIC, ToHost, NIC2}
Schema file	EthernetInterface EthernetInterfaceCollection

### GET – Collection of BMC ethernet interface properties

Use the GET method to retrieve properties in Ethernet interface or host interface collection resource for a BMC.

#### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces`

#### Request body

None

#### Response body

Field	Type	Description
Name	String	EthernetInterfaceCollection
Description	String	A collection of EthernetInterface resource instances.
Members	Array	Items: A reference link of the elements of EthernetInterface. Item count: 1~N (depending in component)
Members[N]	Link	Links to user role resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "@odata.etag": "\"D822CA20\"",
  "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces",
  "@odata.type": "#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "Description": "A collection of EthernetInterface resource instances.",
  "Members": [
```

```

    {
      "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces/NIC"
    },
    {
      "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces/ToHost"
    }
  ],
  "Members@odata.count": 2,
  "Name": "EthernetInterfaceCollection"
}

```

## GET – BMC Ethernet properties

Use the GET method to retrieve properties in Ethernet interface resource for a BMC.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces/{NIC, ToHost, NIC2}](https://<BMC_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces/{NIC, ToHost, NIC2})

### Request body

None

### Response body

Field	Type	Description
Id	String	The value is "NIC" or "NIC2" in resource for BMC Ethernet interface. The value is "ToHost" in BMC Ethernet over USB interface.
Name	String	The name of the resource
Description	String	Manager Ethernet Interface
Links	Object	Expanded.
Chassis	Link	The value of this property shall be a reference to a resource of type Chassis that represent the physical container associated with this Ethernet Interface.
HostInterface	Link	The value of this property shall be a reference to a resource of type HostInterface which represents the interface used by a host to communicate with a Manager. Only "ToHost" has this property.
AutoNeg	Boolean	Indicates if the speed and duplex are automatically negotiated and configured on this XCC3 interface: <ul style="list-style-type: none"> <li>• True. Auto negotiation of speed and duplex is enabled.</li> <li>• False. Auto negotiation of speed and duplex is disabled.</li> </ul>
FullDuplex	Boolean	The duplex status of the Ethernet connection on this XCC3 interface. This value is null when "AutoNeg" is true.
SpeedMbps	String	The current speed in Mbps of this XCC3 interface (units: Mbit/s). This value is null when "AutoNeg" is true.
EthernetInterfaceType	String	Physical
FQDN	String	The complete, fully qualified domain name for this XCC3 interface. It is an empty string in ToHost.
MTUSize	Number	The currently configured Maximum Transmission Unit (MTU) in bytes on this XCC3 interface

Field	Type	Description
HostName	String	The host name for this XCC3 interface, without any domain information. It is an empty string in ToHost.
InterfaceEnabled	Boolean	A boolean indicating whether this interface is enabled
LinkStatus	String	The value of this property represents the current status of link.  LinkUp: The link is available for communication on this interface.  NoLink: There is no link or connection detected on this interface.  LinkDown: There is no link on this interface, but the interface is connected.
MACAddress	String	The currently configured MAC address of the (logical port) interface.
PermanentMACAddress	String	The permanent MAC address assigned to this interface (port).
MaxIPv6StaticAddresses	Number	The maximum number of IPv6 static address. Fixed value "0" in ToHost.
Status	Object	Expanded.
State	String	"Enabled" if this Ethernet interface is enabled.
Health	String	OK
DHCPv4	Object	Expanded.
DHCPEnabled	Boolean	The DHCP is Enabled or not.
FallbackAddress	String	DHCPv4 fallback address method for this interface.  Valid values: None, Static
UseDNSServers	Boolean	Use DNS servers or not.
UseDomainName	Boolean	Use Domain Name or not.
DHCPv6	Object	Expanded.
OperatingMode	String	The operating mode is "Enabled" or "Disabled".
UseDNSServers	Boolean	Use DNS servers or not.
UseDomainName	Boolean	Use Domain Name or not.
IPv4Address	Array	An array of objects used to represent the IPv4 connection characteristics for this XCC3 interface.
IPv4Address[N]	String	Expanded.
Address	String	the IPv4 Address
AddressOrigin	String	This indicates how the address was determined: <ul style="list-style-type: none"> <li>• Static. A static address as configured by the user.</li> <li>• DHCP. Address is provided by a DHCPv4 service.</li> <li>• BOOTP. Address is provided by a BOOTP service.</li> <li>• IPv4LinkLocal . Address is valid only for this network segment (link).</li> </ul>
Gateway	String	the IPv4 gateway for this address
SubnetMask	String	the IPv4 Subnet mask.

Field	Type	Description
IPv4StaticAddresses	Array	An array of objects used to represent the IPv4 connection characteristics for this XCC3 interface.
IPv4StaticAddress[0]	Object	Array element
Address	String	The IPv4 Address
AddressOrigin	String	Static.
Gateway	String	The IPv4 gateway for this address
SubnetMask	String	The IPv4 Subnet mask.
IPv6Addresses	Array	An array of objects used to represent the IPv6 connection characteristics for this XCC3 interface
IPv6Address[N]	Object	Array element
Address	String	The IPv6 Address
AddressOrigin	String	The type of the IPv6 address origin for this XCC3 interface: <ul style="list-style-type: none"> <li>• Static. A static address as configured by the user.</li> <li>• DHCPv6. Address is provided by a DHCPv6 service.</li> <li>• LinkLocal. Address is valid only for this network segment (link).</li> <li>• SLAAC. Address is provided by a Stateless Address AutoConfiguration (SLAAC) service.</li> </ul>
AddressState	String	The current state of this address as defined in RFC 4862: <ul style="list-style-type: none"> <li>• Preferred. This address is currently within both it's valid and preferred lifetimes as defined in RFC 4862.</li> <li>• Deprecated. This address is currently within it's valid lifetime, but is now outside of it's preferred lifetime as defined in RFC 4862.</li> <li>• Tentative. This address is currently undergoing Duplicate Address Detection testing as defined in RFC 4862 section 5.4.</li> <li>• Failed. This address has failed Duplicate Address Detection testing as defined in RFC 4862 section 5.4 and is not currently in use."</li> </ul>
PrefixLength	Number	The IPv6 Address Prefix Length
IPv6StaticAddresses	Array	An array of objects used to represent the IPv6 static connection characteristics for this XCC3 interface. This property is not available in ToHost.
IPv6StaticAddresses[0]	Object	Expanded.
Address	String	A valid IPv6 address
PrefixLength	Number	The Prefix Length of this IPv6 address
IPv6DefaultGateway	String	The current IPv6 default gateway address that is in use on this XCC3 interface. This property is not available in ToHost.
IPv6StaticDefaultGateways	Array	An array of objects used to represent the IPv6 static default gateway for this XCC3 interface.
IPv6StaticDefaultGateways[0]	Object	Expanded.
Address	String	A valid IPv6 address
PrefixLength	Number	0
IPv6AddressPolicyTable	Array	An array of objects used to represent the Address Selection Policy Table as defined in RFC 6724



Field	Type	Description
IPv6AddressPolicyTable[N]	Object	Array element
Label	Number	The label of IPv6 address.
Precedence	Number	The IPv6 precedence, as defined in RFC6724, section 2.1.
Prefix	String	The prefix of IPv6 address.
NameServers	Array	DNS name servers that are currently in use on this XCC3 interface (IPv4 1st,2nd, 3rd ip address, IPv6 1st,2nd, 3rd ip address). It is an empty array in ToHost.
StaticNameServers	Array	The statically-defined set of DNS server IPv4 and IPv6 addresses.  Items: string Items count: 6
StatelessAddressAutoConfig	Object	Expanded.
IPv6AutoConfigEnabled	Boolean	Enable IPv6 Auto Config or not.
VLAN	Link	The value of this property shall be the VLAN for this interface. If this interface supports more than one VLAN, the VLAN property shall not be present and the VLANS collection link shall be present instead. This property is not available in ToHost.
VLANEnable	Boolean	The property of VLAN is Enable or not.
VLANId	Number	The Id of VLAN.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
  "@odata.etag": "\"49BD5FDF\"",
  "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces/NIC",
  "@odata.type": "#EthernetInterface.v1_8_0.EthernetInterface",
  "AutoNeg": true,
  "DHCPv4": {
    "DHCPEnabled": true,
    "FallbackAddress": "Static",
    "UseDNSServers": true,
    "UseDomainName": true
  },
  "DHCPv6": {
    "OperatingMode": "Enabled",
    "UseDNSServers": true,
    "UseDomainName": true
  },
  "Description": "Manager Ethernet Interface",
  "EthernetInterfaceType": "Physical",
  "FQDN": "XCC-7DGC-BHSFW2U005.labs.lenovo.com",
  "FullDuplex": true,
}
```

```

"HostName": "XCC-7DGC-BHSFW2U005",
"IPv4Addresses": [
  {
    "Address": "10.245.22.181",
    "AddressOrigin": "DHCP",
    "Gateway": "10.245.20.1",
    "SubnetMask": "255.255.252.0"
  }
],
"IPv4StaticAddresses": [
  {
    "Address": "192.168.70.125",
    "AddressOrigin": "Static",
    "Gateway": "0.0.0.0",
    "SubnetMask": "255.255.255.0"
  }
],
"IPv6AddressPolicyTable": [
  {
    "Label": 0,
    "Precedence": 50,
    "Prefix": "::1/128"
  },
  {
    "Label": 3,
    "Precedence": 1,
    "Prefix": "::/96"
  }
],
"IPv6Addresses": [
  {
    "Address": "fec0:bd02::c6c6:e6ff:fe88:bfb6",
    "AddressOrigin": "SLAAC",
    "AddressState": "Preferred",
    "PrefixLength": 64
  },
  {
    "Address": "fe80::c6c6:e6ff:fe88:bfb6",
    "AddressOrigin": "LinkLocal",
    "AddressState": "Preferred",
    "PrefixLength": 64
  }
],
"IPv6DefaultGateway": "fe80::5eb1:2eff:fe93:4953",
"IPv6StaticAddresses": [
  {
    "Address": "::",
    "PrefixLength": 64
  }
],
"IPv6StaticDefaultGateways": [
  {
    "Address": "::",
    "PrefixLength": 0
  }
],
"Id": "NIC",
"InterfaceEnabled": true,
"LinkStatus": "LinkUp",
"Links": {
  "Chassis": {

```

```

        "@odata.id": "/redfish/v1/Chassis/1"
    }
},
"MACAddress": "c4:c6:e6:88:bf:b6",
"MTUSize": 1500,
"MaxIPv6StaticAddresses": 1,
"Name": "Manager Ethernet Interface",
"NameServers": [
    "10.245.255.223",
    "10.245.255.224"
],
"Oem": {
    ...
}
},
"PermanentMACAddress": "c4:c6:e6:88:bf:b6",
"SpeedMbps": 10,
"StatelessAddressAutoConfig": {
    "IPv6AutoConfigEnabled": true
},
"StaticNameServers": [
    "0.0.0.0",
    "0.0.0.0",
    "0.0.0.0",
    "::",
    "::",
    "::"
],
"Status": {
    "Health": "OK",
    "State": "Enabled"
},
"VLAN": {
    "VLANEnable": false,
    "VLANId": 1
}
}
}

```

## PATCH – Update BMC Ethernet configurations

Use the PATCH method to update properties in Ethernet interface resource for a BMC.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces/{NIC, NIC2}](https://<BMC_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces/{NIC, NIC2})

### Request body

Properties to be updated are shown below:

Field	Type	Description
InterfaceEnabled	Boolean	A boolean indicating whether this interface is enabled.
MACAddress	String	The currently configured MAC address of the (logical port) interface.
MTUSize	Number	The currently configured Maximum Transmission Unit (MTU) in bytes on this XCC3 interface.
HostName	String	The host name for this XCC3 interface, without any domain information.

Field	Type	Description
IPv4StaticAddresses	Array	An array of objects used to represent the IPv4 connection characteristics for this XCC3 interface.
IPv4StaticAddress[0]	Object	Array element
Address	String	The IPv4 Address
Gateway	String	The IPv4 gateway for this address
SubnetMask	String	The IPv4 Subnet mask.
IPv6StaticAddresses	Array	An array of objects used to represent the IPv6 connection characteristics for this XCC3 interface
IPv6StaticAddresses[0]	Object	Array element
Address	String	The IPv6 Address
PrefixLength	Number	The IPv6 Address Prefix Length
IPv6StaticDefaultGateways	Array	An array of objects used to represent the IPv6 static default gateway for this XCC3 interface.
IPv6StaticDefaultGateways[0]	Object	Expanded.
Address	String	A valid IPv6 address
VLAN	Link	The value of this property shall be the VLAN for this interface. If this interface supports more than one VLAN, the VLAN property shall not be present and the VLANS collection link shall be present instead.
VLANId	Number	The Id of VLAN.
VLANEnable	Boolean	The property of VLAN is Enable or not.
DHCPv4	Object	Expanded.
DHCPEnabled	Boolean	The DHCP is Enabled or not.
UseDNSServers	Boolean	Use DNS servers or not.
UseDomainName	Boolean	Use Domain Name or not.
DHCPv6	Object	Expanded.
OperatingMode	String	The operating mode is "Enabled" or "Disabled".
UseDNSServers	Boolean	Use DNS servers or not.
UseDomainName	Boolean	Use Domain Name or not.
StaticNameServers	Array	The string array allows 6 entries. The first three items are used for IPv4 DNS server and the last three item are used for IPv6 DNS servers.  Items: string  Items count: 6
AutoNeg	Boolean	Indicates if the speed and duplex are automatically negotiated and configured on this XCC3 interface: <ul style="list-style-type: none"> <li>• True. Auto negotiation of speed and duplex is enabled.</li> <li>• False. Auto negotiation of speed and duplex is disabled.</li> </ul>
SpeedMbps	String	The current speed in Mbps of this XCC3 interface (units: Mbit/s). This value is null when "AutoNeg" is true.

Field	Type	Description
FullDuplex	Boolean	The duplex status of the Ethernet connection on this XCC3 interface. This value is null when "AutoNeg" is true.
StatelessAddressAutoConfig	Object	Expanded.
IPv6AutoConfigEnabled	Boolean	Enable IPv6 Auto Config or not.

### Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
400	PropertyValueNotInList, PropertyValueFormatError, PropertyValueTypeError, PropertyNotWritable
500	InternalError

## PATCH – Update BMC Ethernet over USB configurations

Use the PATCH method to update properties in Ethernet interface resource for a BMC.

### Request URL

PATCH `https://<BMC_IPADDR>/redfish/v1/Managers/1/EthernetInterfaces/ToHost`

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
InterfaceEnabled	Boolean	A boolean indicating whether this interface is enabled.
IPv4StaticAddresses	Array	An array of objects used to represent the IPv4 connection characteristics for this XCC3 interface.
IPv4StaticAddress[0]	Object	Array element
Address	String	The IPv4 Address
SubnetMask	String	The IPv4 Subnet mask.

### Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Resource EthernetInterface (Server NIC)

This resource is used to represent the Server Ethernet Interfaces for a Redfish implementation.

Number of Resources	Number of server Ethernet interfaces
Resource Path	/redfish/v1/Systems/1/EthernetInterfaces/{ToManager, NIC{N}}
Schema file	EthernetInterface EthernetInterfaceCollection

## GET – Collection of server network interfaces

Use the GET method to retrieve properties in network interface collection resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/NetworkInterfaces

### Request body

None

### Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of NetworkInterfaces.
Name	String	NetworkInterfacesCollection.
Description	String	A collection of NetworkInterfaces resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "@odata.etag": "\"F8EB33BA\"",
  "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces",
  "@odata.type": "#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "Description": "A collection of NetworkInterface resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/4"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/5"
    }
  ]
}
```

```

    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/6"
    }
  ],
  "Members@odata.count": 6,
  "Name": "NetworkInterfaceCollection"
}

```

## GET – Server Ethernet interface properties

Use the GET method to retrieve properties in Ethernet interface resource for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Systems/1/EthernetInterfaces/NIC{N}`

### Request body

None

### Response body

Field	Type	Description
Description	String	External Network Interface
Id	String	NIC{N}
LinkStatus	String	The link status of this interface (port).  LinkUp: The link is available for communication on this interface.  NoLink: There is no link or connection detected on this interface.  LinkDown: There is no link on this interface, but the interface is connected.
Links	Object	Expanded.
Chassis	Link	The value is a reference to the resource “Chassis” that represent the physical container.
PermanentMACAddress	String	The permanent MAC address assigned to this interface (port).
SpeedMbps	String	The current speed in Mbps of this XCC3 interface (units: Mbit/s)
Status	Object	Expanded.
State	String	The state of this ethernet interface.
Health	String	The health of this ethernet interface.
Name	String	External Ethernet Interface
FQDN	String	"" (empty string)
HostName	String	"" (empty string)
NameServers	String Array	Empty array
IPv4Addresses	Array	Empty array

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
  "@odata.etag": "\"62C4509A\"",
  "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces/NIC1",
  "@odata.type": "#EthernetInterface.v1_9_0.EthernetInterface",
  "Description": "External Ethernet Interface",
  "FQDN": "",
  "FibreChannel": {
    "AssociatedWorldWideNames": [
      "210034800D725642"
    ]
  },
  "HostName": "",
  "IPv4Addresses": [],
  "Id": "NIC1",
  "LinkStatus": "LinkDown",
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  },
  "MACAddress": "210034800D725642",
  "Name": "External Ethernet Interface",
  "NameServers": [],
  "PermanentMACAddress": "210034800D725642",
  "SpeedMbps": 0,
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

## GET – Server Ethernet over USB properties

Use the GET method to retrieve properties in Ethernet interface resource between the server and manager.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/EthernetInterfaces/ToManager](https://<BMC_IPADDR>/redfish/v1/Systems/1/EthernetInterfaces/ToManager)

### Request body

None

### Response body

Field	Type	Description
Id	String	ToManager
Name	String	Host Ethernet Interface



Field	Type	Description
Description	String	Host Network Interface
Links	Object	Expanded.
Chassis	Link	The value is a reference to the resource "Chassis" that represent the physical container.
HostInterface	Link	A reference to the resource "HostInterface" which represents the interface used by the host to communicate with the manager.
EthernetInterfaceType	String	Physical
InterfaceEnabled	Boolean	A boolean indicating whether this interface is enabled.
Status	Object	Expanded.
Health	String	Null
State	String	Enabled
FQDN	String	"" (empty string)
HostName	String	"" (empty string)
MACAddress	String	The currently configured MAC address of the (logical port) interface.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
  "@odata.etag": "\"60FC328F\"",
  "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces/ToManager",
  "@odata.type": "#EthernetInterface.v1_8_0.EthernetInterface",
  "Description": "Host Ethernet Interface",
  "EthernetInterfaceType": "Physical",
  "FQDN": "",
  "HostName": "",
  "Id": "ToManager",
  "InterfaceEnabled": false,
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/1"
    },
    "HostInterface": {
      "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/1"
    }
  },
  "MACAddress": "c4:c6:e6:88:bf:b8",
  "Name": "Host Ethernet Interface",
  "Status": {
    "Health": "OK",
    "State": "Disabled"
  }
}
```

## Resource NetworkInterfaces (Server NIC)

This resource is used to represent the Server Network Interfaces for a Redfish implementation.

Number of Resources	Number of server network interfaces.
Resource Path	/redfish/v1/Systems/1/NetworkInterfaces/{id}
Schema file	NetworkInterfaces NetworkInterfacesCollection

### GET – Collection of server network interfaces

Use the GET method to retrieve properties in network interface collection resource for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/NetworkInterfaces

#### Request body

None

#### Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of NetworkInterfaces.
Name	String	NetworkInterfacesCollection.
Description	String	A collection of NetworkInterfaces resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "@odata.etag": "\"F8EB33BA\"",
  "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces",
  "@odata.type": "#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "Description": "A collection of NetworkInterface resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/3"
    }
  ]
}
```

```

        "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/4"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/5"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/6"
      }
    ],
    "Members@odata.count": 6,
    "Name": "NetworkInterfaceCollection"
  }
}

```

## GET – Server network interface properties

Use the GET method to retrieve properties in network interface resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/NetworkInterfaces/{id}](https://<BMC_IPADDR>/redfish/v1/Systems/1/NetworkInterfaces/{id})

### Request body

None

### Response body

Field	Type	Description
Id	String	Index of network interface.
Description	String	A NetworkInterface contains references linking NetworkAdapter, NetworkPort, and NetworkDeviceFunction resources and represents the functionality available to the containing system.
Name	String	Network Interface X (X=1-N)
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
Links	Object	Expanded.
NetworkAdapter	Link	Link to the related NetworkAdapter
Ports	Link	Link to the related PortCollection
NetworkDeviceFunctionCollection	Link	Link to the related NetworkDeviceFunctionCollection

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#NetworkInterface.NetworkInterface",
  "@odata.etag": "\"98C4EEB6\"",

```

```

"@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/1",
"@odata.type": "#NetworkInterface.v1_2_1.NetworkInterface",
"Description": "A NetworkInterface contains references linking NetworkAdapter,
                NetworkPort, and NetworkDeviceFunction resources and represents
                the functionality available to the containing system.",
"Id": "1",
"Links": {
  "NetworkAdapter": {
    "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000"
  }
},
"Name": "Network Interfaces 1",
"NetworkDeviceFunctions": {
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/NetworkDeviceFunctions"
},
"Ports": {
  "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot3_0xb0000/Ports"
},
"Status": {
  "Health": "OK",
  "State": "Enabled"
}
}

```

---

## Resource HostInterface

Use the GET method to retrieve properties in Host interface resource for a server.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1/HostInterfaces/1
Schema file	HostInterfaceCollection HostInterface

## GET – Collection of host interface

Use the GET method to retrieve properties in HostInterface collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1/HostInterfaces

### Request body

None

### Response body

Field	Type	Description
Name	String	HostInterfaceCollection
Members	Array	Items: A reference link to an element of Host interface
Description	String	A collection of HostInterface resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#HostInterfaceCollection.HostInterfaceCollection",
  "@odata.etag": "\"083A517C\"",
  "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/",
  "@odata.type": "#HostInterfaceCollection.HostInterfaceCollection",
  "Description": "A collection of HostInterface resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "HostInterfaceCollection"
}
```

## GET – Collection of ethernet interface

Use the GET method to retrieve properties in HostEthernetInterfaces for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/HostInterfaces/1/HostEthernetInterfaces](https://<BMC_IPADDR>/redfish/v1/Managers/1/HostInterfaces/1/HostEthernetInterfaces)

### Request body

None

### Response body

Field	Type	Description
Name	String	EthernetInterfaceCollection
Members	Array	Items: A reference link to an element of Ethernet interface

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "@odata.etag": "\"723ADCB5\"",
  "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/1/HostEthernetInterfaces",
  "@odata.type": "#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "Description": "A collection of EthernetInterface resource instances.",
  "Members": [
```

```

    {
      "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces/ToManager"
    }
  ],
  "Members@odata.count": 1,
  "Name": "EthernetInterfaceCollection"
}

```

## GET – Host interface properties

Use the GET method to retrieve properties in HostInterface resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1/HostInterfaces/1

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of Chassis. Always set to "1".
Name	String	Host Interface
Description	String	Provides a description of Host Interface resources.
HostInterfaceType	String	NetworkHostInterface
ExternallyAccessible	Boolean	Always set to false
InterfaceEnabled	Boolean	Indicate whether this interface is enabled.
HostEthernetInterfaces	Link	A reference link to the collection of Ethernet interfaces that the system uses for network communication with the host interface.
Links	Object	Expanded.
ComputerSystems	Array	An array of references to the computer systems connected to this host interface.
ComputerSystems[0]	Link	A reference link to a resource of computer system
CredentialBootstrappingRole	Link	Link to related role that contains the privileges for the bootstrap account created for this interface.  This link will be generated after the bootstrap account is created by IPMI command.
ManagerEthernetInterface	Link	A reference link to a single Ethernet interface that the manager uses for network communication with the host interface.
NetworkProtocol	Link	A reference link to the network services and their settings that the manager controls.
CredentialBootstrapping	Object	Expanded.
Enabled	Boolean	Indicate whether credential bootstrapping is enabled for this interface.

Field	Type	Description
EnableAfterReset	Boolean	Indicate whether credential bootstrapping is enabled after a reset for this interface.
RoleId	String	Administrator

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#HostInterface.HostInterface",
  "@odata.etag": "\"1BCBEB34\"",
  "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/1",
  "@odata.type": "#HostInterface.v1_3_0.HostInterface",
  "CredentialBootstrapping": {
    "EnableAfterReset": true,
    "Enabled": true,
    "RoleId": ""
  },
  "Description": "This resource shall be used to represent Host Interface
    resources as part of the Redfish specification.",
  "ExternallyAccessible": false,
  "HostEthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/1/HostInterfaces/1/HostEthernetInterfaces"
  },
  "HostInterfaceType": "NetworkHostInterface",
  "Id": "1",
  "InterfaceEnabled": false,
  "Links": {
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/1"
      }
    ]
  },
  "ManagerEthernetInterface": {
    "@odata.id": "/redfish/v1/Managers/1/EthernetInterfaces/ToHost"
  },
  "Name": "Host Interface",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/1/NetworkProtocol"
  }
}
```

## PATCH – Enable/disable host interface

Use the PATCH method to update properties in Host Interface resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/HostInterfaces/1](https://<BMC_IPADDR>/redfish/v1/Managers/1/HostInterfaces/1)

## Request body

Property to be updated is shown as bellow.

Field	Type	Description
InterfaceEnabled	Boolean	Indicate whether this interface is enabled.
CredentialBootstrapping	Object	Expanded.
Enabled	Boolean	When value is false, IPMI command 2C 01 and 2C 02 shall be rejected with Completion code 0x80. When there is an existing boot strap account, this value shall be always "disabled".
EnableAfterReset	Boolean	If the value is true, after XCC/host reboot, the property "Enabled" will be changed to true automatically, as the boot strap account is expired and deleted.

## Response body

The response returns same content as GET operation with updated properties.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

---

## Resource ManagerNetworkProtocol

Use the GET method to retrieve properties in ManagerNetworkProtocol resource for a server.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1/NetworkProtocol
Schema file	ManagerNetworkProtocol LenovoManagerNetworkProtocol

## GET – BMC network services

Use the GET method to retrieve properties definition for the network protocol in a BMC.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Managers/1/NetworkProtocol`

### Request body

None

### Response body

Field	Type	Description
Description	String	The resource is used to represent the network service settings for the manager for a Redfish implementation.
Status	Object	Expanded.



Field	Type	Description
State	String	Enabled
Health	String	OK
HealthRollup	String	OK
KVMIP	Object	Settings for this Manager's KVM-IP protocol support.
Port	String	443
ProtocolEnabled	Boolean	Indicate if the protocol is enabled or disabled.
FQDN	String	This is the fully qualified domain name for the manager obtained by DNS including the host name and top-level domain name.
Port	Number	Indicates the protocol port.
ProtocolEnabled	Boolean	Indicates if the protocol is enabled or disabled. Fixed value "true".
SNMP	Object	Settings for this Manager's SNMP support.
Port	Number	Indicates the protocol port.
EnableSNMPv3	Boolean	Indicates if access via SNMPv3 is enabled.
EngineId	Object	The engine ID.
ArchitectureId	String	The architecture identifier.
PrivateEnterpriseId	String	The private enterprise ID.
SSDP	Object	Settings for this Manager's SSDP support.
NotifyIPv6Scope	String	Indicates the scope for the IPv6 Notify messages for SSDP. Fixed value "Organization"
NotifyMulticastIntervalSeconds	Number	Indicates how often the Multicast is done from this service for SSDP. Fixed value "60"
NotifyTTL	Number	Indicates the time to live hop count for SSDPs Notify messages. Fixed value "2"
Port	Number	Indicates the protocol port. Fixed port "1900"
ProtocolEnabled	Boolean	Indicates if the protocol is enabled or disabled. Fixed value "true".
DHCP	Object	Settings for this Manager's DHCP support.
ProtocolEnabled	Boolean	Indicate if the protocol is enabled or disabled.
DHCPv6	Object	Settings for this Manager's DHCPv6 support
ProtocolEnabled	Boolean	Indicate if the protocol is enabled or disabled.
HTTPS	Object	Settings for this Manager's HTTPS protocol support.
Port	Number	Indicates the protocol port.
ProtocolEnabled	Boolean	Indicates if the protocol is enabled or disabled.
Certificates	Link	The value of this property shall be a reference to a collection of certificates.
HostName	String	The DNS Host Name of this manager, without any domain information.

Field	Type	Description
IPMI	Object	Settings for this Manager's IPMI-over-LAN protocol support.
Port	Number	Indicates the protocol port. Fixed port "623"
ProtocolEnabled	Boolean	Indicates if the protocol is enabled or disabled.
Id	String	NetworkProtocol
NTP	Object	Settings for this Manager's NTP support.
NTPServers	Array	Items: string List of NTP servers IP.
ProtocolEnabled	Boolean	Indicate if the protocol is enabled or disabled.
Name	String	Manager Network Protocol

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"296476A0\"",
  "@odata.id": "/redfish/v1/Managers/1/NetworkProtocol",
  "@odata.type": "#ManagerNetworkProtocol.v1_6_0.ManagerNetworkProtocol",
  "DHCP": {
    "ProtocolEnabled": true
  },
  "DHCPv6": {
    "ProtocolEnabled": true
  },
  "Description": "The resource is used to represent the network service settings
    for the manager for a Redfish implementation.",
  "FQDN": "XCC-7DGC-BHSFW2U005.labs.lenovo.com",
  "HTTPS": {
    "Certificates": {
      "@odata.id": "/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates"
    },
    "Port": 443,
    "ProtocolEnabled": true
  },
  "HostName": "XCC-7DGC-BHSFW2U005",
  "IPMI": {
    "Port": 623,
    "ProtocolEnabled": true
  },
  "Id": "NetworkProtocol",
  "KVMIP": {
    "Port": 443,
    "ProtocolEnabled": true
  },
  "NTP": {
    "NTPServers": [
      ""
    ]
  }
}
```

```

    ""
    ""
    ""
  ],
  "ProtocolEnabled": false
},
"Name": "Manager Network Protocol",
"Oem": {
  ...
}
},
"SNMP": {
  "EnableSNMPv3": false,
  "EngineId": {
    "ArchitectureId": "58 43 43 2d 37 44 47 43 2d 42 48 53 46 57 32 55 30 30 35",
    "PrivateEnterpriseId": "80 00 1f 88 04"
  },
  "Port": 161
},
"SSDP": {
  "NotifyIPv6Scope": "Organization",
  "NotifyMulticastIntervalSeconds": 60,
  "NotifyTTL": 2,
  "Port": 1900,
  "ProtocolEnabled": true
},
"SSH": {
  "Port": 22,
  "ProtocolEnabled": true
},
"Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Enabled"
}
}
}

```

## PATCH – Update BMC network service configurations

Use the PATCH method to update properties in the network protocol resource in a BMC.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/NetworkProtocol](https://<BMC_IPADDR>/redfish/v1/Managers/1/NetworkProtocol)

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
NTP	Object	Settings for this Manager's NTP support.
NTPServers	Array	Items: string List of NTP servers IP.
ProtocolEnabled	Boolean	Indicate if the protocol is enabled or disabled.
IPMI	Object	Settings for this Manager's IPMI-over-LAN protocol support.

Field	Type	Description
Port	Number	Indicates the protocol port. Fixed port "623"
ProtocolEnabled	Boolean	Indicates if the protocol is enabled or disabled.

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP STATUS Code	Error Message ID
500	InternalError

---

## Chapter 10. Serial Interface Management

---

### Resource SerialInterface

The resource represents the serial interface implementation for Redfish service.

Number of Resources	1
Resource Path	/redfish/v1/Managers/1/SerialInterfaces/1
Schema file	SerialInterface LenovoSerialInterface

### GET – BMC serial interface properties

Use the GET method to retrieve properties in the resource of serial interface for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Managers/1/SerialInterfaces/1

#### Request body

None

#### Response body

Field	Type	Description
Id	String	"1"
Description	String	Serial Interface of Redfish
Name	String	Serial Interface
InterfaceEnabled	Boolean	Indicates whether this interfaces is enabled.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#SerialInterface.SerialInterface",
  "@odata.etag": "\"FFD62735\"",
  "@odata.id": "/redfish/v1/Managers/1/SerialInterfaces/1",
  "@odata.type": "#SerialInterface.v1_1_8.SerialInterface",
  "Description": "Serial port redirection of the host.",
  "Id": "1",
  "InterfaceEnabled": true,
  "Name": "Serial Interface",
  "Oem": {
    ...
  }
}
```

```
}  
  }  
}
```

---

## Chapter 11. Virtual Media Management

---

### Resource VirtualMedia

This resource shall be used to represent a virtual media service for a Redfish implementation.

Number of Resources	1~10
Resource Path	/redfish/v1/Systems/1/VirtualMedia/{Id}
Schema file	VirtualMediaCollection VirtualMedia

### GET – Collection of virtual media

Use the GET method to retrieve properties in virtual media collection for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/VirtualMedia

#### Request body

None

#### Response body

Field	Type	Description
Name	String	VirtualMediaCollection
Members	Array	Items: A reference link to an element of virtual media.
Description	String	A collection of VirtualMedia resource instances

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#VirtualMediaCollection.VirtualMediaCollection",
  "@odata.etag": "\"0D7C278A\"",
  "@odata.id": "/redfish/v1/Systems/1/VirtualMedia",
  "@odata.type": "#VirtualMediaCollection.VirtualMediaCollection",
  "Description": "A collection of VirtualMedia resource instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/EXT1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/EXT2"
    }
  ]
}
```

```

    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/EXT3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/EXT4"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/Remote1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/Remote2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/Remote3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/Remote4"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/RDOC1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/RDOC2"
    }
  ],
  "Members@odata.count": 10,
  "Name": "VirtualMediaCollection"
}

```

## GET – Virtual media properties

Use the GET method to retrieve properties in virtual media resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/VirtualMedia/Id

### Request body

None

### Response body

Field	Type	Description
Id	String	This field shows the storage type with index value.  The Id value will be any of (Remote1, ..., Remote4), (RDOC1, RDOC2) or (EXT1, ..., EXT4).
Description	String	This resource is used to represent a virtual media service for a Redfish implementation
Name	String	Expanded.
Action	Object	VirtualMedia
#VirtualMedia.EjectMedia	Object	Action for ejecting RDOC media
#VirtualMedia.InsertMedia	Object	Action for inserting RDOC media



Field	Type	Description
Image	String	Required. This parameter shall contain the URI of the media to be attached to the virtual media. Currently supported protocol: SFTP, CIFS, NFS, HTTP and HTTPS. Currently support at most mounting 2 RDOC images with a total RDOC images size of 100MB. <b>Note:</b> The value of srouce URL must add protocol prefix. HTTP protocol prefix is "http://" and the complete source URL for HTTP shall be like "http://10.10.10.10/path/to/test.iso", the SAMBA protocol prefix is "smb://", the NFS protocol prefix is "nfs://", the SFTP protocol prefix is "sftp://" and the FTP protocol prefix is "ftp://".
UserName	String	Optional. This parameter shall contain the username to access the URI specified by the Image parameter.
Password	String	Optional. This parameter shall contain the password to access the URI specified by the Image parameter.
WriteProtected	Boolean	Optional. This parameter shall contain whether the remote media is treated as write-protected.
Domain	String	Optional. Domain value for samba protocol.
ImageName	String	Image name.
Image	String	A URI providing the location of the selected image.
MediaTypes	Array	The media types supported as virtual media.
MediaTypes[]	String	The type values for virtual disk devices.
ConnectedVia	String	Current virtual media connection methods.
Inserted	Boolean	Indicates the virtual media is inserted in the virtual device or not.
WriteProtected	Boolean	Indicate the media is write protected
UserName	String	User name
Password	String	null
TransferMethod	String	"Upload" or "Stream".
TransferProtocolType	String	"HTTPS" or "NFS" or "CIFS". For RDOC type, this property doesn't show.
VerifyCertificate	Boolean	Indicated whether to perform certificates verification. By default, this value is false.
Status	Object	Expanded.
State	String	<ul style="list-style-type: none"> <li>Enabled: if a VM is installed.</li> <li>Absent: if none is installed.</li> </ul>
Health	String	OK

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#VirtualMedia.VirtualMedia",
  "@odata.etag": "\"A442E1B6\"",
  "@odata.id": "/redfish/v1/Systems/1/VirtualMedia/EXT1",
  "@odata.type": "#VirtualMedia.v1_4_0.VirtualMedia",
  "ConnectedVia": "NotConnected",
  "Description": "This resource shall be used to represent a virtual media
                 service for a Redfish implementation.",
  "Id": "EXT1",
  "Image": null,
  "ImageName": null,
  "Inserted": false,
  "MediaTypes": [
    "CD",
    "DVD",
    "USBStick"
  ],
  "Name": "Virtual Media",
  "Oem": {
    ...
  },
  "Password": null,
  "Status": {
    "Health": "OK",
    "State": "Absent"
  },
  "TransferMethod": "Stream",
  "UserName": null,
  "VerifyCertificate": true,
  "WriteProtected": true
}

```

## PATCH – Insert/Eject a virtual media

Use the PATCH method to insert or eject a virtual media.

**Notes:** In current implementation:

- Insert/Eject “Remote{N}” media is not supported .
- Insert “RDOC{N}” media is not supported.
- Only support insert “EXT{N}” media via protocol HTTP, HTTPS, NFS or CIFS.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/VirtualMedia/{id}](https://<BMC_IPADDR>/redfish/v1/Systems/1/VirtualMedia/{id})

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
Image	String	A URI providing the location of the selected image. Set to null to eject the virtual media.
Inserted	Boolean	Indicate if virtual media is inserted in the virtual device. Set to false to eject the virtual media.
WriteProtected	Boolean	Indicate the media is write protected.

Field	Type	Description
UserName	String	User name.
Password	String	null
VerifyCertificate	Boolean	If false, the service will not check certificate from remote HTTPS server.

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
400	InsufficientPrivilege, Conflict, PropertyValueTypeError, PropertyMissing, PropertyNotWritable, SourceDoesNotSupportProtocol
500	InternalServerError



---

## Chapter 12. Server Management

---

### Resource ComputerSystem

This resource is used to represent computer system for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Systems/1 /redfish/v1/Systems/1/Pending
Schema file	ComputerSystem

### GET – Collection for server

Use the GET method to retrieve properties in Systems collection for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems

#### Request body

None

#### Response body

Field	Type	Description
Name	String	ComputerSystemCollection
Members	Array	Items: A reference link to an element of Systems.
Description	String	A collection of ComputerSystem resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.etag": "\"F1474B90\"",
  "@odata.id": "/redfish/v1/Systems",
  "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Computer System Collection"
}
```

## GET – Server properties

Use the GET method to retrieve properties in System resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1

### Request body

None

### Response body

Field	Type	Description
Actions	Object	The available actions for this resource.
#ComputerSystem. Reset	Object	This action shall perform a reset of the ComputerSystem. For systems which implement ACPI Power Button functionality, the PushPowerButton value shall perform or emulate an ACPI Power Button push. The ForceOff value shall remove power from the system or perform an ACPI Power Button Override (commonly known as a 4-second hold of the Power Button). The ForceRestart value shall perform a ForceOff action followed by a On action.  Allowable values: <ul style="list-style-type: none"> <li>• On</li> <li>• Nmi</li> <li>• GracefulShutdown</li> <li>• GracefulRestart</li> <li>• ForceOn</li> <li>• ForceOff</li> <li>• ForceRestart</li> </ul>
AssetTag	String	The asset tag of the system
Bios	Link	A reference to the BIOS settings associated with this system.
BiosVersion	String	The version of the system BIOS.
Boot	Object	Describes boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration
AutomaticRetryConfig	String	“Disabled” or “RetryAttempts”
AutomaticRetryConfig@Redfish. AllowableValues	Array	“Disabled” or “RetryAttempts”
BootSourceOverrideEnabled	String	Describes the state of the Boot Source Override feature
BootSourceOverrideMode	String	The BIOS Boot Mode (UEFI only) to be used when BootSourceOverrideTarget boot source is booted from
BootSourceOverrideTarget	String	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is “Once”.
BootSourceOverrideTarget@Redfish. AllowableValues	Array String	“None”, “Pxe”, “Hdd”, “Cd”, “Diags”, “BiosSetup”, “Usb”, or “UefiTarget”

Field	Type	Description
UefiTargetBootSourceOverride	String	The UEFI Device Path of the device to boot from when BootSourceOverrideSupported is UefiTarget.
BootOptions	Link	The link to the collection of the UEFI boot options associated with this computer system.
BootOrder	Array	Items: string Item count: N
BootOrder[N]	String	BootOptionReference strings that represent the persistent boot order for with this computer system.
TrustedModuleRequiredToBoot	Boolean	The Trusted Module boot requirement.
StopBootOnFault	String	If the boot should stop on a fault.
Description	String	This resource is used to represent a computing system for a Redfish implementation.
EthernetInterfaces	Link	A reference to the collection of Ethernet interfaces associated with this system.
GraphicalConsole	Object	Expanded.
ConnectTypesSupported	Array String	KVMIP
MaxConcurrentSessions	Integer	4
ServiceEnabled	Boolean	True
HostWatchdogTimer	Object	This object describes the Host Watchdog Timer functionality for this system.
FunctionEnabled	Boolean	This indicates if the Host Watchdog Timer functionality has been enabled. Additional host-based software is necessary to activate the timer function.
Status	Object	Expanded.
State	String	Enabled
TimeoutAction	String	ResetSystem
Id	String	"1"
LastResetTime	String	The date and time when the system was last reset or rebooted.
Links	Object	An object for reference links.
Chassis	Array	An array of references to the chassis in which this system is contained.
ManagedBy	Array	An array of references to Managers responsible for this system.
LogServices	Link	A reference to the collection of Log Services associated with this system.
Manufacturer	String	The manufacturer tag of the system
Memory	Link	A reference to the collection of memory device associated with this system.
MemorySummary	Object	This object describes the memory of the system in general detail.

Field	Type	Description
TotalSystemMemoryGiB	Number	The total installed, operating system-accessible memory (RAM), measured in GiB.
Status	Object	Reflect the memory summary status.
State	String	“Enabled”.
Health	String	This represents the health state of this resource in the absence of its dependent resources.
Model	String	Model of the system
Name	String	ComputerSystem
NetworkInterfaces	Link	A reference to the collection of network interfaces associated with this system.
PCleDevices	Array	An array of references to pci devices in which this system is contained.
PartNumber	String	null
PCleFunctions	Array	An array of references to pci functions in which this system is contained.
PCleFunctions[]	Link	Link to PCleFunction
PowerRestorePolicy	String	The desired power state of the system when power is restored after a power loss.
PowerState	String	Current power state of the system.
ProcessorSummary	Object	This object describes the central processors of the system in general detail.
CoreCount	Number	The number of cores in the system.
Count	Number	Calculate. Add up all CoreCount.
Status	Object	Reflect the processor summary status.
Health	String	This represents the health state of this resource in the absence of its dependent resources.
Processors	Link	This object describes the processor of the system in general detail.
SerialConsole	Object	Expanded.
IPMI	Number	Expanded.
ServiceEnabled	Boolean	False
SSH	Object	Expanded.
HotKeySequenceDisplay	String	The hotkey sequence available for the user to exit the serial console session.
Port	Integer	The port assigned to the service.
ServiceEnabled	Boolean	An indication of whether the service is enabled for this system.
SerialNumber	String	Serial number of the system
Status	Object	Expanded.
State	String	Enabled
HealthRollup	String	OK



Field	Type	Description
Health	String	This represents the health state of this resource in the absence of its dependent resources.
Storage	Link	A reference to the collection of storage device with this system.
SystemType	String	The type of computer system represented by this resource
UUID	String	The universal unique identifier (UUID) for this system
SecureBoot	Link	A reference to the SecureBoot settings associated with this system.
SubModel	String	Sub model of the system
SKU	String	The manufacturer SKU for this system.
VirtualMedia	Link	A reference to the virtual media services for this system.
@Redfish.Settings	Object	Expanded.
Messages	Array	Items: object Item count: 0 or 1
Messages[N]	Object	Expanded. Indicate a "RebootRequired" message when successful to modify the Boot/BootOrder of Pending resource.
MessageId	String	"ExtendedError.1.2. RebootRequired"
SettingsObject	Link	/redfish/v1/Systems/1/Pending
SupportedApplyTimes	Array	Items: string Item count: 1
SupportedApplyTimes[0]	String	"OnReset"
Time	String	Indicate the time at which the Settings resource was last applied, otherwise the value is null.
IndicatorLED	String	The indicator light state for the indicator light associated with this system

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_3_0.Settings",
    "Messages": [],
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/1/Pending"
    }
  },
}
```

```

    "SupportedApplyTimes": [
        "OnReset"
    ],
    "Time": null
},
"@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
"@odata.etag": "\"38AA1EF7\"",
"@odata.id": "/redfish/v1/Systems/1",
"@odata.type": "#ComputerSystem.v1_16_0.ComputerSystem",
"Actions": {
    "#ComputerSystem.Reset": {
        "@Redfish.ActionInfo": "/redfish/v1/Systems/1/ResetActionInfo",
        "target": "/redfish/v1/Systems/1/Actions/ComputerSystem.Reset",
        "title": "Reset"
    },
    "Oem": {
        ...
    }
}
},
"AssetTag": "",
"Bios": {
    "@odata.id": "/redfish/v1/Systems/1/Bios"
},
"BiosVersion": "IHE109B",
"Boot": {
    "AutomaticRetryConfig": "RetryAttempts",
    "AutomaticRetryConfig@Redfish.AllowableValues": [
        "Disabled",
        "RetryAttempts"
    ],
    "BootOptions": {
        "@odata.id": "/redfish/v1/Systems/1/BootOptions"
    },
    "BootOrder": [
        "Boot000A",
        "Boot0001",
        "Boot0002",
        "Boot0003"
    ],
    "BootSourceOverrideEnabled": "Disabled",
    "BootSourceOverrideMode": "UEFI",
    "BootSourceOverrideTarget": "None",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
        "None",
        "Pxe",
        "Hdd",
        "Cd",
        "Diags",
        "BiosSetup",
        "Usb",
        "UefiTarget"
    ],
    "StopBootOnFault": "Never",
    "TrustedModuleRequiredToBoot": "Disabled",
    "UefiTargetBootSourceOverride": null
},
"Description": "This resource is used to represent a computing system
                for a Redfish implementation.",
"EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces"
}

```

```

},
"GraphicalConsole": {
  "ConnectTypesSupported": [
    "KVMIP"
  ],
  "MaxConcurrentSessions": 4,
  "ServiceEnabled": true
},
"HostWatchdogTimer": {
  "FunctionEnabled": false,
  "Status": {
    "State": "Enabled"
  },
  "TimeoutAction": "ResetSystem"
},
"Id": "1",
"IndicatorLED": "Off",
"LastResetTime": "2024-12-04T02:40:29+00:00",
"Links": {
  "Chassis": [
    {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  ],
  "ManagedBy": [
    {
      "@odata.id": "/redfish/v1/Managers/1"
    }
  ]
},
"LogServices": {
  "@odata.id": "/redfish/v1/Systems/1/LogServices"
},
"Manufacturer": "Lenovo",
"Memory": {
  "@odata.id": "/redfish/v1/Systems/1/Memory"
},
"MemorySummary": {
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "TotalSystemMemoryGiB": 256
},
"Model": "ThinkSystem SR650 V4",
"Name": "ComputerSystem",
"NetworkInterfaces": {
  "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces"
},
"Oem": {
  ...
}
},
"PCIeDevices": [
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000"
  }
],

```

```

"PCIeDevices@odata.count": 2,
"PCIeFunctions": [
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions/slot_3.00"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions/slot_3.01"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000/PCIeFunctions/slot_14.00"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000/PCIeFunctions/slot_14.01"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000/PCIeFunctions/slot_14.02"
  },
  {
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000/PCIeFunctions/slot_14.03"
  }
],
"PartNumber": "SB27C00442",
"PowerRestorePolicy": "LastState",
"PowerState": "On",
"ProcessorSummary": {
  "Count": 2,
  "Status": {
    "Health": "OK"
  }
},
"Processors": {
  "@odata.id": "/redfish/v1/Systems/1/Processors"
},
"SKU": "7DGCCT01WW",
"SecureBoot": {
  "@odata.id": "/redfish/v1/Systems/1/SecureBoot"
},
"SerialConsole": {
  "IPMI": {
    "ServiceEnabled": false
  },
  "SSH": {
    "HotKeySequenceDisplay": "Press ~. to exit console",
    "Port": 22,
    "ServiceEnabled": true
  }
},
"SerialNumber": "BHSFW2U005",
"Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Enabled"
},
"Storage": {
  "@odata.id": "/redfish/v1/Systems/1/Storage"
},
"SubModel": "7DGC",
"SystemType": "Physical",
"UUID": "FE57AA52-E969-4448-9C0B-045179900052",
"VirtualMedia": {
  "@odata.id": "/redfish/v1/Systems/1/VirtualMedia"
}

```

```
}  
}
```

## PATCH – Update next-one-time boot configurations and other properties

Use the PATCH method to update properties in System resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1](https://<BMC_IPADDR>/redfish/v1/Systems/1)

### Request body

Properties to be updated are shown as below.

Field	Type	Description
Boot	Object	Describes boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.
BootSourceOverrideTarget	String	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is “Once” or “Disabled”.
UefiTargetBootSourceOverride	String	The UEFI Device Path of the device to boot from when BootSourceOverrideSupported is UefiTarget.
BootSourceOverrideEnabled	String	Describes the state of the Boot Source Override feature.
IndicatorLED	Object	The indicator light state for the indicator light associated with this system.

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Server reset operations

Use the POST method for server reset operations.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Actions/ComputerSystem.Reset](https://<BMC_IPADDR>/redfish/v1/Systems/1/Actions/ComputerSystem.Reset)

### Request body

Field	Error Message ID
ResetType	System reset type, possible values:  On/ForceOff/GracefulShutdown/GracefulRestart/ ForceRestart/Nmi/ForceOn

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – The pending System settings

Use the GET method to retrieve properties in System resource (pending) for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Pending

### Request body

None

### Response body

Field	Type	Description
Id	String	Pending
Name	String	Pending
Description	String	ComputerSystem 1 Pending Setting
Boot	Object	Expanded.
BootOrder	Array	Items: string Item count: N The pending data of BootOrder attributes.
BootOrder[N]	String	BootOptionReference strings that represent the persistent boot order for with this computer system.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.etag": "\"535D18D5\"",
  "@odata.id": "/redfish/v1/Systems/1/Pending",
  "@odata.type": "#ComputerSystem.v1_19_0.ComputerSystem",
  "Boot": {
    "BootOrder": [
      "Boot000A",
      "Boot0001",
      "Boot0002",
      "Boot0003"
    ]
  },
  "Description": "ComputerSystem 1 Pending Setting",
  "Id": "Pending",
  "Name": "Pending"
}
```

## PATCH – Update pending System settings

Use the PATCH method to update properties in System resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Pending](https://<BMC_IPADDR>/redfish/v1/Systems/1/Pending)

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
Boot	Object	Expanded.
BootOrder	Array	Items: string Item count: N The pending data of BootOrder attributes. Item count shall not be "0".
BootOrder[N]	String	BootOptionReference strings that represent the persistent boot order for with this computer system.

### Response

The response returns same content as GET operation with updated properties

### Status code

HTTP Status Code	Error Message ID
200	RebootRequired
403	InsufficientPrivilege
500	InternalError
503	ServiceUnavailable





---

## Chapter 13. Log Service and Event Log

---

### Resource LogService

This resource is used to provided Log Service and Event Log for a Redfish implementation.

Number of Resources	7
Resource Path	/redfish/v1/Systems/1/LogServices/{PlatformLog, AuditLog, ActiveLog, MaintenanceLog, SaLog, SEL, DiagnosticLog}
Schema file	LogService LogServiceCollection

### GET – Collection of BMC log services

Use the GET method to retrieve properties in log services resource for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices

#### Request body

None

#### Response body

Field	Type	Description
Name	String	The name of the log services collection.
Members	Array	Contains the members of log services collection.
Description	String	A collection of LogService resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogServiceCollection.LogServiceCollection",
  "@odata.etag": "\"8548F318\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices",
  "@odata.type": "#LogServiceCollection.LogServiceCollection",
  "Description": "A collection of LogService resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/LogServices/PlatformLog"
    },
    {

```

```

    "@odata.id": "/redfish/v1/Systems/1/LogServices/AuditLog"
  },
  {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/ActiveLog"
  },
  {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog"
  },
  {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/SaLog"
  },
  {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/SEL"
  },
  {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/DiagnosticLog"
  }
],
"Members@odata.count": 7,
"Name": "LogServiceCollection"
}

```

## GET – Service for BMC Active logs

Use the GET method to retrieve properties in active log service resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/ActiveLog](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/ActiveLog)

### Request body

None

### Response body

Field	Type	Description
Id	String	ActiveLog
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	The maximum number of log entries this service can have. Always set to 512.
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
LogEntryType	String	Multiple
Entries	Object	References to the log entry collection.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"47655F3C\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/ActiveLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "Oem": {
      ...
    }
  },
  "DateTime": "2024-12-04T05:05:06+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log
    service for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/ActiveLog/Entries"
  },
  "Id": "ActiveLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 512,
  "Name": "LogService",
  "ServiceEnabled": true
}
```

## GET – Service for BMC Platform event logs

Use the GET method to retrieve properties in Platform log service resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/PlatformLog](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/PlatformLog)

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to "PlatformLog".
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	The maximum number of log entries this service can have. Always set to 1024.

Field	Type	Description
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
LogEntryType	String	Multiple
OverWritePolicy	String	The overwrite policy for this service that takes place when the log is full. Always set to "WrapsWhenFull" – When full, new entries to the Log will overwrite previous entries.
Entries	Object	References to the log entry collection.
Actions	Object	The available actions for this resource.
#LogService.ClearLog	Object	This action is used to clear all standard log entries. <b>Note:</b> Only for AuditLog, PlatformLog, and SEL.
title	String	ClearLog
target	String	/redfish/v1/Systems/1/LogServices/PlatformLog/Actions/LogService.ClearLog

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"1EDD878B\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/PlatformLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "#LogService.ClearLog": {
      "target": "/redfish/v1/Systems/1/LogServices/PlatformLog/Actions/LogService.ClearLog",
      "title": "ClearLog"
    },
    "Oem": {
      ...
    }
  },
  "DateTime": "2024-12-04T04:46:25+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log service
    for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/PlatformLog/Entries"
  },
  "Id": "PlatformLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 1024,
  "Name": "LogService",
  "Oem": {
    ...
  }
}
```

```

    },
    "OverWritePolicy": "WrapsWhenFull",
    "ServiceEnabled": true
}

```

## GET – Service for BMC Audit event logs

Use the GET method to retrieve properties in Audit log service resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/AuditLog

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to "AuditLog".
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	The maximum number of log entries this service can have. Always set to 1024.
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
LogEntryType	String	Multiple
OverWritePolicy	String	The overwrite policy for this service that takes place when the log is full. Always set to "WrapsWhenFull" – When full, new entries to the Log will overwrite previous entries.
Entries	Object	References to the log entry collection.
Actions	Object	The available actions for this resource.
#LogService.ClearLog	Object	This action is used to clear all standard log entries. <b>Note:</b> Only for AuditLog, PlatformLog, and SEL.
title	String	ClearLog
target	String	/redfish/v1/Systems/1/LogServices/AuditLog/Actions/LogService.ClearLog

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"0BB638F2\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/AuditLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "#LogService.ClearLog": {
      "target": "/redfish/v1/Systems/1/LogServices/AuditLog/Actions/LogService.ClearLog",
      "title": "ClearLog"
    },
    "Oem": {
      ...
    }
  },
  "DateTime": "2024-12-04T04:49:33+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log service
    for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/AuditLog/Entries"
  },
  "Id": "AuditLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 1024,
  "Name": "LogService",
  "Oem": {
    ...
  },
  "OverWritePolicy": "WrapsWhenFull",
  "ServiceEnabled": true
}
```

## GET – Service for BMC Maintenance event logs

Use the GET method to retrieve properties in maintenance log service resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/MaintenanceLog](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/MaintenanceLog)

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to "MaintenanceLog".
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.

Field	Type	Description
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	The maximum number of log entries this service can have. Always set to 512.
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
LogEntryType	String	Multiple
Entries	Object	References to the log entry collection.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"B8AD223B\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "Oem": {
      ...
    }
  },
  "DateTime": "2024-12-04T05:05:08+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log service
    for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries"
  },
  "Id": "MaintenanceLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 512,
  "Name": "LogService",
  "ServiceEnabled": true
}
```

## GET – Service for BMC Service Advisor event logs

Use the GET method to retrieve properties in service advisor log service resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/SaLog

### Request body

None

## Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to "SaLog".
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	The maximum number of log entries this service can have. Always set to 5.
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
LogEntryType	String	Multiple
Entries	Object	References to the log entry collection.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"4631EDB3\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/SaLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "Oem": {
      ...
    }
  },
  "DateTime": "2024-12-04T05:05:13+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log service
    for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/SaLog/Entries"
  },
  "Id": "SaLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 5,
  "Name": "LogService",
  "ServiceEnabled": true
}
```



## GET – Service for IPMI SEL log

Use the GET method to retrieve properties in IPMI SEL log resource for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/SEL`

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to “SEL”.
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the “+HH:MM” format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
Actions	Object	Expanded.
#LogService.ClearLog	Object	Using IPMI command to clear SEL record. <b>Note:</b> Only for AuditLog, PlatformLog, and SEL.
title	String	ClearLog
target	String	/redfish/v1/Systems/1/LogServices/SEL/Actions/LogService.ClearLog

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"7A0A8B9A\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/SEL",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "#LogService.ClearLog": {
      "target": "/redfish/v1/Systems/1/LogServices/SEL/Actions/LogService.ClearLog",
      "title": "ClearLog"
    }
  },
  "DateTime": "2024-12-04T05:05:15+00:00",
  "DateTimeLocalOffset": "+00:00",
}
```

```

    "Description": "This resource is used to represent a log service
                  for a Redfish implementation.",
    "Id": "SEL",
    "Name": "LogService",
    "ServiceEnabled": true
}

```

## GET – Service for BMC Diagnostic logs

Use the GET method to retrieve properties in diagnostic log service resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog)

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log services resource. Always set to "DiagnosticLog".
Name	String	The name of the resource or array element.
Description	String	This resource is used to represent a log service for a Redfish implementation.
ServiceEnabled	Boolean	Indicate whether this service is enabled.
MaxNumberOfRecords	Number	12 (Manager (FFDC) and OS (failure screen) )
DateTimeLocalOffset	String	The UTC offset that the current DateTime property value contains in the "+HH:MM" format.
DateTime	String	The current DateTime (with offset) for the log service, used to set or read time.
OverWritePolicy	String	enum string "WrapsWhenFull"
LogEntryType	String	"Multiple"
Entries	Object	References to the log entry collection.
Actions	Object	Expanded.
#LogService. CollectDiagnosticData	Object	Expanded.
title	String	CollectDiagnosticData
target	String	/redfish/v1/Systems/1/LogServices/DiagnosticLog/Actions/LogService.CollectDiagnosticData

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.etag": "\"566C0640\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/DiagnosticLog",
  "@odata.type": "#LogService.v1_3_1.LogService",
  "Actions": {
    "#LogService.CollectDiagnosticData": {
      "DiagnosticDataType@Redfish.AllowableValues": [
        "Manager",
        "OEM"
      ],
      "OEMDiagnosticDataType@Redfish.AllowableValues": [
        "MiniLog",
        "MPFA"
      ],
      "target": "/redfish/v1/Systems/1/LogServices/DiagnosticLog/Actions/LogService.CollectDiagnosticData",
      "title": "CollectDiagnosticData"
    }
  },
  "DateTime": "2024-12-04T05:05:15+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "This resource is used to represent a log service for a Redfish implementation.",
  "Entries": {
    "@odata.id": "/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries"
  },
  "Id": "DiagnosticLog",
  "LogEntryType": "Multiple",
  "MaxNumberOfRecords": 12,
  "Name": "LogService",
  "Oem": {
    ...
  },
  "OverWritePolicy": "WrapsWhenFull",
  "ServiceEnabled": true
}

```

## POST – Clear event logs

Use the POST method to clear event logs.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/{PlatformLog, AuditLog, SEL}/Actions/LogService.ClearLog](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/{PlatformLog, AuditLog, SEL}/Actions/LogService.ClearLog)

### Request body

None

### Response body

None

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Collect BMC diagnostic Data

Use the POST method to collect BMC diagnostic Data.

### Request URL

POST https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/  
DiagnosticLog/Actions/LogService.CollectDiagnosticData

### Request body

Field	Type	Description
DiagnosticData-Type	String	“Manager”

### Response body

None

### Status code

HTTP Status Code	Error Message ID
500	InternalError
503	ResourceInUse

---

## Resource LogEntry

This resource is used to provide logs of LogEntry for a Redfish implementation

Number of Resources	Number of log entries
Resource Path	/redfish/v1/Systems/1/LogServices/PlatformLog/Entries/X /redfish/v1/Systems/1/LogServices/AuditLog/Entries/X /redfish/v1/Systems/1/LogServices/ActiveLog/Entries/Y /redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/Z /redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/MPFA /redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog_{id} /redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog2_{id} /redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/ServiceDataLog_{id} /redfish/v1/Chassis/Enclosure/LogServices/ChassisMaintenanceLog/Entries/X /redfish/v1/Systems/1/LogServices/SaLog/Entries/Z
Schema file	LogEntry LogEntryCollection

## GET – Collection of BMC log entries

Use the GET method to retrieve properties in log entries resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/{PlatformLog, AuditLog, ActiveLog, MaintenanceLog, SaLog, SEL, DiagnosticLog}/Entries

### Request body

None

### Response body

Field	Type	Description
Name	String	The name of the log services collection.
Members	Array	Contains the members of log services collection.
Description	String	A collection of LogService resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntryCollection.LogEntryCollection",
  "@odata.etag": "\"DCE55E4D\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "A collection of LogEntryMaintenanceLogEntry resource instances.",
  "Members": [
    {
      "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
      "@odata.etag": "\"C5CB9B84\"",
      "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/1",
      "@odata.type": "#LogEntry.v1_13_0.LogEntry",
      "Created": "2024-12-03T20:35:54+00:00",
      "Description": "This resource is used to represent a log entry for
        log services for a Redfish implementation.",
      "EntryType": "Oem",
      "EventGroupId": 0,
      "Id": "1",
      "Message": "Backup BMC firmware is updated to IHX407Y by Redfish.",
      "Name": "LogEntry",
      "Oem": {
        ...
      }
    },
    "OemRecordFormat": "Lenovo",
    "Severity": null
  ],
  ...
  {
    "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
    "@odata.etag": "\"EB9325D6\"",
    "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/6",
    "@odata.type": "#LogEntry.v1_13_0.LogEntry",
    "Created": "2024-12-04T02:41:49+00:00",
    "Description": "This resource is used to represent a log entry for
      log services for a Redfish implementation.",
    "EntryType": "Oem",
    "EventGroupId": 0,
    "Id": "6",
    "Message": "Primary BMC firmware is activated to IHX407Y.",
    "Name": "LogEntry",
    "Oem": {
      ...
    }
  },
  "OemRecordFormat": "Lenovo",
  "Severity": null
}
],
"Members@odata.count": 6,
"Name": "LogEntryMaintenanceLogEntryCollection"
}
```

## GET – BMC Active log entries

Use the GET method to retrieve properties in active log entries for a server.

## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/ActiveLog/Entries/Y

## Request body

None

## Response body

Field	Type	Description
Created	String	The time the log entry was created.
Description	String	This resource is used to represent a log entry for log services for a Redfish implementation.
EntryType	String	The type of log entry. Always set to "OEM".
EventGroupId	Integer	The identifier to correlate events come from a same cause. Always set to 0.
EventId	String	The unique instance identifier for an event.
Id	String	Uniquely identifies the resource within the collection of the log entries.
Links	Object	Expanded.
OriginOfCondition	Link	Link to origin of condition.
Message	String	The actual Log Entry.
MessageArgs	String	Arguments for the message.
MessageArgs[N]	Array	The arguments for the message.
MessageSeverity	String	Severity of the event. Valid values <ul style="list-style-type: none"><li>• "OK"</li><li>• "Warning"</li><li>• "Critical"</li></ul>
Name	String	The name of the resource or array element. Always set to "LogEntry".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Severity	String	The severity of the log entry.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – BMC Platform event log entries

Use the GET method to retrieve properties in Platform log entries for a server.

## Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/PlatformLog/Entries/X

## Request body

None

## Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log entries.
Name	String	The name of the resource or array element. Always set to "LogEntry".
Description	String	A collection of Platform LogEntry resource instances.
Severity	String	The severity of the log entry.
Created	String	The time the log entry was created.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Message	String	The actual Log Entry.
MessageArgs	Array	Arguments for the message.
MessageArgs[N]	Array	The arguments for the message.
Links	Object	Expanded.
OriginOfCondition	Object	Expanded.
@odata.id	Link	/redfish/v1/Systems/1
EventId	String	The unique instance identifier for an event.
EventGroupId	String	The identifier to correlate events come from a same cause. Always set to 0.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
  "@odata.etag": "\"720CA671\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/PlatformLog/Entries/1",
  "@odata.type": "#LogEntry.v1_13_0.LogEntry",
  "Created": "2024-11-30T05:42:45+00:00",
  "Description": "This resource is used to represent a log entry for log
    services for a Redfish implementation.",
  "EntryType": "Oem",
  "EventGroupId": 0,
  "EventId": "FQXSPPW2008I",
  "Id": "1",
  "Links": {
    "OriginOfCondition": {
      "@odata.id": "/redfish/v1/Systems/1"
    }
  },
  "Message": "Host power has been turned on.",
  "MessageArgs": [],
  "Name": "LogEntry",
}
```



```

    "Oem": {
        ...
    },
    "OemRecordFormat": "Lenovo",
    "Severity": "OK"
}

```

## GET – BMC Audit event log entries

Use the GET method to retrieve properties in Audit log entries for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/AuditLog/Entries/X

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log entries.
Name	String	The name of the resource or array element. Always set to "LogEntry".
Description	String	A collection of Platform LogEntry resource instances.
Severity	String	The severity of the log entry.
Created	String	The time the log entry was created.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Message	String	The actual Log Entry.
MessageArgs	Array	Arguments for the message.
MessageArgs[N]	Array	The arguments for the message.
EventId	String	The unique instance identifier for an event.
EventGroupId	String	The identifier to correlate events come from a same cause. Always set to 0.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
  "@odata.etag": "\"0DC64599\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/AuditLog/Entries/489",
  "@odata.type": "#LogEntry.v1_13_0.LogEntry",

```

```

"Created": "2024-12-01T11:30:39+00:00",
"Description": "This resource is used to represent a log entry for log
                services for a Redfish implementation.",
"EntryType": "Oem",
"EventGroupId": 0,
"EventId": "FQXSPSE4032I",
"Id": "489",
"Links": {
  "OriginOfCondition": {
    "@odata.id": "/redfish/v1/Managers/1"
  }
},
"Message": "Login ID: USERID from CLI at IP address 10.245.43.250 has logged off.",
"MessageArgs": [
  "USERID",
  "CLI",
  "10.245.43.250"
],
"Name": "LogEntry",
"Oem": {
  ...
}
},
"OemRecordFormat": "Lenovo",
"Severity": "OK"
}

```

## GET – BMC Maintenance event log entries

Use the GET method to retrieve properties in Maintenance log entries for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/Z](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/Z)

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log entries.
Name	String	The name of the resource or array element. Always set to "LogEntry".
Description	String	A collection of Platform LogEntry resource instances.
Severity	String	null
Created	String	The time the log entry was created.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Message	String	The actual Log Entry.
EventGroupId	String	The identifier to correlate events come from a same cause.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
  "@odata.etag": "\"C5CB9B84\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/MaintenanceLog/Entries/1",
  "@odata.type": "#LogEntry.v1_13_0.LogEntry",
  "Created": "2024-12-03T20:35:54+00:00",
  "Description": "This resource is used to represent a log entry for log
    services for a Redfish implementation.",
  "EntryType": "Oem",
  "EventGroupId": 0,
  "Id": "1",
  "Message": "Backup BMC firmware is updated to IHX407Y by Redfish.",
  "Name": "LogEntry",
  "Oem": {
    ...
  },
  "OemRecordFormat": "Lenovo",
  "Severity": null
}
```

## GET – BMC Service Advisor event log entries

Use the GET method to retrieve properties in Service Advisor log entries for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/SaLog/Entries/Z](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/SaLog/Entries/Z)

### Request body

None

### Response body

Field	Type	Description
Created	String	The time the log entry was created.
Description	String	A collection of Platform LogEntry resource instances.
EntryType	String	The type of log entry. Always set to "OEM".
EventId	String	The unique instance identifier for an event.
Id	String	Uniquely identifies the resource within the collection of the log entries.
Message	String	The actual Log Entry.
Name	String	The name of the resource or array element. Always set to "LogEntry".

Field	Type	Description
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Severity	String	The severity of the log entry.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – BMC Diagnostic log entries (MPFA)

Use the GET method to retrieve properties in Diagnostic log entries (MPFA) for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/MPFA

#### Request body

None

#### Response body

Field	Type	Description
Id	String	MPFA
Name	String	Memory PFA Data
Description	String	This resource is used to represent a log entry for log services for a Redfish implementation.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
DiagnosticDataType	String	The type of diagnostic data. Always set to "OEM".
OEMDiagnosticDataType	String	The type of OEM diagnostic data. Always set to "MPFA"
AdditionalDataSizeBytes	Integer	The file size of FFDC file or failure screenshot. Set it to 0, if the diagnostic data is not available,
AdditionalDataURI	String	The URI where XCC HTTPS server keeps the diagnostic data. Set it to null, if the diagnostic data is not available.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
```

```

"@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
"@odata.etag": "\"C2117F37\"",
"@odata.id": "/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/MPFA",
"@odata.type": "#LogEntry.v1_13_0.LogEntry",
"AdditionalDataSizeBytes": 0,
"AdditionalDataURI": null,
"Description": "This resource is used to represent a log entry for log
                services for a Redfish implementation.",
"DiagnosticDataType": "OEM",
"EntryType": "Oem",
"Id": "MPFA",
"Name": "Memory PFA Data",
"OEMDiagnosticDataType": "MPFA",
"OemRecordFormat": "Lenovo"
}

```

## GET – BMC Diagnostic log entries (DebugLog)

Use the GET method to retrieve properties in Diagnostic log entries (DebugLog) for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog\\_{id}](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog_{id})

### Request body

None

### Response body

Field	Type	Description
Id	String	DebugLog_{id}
Name	String	DebugLog_{id}
Description	String	This resource is used to represent a log entry for log services for a Redfish implementation.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
DiagnosticDataType	String	The type of diagnostic data. Always set to "Manager"
AdditionalDataSizeBytes	Integer	The file size of FFDC file or failure screenshot. Set it to 0, if the diagnostic data is not available,
AdditionalDataURI	String	The URI where XCC HTTPS server keeps the diagnostic data. Set it to null, if the diagnostic data is not available.
OriginatorType	String	Internal

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
  "@odata.etag": "\"0DA14EE6\"",
  "@odata.id": "/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog_5",
  "@odata.type": "#LogEntry.v1_13_0.LogEntry",
  "AdditionalDataSizeBytes": 7537405,
  "AdditionalDataURI": "/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog_5
    /attach/7DGCCT01WW_BHSFW2U005_xcc3_DebugLog_241203-020203.tar.zst",
  "Description": "This resource is used to represent a log entry for log
    services for a Redfish implementation.",
  "DiagnosticDataType": "Manager",
  "EntryType": "Oem",
  "Id": "DebugLog_5",
  "Name": "DebugLog_5",
  "OemRecordFormat": "Lenovo",
  "OriginatorType": "Internal"
}
```

## GET – BMC Diagnostic log entries (DebugLog2)

Use the GET method to retrieve properties in Diagnostic log entries for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog2\\_{id}](https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/DebugLog2_{id})

### Request body

None

### Response body

Field	Type	Description
Id	String	DebugLog2_{id}
Name	String	DebugLog2_{id}
Description	String	This resource is used to represent a log entry for log services for a Redfish implementation.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
DiagnosticDataType	String	The type of diagnostic data. Always set to "Manager"
AdditionalDataSizeBytes	Integer	The file size of FFDC file or failure screenshot. Set it to 0, if the diagnostic data is not available,
AdditionalDataURI	String	The URI where XCC HTTPS server keeps the diagnostic data. Set it to null, if the diagnostic data is not available.
OriginatorType	String	Internal
Links	Object	Expanded.

Field	Type	Description
RelatedLogEntries	Array	Item: object Item count: 1
RelatedLogEntries[1]	Link	Link to related DebugLog2 Entry.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – BMC Diagnostic log entries (ServiceDataLog)

Use the GET method to retrieve properties in Diagnostic log entries for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Systems/1/LogServices/DiagnosticLog/Entries/ServiceDataLog_{id}`

### Request body

None

### Response body

Field	Type	Description
Id	String	ServiceDataLog_{id}
Name	String	ServiceDataLog_{id}
Description	String	This resource is used to represent a log entry for log services for a Redfish implementation.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
DiagnosticDataType	String	The type of diagnostic data. Always set to "OEM"
OEMDiagnosticDataType	String	The type of diagnostic data. Always set to "MiniLog"
AdditionalDataSizeBytes	Integer	The file size of FFDC file or failure screenshot. Set it to 0, if the diagnostic data is not available,
AdditionalDataURI	String	The URI where XCC HTTPS server keeps the diagnostic data. Set it to null, if the diagnostic data is not available.
OriginatorType	String	Internal
Links	Object	Expanded.
RelatedLogEntries	Array	Item: object Item count: 1
RelatedLogEntries[1]	Link	Link to related ServiceDataLog Entry

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – BMC Chassis maintenance log entries

Use the GET method to retrieve properties in Chassis maintenance log entries for a enclosure.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/Enclosure/LogServices/ChassisMaintenanceLog/Entries/X](https://<BMC_IPADDR>/redfish/v1/Chassis/Enclosure/LogServices/ChassisMaintenanceLog/Entries/X)

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the log entries.
Description	String	A collection of Platform LogEntry resource instances.
Name	String	The name of the resource or array element. Always set to "LogEntry".
Created	String	The time the log entry was created.
EntryType	String	The type of log entry. Always set to "OEM".
OemRecordFormat	String	If the entry type is OEM, this will contain more information about the record format from the OEM. Always set to Lenovo.
Message	String	The actual Log Entry.
EventGroupId	Integer	The identifier to correlate events come from a same cause.
Severity	String	Null

### Status code

HTTP Status Code	Error Message ID
500	InternalError



---

## Chapter 14. Server Inventory

---

### Resource Memory

This resource is used to represent memory for a Redfish implementation.

Number of Resources	Number of DIMM slots
Resource Path	/redfish/v1/Systems/1/Memory/{1-N}, N is a max number of memories
Schema file	Memory MemoryCollection

### GET – Collection of server memories

Use the GET method to retrieve properties in Memory collection for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Memory

#### Request body

None

#### Response body

Field	Type	Description
Name	String	Memory Collection
Members	Array	Items: A reference link to an element of memory resource
Description	String	A Collection of memory resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MemoryCollection.MemoryCollection",
  "@odata.etag": "\"98E01A23\"",
  "@odata.id": "/redfish/v1/Systems/1/Memory",
  "@odata.type": "#MemoryCollection.MemoryCollection",
  "Description": "A collection of memory resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Memory/32"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Memory/31"
    }
  ]
}
```

```

    },
    ...
    {
      "@odata.id": "/redfish/v1/Systems/1/Memory/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Memory/1"
    }
  ],
  "Members@odata.count": 32,
  "Name": "Memory Collection"
}

```

## GET – Memory properties

Use the GET method to retrieve properties in Memory resource for Redfish service

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Memory/{1-N}

**Note:** *N* is the max number of memories.

### Request body

None

### Response body

Field	Type	Description
AllowedSpeedsMHz	Array	Speeds supported by this memory device.
BaseModuleType	String	The base module type of the memory device.
BusWidthBits	Integer	The bus width, in bits.
CapacityMiB	Integer	Memory capacity in mebibytes (MiB).
DeviceID	String	Device ID.
DataWidthBits	Integer	Data width in bits.
Description	String	This resource is used to represent a memory for a Redfish implementation.
ErrorCorrection	String	Error correction scheme supported for this memory device.
Id	String	The memory id.
Manufacturer	String	The memory device manufacturer.
MemoryLocation	Object	Expanded.
Socket	Integer	The CPU socket number to which the memory device is connected.
Slot	Integer	The DIMM slot number to which the memory device is connected.
MemoryType	String	The type of memory device.
MemoryDeviceType	String	Type details of the memory device.
Name	String	The memory name.
OperatingSpeedMhz	Integer	Operating speed of the memory device in MHz or MT/s as appropriate.
PartNumber	String	The product part number.

Field	Type	Description
RankCount	Integer	Number of ranks available in the memory device.
SerialNumber	String	The serial number of this memory. The value is null or empty if the memory is absent.
Status	Object	None
State	String	The status of the resource.
Health	String	The health of the resource.
PartLocation	Object	None
LocationOrdinalValue	Integer	The number that represents the location of the part. If LocationType is `slot` and this unit is in slot 2, the LocationOrdinalValue is 2.
LocationType	String	The type of location of the part.
ServiceLabel	String	The label of the part location.
Links	Object	Expanded.
Chassis	Link	The link to the chassis that contains this memory device.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Memory.Memory",
  "@odata.etag": "\"2BDB6415\"",
  "@odata.id": "/redfish/v1/Systems/1/Memory/1",
  "@odata.type": "#Memory.v1_16_0.Memory",
  "AllowedSpeedsMHz": [
    6400
  ],
  "BaseModuleType": "RDIMM",
  "BusWidthBits": 80,
  "CapacityMiB": 16384,
  "DataWidthBits": 64,
  "Description": "This resource is used to represent a memory for
    a Redfish implementation.",
  "DeviceID": "DIMM_1",
  "ErrorCorrection": "SingleBitECC",
  "Id": "1",
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  },
  "Location": {
    "PartLocation": {
      "LocationOrdinalValue": 0,
      "LocationType": "Slot",
      "ServiceLabel": "DIMM 1"
    }
  }
}
```

```

    },
    "Manufacturer": "Micron Technology",
    "MemoryDeviceType": "DDR5",
    "MemoryLocation": {
        "Slot": 1,
        "Socket": 1
    },
    },
    "MemoryType": "DRAM",
    "Name": "DIMM 1",
    "Oem": {
        ...
    }
    },
    "OperatingSpeedMhz": 6400,
    "PartNumber": "MTC10F1084S1RC64BD2 MWFF",
    "RankCount": 1,
    "SerialNumber": "802C0F241447F300F4",
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    }
}

```

---

## Resource PCIeDevice

This resource is used to represent PCIe device for a Redfish implementation.

Number of Resources	Number of PCIe devices
Resource Path	/redfish/v1/Chassis/1/PCIeDevices/{Device_id}
Schema file	PCIeDevice

## GET – Collection of PCIe Devices

Use the GET method to retrieve properties in PCIeDevice collection for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/PCIeDevices](https://<BMC_IPADDR>/redfish/v1/Chassis/1/PCIeDevices)

### Request body

None

### Response body

Field	Type	Description
Name	String	PCIeDevicesCollection
Members	Array	Items: A reference link to an element of PCIeDevices.
Description	String	A collection of PCIeDevice resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"9F6E877D\"",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices",
  "@odata.type": "#PCIeDeviceCollection.PCIeDeviceCollection",
  "Description": "Collection of PCIe Devices",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot8_0xc60000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot4_0x330000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot5_0x460000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot7_0x8b0000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot6_0xa20000"
    }
  ],
  "Members@odata.count": 7,
  "Name": "PCIe Device Collection"
}
```

## GET – Server PCIe devices

Use the GET method to retrieve properties in PCIeDevice resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Chassis/1/PCIeDevices/{Device\\_id}](https://<BMC_IPADDR>/redfish/v1/Chassis/1/PCIeDevices/{Device_id})

### Request body

None

### Response body

Field	Type	Description
AssetTag	String	The user-assigned asset tag for this PCIe device.
Id	String	The Id property uniquely identifies this PCIe device.
DeviceType	String	The device type for this PCIe device.
FirmwareVersion	String	The version of firmware for this PCIe device.
SKU	String	This is the SKU for this PCIe device.
PCIeFunctions	Object	Link to related PCIeFunctions.

Field	Type	Description
Links	Object	Expanded.
Chassis	Link	Link to chassis resource.
Manufacturer	String	This is the manufacturer of this PCIe device.
Model	String	This is the model number for the PCIe device.
Name	String	The card name in VPD for this PCIe device, if it is an on-board PCIe device, add "(onboard)" in the end.  If there is no VPD data, this property will be "Adapter".
PartNumber	String	The part number for this PCIe device.
SerialNumber	String	The serial number for this PCIe device.
Status	Object	Expanded.
State	String	Enabled
HealthRollup	String	This represents the health state of this resource and its dependent resources.
Health	String	This represents the health state of this resource.
PCIeInterface	Object	These properties shall contain the definition for a PCIe Interface for a Redfish implementation.
LanesInUse	Integer	The number of PCIe lanes in use by this device.
MaxPCIeType	String	The highest version of the PCIe specification supported by this device.
MaxLanes	Integer	The number of PCIe lanes supported by this device.
PCIeType	String	The version of the PCIe specification in use.
Slot	Object	Expanded.
Location	Object	Expanded.
PartLocation	Object	Expanded.  The part location within the placement.
LocationType	String	The type of location of PCIe device. Fixed value : Slot
LocationOrdinalValue	Integer	The number that represents the location of the part. If LocationType is 'slot' and this unit is in slot 2, the LocationOrdinalValue is 2.
SlotType	String	The PCIe slot type.
UUID	String	The UUID for this PCIe device.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
```

```

"@odata.context": "/redfish/v1/$metadata#PCIeDevice.PCIeDevice",
"@odata.etag": "\"9F983D35\"",
"@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000",
"@odata.type": "#PCIeDevice.v1_10_0.PCIeDevice",
"Description": "This resource represents the properties of a
                PCIeDevice attached to a System.",
"DeviceType": "MultiFunction",
"FirmwareVersion": "4.07.04",
"Id": "slot3_0xb0000",
"Links": {
  "Chassis": [
    {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  ]
},
"Manufacturer": "QLogic",
"Model": "QLE2772",
"Name": "QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter",
"Oem": {
  ...
}
},
"PCIeFunctions": {
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions"
},
"PCIeInterface": {
  "LanesInUse": 8,
  "MaxLanes": 8,
  "MaxPCIeType": "Gen4",
  "PCIeType": "Gen4"
},
"PartNumber": "SN37A28357",
"SKU": "01KR591",
"SerialNumber": "C1MP0630A9E",
"Slot": {
  "Location": {
    "PartLocation": {
      "LocationOrdinalValue": 3,
      "LocationType": "Slot"
    }
  }
},
"SlotType": "CEM"
},
"Status": {
  "Health": "OK",
  "State": "Enabled"
},
"UUID": "AF3A10A6A2DC4039B6D055C969462255"
}

```

---

## Resource PCIeFunction

This resource is used to represent PCIe function information for a Redfish implementation.

Number of Resources	Number of PCIe functions
Resource Path	/redfish/v1/Chassis/1/PCIeDevice/{Device_id}/ PCIeFunctions/{Location}  (Location=ob_X.YY or slot_W.ZZ)
Schema file	PCIeFunction  PCIeFunctionCollection

## GET – Collection of PCIe functions

Use the GET method to retrieve properties in PCIeFunction collection for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/PCIeDevices/{Device\_id}/PCIeFunctions

### Request body

None

### Response body

Field	Type	Description
Name	String	PCIeFunctionCollection
Members	Array	Items: A reference link to an element of PCIeFunction
Description	String	A collection of PCIeFunction resource instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"88ECF74B\"",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions",
  "@odata.type": "#PCIeFunctionCollection.PCIeFunctionCollection",
  "Description": "Collection of PCIe Functions for PCIe Device slot3_0xb0000",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions/slot_3.00"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions/slot_3.01"
    }
  ],
  "Members@odata.count": 2,
  "Name": "PCIe Function Collection"
}
```



## GET – Functions of server PCIe functions

Use the GET method to retrieve properties in PCIeFunction resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/PCIeDevice/{Device\_id}/PCIeFunctions/{Location}

**Note:** Location = ob\_X.YY or slot\_W.ZZ

### Request body

None

### Response body

Field	Type	Description
Id	String	The Id property uniquely identifies this PCIe function.
ClassCode	String	The Class Code of this PCIe function.
Description	String	This resource represents the properties of a PCIeFunction attached to a System.
DeviceId	String	The Device ID of this PCIe function.
DeviceClass	String	The class for this PCIe Function.
FunctionId	String	The PCIe Function identifier.
FunctionType	String	Physical
Links	Object	Expanded.
PCIeDevice	Link	Link to related the PCIeDevice resource.
Name	String	The card name in VPD + bus number, device number, function number.  If there is no VPD data, using “Adapter” instead of card name.
RevisionId	String	The Revision ID of this PCIe function.
SubsystemId	String	The Subsystem ID of this PCIe function.
SubsystemVendorId	String	The Subsystem Vendor ID of this PCIe function.
VendorId	String	The Vendor ID of this PCIe function.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeFunction.PCIeFunction",
  "@odata.etag": "\"A6B4AE04\"",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000/PCIeFunctions/slot_3.00",
  "@odata.type": "#PCIeFunction.v1_4_0.PCIeFunction",
  "ClassCode": "0x0C0400",
```

```

    "Description": "This resource represents the properties of a
                  PCIeFunction attached to a System.",
    "DeviceClass": "SerialBusController",
    "DeviceId": "0x2281",
    "Enabled": true,
    "FunctionId": 0,
    "FunctionType": "Physical",
    "Id": "slot_3.00",
    "Links": {
      "PCIeDevice": {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot3_0xb0000"
      }
    },
    "Name": "QLogic QLE2772 32Gb 2-Port PCIe Fibre Channel Adapter 00:0B:00.00",
    "Oem": {
      ...
    }
  },
  "RevisionId": "0x2",
  "SubsystemId": "0x2F5",
  "SubsystemVendorId": "0x1077",
  "VendorId": "0x1077"
}

```

---

## Resource PCIeSlot

This resource is used to represent PCIe slot for a Redfish implementation.

Number of Resources	Number of PCIe slots
Resource Path	/redfish/v1/Chassis/1/PCIeSlots
Schema file	PCIeDevice

## GET – Server PCIe slots

Use the GET method to retrieve properties in PCIeSlots for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Chassis/1/PCIeSlots

### Request body

None

### Response body

Field	Type	Description
Id	String	PCIeSlots
Name	String	PCIe Slots
Description	String	This resource shall be used to represent a set of PCIe slot information for a Redfish implementation.
Slots	Object	An array of PCI Slot information.
Links	Object	The links to other Resources that are related to Slots.
PCIeDevice	Link	Link to related PCIeDevice.

Field	Type	Description
HotPluggable	Boolean	An indication of whether this PCIe slot supports hotplug.
PCleType	String	The version of the PCIe specification in use.
SlotType	String	The PCIe slot type.
Lanes	Integer	The number of PCIe lanes supported by this slot.
Location	Object	The location of the PCIe slot.
PartLocation	Object	The part location within the placement.
ServiceLabel	String	The label of the part location, such as PCIe X (X is the slot number).
LocationType	String	The type of location of the part, such as slot.
LocationOrdinalValue	String	The number that represents the location of the part.  If LocationType is `slot` and this unit is in slot 2, the LocationOrdinalValue is 2.
Status	Object	The status and health of PCIeSlots.
State	String	The known state of PCIeSlots, such as, enabled, disabled.
Health	String	This represents the health state of this resource.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeSlots.PCIeSlots",
  "@odata.etag": "\"97E1A3F7\"",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeSlots",
  "@odata.type": "#PCIeSlots.v1_5_0.PCIeSlots",
  "Description": "This resource shall be used to represent an set of
    PCIe slot information for a Redfish implementation.",
  "Id": "PCIeSlots",
  "Name": "PCIe Slots",
  "Slots": [
    {
      "HotPluggable": false,
      "Lanes": 8,
      "Links": {
        "PCIeDevice": [
          {
            "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot14_0xb40000"
          }
        ]
      },
      "Location": {
        "PartLocation": {
          "LocationOrdinalValue": 14,
          "LocationType": "Slot",
          "ServiceLabel": "PCIe 14"
        }
      }
    }
  ]
}
```

```

    }
  },
  "PCIeType": "Gen5",
  "SlotType": "OCP3Small",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
},
{
  "HotPluggable": false,
  "Lanes": 8,
  "Links": {
    "PCIeDevice": []
  },
  "Location": {
    "PartLocation": {
      "LocationOrdinalValue": 13,
      "LocationType": "Slot",
      "ServiceLabel": "PCIe 13"
    }
  },
  "PCIeType": "Gen5",
  "SlotType": "OCP3Small",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
],
}

```

---

## Resource Processor

This resource is used to represent processor for a Redfish implementation.

Number of Resources	Number of processors supported
Resource Path	redfish/v1/Systems/1/Processors/{1-N}
Schema file	Processor ProcessorCollection

## GET – Collection of Processors

Use the GET method to retrieve properties in Processor collection for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Processors](https://<BMC_IPADDR>/redfish/v1/Systems/1/Processors)

### Request body

None

## Response body

Field	Type	Description
Name	String	ProcessorCollection
Members	Array	Items: A reference link to an element of processor resource.
Description	String	A Collection of Processor resource instances.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ProcessorCollection.ProcessorCollection",
  "@odata.etag": "\"F87A795D\"",
  "@odata.id": "/redfish/v1/Systems/system/Processors",
  "@odata.type": "#ProcessorCollection.ProcessorCollection",
  "Description": "A collection of Processor resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Processors/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Processors/1"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Processor Collection"
}
```

## GET – Processor properties

Use the GET method to retrieve properties of processor resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Processors/{1-N}

### Request body

None

### Response body

Field	Type	Description
Description	String	This resource is used to represent a processor for a Redfish implementation.
TotalEnabledCores	Integer	The total number of enabled cores that this processor contains.
Id	String	1~{N}, N=1- number of processors.
InstructionSet	String	null if Status.state is absent, otherwise, "x86-64".

Field	Type	Description
Manufacturer	String	The processor manufacturer.
MaxSpeedMHz	Number	The maximum clock speed of the processor.
Metrics	Link	The link to the metrics associated with this processor.
Model	String	The product model of the processor.
Name	String	"Processor {N}", N is the socket number of this processor.
SerialNumber	String	Serial number of this processor.
PartNumber	String	Part number of this processor.
Version	String	It is the same as the Model property.
ProcessorArchitecture	String	null if Status.state is absent, otherwise, "x86".
ProcessorId	Object	Expanded.
EffectiveFamily	String	The effective Family for this processor.
EffectiveModel	String	The effective Model for this processor.
IdentificationRegisters	String	The contents of the Identification Registers (CPUID) for this processor.
Step	String	The Step value for this processor.
ProtectedIdentificationNumber	String	The protected identification number for this processor.
ProcessorType	String	"CPU"
Socket	String	The socket or location of the processor.
Status	Object	Contains the following elements
State	String	"Enabled": processor is present "Absent": processor is not present
Health	String	The health of this processor. Possible values are "OK", "Warning" and "Critical". Hide if Status.state is absent.
TotalCores	Number	The total number of cores contained in this processor.
TotalThreads	Number	The total number of execution threads supported by this processor.
Location	Object	The location of the processor.
PartLocation	Object	The part location within the placement.
LocationOrdinalValue	Integer	The number that represents the location of the part.  If LocationType is `slot` and this unit is in slot 2, the LocationOrdinalValue is 2.
LocationType	String	The type of location of the part, such as slot, bay and socket. Here hard code to "Socket".
ServiceLabel	String	The label of the part location, such as a silk-screened name or a printed label.
TDPWatts	Integer	The nominal Thermal Design Power (TDP) in watts.
Links	Object	Expanded.
Chassis	Link	/redfish/v1/Chassis/1/

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Processor.Processor",
  "@odata.etag": "\"FE331BF2\"",
  "@odata.id": "/redfish/v1/Systems/1/Processors/1",
  "@odata.type": "#Processor.v1_14_0.Processor",
  "Description": "This resource is used to represent a processor
    for a Redfish implementation.",
  "Id": "1",
  "InstructionSet": "x86-64",
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/1"
    }
  },
  "Location": {
    "PartLocation": {
      "LocationOrdinalValue": 0,
      "LocationType": "Socket",
      "ServiceLabel": "CPU 1"
    }
  },
  "Manufacturer": "Intel(R) Corporation",
  "MaxSpeedMHz": 3800,
  "Metrics": {
    "@odata.id": "/redfish/v1/Systems/1/Processors/1/ProcessorMetrics"
  },
  "Model": "Intel(R) Xeon(R) 6760P",
  "Name": "Processor 1",
  "Oem": {
    ...
  },
  "PartNumber": "UNKNOWN",
  "ProcessorArchitecture": "x86",
  "ProcessorId": {
    "EffectiveFamily": "0x0006",
    "EffectiveModel": "0x00AD",
    "IdentificationRegisters": "BFEBFBFF000A06D1",
    "ProtectedIdentificationNumber": "647BE0BFDD73947C",
    "Step": "0x0001"
  },
  "ProcessorType": "CPU",
  "SerialNumber": "647BE0BFDD73947C",
  "Socket": "CPU 1",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "TDPWatts": 330,
  "TotalCores": 64,
  "TotalEnabledCores": 64,
}
```

```

    "TotalThreads": 128,
    "Version": "Intel(R) Xeon(R) 6760P"
}

```

## Resource ProcessorMetric

This resource is used to represent processor for a Redfish implementation.

Number of Resources	1 + N. (N: Number of processors supported)
Resource Path	/redfish/v1/Systems/1/ProcessorSummary/ ProcessorMetrics  /redfish/v1/Systems/1/Processors/{1-N}/ ProcessorMetrics
Schema file	ProcessorMetric

## GET – Processor summary metric properties

Use the GET method to retrieve properties in Processor Summary Metric for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/ProcessorSummary/ProcessorMetrics

### Request body

None

### Response body

Field	Type	Description
Id	String	ProcessorMetrics
Name	String	Processor Summary Metrics
Description	String	This resource is used to represent processor summary metrics for a Redfish implementation.
ConsumedPowerWatt	String	The power, in watts, that the processor has consumed.
BandwidthPercent	String	The processor bandwidth as a percentage.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Processor metric properties

Use the GET method to retrieve properties in a Processor Metric for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Processors/{1-N}/ProcessorMetrics

### Request body

None



## Response body

Field	Type	Description
Id	String	ProcessorMetrics
Name	String	Processor Metrics
Description	String	This resource is used to represent a processor metrics for a Redfish implementation.
ConsumedPowerWatt	Number	The consumed Power watt of this processor.
TemperatureCelsius	Number	The temperature of the processor.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"E2885BB0\"",
  "@odata.id": "/redfish/v1/Systems/1/Processors/1/ProcessorMetrics",
  "@odata.type": "#ProcessorMetrics.v1_6_0.ProcessorMetrics",
  "ConsumedPowerWatt": 70,
  "Description": "This resource is used to represent a processor
                 metrics for a Redfish implementation.",
  "Id": "ProcessorMetrics",
  "Name": "Processor Metrics",
  "TemperatureCelsius": 37
}
```

---

## Resource Memory Metrics

This resource is used to represent memory metrics summary for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Systems/1/MemorySummary/MemoryMetrics /redfish/v1/Systems/1/Memory/{1-N}/MemoryMetrics
Schema file	MemoryMetrics

## GET – memory metrics properties in MemorySummary

Use the GET method to retrieve properties in Memory resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/MemorySummary/MemoryMetrics

### Request body

None

### Response body

Field	Type	Description
Id	String	MemoryMetrics
Name	String	Memory Summary Metrics
Description	String	The usage and health statistics for system memory summary.
BandwidthPercent	Number	Memory average percentage.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – memory metrics properties in Memory

Use the GET method to retrieve properties in Memory resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Memory/{N}/MemoryMetrics](https://<BMC_IPADDR>/redfish/v1/Systems/1/Memory/{N}/MemoryMetrics)

### Request body

None

### Response body

Field	Type	Description
Id	String	MemoryMetrics
Name	String	Memory Summary Metrics
Description	String	The usage and health statistics for system memory summary.
BandwidthPercent	Number	Memory average percentage.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

---

## Chapter 15. Storage Management

---

### Resource Storage

This Resource is used to represent Storage for a Redfish implementation.

Number of Resources	Number of storage controllers
Resource Path	/redfish/v1/Systems/1/Storage/{Id}
Schema file	Storage StorageCollection

### GET – Collection of storage controllers

Use the GET method to retrieve the properties storage collection resource for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage

#### Request body

None

#### Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of Storage.
Name	String	StorageCollection
Description	String	A collection of storage resource instances.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#StorageCollection.StorageCollection",
  "@odata.etag": "\"0DCF3B35\"",
  "@odata.id": "/redfish/v1/Storage",
  "@odata.type": "#StorageCollection.StorageCollection",
  "Description": "A collection of storage resource instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Storage Collection"
}
```

}

## GET – Storage controller properties

Use the GET method to retrieve the properties of storage resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage/{Id}

### Response body

Field	Type	Description
Drives	Array	Drives connected to selected controller.
Drives[N]	Object	Link to Drives.
Description	String	This resource is used to represent a storage for a Redfish implementation.
Volumes	Array	The volumes created by the controller.
Id	String	The identifier of this resource.
HotspareActivation-Policy	String	The policy under which hot spare drives in this storage domain will activate.
Links	Object	The links to other resources that are related to this resource.
Name	String	The name of this resource.
Status	Object	Expanded.
State	String	Enabled
Health	String	Overall health info of this storage, including the controller, drive and volume.
HealthRollup	String	This represents the overall health state from the view of this resource.
StoragePools	Link	Link to the storage pool collection. <b>Note:</b> If the storage is a raid storage controller, this object will be displayed.
StorageControllers	Array	Controller info of the selected storage
StorageControllers [N]	Object	Expanded.
MemberId	String	This is the identifier for the member within the collection.
SupportedRAID-Types	Array	The set of RAID types supported by the storage controller.
SupportedRAIDTypes[N]	String	Expanded.
FirmwareVersion	String	Controller's firmware info. <b>Note:</b> If the storage is direct attached storage, this property will be hidden.
Identifiers	Array	Items: the durable names of the storage controller.  Item count: 1  <b>Note:</b> If the storage is a direct attached storage, this array will be hidden.
Identifiers[N]	Object	Expanded.
DurableNameFormat	String	"UUID" <b>Note:</b> If the storage is a direct attached storage, this object will be hidden.

Field	Type	Description
DurableName	String	The UUID of this storage controller. <b>Note:</b> If the storage is a direct attached storage, this object will be hidden.
Manufacturer	String	The manufacturer of this storage controller.
Model	String	This is the model number for the storage controller
Name	String	The name of the Storage Controller.
CacheSummary	Object	The cache memory of the storage controller in general detail. <b>Note:</b> If the storage is M.2/7mm or NVMe storage, this object will be hidden.
TotalCacheSizeMiB	Integer	The total configured cache memory, measured in MiB.
PersistentCacheSizeMiB	Integer	The portion of the cache memory that is persistent, measured in MiB.
Status	Object	The status for the cache summary of this storage controller.
State	String	The state for the cache summary of this storage controller. Possible values are "Enabled" and "Disabled".
Health	String	The health for the cache summary of this storage controller.
ControllerRates	Object	This property describes the various controller rates used for processes such as volume rebuild or consistency checks.
Consistency-CheckRatePercent	Integer	The percentage of controller resources used for performing a data consistency check on volumes.
RebuildRatePercent	Integer	The percentage of controller resources used for rebuilding/repairing volumes.
Transformation-RatePercent	Integer	The percentage of controller resources used for transforming volumes from one configuration to another.
PCIeInterface	Object	Expanded. <b>Note:</b> If the storage is Host Bus Adapter or 7mm, this object will be displayed.
LanesInUse	Integer	The number of PCIe lanes in use.
MaxLanes	Integer	The number of PCIe lanes supported.
MaxPCIeType	Integer	The highest version of the PCIe specification supported.
PCIeType	Integer	The version of the PCIe specification in use.
PartNumber	String	The part number for this storage controller. <b>Note:</b> If the storage is direct attached storage, this property will be hidden.
SKU	String	The SKU for this storage controller. <b>Note:</b> If the storage is direct attached storage, this property will be hidden.
SerialNumber	String	The serial number for this storage controller. <b>Note:</b> If the storage is direct attached storage, this property will be hidden.
Status	Object	The status for this storage controller.
State	String	The state for this storage controller.
SupportedControllerProtocols	Array	Expanded.

Field	Type	Description
SupportedControllerProtocols [N]	String	The supported set of protocols for communicating to this storage controller.
SupportedDeviceProtocols	Array	The protocols that the storage controller can use to communicate with attached devices.
SupportedDeviceProtocols[N]	String	Possible values are "SAS/SATA/NVMe".
Location	Object	The location of the storage controller. <b>Note:</b> If the storage is direct attached storage, this object will be hidden.
PartLocation	Object	The part location within the placement.
LocationOrdinalValue	Integer	The number that represents the location of this storage controller.
LocationType	String	"Slot"
ServiceLabel	String	The service label of this storage controller.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Storage.Storages",
  "@odata.etag": "\"D3601548\"",
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8",
  "@odata.type": "#Storage.v1_15_0.Storage",
  "Actions": {
    "Oem": {
      ...
    }
  },
  "Description": "This resource is used to represent a storage for a Redfish implementation.",
  "Drives": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_7"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_5"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_6"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_0"
    }
  ],
}
```

```

    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_4"
    }
  ],
  "Drives@odata.count": 8,
  "Id": "controller_slot8",
  "Name": "ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter",
  "Status": {
    "Health": "Warning",
    "HealthRollup": "Warning",
    "State": "Enabled"
  },
  "StorageControllers": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8#/StorageControllers/0",
      "CacheSummary": {
        "PersistentCacheSizeMiB": 3142,
        "Status": {
          "Health": "OK",
          "State": "Enabled"
        }
      },
      "TotalCacheSizeMiB": 4096
    },
    {
      "FirmwareVersion": "52.32.0-5785",
      "Identifiers": [
        {
          "DurableName": "BE2F1F5977264864A926E98498C466A2",
          "DurableNameFormat": "UUID"
        }
      ]
    },
    {
      "Location": {
        "PartLocation": {
          "LocationOrdinalValue": 8,
          "LocationType": "Slot",
          "ServiceLabel": "Slot=8"
        }
      }
    },
    {
      "Manufacturer": "Lenovo",
      "MemberId": "0",
      "Model": "SAS3916",
      "Name": "ThinkSystem RAID 940-8i 4GB Flash PCIe Gen4 12Gb Adapter",
      "Oem": {
        ...
      }
    },
    {
      "PCIeInterface": {
        "LanesInUse": 8,
        "MaxLanes": 8,
        "MaxPCIeType": "Gen4",
        "PCIeType": "Gen4"
      }
    },
    {
      "PartNumber": "SR17A32432",
      "SKU": "01PE816",
      "SerialNumber": "L1FM192SA63",
      "Status": {

```

```

        "Health": "Warning",
        "State": "Enabled"
    },
    "SupportedControllerProtocols": [
        "PCIe"
    ],
    "SupportedDeviceProtocols": [
        "SAS",
        "SATA",
        "NVMe"
    ],
    "SupportedRAIDTypes": [
        "RAID0",
        "RAID1",
        "RAID00",
        "RAID10"
    ]
}
],
"StorageControllers@odata.count": 1,
"StoragePools": {
    "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools"
},
"Volumes": {
    "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes"
}
}

```

---

## Resource Drive

This Resource is used to represent drive information for a Redfish implementation.

Number of Resources	Number of drives managed by storage controller
Resource Path	/redfish/v1/Systems/1/Storage/Id/Drives/{DriveId}
Schema file	Drive Volume Chassis Storage

### GET – Drives managed by storage controller

Use the GET method to retrieve the drive resource for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage/Id/Drives/{DriveId}

#### Request body

None



## Response body

Field	Type	Description
BlockSizeBytes	Number	Size of the smallest addressable unit of the associated drive.
CapableSpeedGbs	Number	Fastest capable bus speed of the associated drive.
CapacityBytes	Number	Size in bytes of this Drive.
DriveFormFactor	String	The form factor of the drive inserted in this slot.
EncryptionAbility	String	“None” “SelfEncryptingDrive”
EncryptionStatus	String	“Unlocked” “Locked” “Unencrypted”
NegotiatedSpeedGbs	Number	The speed, in gigabit per second (Gbit/s), at which this drive currently communicates to the storage controller.
FailurePredicted	Boolean	Indicate this drive currently predicting a failure in the near future.
FirmwareVersion	String	The firmware version for this drive.
HotspareType	String	“None” “Global”
Id	String	Drive slot id
Links	Object	Expanded.
Chassis	Link	A URI reference to a resource of chassis.
Storage	Link	A URI reference to a resource of storage.
Volumes	Array	An array of references to the volumes contained in this drive.
Volumes[N]	Link	Link
Manufacturer	String	Drive’s manufacture.
MediaType	String	Drive’s media type.
Model	String	Model of the drive.
Name	String	Name of the drive.
PartNumber	String	Part number of the drive.
SKU	String	The SKU for this drive.
StatusIndicator	String	The state of the status indicator, which communicates status information about this drive.
PhysicalLocation	Object	The location of this drive.
PartLocation	Object	The part location within the placement.
LocationType	String	“Bay”.
LocationOrdinalValue	Integer	The number that represents the location of this drive.

Field	Type	Description
ServiceLabel	String	The service label of this drive.
Protocol	String	The protocol this drive is using to communicate to storage controller.
PredictedMedia-LifeLeftPercent	Number	0-100. disk info remaining life.
Revision	String	Drive's firmware/hardware version.
RotationSpeedRPM	Number	Drive's rotation speed.
SerialNumber	String	Serial number of the drive.
Status	Object	Expanded.
State	String	"Enabled"
Health	String	Drive's health info.

**Note:** The resource "Drive" can describe multiple types of drives. For some cases, such as NVMe added on M.2 card, partial info may not be available.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Drive.Drive",
  "@odata.etag": "\"51F420A4\"",
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_0",
  "@odata.type": "#Drive.v1_17_0.Drive",
  "BlockSizeBytes": 512,
  "CapableSpeedGbs": 6.0,
  "CapacityBytes": 1998998994944,
  "DriveFormFactor": "Drive3_5",
  "EncryptionAbility": "None",
  "EncryptionStatus": "Unencrypted",
  "FailurePredicted": false,
  "FirmwareVersion": "LJ88",
  "HotspareType": "None",
  "Id": "drive_bay_0",
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/1"
    },
    "Storage": {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8"
    },
    "Volumes": [
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes/239"
      }
    ]
  }
},
```

```

"Manufacturer": "SEAGATE",
"MediaType": "HDD",
"Model": "ST2000NM0055",
"Name": "Drive 0",
"NegotiatedSpeedGbs": 6.0,
"Oem": {
  ...
},
"PartNumber": "ST2000NM0055",
"PhysicalLocation": {
  "PartLocation": {
    "LocationOrdinalValue": 0,
    "LocationType": "Bay",
    "ServiceLabel": "Drive 0"
  }
},
"Protocol": "SATA",
"RotationSpeedRPM": 8220,
"SKU": "ZC22R8FX",
"SerialNumber": "ZC22R8FX",
"Status": {
  "Health": "OK",
  "State": "Enabled"
},
"StatusIndicator": "OK"
}

```

---

## Resource Volume

This resource is used to represent volume information for a Redfish implementation.

Number of Resources	Number of volumes managed by storage controller
Resource Path	/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}
Schema file	Volume

## GET – Collection of Volumes managed by storage controller

Use the GET method to retrieve the Volume collection resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes

### Response body

Field	Type	Description
Name	String	VolumeCollection
Description	String	A collection of volumes instances.
Members	Array	Items: A reference link of the elements of Volumes.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"13CFDD03\"",
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes",
  "@odata.type": "#VolumeCollection.VolumeCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes/239"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes/238"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Volume Collection",
  "Oem": {
    ...
  }
}
```

## GET – Volumes managed by storage controller

Use the GET method to retrieve the volume resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}](https://<BMC_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId})

### Response body

Field	Type	Description
AccessCapabilities	Array	Supported IO access capabilities. <b>Note:</b> If the storage is M.2, this object will be hidden.
BlockSizeBytes	Number	Size of the smallest addressable unit of the associated volume. <b>Note:</b> If the storage is 7mm or M.2, this object will be hidden.
CapacityBytes	Number	Size in bytes of this volume.
Description	String	This resource is used to represent volume in Redfish implementation.
DisplayName	String	A user-configurable string to name the volume. <b>Note:</b> If the storage is 7mm or M.2, this object will be hidden.
Encrypted	Boolean	Is this Volume encrypted.
EncryptionTypes	Array	The types of encryption used by this Volume.
Id	String	Volume Id

Field	Type	Description
IsBootCapable	Boolean	Indicates whether or not the Volume contains a boot image and is capable of booting.
Links	Object	Expanded.
Drives	Array	An array of references to the drives that are used to create the volume.
Drives[N]	Link	Link
DedicatedSpare-Drives	Array	Links to DedicatedSpareDrives.
MediaSpanCount	Number	The requested number of media elements used per span in the secondary RAID for a hierarchical RAID type.
RAIDType	String	The RAID type of this volume.
Name	String	Volume info name
OptimumIOSizeBytes	Number	The size in bytes of this Volume's optimum IO size.
ReadCachePolicy	String	Indicates the read cache policy setting for the Volume.  <b>Note:</b> If the storage is 7mm or M.2, this property will be hidden.
ReadCachePolicy@Redfish.AllowableValues	String	“Off”, “ReadAhead”.  <b>Note:</b> If the storage is 7mm or M.2, this property will be hidden.
WriteCachePolicy	String	Indicates the write cache policy setting for the Volume.  <b>Note:</b> If the storage is 7mm or M.2, this property will be hidden.
WriteCachePolicy@Redfish.AllowableValues	String	“WriteThrough”, “UnprotectedWriteBack” and “ProtectedWriteBack”.  <b>Notes:</b> <ul style="list-style-type: none"> <li>• If the storage is 7mm or M.2, this property will be hidden.</li> <li>• If the storage is VROC, the value of this property is “Off”.</li> </ul>
WriteCacheState	String	Indicates the WriteCacheState policy setting for the Volume.
StripSizeBytes	Number	The number of blocks (bytes) in a strip in a disk array that uses striped data mapping.  <b>Note:</b> If the storage is 7mm or M.2, this object will be hidden.
Status	Object	Expanded.
State	String	Enabled
Health	String	The health of this volume. Possible values are “OK”, “Warning” and “Critical”.
Actions	Object	Expanded.  <b>Note:</b> If the storage is 7mm or M.2, this object will be hidden.
#Volume.Initialize	Object	Expanded.
target	String	Initialize
title	String	The link of this action.
InitializeType@Redfish.AllowableValues	Array	Items: string  Item count: 1

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@Redfish.WriteableProperties": [
    "DisplayName",
    "IOPolicy",
    "DriveCachePolicy",
    "AccessPolicy",
    "WriteCachePolicy",
    "ReadCachePolicy"
  ],
  "@odata.context": "/redfish/v1/$metadata#Volume.Volume",
  "@odata.etag": "\"ADE20C32\"",
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes/238",
  "@odata.type": "#Volume.v1_8_0.Volume",
  "AccessCapabilities": [
    "Read",
    "Write"
  ],
  "Actions": {
    "#Volume.Initialize": {
      "InitializeType@Redfish.AllowableValues": [
        "Fast",
        "Full"
      ],
      "target": "/redfish/v1/Systems/1/Storage/controller_slot8/Volumes/238/Actions/Volume.Initialize",
      "title": "Initialize"
    }
  },
  "BlockSizeBytes": 512,
  "CapacityBytes": 3997997989888,
  "Description": "This resource is used to represent a volume for
    a Redfish implementation.",
  "DisplayName": "VD_2",
  "Encrypted": false,
  "EncryptionTypes": [],
  "Id": "238",
  "IsBootCapable": false,
  "Links": {
    "DedicatedSpareDrives": [],
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_4"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_5"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_6"
      },
      {
        "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/Drives/drive_bay_7"
      }
    ]
  }
}
```

```

    ]
  },
  "MediaSpanCount": 2,
  "Name": "VD_2",
  "Oem": {
    ...
  }
},
"OptimumIOSizeBytes": 262144,
"RAIDType": "RAID10",
"ReadCachePolicy": "ReadAhead",
"ReadCachePolicy@Redfish.AllowableValues": [
  "ReadAhead",
  "Off"
],
"Status": {
  "Health": "OK",
  "State": "Enabled"
},
"StripSizeBytes": 262144,
"WriteCachePolicy": "WriteThrough",
"WriteCachePolicy@Redfish.AllowableValues": [
  "WriteThrough"
],
"WriteCacheState": null
}

```

## POST – Create a Volume

Use the POST method to initialize volume.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes](https://<BMC_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes)

### Request body

Field	Type	Description
Name <small>Note 1</small>	String	The new name with at most 15 characters.
RAIDType <small>Note 1</small>	String	RAID TYPEs that the RAID controller and current env support.
CapacityBytes <small>Note 2</small>	String	At least 1048576.
ReadCachePolicy	String	“Off” or “ReadAhead”
WriteCachePolicy	String	“WriteThrough”, “UnprotectedWriteBack” or “ProtectedWriteBack”
Oem/Lenovo/ IOPolicy	String	“DirectIO” or “CachedIO”
Oem/Lenovo/ AccessPolicy	String	“ReadWrite”, “ReadOnly” or “Blocked”
Oem/Lenovo/ DriveCachePolicy	String	“Unchanged”, “Disable” or “Enable”
StripSizeBytes	Number	The number of blocks (bytes) in a strip in a disk array that uses striped data mapping.  <b>Note:</b> If the storage is 7mm or M.2, this object will be hidden.

Field	Type	Description
Links	Object	Expanded.
Drives	Array	An array of references to the drives that are used to create the volume.

Note 1: This property is mandatory and should not be an empty string when creating a volume.

Note 2: It will be converted to a unit of megabyte at backend, so the property in GET operation may be different with the input value in POST operation. The minimum of the value is 1048576 (1MB = 1024 \* 1024).

### Response

The response returns the created volumes information.

### Status code

HTTP Status Code	Error Message ID
201	Created
500	InternalError

## POST – Initialize Volume

Use the POST method to initialize volume.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}/Actions/Volume.Initialize](https://<BMC_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}/Actions/Volume.Initialize)

### Request body

Field	Type	Description
InitializeType	String	Fast

### Response

None

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

## PATCH – Update Volume settings

Use the PATCH method to update properties in volume for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}](https://<BMC_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId})

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.



Field	Type	Description
Name	String	The new name with at most 15 characters.
ReadCachePolicy	String	“Off” or “ReadAhead”
WriteCachePolicy	String	“WriteThrough”, “UnprotectedWriteBack” or “ProtectedWriteBack”
Oem/Lenovo/ IOPolicy	String	“DirectIO” or “CachedIO”
Oem/Lenovo/ AccessPolicy	String	“ReadWrite”, “ReadOnly” or “Blocked”
Oem/Lenovo/ DriveCachePolicy	String	“Unchanged”, “Disable” or “Enable”
Encrypted	Boolean	Is this Volume encrypted.

### Response

The response returns same content as GET operation with updated properties

### Status code

HTTP Status Code	Error Message ID
200	OK
400	BadRequest
500	InternalError

Note that if the host is powered off, the 400 BadRequest with the Message ID: “ChassisPowerStateOnRequired” is returned.

## DELETE – Delete a Volume

Use the DELETE method to delete a volume for Redfish service.

### Request URL

DELETE [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId}](https://<BMC_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/Volumes/{VolumeId})

### Request body

None.

### Response

None.

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

---

## Resource StoragePool

This resource is used to represent StoragePool information for a Redfish implementation.

Number of Resources	Number of StoragePool managed by storage controller
Resource Path	/redfish/v1/Systems/1/Storage/Id/StoragePools/{StoragePoolId}
Schema file	StoragePool StoragePoolCollection

## GET – Collection of StoragePool managed by storage controller

Use the GET method to retrieve the StoragePool collection resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/StoragePools

### Response body

Field	Type	Description
Name	String	StoragePoolCollection
Description	String	A collection of storage pools instances.
Members	Array	Items: A reference link of the elements of StoragePools.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"24248091\"",
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools",
  "@odata.type": "#StoragePoolCollection.StoragePoolCollection",
  "Description": "A collection of StoragePool resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/Pool_8_239"
    },
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/Pool_8_238"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Storage Pool Collection"
}
```

## GET – StoragePool managed by storage controller

Use the GET method to retrieve the StoragePool resource for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Storage/{StorageId}/StoragePools/{StoragePoolId}

## Response body

Field	Type	Description
AllocatedVolumes	Link	A reference to the collection of volumes allocated from this storage pool.
Capacity	Object	Capacity utilization.
Data	Object	The capacity information relating to the user data.
AllocatedBytes	Integer	The number of bytes currently allocated by the storage system in this data store for this data type.
ConsumedBytes	Integer	The number of bytes consumed in this data store for this data type.
CapacitySources	Array	An array of space allocations to this store.
CapacitySources[]	Object	Each element of space allocations to this store.
ProvidingDrives	Link	The drive or drives that provide this space.
Id	String	The resource ID of the CapacitySource.
Name	String	The resource name of the CapacitySource.
Description	String	The description of this CapacitySource.
Description	String	This resource is used to represent StoragePool in Redfish implementation.
EncryptionEnabled	Boolean	The value of this property shall be a boolean indicating whether encryption is enabled.
Id	String	Volume Id
Link	Object	Expanded.
DedicatedSpare-Drives	Array	An array of references to the drives which are dedicated spares for this volume.
MaxBlockSizeBytes	Number	Max Block size in bytes.
Name	String	Volume info name
RemainingCapacity-Percent	Number	The percentage of the capacity remaining in the Volume.
Status	Object	The status of this storage pool.
State	String	The state of this storage pool.
Health	String	The health of this storage pool.
SupportedRAID-Types	Array	A collection of the RAID Types supported by the storage pool.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#StoragePool.StoragePool",
  "@odata.etag": "\"021A239E\"",

```

```

"@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/Pool_8_238",
"@odata.type": "#StoragePool.StoragePool",
"AllocatedVolumes": {
  "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/
    Pool_8_238/AllocatedVolumes"
},
"Capacity": {
  "Data": {
    "AllocatedBytes": 3997997989888,
    "ConsumedBytes": 3997997989888
  }
},
"CapacitySources": [
  {
    "@odata.context": "/redfish/v1/$metadata#Capacity.CapacitySource",
    "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/
      Pool_8_238/CapacitySources/1",
    "@odata.type": "#Capacity.v1_2_0.CapacitySource",
    "Description": "The resource is used to represent a capacity
      for a Redfish implementation.",
    "Id": 1,
    "Name": "CapacitySources_1",
    "ProvidingDrives": {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot8/StoragePools/
        Pool_8_238/CapacitySources/1/ProvidingDrives"
    }
  }
],
"Description": "This resource is used to represent a storage pool for
  a Redfish implementation.",
"EncryptionEnabled": false,
"Id": "Pool_8_238",
"Links": {
  "DedicatedSpareDrives": []
},
"MaxBlockSizeBytes": 512,
"Name": "Pool_8_238",
"RemainingCapacityPercent": 0,
"Status": {
  "Health": "OK",
  "State": "Enabled"
},
"SupportedRAIDTypes": [
  "RAID10"
]
}

```

---

## Resource Battery

This resource is used to represent Battery for a Redfish implementation.

Number of Resources	Depends on the max number of batteries on the system.
Resource Path	/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/ Batteries/{BatteryId}
Schema file	Battery  BatteryCollection

## GET – Collection of Batteries

Use the GET method to retrieve properties in battery collection for Redfish service.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries`

### Request body

None

### Response body

Field	Type	Description
Description	String	A collection of Battery resource instances.
Name	String	Battery Collection
Members	Array	Items: A reference link to an element of batteries.
Members[N]	Link	Links to battery instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

```
{
  "@odata.context": "/redfish/v1/$metadata#BatteryCollection.BatteryCollection",
  "@odata.etag": "\"5C811DAF\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/Batteries",
  "@odata.type": "#BatteryCollection.BatteryCollection",
  "Description": "A collection of Battery resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/Batteries/slot1_0x460000"
    }
  ],
  "Members@odata.count": 0,
  "Name": "Battery Collection"
}
```

## GET – Battery properties

Use the GET method to retrieve properties in Battery for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/Chassis/{ChassisId}/PowerSubsystem/Batteries/{BatteryId}`

### Request body

None

## Response body

Field	Type	Description
Description	String	This resource is used to represent a battery for a Redfish implementation.
CapacityRatedAmpHours	Number	The rated maximum capacity of this battery in amp-hour units.
CapacityRatedWattHours	Number	The rated maximum capacity of this battery in watt-hour units.
ChargeState	String	The charge state of this battery.
FirmwareVersion	String	The firmware version for this battery.
HotPluggable	Boolean	An indication of whether this device can be inserted or removed while the equipment is in operation.
Manufacturer	String	The manufacturer of this battery.
Model	String	The model number for this battery.
ProductionDate	String	The production or manufacturing date of this battery.
Replaceable	Boolean	An indication of whether this component can be independently replaced as allowed by the vendor's replacement policy.
SerialNumber	String	The serial number for this battery.
Name	String	Battery
Id	String	Battery
Links	Object	Expanded.
StorageControllers	Array	An array of links to the storage controllers to which this battery provides power during a power-loss event.
StorageControllers[1]	String	A reference link to a resource of this storage controller.
Status	Object	Expanded.
State	String	Enabled
Health	String	This represents the health state of this resource in the absence of its dependent resources.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Battery.Battery",
  "@odata.etag": "\"02235624\"",
  "@odata.id": "/redfish/v1/Chassis/1/PowerSubsystem/Batteries/slot1_0x460000",
  "@odata.type": "#Battery.v1_2_0.Battery",
  "CapacityRatedAmpHours": 0.006043085362762213,
  "CapacityRatedWattHours": 0.041111111640930176,
  "ChargeState": "Idle",
  "FirmwareVersion": "3456-8GB",
  "HotPluggable": false,
```

```
"Id": "slot1_0x460000",
"Links": {
  "StorageControllers": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/controller_slot1"
    }
  ]
},
"Manufacturer": "LSI",
"Model": "CVPM05",
"Name": "Battery of the RAID Controller in slot 1",
"Oem": {
  ...
}
},
"ProductionDate": "2017-05-05",
"Replaceable": true,
"SerialNumber": "12017",
"Status": {
  "Health": "OK",
  "State": "Enabled"
}
}
```





## Chapter 16. BIOS Setting and Boot Management

### Resource Bios

This resource is used to represent the BIOS setting for a Redfish implementation.

Number of Resources	2
Resource Path	/redfish/v1/Systems/1/Bios /redfish/v1/Systems/1/Bios/Pending
Schema file	Bios

### GET – Resource for BIOS

Use the GET method to retrieve properties in BIOS resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/Bios

#### Request body

None

#### Response body

Field	Type	Description
Id	String	Bios
Name	String	Bios
Description	String	System Bios
AttributeRegistry	String	"BiosAttributeRegistry.1.0.0"
Attributes	Object	This is the manufacturer/provider specific list of BIOS attributes.
Actions	Object	Expanded.
#Bios.ChangePassword	Object	Expanded.
@Redfish.ActionInfo	Link	/redfish/v1/Systems/1/Bios/ChangePasswordActionInfo
PasswordName@Redfish.AllowableValues	Array	Items: string Item count: 2
PasswordName@Redfish.AllowableValues[0]	String	"UefiAdminPassword"
PasswordName@Redfish.AllowableValues[1]	String	"UefiPowerOnPassword"
target	String	redfish/v1/Systems/1/Bios/Actions/Bios.ChangePassword
title	String	ChangePassword
#Bios.ResetBios	Object	Expanded.

Field	Type	Description
target	String	/redfish/v1/Systems/system/Bios/Actions/Bios.ResetBios
title	String	ResetBios
@Redfish.Settings	Object	Expanded.
Messages	Array	Items: object.
Messages[N]	Object	Expanded.
MessageId	String	"Base.1.16.0.ResetRequired"
RelatedProperties	Array	Items: string.
RelatedProperties[N]	String	The setting name of BIOS attributes. The format will be "#/Attributes/" + the name of attribute.
SettingsObject	Link	/redfish/v1/Systems/1/Bios/Pending/
SupportedApplyTimes	Array	Items: string Item count: 1
SupportedApplyTimes[0]	String	"OnReset"
Time	String	Indicate the time when the Attributes last applied.
Links	Object	Expanded.
ActiveSoftwareImage	Link	/redfish/v1/UpdateService/FirmwareInventory/UEFI
SoftwareImages	Array	Items: string Item count: 1
SoftwareImages[N]	Link	/redfish/v1/UpdateService/FirmwareInventory/UEFI
SoftwareImages@odata.count	Number	1

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_3_5.Settings",
    "Messages": [],
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/1/Bios/Pending"
    },
    "SupportedApplyTimes": [
      "OnReset"
    ],
    "Time": "2024-12-03T22:34:35+00:00"
  },
  "@odata.context": "/redfish/v1/$metadata#Bios.Bios",
  "@odata.etag": "\"7277A030\"",
  "@odata.id": "/redfish/v1/Systems/1/Bios",
}
```

```

"@odata.type": "#Bios.v1_2_0.Bios",
"Actions": {
  "#Bios.ChangePassword": {
    "@Redfish.ActionInfo": "/redfish/v1/Systems/1/Bios/ChangePasswordActionInfo",
    "PasswordName@Redfish.AllowableValues": [
      "UefiAdminPassword",
      "UefiPowerOnPassword"
    ],
    "target": "/redfish/v1/Systems/1/Bios/Actions/Bios.ChangePassword",
    "title": "ChangePassword"
  },
  "#Bios.ResetBios": {
    "target": "/redfish/v1/Systems/1/Bios/Actions/Bios.ResetBios",
    "title": "ResetBios"
  },
  "Oem": {}
},
"AttributeRegistry": "BiosAttributeRegistry.1.0.0",
"Attributes": {
  "AdvancedRAS_DIMMDisablePolicy": "DisableFaultyDIMMPersistently",
  ...
  "iSCSI_TargetPort_8": 3260
},
"Description": "System Bios",
"Id": "Bios",
"Links": {
  "ActiveSoftwareImage": {
    "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/UEFI"
  },
  "SoftwareImages": [
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/UEFI"
    }
  ],
  "SoftwareImages@odata.count": 1
},
"Name": "Bios",
"Oem": {
  ...
}
}

```

## POST – Change BIOS password settings

Use the POST method to change BIOS password settings

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Bios/Actions/Bios.ChangePassword](https://<BMC_IPADDR>/redfish/v1/Systems/1/Bios/Actions/Bios.ChangePassword)

### Request body

Field	Type	Description
title	String	ChangePassword
target	Link	The link of this action.
PasswordName	String	"UefiAdminPassword" or "UefiPowerOnPassword".

Field	Type	Description
OldPassword	String	Configure parameter OldPassword.
NewPassword	String	Configure parameter NewPassword, empty value will clear current password. If it's not empty, the password length must be at least 8 and at most 20. The password rule shall follow the Lenovo UEFI password rule, no three continuous and same characters appear in password.

**Note:** To recover UEFI Admin password, leave both OldPassword and NewPassword empty to clear it.

#### Response body

None

#### Status code

HTTP Status Code	Error Message ID
200	RebootRequired
400	ActionParamFormatError
403	InsufficientPrivilege
500	InternalError

## POST – Reset BIOS operation

Use the POST method to reset BIOS password settings

#### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Bios/Actions/Bios.ResetBios](https://<BMC_IPADDR>/redfish/v1/Systems/1/Bios/Actions/Bios.ResetBios)

#### Request body

None

#### Response body

None

#### Status code

HTTP Status Code	Error Message ID
200	RebootRequired
403	Forbidden
500	InternalError

## GET – The pending BIOS settings

Use the GET method to retrieve properties in Bios resource (pending) for Redfish service.

#### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Bios/Pending](https://<BMC_IPADDR>/redfish/v1/Systems/1/Bios/Pending)

#### Request body

None

## Response

Field	Type	Description
Id	String	Pending
Name	String	Pending
Description	String	Bios Pending Setting
AttributeRegistry	String	"BiosAttributeRegistry.1.0.0"
Attributes	Object	Expanded, the pending data of BIOS attributes.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Bios.Bios",
  "@odata.etag": "\"E29D62F1\"",
  "@odata.id": "/redfish/v1/Systems/1/Bios/Pending",
  "@odata.type": "#Bios.v1_2_0.Bios",
  "AttributeRegistry": "BiosAttributeRegistry.1.0.0",
  "Attributes": {
    "AdvancedRAS_DIMMDisablePolicy": "DisableFaultyDIMMPersistently",
    ...
    "iSCSI_TargetPort_8": 3260
  },
  "Description": "Bios Pending Setting",
  "Id": "Pending",
  "Name": "Pending"
}
```

## PATCH – Update pending BIOS settings

Use the PATCH method to update properties in BIOS resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/Bios/Pending](https://<BMC_IPADDR>/redfish/v1/Systems/1/Bios/Pending)

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
Attributes	Object	Expanded, the pending data of BIOS attributes.

## Response

The response returns same content as GET operation with updated properties.

## Status code

HTTP Status Code	Error Message ID
200	RebootRequired
403	InsufficientPrivilege
500	InternalError

## Resource AttributeRegistry

This resource is used to represent the attribute registry for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/schemas/registries/BiosAttributeRegistry.1.0.0.json
Schema file	AttributeRegistry

## GET – BIOS attribute registries

Use the GET method to retrieve properties in AttributeRegistry for Redfish service.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/schemas/registries/BiosAttributeRegistry.1.0.0.json`

### Request body

None

### Response body

Field	Type	Description
Id	String	“BiosAttributeRegistry.1.0.0”
Language	String	“en”
Name	String	“Bios Attribute Registry Version 1”
OwningEntity	String	Lenovo
RegistryEntries	Object	List of all attributes and their metadata for this component.
Attributes	Array	The array containing the attributes and their possible values.
Attributes[N]	Object	An attribute and its possible values.
Attribute-Name	String	The unique name of the attribute.
CurrentValue	String	null
DefaultValue	String	The default current value of the attribute.
DisplayName	String	The user-readable display string for the attribute in the defined language.
DisplayOrder	Number	The numeric value describing the ascending order that the attribute is displayed relative to other attributes.
GrayOut	Boolean	The gray-out state of this attribute.

Field	Type	Description
HelpText	String	The help text for the attribute.
Hidden	Boolean	The hidden state of this attribute.
LowerBound	Number	The lower limit of the value of an attribute of type 'Integer'.
MaxLength	Number	The maximum character length of the value of an attribute of type 'string'.
MenuPath	String	A path that describes the menu hierarchy of this attribute.
MinLength	Number	The minimum character length of the value of an attribute of type 'string'.
ReadOnly	Boolean	The read-only state of this attribute.
ResetRequired	Boolean	The value shall be true for all BIOS registry attributes.
ScalarIncrement	Number	The amount to increment or decrement the value of an attribute of type 'Integer' each time a user requests a value change.
Type	String	The type of the attribute.
UpperBound	Number	The upper limit of the value of an attribute of type 'Integer'.
Value	Array	The array containing possible values for attributes of type 'Enumeration'.
Value[N]	Object	Expanded.
ValueDisplayName	String	A user-readable display string of the value of the attribute in the defined 'Language'.
ValueName	String	The value name of the attribute.
ValueExpression	String	A regular expression that is used to validate the value of the attribute. This is only applicable to attributes of type 'string' or 'Integer'.
WarningText	String	The warning text for changing the attribute.
WriteOnly	Boolean	Defines whether this attribute is write-only. Such attributes revert back to their initial value after settings are applied.
Dependencies	Array	The array containing a list of dependencies of attributes on this component.
Dependencies [N]	Object	A dependency of attributes on this component.
Dependency	Object	The dependency expression for one or more Attributes in this Attribute Registry.
MapFrom	Array	Array of the map-from conditions for mapping dependency.
MapFrom [N]	Object	A map-from condition for mapping dependency.
MapFromAttribute	String	The attribute that is used to evaluate this dependency expression.
MapFromCondition	String	The condition that is used to evaluate this dependency expression.
MapFromProperty	String	"CurrentValue".
MapFromValue	String	The value to use to evaluate this dependency expression.
MapTerms	String	The logical term used to combine two or more MapFrom conditions in this dependency expression.

Field	Type	Description
MapToAttribute	String	The Name of the attribute that is affected by this dependency expression.
MapToProperty	String	The meta-data property of the attribute specified in MapFromAttribute that is used to evaluate this dependency expression.
MapToValue	Boolean	TRUE
Dependency-For	String	The AttributeName of the attribute whose change triggers the evaluation of this dependency expression.
Type	String	"Map"
Menus	Array	The array containing the attributes menus and their hierarchy.
Menus[N]	Object	A menu and its hierarchy.
DisplayName	String	The user-readable display string of this menu in the defined 'Language'.
DisplayOrder	Number	The numeric value describing the ascending order in which this menu is displayed relative to other menus.
GrayOut	Boolean	FALSE
MenuName	String	The unique name string of this menu.
MenuPath	String	A path that describes this menu hierarchy relative to other menus.
ReadOnly	Boolean	FALSE
RegistryVersion	String	"1.0.0"
SupportedSystems	Array	Array of systems supported by this attribute registry.
SupportedSystems[N]	Object	A system supported by this attribute registry.
ProductName	String	Use The product name of the system.
SystemId	String	The system ID of the system.
FirmwareVersion	String	Firmware version.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#AttributeRegistry.AttributeRegistry",
  "@odata.type": "#AttributeRegistry.v1_3_6.AttributeRegistry",
  "Id": "BiosAttributeRegistry.1.0.0",
  "Language": "en",
  "Name": "Bios Attribute Registry Version 1",
  "OwningEntity": "Lenovo",
  "RegistryEntries": {
    "Attributes": [
      {

```



```

"AttributeName": "CXLMemoryModule_MemoryMode",
"CurrentValue": null,
"DefaultValue": "MemoryMode_1LM_Vol",
"DisplayName": "Memory Mode",
"GrayOut": false,
"HelpText": "[1LM + Vol]:DRAM and CMM are visible to software as
              two separate NUMA nodes. \r\n[Heterogeneous Interleave]:DRAM
              and CMM are visible to software as one NUMA node, and they are
              interleaved.\r\n[Flat Memory Mode]: DRAM and CMM are visible to
              software as one NUMA node. Frequently used data is in DRAM,
              less frequently used data is in CMM. Hardware swaps the
              less frequently used data to CMM automatically.",
"Hidden": false,
"IsSystemUniqueProperty": false,
"MenuPath": "./CXLMemoryModule/CXLMemoryModule_CXLMemoryModule",
"ReadOnly": false,
"ResetRequired": true,
"Type": "Enumeration",
"Value": [
  {
    "ValueDisplayName": "1LM + Vol",
    "ValueName": "MemoryMode_1LM_Vol"
  },
  {
    "ValueDisplayName": "Heterogeneous Interleave",
    "ValueName": "HeterogeneousInterleave"
  },
  {
    "ValueDisplayName": "Flat Memory Mode",
    "ValueName": "FlatMemoryMode"
  }
],
"WriteOnly": false
},
...
{
  "AttributeName": "DevicesandIOPorts_Bifurcation_Slot7",
  "CurrentValue": null,
  "DefaultValue": "x16",
  "DisplayName": "Slot 7",
  "GrayOut": false,
  "HelpText": "Setting [x16] uses the system setting to bifurcate the slot.
              [x8x8] to bifurcate the physical x16 slot to support two x8
              devices at maximum. [x8x4x4]/[x4x4x8] to support one x8 and
              two x4 devices at maximum. [x4x4x4x4] to support four x4 devices
              at maximum",
  "Hidden": false,
  "IsSystemUniqueProperty": false,
  "MenuPath": "./SystemUEFI/DevicesandIOPorts_Bifurcation/
              DevicesandIOPorts_Bifurcation_OverrideSlotBifurcation",
  "ReadOnly": false,
  "ResetRequired": true,
  "Type": "Enumeration",
  "Value": [
    {
      "ValueDisplayName": "x16",
      "ValueName": "x16"
    },
    {
      "ValueDisplayName": "x8x8",
      "ValueName": "x8x8"
    }
  ]
}

```

```

    },
    {
      "ValueDisplayName": "x8x4x4",
      "ValueName": "x8x4x4"
    },
    {
      "ValueDisplayName": "x4x4x8",
      "ValueName": "x4x4x8"
    },
    {
      "ValueDisplayName": "x4x4x4x4",
      "ValueName": "x4x4x4x4"
    }
  ],
  "WriteOnly": false
}
"Dependencies": [
  {
    "Dependency": {
      "MapFrom": [
        {
          "MapFromAttribute": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort1LogicalPort1_LegacyVLANMode",
          "MapFromCondition": "EQU",
          "MapFromProperty": "CurrentValue",
          "MapFromValue": "Disabled"
        }
      ],
      "MapToAttribute": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort1LogicalPort1_VLANID14094",
      "MapToProperty": "GrayOut",
      "MapToValue": true
    },
    "DependencyFor": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort1LogicalPort1_VLANID14094",
    "Type": "Map"
  },
  ...
  {
    "Dependency": {
      "MapFrom": [
        {
          "MapFromAttribute": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort2LogicalPort1_LegacyVLANMode",
          "MapFromCondition": "EQU",
          "MapFromProperty": "CurrentValue",
          "MapFromValue": "Disabled"
        }
      ],
      "MapToAttribute": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort2LogicalPort1_VLANID14094",
      "MapToProperty": "GrayOut",
      "MapToValue": true
    },
    "DependencyFor": "BroadcomNetXtremeGigabitEthernetAdapter__Slot14PhysicalPort2LogicalPort1_VLANID14094",
    "Type": "Map"
  },
  ],
  "Menus": [
    {

```

```

        "DisplayName": "BIOS Configurations",
        "DisplayOrder": 1,
        "GrayOut": false,
        "Hidden": false,
        "MenuName": "BiosConfigurations",
        "MenuPath": "./",
        "ReadOnly": false
    },
    ...
    {
        "DisplayName": "System UEFI",
        "DisplayOrder": 2,
        "GrayOut": false,
        "Hidden": false,
        "MenuName": "SystemUEFI",
        "MenuPath": "./SystemUEFI",
        "ReadOnly": false
    }
    ]
},
"RegistryVersion": "1.0.0",
"SupportedSystems": [
    {
        "FirmwareVersion": "1.20",
        "ProductName": "ThinkSystem SR650 V4",
        "SystemId": "7D6CCT01WW"
    }
],
"odata.context": "/redfish/v1/$metadata#AttributeRegistry.AttributeRegistry"
}

```

---

## Resource SecureBoot

This resource is used to represent secure boot information for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Systems/1/SecureBoot
Schema file	SecureBoot

## GET – Secure boot properties

Use the GET method to retrieve properties in SecureBoot resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/SecureBoot

### Request body

None

### Response body

Field	Type	Description
Id	String	SecureBoot
Name	String	Secure Boot
Description	String	UEFI Secure Boot Configuration

Field	Type	Description
SecureBootEnable	Boolean, Null	Enable or disable UEFI Secure Boot (takes effect on next boot).
SecureBootCurrentBoot	String, Null	Secure Boot state during the current boot cycle.
SecureBootMode	String, Null	Current Secure Boot Mode  Property value: <ul style="list-style-type: none"> <li>• "UserMode"</li> <li>• "SetupMode"</li> <li>• "AuditMode"</li> <li>• "DeployedMode"</li> </ul>
Actions	Object	Expanded.
#SecureBoot.ResetKeys	Object	Refer to the Post section.
@Redfish.ActionInfo	Link	/redfish/v1/Systems/1/SecureBoot/ResetKeysActionInfo

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

When the request is successful, a message body similar to the following is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#SecureBoot.SecureBoot",
  "@odata.etag": "\"848E3F3E\"",
  "@odata.id": "/redfish/v1/Systems/1/SecureBoot",
  "@odata.type": "#SecureBoot.v1_1_0.SecureBoot",
  "Actions": {
    "#SecureBoot.ResetKeys": {
      "@Redfish.ActionInfo": "/redfish/v1/Systems/1/SecureBoot/ResetKeysActionInfo",
      "target": "/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys",
      "title": "ResetKeys"
    }
  },
  "Description": "UEFI Secure Boot Configuration",
  "Id": "SecureBoot",
  "Name": "Secure Boot",
  "SecureBootCurrentBoot": "Disabled",
  "SecureBootEnable": false,
  "SecureBootMode": "UserMode"
}
```

## PATCH – Update secure boot properties

Use the PATCH method to update properties in SecureBoot resource for Redfish service.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/SecureBoot](https://<BMC_IPADDR>/redfish/v1/Systems/1/SecureBoot)

## Request body

Property to be updated is shown as bellow.

Field	Type	Description
Secure-Boot-Enable	String	<p>Enable or disable UEFI Secure Boot (takes effect on next boot).</p> <p>XCC3 will do the RPP assert internally when receiving this cmd.</p> <p>If assert RPP successfully, return code 200 + @Message.ExtendedInfo</p> <p>"RebootRequired":</p> <pre>"RebootRequired": {   "Description": "Indicates that one or more properties were changed, and/or actions completed successfully. However, these changes will not take effect until the next system reboot.",   "Message": "Changes completed successfully, but these changes will not take effect until next reboot.",   "Severity": "Warning",   "NumberOfArgs": 0,   "ParamTypes": [],   "Resolution": "Reboot the computer system for the changes to take effect." }</pre> <p>else return</p> <pre>code 200 + @Message.ExtendedInfo "PhysicalPresenceError": "PhysicalPresenceError": {   "Description": "The operation failed because Physical Presence or Remote Physical Presence was not asserted.",   "Message": " The operation failed because of Remote Physical Presence security requirements.",   "Severity": "Warning",   "NumberOfArgs": 0,   "ParamTypes": [],   "Resolution": "Attempt asserting Physical Presence or Remote Physical Presence, and retry the operation." }</pre>

## Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
200	RebootRequired
403	InsufficientPrivilege
500	InternalError

## POST – Reset secure boot keys

Use the POST method to reset secure boot keys.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys](https://<BMC_IPADDR>/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys)

## Request body

Field	Type	Description
ResetKeysType	String	<p>This action is used to reset the Secure Boot keys(takes effect on next boot):</p> <p>Value:</p> <ul style="list-style-type: none"> <li>• “DeleteAllKeys”</li> <li>• “DeletePK”</li> </ul> <p>XCC3 will do the RPP assert internally when receiving this cmd.</p> <p>If assert RPP successfully, return code 200 + @Message.ExtendedInfo “RebootRequired”:</p> <pre>"RebootRequired": {   "Description": "Indicates that one or more properties were changed, and/or   actions completed successfully. However, these changes will not take effect until   the next system reboot.",   "Message": "Changes completed successfully, but these changes will not take   effect until next reboot.",   "Severity": "Warning",   "NumberOfArgs": 0,   "ParamTypes": [],   "Resolution": "Reboot the computer system for the changes to take effect." },</pre> <p>else return code 200 + @Message.ExtendedInfo “PhysicalPresenceError”:</p> <pre>"PhysicalPresenceError": {   "Description": "The operation failed because Physical Presence or Remote   Physical Presence was not asserted.",   "Message": " The operation failed because of Remote Physical Presence security   requirements.",   "Severity": "Warning",   "NumberOfArgs": 0,   "ParamTypes": [],   "Resolution": "Attempt asserting Physical Presence or Remote Physical   Presence, and retry the operation." },</pre>

### Status code

HTTP Status Code	Error Message ID
200	RebootRequired, PhysicalPresenceError
403	Forbidden
500	InternalError

## Resource BootOption

This resource is used to represent boot options for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/Systems/1/BootOptions
Schema file	BootOption

## GET – Collection of Boot options

Use the GET method to retrieve the properties of boot options for a server.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/BootOptions

### Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of boot options.
Name	String	BootOptions
Description	String	A collection of boot option instances.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#BootOptionCollection.BootOptionCollection",
  "@odata.etag": "\"D291E1EA\"",
  "@odata.id": "/redfish/v1/Systems/1/BootOptions",
  "@odata.type": "#BootOptionCollection.BootOptionCollection",
  "Description": "A Collection of BootOption resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot0002"
    },
    {
```



```

        "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot000A"
    },
    {
        "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot0004"
    },
    {
        "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot0001"
    },
    {
        "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot0003"
    }
],
"Members@odata.count": 5,
"Name": "BootOptions"
}

```

## GET – Boot options

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/Systems/1/BootOptions/{Id}

### Response body

Field	Type	Description
Description	String	This resource is used to represent a single boot option for a Redfish implementation.
Id	String	Id of boot option.
Name	String	Name of the boot option.
Boot-Option-Reference	String	The unique boot option.
Display-Name	String	The user-readable display name of the boot option that appears in the boot order list in the user interface.
UefiDevice-Path	String	The UEFI device path to access this UEFI Boot Option.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#BootOption.BootOption",
  "@odata.etag": "\"E312FA0E\"",
  "@odata.id": "/redfish/v1/Systems/1/BootOptions/Boot000A",
  "@odata.type": "#BootOption.v1_0_4.BootOption",
  "BootOptionReference": "Boot000A",
  "Description": "This resource shall be used to represent a single boot

```

```
        option contained within a system.",
"DisplayName": "Windows Boot Manager",
"Id": "Boot000A",
"Name": "WindowsBootManager",
"UefiDevicePath": "HD(1,GPT,C8F5A806-484C-477F-B080-81BFC0797BC9,0x800,
                  0x64000)/\\EFI\\Microsoft\\Boot\\bootmgfw.efi"
}
```

---

## Chapter 17. Firmware Inventory and Update Service

---

### Resource UpdateService

This resource shall be used to represent update service information for a Redfish implementation. It represents the properties that affect the service itself.

Number of Resources	1
Resource Path	/redfish/v1/UpdateService
Schema file	UpdateService

### GET – Properties for firmware update service

Use the GET method to retrieve the update service resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/UpdateService

#### Response body

Field	Type	Description
Id	String	UpdateService
Name	String	Update Service
Description	String	Lenovo firmware update service
Actions	Object	Expanded.
#UpdateService.SimpleUpdate	Object	Expanded.
@Redfish.ActionInfo	Link	/redfish/v1/UpdateService/SimpleUpdateActionInfo
@Redfish.OperationApplyTimeSupport	Object	Expanded.
SupportedValues	Array	“Immediate” “OnReset” “OnStartUpdateRequest”
Targets@Redfish.AllowableValues	Link	/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup
TransferProtocol @Redfish.AllowableValues	Array	Allowable values for SimpleUpdate action Item: string Item count: 2
target	String	/redfish/v1/UpdateService/Actions/UpdateService.SimpleUpdate
title	String	SimpleUpdate
#UpdateService.StartUpdate	Object	Expanded.
@Redfish.ActionInfo	Link	Expanded.

Field	Type	Description
target	String	/redfish/v1/UpdateService/Actions/UpdateService.StartUpdate
title	String	StartUpdate
FirmwareInventory	Object	URI to the firmware info on the server
MaxImageSizeBytes	Integer	838860800 (800MB)
MultipartHttpPushUri	String	The URI used to perform an HTTPS push update to the Service with a multipart formatted request body; value is "/redfish/v1/UpdateService/update".
MultipartHttpPushUri@Redfish.OperationApplyTimeSupport	Object	Expanded.
SupportedValues	Array String	"Immediate" "OnReset" "OnStartUpdateRequest"
ServiceEnabled	Boolean	True.
VerifyRemoteServerCertificate	Boolean	Indicates whether the Service will verify the certificate of the HTTPS server referenced by the ImageURI property in SimpleUpdate prior to sending the transfer request.  Default value is false.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#UpdateService.UpdateService",
  "@odata.etag": "\"05C6DF5C\"",
  "@odata.id": "/redfish/v1/UpdateService",
  "@odata.type": "#UpdateService.v1_11_1.UpdateService",
  "Actions": {
    "#UpdateService.SimpleUpdate": {
      "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo",
      "@Redfish.OperationApplyTimeSupport": {
        "@odata.type": "#Settings.v1_3_5.OperationApplyTimeSupport",
        "SupportedValues": [
          "Immediate",
          "OnStartUpdateRequest",
          "OnReset"
        ]
      }
    },
    "Targets@Redfish.AllowableValues": [
      "/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup"
    ],
    "TransferProtocol@Redfish.AllowableValues": [
      "TFTP",
      "SFTP",
      "HTTP"
    ]
  }
}
```

```

        "HTTPS"
    ],
    "target": "/redfish/v1/UpdateService/Actions/UpdateService.SimpleUpdate",
    "title": "SimpleUpdate"
  },
  "#UpdateService.StartUpdate": {
    "@Redfish.ActionInfo": "/redfish/v1/UpdateService/StartUpdateActionInfo",
    "target": "/redfish/v1/UpdateService/Actions/UpdateService.StartUpdate",
    "title": "StartUpdate"
  },
  "Oem": {
    ...
  }
}
},
"Description": "Service for Software Update",
"FirmwareInventory": {
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory"
},
"Id": "UpdateService",
"MaxImageSizeBytes": 838860800,
"MultipartHttpPushUri": "/redfish/v1/UpdateService/update",
"MultipartHttpPushUri@Redfish.OperationApplyTimeSupport": {
  "@odata.type": "#Settings.v1_3_5.OperationApplyTimeSupport",
  "SupportedValues": [
    "Immediate",
    "OnReset",
    "OnStartUpdateRequest"
  ]
},
"Name": "Update Service",
"Oem": {
  ...
}
},
"ServiceEnabled": true,
"VerifyRemoteServerCertificate": false
}

```

## PATCH– Update verify remote server certificate property

Use the PATCH method to update the verify remote server certificate property.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/UpdateService](https://<BMC_IPADDR>/redfish/v1/UpdateService)

### Request body

Field	Type	Description
VerifyRemoteServerCertificate	Boolean	Indicates whether the Service will verify the certificate of the HTTPS server referenced by the ImageURI property in SimpleUpdate prior to sending the transfer request.  Default value is false.

### Response

The response returns same content as GET operation with updated properties.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Simple update for firmware

This action can perform an update of installed software component(s) as contained within a software image file located at a URI referenced by the ImageURI parameter.

### Request URL

POST `https://<BMC_IPADDR>/redfish/v1/UpdateService/Actions/UpdateService.SimpleUpdate`

### Request body

Parameter	Type	Description
ImageURI	String	URI for the image file.
Targets	String	URIs of the resource that is expected to update.  That is, when you intend to update firmware for BMC (Backup), the Targets parameter must be <code>[/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup]</code> . This is also the exclusive case to provide a value in Targets to update firmware with Redfish, and only applicable for BMC (Backup) update. In order to update other kind of firmware, the Targets is not needed or accepts null value.
TransferProtocol	String	Network protocol used by the Service to retrieve the firmware image file.
Username	String	User name to access an sftp server. It's required when the image is located on an sftp server, and username:password is not available in ImageURI.
Password	String	Password to access an sftp server. It's required when the image is located on an sftp server, and username:password is not available in ImageURI.
@Redfish.OperationApply-Time	String	Specify when to start to update SimpleUpdate-provided firmware. Accepted settings are <ul style="list-style-type: none"><li>“Immediate”</li><li>“OnStartUpdateRequest”</li></ul>

### Response

Field	Type	Description
Id	String	The created task ID.
Name	String	Task name.
Description	String	This resource represents a task for a Redfish implementation.
TaskMonitor	String	The URI of the Task Monitor for this task.
StartTime	String	The date-time stamp that the task was last started.
TaskState	String	The state of the task.
Messages	Array	This is an array of messages associated with the task.
PercentComplete	Integer	Task completion in percent.
HidePayload	Boolean	Indicates Payload object is hidden and not returned on GET.

## Status code

HTTP Status Code	Error Message ID
202	Accepted
400	BadRequest, ActionParamMissing , ActionParamTypeError , ActionParamFormatError
419	Conflict
500	InternalError

## POST – Multipart HTTP Push update for firmware

This operation can perform an update of installed software component(s) by pushing a software image file to the URI referenced by UpdateService.MultipartHttpPushUri property. In XCC3 redfish service, the UpdateService.MultipartHttpPushUri property value is “/redfish/v1/UpdateService/update”.

### Request URL

POST https://<BMC\_IPADDR>/redfish/v1/UpdateService/update

### Request body

The HTTP POST operation shall provide authentication with the sufficient privilege to access the UpdateService resource.

### Response

Field	Type	Description
Id	String	The created task ID.
Name	String	Task name.
Description	String	This resource represents a task for a Redfish implementation.
TaskMonitor	String	The URI of the Task Monitor for this task.
StartTime	String	The date-time stamp that the task was last started.
TaskState	String	The state of the task.
Messages	Array	This is an array of messages associated with the task.
PercentComplete	Integer	Task completion in percent.
HidePayload	Boolean	Indicates Payload object is hidden and not returned on GET.

**Note:** The client may optionally include HTTP multipart form data in the POST body to specify the image file name as RFC2388 specified. XCC3 checks this header and verify the size is supported for firmware updates, and returns code 413 when file size is too large. If the client uploads multiple files in a POST request, it returns code 400 with an error message indicating the format is not supported.

Multipart HTTP push update may be rejected with code 503 when Http Push update is in progress, and vice versa.

### Status code

HTTP Status Code	Error Message ID
202	Accepted
400	BadRequest, ActionParamMissing, ActionParamTypeError, ActionParamFormatError
413	RequestEntityTooLarge
500	InternalServerError
503	ServiceUnavailable

## POST – Start update firmware

This action can perform an update of installed software component(s) as contained within a software image file located at a URI referenced by the ImageURI parameter.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/UpdateService/Actions/UpdateService.StartUpdate](https://<BMC_IPADDR>/redfish/v1/UpdateService/Actions/UpdateService.StartUpdate)

### Request body

None.

### Response

None.

### Status code

HTTP Status Code	Error Message ID
202	Accepted
400	BadRequest, ActionParamMissing, ActionParamTypeError, ActionParamFormatError
419	Conflict
503	ServiceUnavailable

---

## Resource FirmwareInventory

This resource shall be used to represent a single software component managed by this Redfish Service.

Number of Resources	Number of firmware entries managed
Resource Path	/redfish/v1/UpdateService/FirmwareInventory/{Id}
Schema file	SoftwareInventory SoftwareInventoryCollection

## GET – Collection for firmware inventories on the server

Use the GET method to retrieve a firmware info list placed on the server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/UpdateService/FirmwareInventory](https://<BMC_IPADDR>/redfish/v1/UpdateService/FirmwareInventory)



## Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of Firmware.
Name	String	SoftwareInventoryCollection
Description	String	Firmware Inventory Collection

**Note:** The “FirmwareInventory” describes firmware information of multiple kinds of devices, which includes BMC (Primary), UEFI, LXPM, LXPM Windows/Linux driver, and firmware of onboard and add-on adapter supporting PLDM or agentless management, disk drive managed by RAID controller.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "@odata.etag": "\"96C54918\"",
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory",
  "@odata.type": "#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "Description": "Firmware Inventory Collection.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Primary"
    },
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Primary-Pending"
    },
    ...
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/PCIeDevice_slot5_0x460000.Bundle"
    }
  ],
  "Members@odata.count": 28,
  "Name": "Software Inventory Collection"
}
```

## GET – Firmware inventory properties

Use the GET method to retrieve each firmware info.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/UpdateService/FirmwareInventory/{Id}](https://<BMC_IPADDR>/redfish/v1/UpdateService/FirmwareInventory/{Id})

## Response body

Field	Type	Description
Description	String	Description for the firmware.
Id	String	The Id property uniquely identifies this firmware.

Field	Type	Description
Manufacturer	String	A string representing the manufacturer/producer of this firmware.
Name	String	The name of this firmware.
RelatedItem	Array	URI of the resources associated with this software inventory item.
RelatedItem[N]	Object	Link to the manager resource.
RelatedItem@odata.count	Number	The number of related items.
ReleaseDate	String	Release date of this firmware.
SoftwareId	String	A specific ID for identifying this firmware.
Status	Object	Expanded.
Health	String	"OK"
State	String	The firmware inventory status such as "Enabled", "Disabled", "StandbySpare".
Updateable	Boolean	Indicates whether the firmware can be updated by redfish.
Version	String	The firmware version number.  In order to be identified by management software, the Version property value can be different to the Version string displayed in Web or Legacy CLI.
WriteProtected	Boolean	true

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response describes the BMC (Primary) firmware information.

```
{
  "@odata.context": "/redfish/v1/$metadata#SoftwareInventory.SoftwareInventory",
  "@odata.etag": "\"2D7BADF2\"",
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup",
  "@odata.type": "#SoftwareInventory.v1_3_0.SoftwareInventory",
  "Description": "The information of Firmware:BMC firmware.",
  "Id": "BMC-Backup",
  "Manufacturer": "Lenovo",
  "Name": "Firmware:BMC",
  "Oem": {
    ...
  },
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Managers/1"
    }
  ],
  "RelatedItem@odata.count": 1,
  "ReleaseDate": "2024-11-28T00:00:00Z",
  "SoftwareId": "BMC-IHX4-10",
  "Status": {
```

```

    "Health": "OK",
    "State": "StandbySpare"
  },
  "Updateable": true,
  "Version": "07Y-0.80",
  "WriteProtected": true
}

```

The following example JSON response describes firmware information of a network adapter.

```

{
  "@odata.context": "/redfish/v1/$metadata#SoftwareInventory.SoftwareInventory",
  "@odata.etag": "\"4FCB14A9\"",
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/PCIeDevice_slot5_0x460000.Bundle",
  "@odata.type": "#SoftwareInventory.v1_3_0.SoftwareInventory",
  "Description": "The information of Firmware:DEVICE-Broadcom NetXtreme
    PCIe 1Gb 4-Port RJ45 Ethernet Adapter firmware.",
  "Id": "PCIeDevice_slot5_0x460000.Bundle",
  "Manufacturer": "Broadcom Limited",
  "Name": "Firmware:DEVICE-Broadcom NetXtreme PCIe 1Gb 4-Port RJ45 Ethernet Adapter",
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/slot5_0x460000"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/slot5_0x460000"
    }
  ],
  "RelatedItem@odata.count": 2,
  "SoftwareId": "DEVICE-14E4-1657-17AA-402D-13",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "Updateable": false,
  "Version": "230.0.3.1",
  "WriteProtected": true
}

```



---

## Chapter 18. Task Management

---

### Resource TaskService

The resource represents a collection of tasks for the Redfish service. All existing tasks are accessible through the links from the TaskService resource.

Number of Resources	1
Resource Path	/redfish/v1/TaskService
Schema file	TaskService

### GET – Task service properties

Use the GET method to retrieve properties in TaskService resource for Redfish service.

#### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/TaskService`

#### Request body

None

#### Response body

Field	Type	Description
Id	String	TaskService
Name	String	Task Service
Description	String	This resource represents a task service for a Redfish implementation.
CompletedTaskOverWritePolicy	String	Oldest
DateTime	String	The current DateTime (with offset) setting that the task service is using.
LifeCycleEventOnTaskState-Change	Boolean	True
ServiceEnabled	Boolean	This indicates whether this service is enabled. Value: True
Status	Object	Expanded.
State	String	Enabled
Health	String	OK
HealthRollup	String	OK
Tasks	Link	This property shall contain the link to a collection of type Task.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.etag": "\"DC0E2AA2\"",
  "@odata.id": "/redfish/v1/TaskService",
  "@odata.type": "#TaskService.v1_1_4.TaskService",
  "CompletedTaskOverWritePolicy": "Oldest",
  "DateTime": "2024-12-04T05:30:57+00:00",
  "Description": "This resource represents a task service for a
    Redfish implementation.",
  "Id": "TaskService",
  "LifecycleEventOnTaskStateChange": false,
  "Name": "Task Service",
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService/Tasks"
  }
}
```

---

## Resource Task

The resource represents Task resource implementation for the Redfish service.

Number of Resources	Number of tasks available in Redfish service
Resource Path	/redfish/v1/TaskService/Tasks/{Id}
Schema file	Task

## GET – Task properties

Use the GET method to retrieve properties in Task resource for Redfish service.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/TaskService/Tasks/{Id}

### Request body

None

### Response body

Field	Type	Description
Id	String	The Id property uniquely identifies this task resource.
Name	String	Task {Id}
Description	String	This resource represents a task for a Redfish implementation.
TaskState	String	The state of the task.
StartTime	String	The date-time stamp that the task was last started.

Field	Type	Description
EndTime	String	The date-time stamp that the task was last completed.
Messages	Object	Expanded.
Messages[N]	String	A message associated with the task..
PercentComplete	Integer	This property shall indicate the completion progress of the task, reported in percent of completion.
TaskStatus	String	The completion status of the task.  The mapping between TaskState and TaskStatus: <ul style="list-style-type: none"> <li>• “Completed” (TaskState) -&gt; “OK” (TaskStatus)</li> <li>• “Killed”(TaskState) -&gt; “Warning”(TaskStatus)</li> <li>• “Exception”(TaskState) -&gt; “Warning”(TaskStatus)</li> <li>• Others (TaskState) -&gt; Do not expose TaskStatus (TaskStatus)</li> </ul>
TaskMonitor	Link	The URI of the Task Monitor for this task. It is a URI for deleting the task when the TaskState is Completed, Exception or Killed.
HidePayload	Boolean	This property shall indicate whether the contents of the payload should be hidden from view after the task has been created.

### Status code

HTTP Status Code	Error Message ID
500	InternalServerError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.etag": "\"0B755D5E\"",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_4_3.Task",
  "Description": "This resource represents a task for a Redfish implementation.",
  "EndTime": "2024-11-30T05:49:59+00:00",
  "HidePayload": true,
  "Id": "1",
  "Messages": [
    {
      "@odata.type": "#Message.v1_1_1.Message",
      "Message": "The task with Id '1' has started.",
      "MessageArgs": [
        "1"
      ],
      "MessageId": "TaskEvent.1.0.3.TaskStarted",
      "MessageSeverity": "OK",
      "Resolution": "None."
    },
    {
      "@odata.type": "#Message.v1_1_1.Message",
      "Message": "The task with Id '1' has completed.",
      "MessageArgs": [
        "1"
      ]
    }
  ],
}
```

```

        "MessageId": "TaskEvent.1.0.3.TaskCompletedOK",
        "MessageSeverity": "OK",
        "Resolution": "None."
    }
],
"Name": "Task 1",
"PercentComplete": 100,
"StartTime": "2024-11-30T05:46:48+00:00",
"TaskMonitor": "/redfish/v1/TaskService/TaskMonitors/1",
"TaskState": "Completed",
"TaskStatus": "OK"
}

```

## DELETE – Delete a task

Use the DELETE method to delete task resource for Redfish service.

### Request URL

DELETE [https://<BMC\\_IPADDR>/redfish/v1/TaskService/Tasks/{Id}](https://<BMC_IPADDR>/redfish/v1/TaskService/Tasks/{Id})

### Request body

None

### Response

None

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError



---

## Chapter 19. Event Service

---

### Resource EventService

This Resource is used to represent event service for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/EventService
Schema file	EventService

### GET – Event service properties

Use the GET method to retrieve properties in Event service resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/EventService

#### Request body

None

#### Response body

Field	Type	Description
Id	String	EventService
Name	String	Event Service
Description	String	This resource represents an event service for a Redfish implementation.
DeliveryRetryAttempts	Integer	3
DeliveryRetryIntervalSeconds	Integer	60 (Unit: seconds)
EventFormatTypes	Array	Item: string Item count: 2
EventFormatTypes[N]	String	Valid values: “Event” or “MetricReport”
RegistryPrefixes	Array	Item: string Item count: maps to members under the resource /redfish/v1/Registries
RegistryPrefixes[N]	String	Maps to members under the resource /redfish/v1/Registries
ResourceTypes	Array	A list of @odata.type values (Schema names) that can be specified in a ResourceType on a subscription.
ResourceTypes[N]	String	Array element of ResourceTypes <b>Note:</b> Alert event cannot be filtered by ResourceType
IncludeOriginOfConditionSupported	Boolean	True

Field	Type	Description
SubordinateResourcesSupported	Boolean	Indicate if the service supports the SubordinateResource property on Event Subscriptions.
SSEFilterPropertiesSupported	Object	Expanded.
EventFormatType	Boolean	True
MessageId	Boolean	True
MetricReportDefinition	Boolean	True
OriginResource	Boolean	True
RegistryPrefix	Boolean	True
ResourceType	Boolean	True
SubordinateResources	Boolean	True
ServerSentEventUri	Link	/redfish/v1/EventService/ServerSentEvent
Subscriptions	Link	Reference to event subscriptions of EventDestinationCollection type.
ServiceEnabled	Boolean	True
Status	Object	Expanded.
State	String	"Enabled"
Health	String	"OK"
Actions	Object	Expanded.
#EventService.SubmitTestEvent	Object	Refer to Actions
title	String	SubmitTestEvent
target	Link	/redfish/v1/EventService/Actions/EventService.SubmitTestEvent
SMTP	Object	Expanded.
Authentication	String	The authentication method for the SMTP server.
Authentication@Redfish.AllowableValues	Array	Items: string Item count: 3
Authentication @Redfish.AllowableValues[N]	String	"None", "Login", "CRAM_MD5".
ConnectionProtocol	String	The connection type to the outgoing SMTP server.
ConnectionProtocol@Redfish.AllowableValues	Array	Items: string Item count: 1
ConnectionProtocol @Redfish.AllowableValues[N]	String	"AutoDetect"
FromAddress	String	The from email address of the outgoing email.
Password	String	The password for authentication with the SMTP server. The value is null in responses.
Port	Number	The destination SMTP port.
ServerAddress	String	The address of the SMTP server.

Field	Type	Description
ServiceEnabled	Boolean	An indication if SMTP for event delivery is enabled.
Username	String	The username for authentication with the SMTP server.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventService.EventService",
  "@odata.etag": "\"E1C416CD\"",
  "@odata.id": "/redfish/v1/EventService",
  "@odata.type": "#EventService.v1_8_0.EventService",
  "Actions": {
    "#EventService.SubmitTestEvent": {
      "target": "/redfish/v1/EventService/Actions/EventService.SubmitTestEvent",
      "title": "SubmitTestEvent"
    }
  },
  "DeliveryRetryAttempts": 3,
  "DeliveryRetryIntervalSeconds": 30,
  "Description": "This resource represents an event service for
    a Redfish implementation.",
  "EventFormatTypes": [
    "Event",
    "MetricReport"
  ],
  "Id": "EventService",
  "IncludeOriginOfConditionSupported": true,
  "Name": "Event Service",
  "RegistryPrefixes": [
    "Base",
    "TaskEvent",
    "EventRegistry",
    "UEFIEventRegistry",
    "LXPMEventRegistry"
  ],
  "ResourceTypes": [
    "Task",
    "Fan",
    "PowerSupply",
    "PowerSubsystem",
    "ComputerSystem",
    "Memory"
  ],
  "SMTP": {
    "Authentication": "None",
    "Authentication@Redfish.AllowableValues": [
      "Login",
      "CRAM_MD5",
      "None"
    ]
  },
  "ConnectionProtocol": "AutoDetect",
}
```

```

    "ConnectionProtocol@Redfish.AllowableValues": [
      "AutoDetect"
    ],
    "FromAddress": "",
    "Password": null,
    "Port": 25,
    "ServerAddress": "0.0.0.0",
    "ServiceEnabled": true,
    "Username": ""
  },
  "SSEFilterPropertiesSupported": {
    "EventFormatType": true,
    "MessageId": true,
    "MetricReportDefinition": true,
    "OriginResource": true,
    "RegistryPrefix": true,
    "ResourceType": true,
    "SubordinateResources": true
  },
  "ServerSentEventUri": "/redfish/v1/EventService/ServerSentEvent",
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "SubordinateResourcesSupported": true,
  "Subscriptions": {
    "@odata.id": "/redfish/v1/EventService/Subscriptions"
  }
}

```

## PATCH– Update event service properties

Use the PATCH method to update the event service resource properties.

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/EventService](https://<BMC_IPADDR>/redfish/v1/EventService)

### Request body

Field	Type	Description
DeliveryRetryAttempts	Integer	Range: 1~10
DeliveryRetryIntervalSeconds	Integer	Range: 5~300
SMTP	Object	Expanded.
Authentication	String	The authentication method for the SMTP server.
FromAddress	String	The 'from' email address of the outgoing email.
Password	String	The password for authentication with the SMTP server. The value is `null` in responses.
Port	Number	The destination SMTP port.

Field	Type	Description
ServerAddress	String	The address of the SMTP server.
Username	String	The username for authentication with the SMTP server.

### Response

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Submit a test event

Use the POST method to send a test event to subscribers.

### Request URL

POST `https://<BMC_IPADDR>/redfish/v1/EventService/Actions/EventService.SubmitTestEvent`

### Request body

Field	Type	Description
EventId	String	The ID of event to be added.
EventTimestamp	String	The time stamp of event to be added.
Message	String	The event message text of event to be added.
MessageArgs	Array	The array of message arguments of event to be added.
MessageId	String	The message ID of event to be added.
OriginOfCondition	String	The URL of a valid resource caused the event to be added.
EventGroupId	Integer	The group id of event to be added.

### Response

None

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

---

## Resource Event Subscription

This resource is used to provide event subscriptions for a Redfish implementation.

Number of Resources	<p><math>N = N1 + N2 + N3 + N4 + N5</math></p> <p>N1 is 0 to 20 for SSE (max 10) and Redfish Event, the total max count is 20.</p> <p>N2 is 0 to 3 for SNMPv1, the total max count is 3.</p> <p>N3 is 0 to 3 for SNMPv2c, the total max count is 3.</p> <p>N4 is 0 to 9 for SNMPv3, the total max count is 9.</p> <p>N5 is 0 to 12 for SMTP, the total max count is 12.</p>
Resource Path	<p>/redfish/v1/EventService/Subscriptions/{random_ID} for SSE and Redfish Event.</p> <p>/redfish/v1/EventService/Subscriptions/REST-SNMPv1-{N} for SNMPv1.</p> <p>/redfish/v1/EventService/Subscriptions/REST-SNMPv2c-{N} for SNMPv2c.</p> <p>/redfish/v1/EventService/Subscriptions/REST-SNMPv3-{N}-{M} for SNMPv3.</p> <p>/redfish/v1/EventService/Subscriptions/REST-SMTP-{N} for SMTP.</p>
Schema file	<p>EventDestination</p> <p>EventDestinationCollection</p>

## GET – Collection of event subscriptions

Use the GET method to retrieve the properties of event subscription collection resource for a server.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/EventService/Subscriptions](https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions)

### Request body

None

### Response body

Field	Type	Description
Description	String	This resource represents a Resource Collection of EventDestination instances for a Redfish implementation.
Members	Array	Items: A reference link of the elements of event subscriptions.
Name	String	Subscriptions

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventDestinationCollection.EventDestinationCollection",
  "@odata.etag": "\"8C6E06D9\"",
  "@odata.id": "/redfish/v1/EventService/Subscriptions",
  "@odata.type": "#EventDestinationCollection.EventDestinationCollection",
  "Description": "This resource represents a Resource Collection of
    EventDestination instances for a Redfish implementation.",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "Subscriptions"
}
```

## GET – Event subscriptions

Use the GET method to retrieve properties in event subscription entries for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions/{random_ID}`

### Request body

None

### Response body

Field	Type	Description
Id	String	Uniquely identifies the resource within the collection of the subscriptions.
Name	String	Destination
Description	String	This resource represents the target of an event subscription, including the types of events subscribed and context to provide to the target in the Event payload.
Destination	String	This property shall contain a URI to the destination where the events will be sent.
Protocol	String	Redfish
Context	String	A client-supplied string that is stored with the event destination subscription.
EventFormatType	String	Valid values: "Event", "MetricReport"  (MetricReport type event is not supported yet)
HttpHeaders	Array	This is for setting HTTP headers, such as authorization information. This object will be null on a GET.
MessageIds	Array	A list of MessageIds that the service will only send. If this property is absent or the array is empty, then Events with any MessageId will be sent to the subscriber.
MessageIds[N]	String	Message Id that the service will send.
OriginResources	Array	A list of resources for which the service will only send related events. If this property is absent or the array is empty, then Events originating from any resource will be sent to the subscriber.

Field	Type	Description
OriginResources[N]	Object	Expanded.
@odata.id	Link	Link to subscribed resources.
MetricReportDefinitions	Array	A list of metric report definitions. If this property is an empty array or is absent, no filtering based upon MetricReportDefinition.
MetricReportDefinitions[N]	Object	Expanded.
@odata.id	Link	Link to subscribed resources.
SubscriptionType	String	Valid values: "RedfishEvent", "SSE"
RegistryPrefixes	Array	Item: string Item count: maps to members under the resource /redfish/v1/Registries
RegistryPrefixes[N]	String	Maps to members under the resource /redfish/v1/Registries
ResourceTypes	Array	A list of @odata.type values (Schema names) that can be specified in a ResourceType on a subscription.
ResourceTypes[N]	String	Array element of ResourceTypes <b>Note:</b> Alert event cannot be filtered by ResourceType.
SubordinateResources	Boolean	Whether the subscription is for events in the OriginResources array and its subordinate resources.
DeliveryRetryPolicy	String	"TerminateAfterRetries" or "SuspendRetries" or "RetryForever" or "RetryForeverWithBackoff"
DeliveryRetryPolicy@Redfish.AllowableValues	Array	Items: string Item count: 4
DeliveryRetryPolicy@Redfish.AllowableValues[N]	String	"TerminateAfterRetries", "SuspendRetries", "RetryForever", "RetryForeverWithBackoff"
IncludeOriginOfCondition	Boolean	Whether the events subscribed to will also include the entire resource referenced the OriginOfCondition property.
Status	Object	Expanded.
State	String	"Enabled" or "Disabled"
Actions	Object	Expanded.
#EventDestination.ResumeSubscription	Object	Only "RedfishEvent" subscription supports this action. Refer to Actions.
title	String	ResumeSubscription
target	Link	/redfish/v1/EventService/Subscriptions/{random ID}/Actions/EventDestination.ResumeSubscription

### Status code

HTTP Status Code	Error Message ID
500	InternalError



## GET – Event subscriptions for SMTP-{N}

Use the GET method to retrieve properties in event subscription entries for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions/REST-SMTP-{N}`

### Request body

None

### Response body

Field	Type	Description
Id	String	REST-SMTP-{N}, N is from 1 - 12
Name	String	REST-SMTP-{N}, N is from 1 - 12
Context	String	Empty string.
Status	Object	Expanded.
State	String	The state of this subscription. Possible values are “Enabled” and “Disabled”.
EventFormatType	Boolean	Event
Destination	String	This property shall contain a URI to the destination where the events will be sent.
SubscriptionType	String	RedfishEvent
Description	Array	This resource represents an event destination for a Redfish implementation.
Protocol	String	SMTP

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Event subscriptions for SNMPv1-{N}

Use the GET method to retrieve properties in event subscription entries for a server.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions/REST-SNMPv1-{N}`

### Request body

None

### Response body

Field	Type	Description
Id	String	REST-SNMPv1-{N}, N is from 1 - 3
Name	String	Destination
Description	Array	This resource represents an event destination for a Redfish implementation.

Field	Type	Description
Destination	String	This property shall contain a URI to the destination where the events will be sent.
Protocol	String	SNMPv1
Context	String	Empty string.
EventFormatType	Boolean	Event
Status	Object	Expanded.
State	String	The state of the Event subscription, "Enabled" or "Disabled".
SubscriptionType	String	"SNMPTrap"
SNMP	Object	Expanded.
TrapCommunity	String	The SNMP trap community string.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Event subscriptions for SNMPv2c-**{N}**

Use the GET method to retrieve properties in event subscription entries for a server.

#### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/EventService/Subscriptions/REST-SNMPv2c-\*\*{N}\*\*](https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions/REST-SNMPv2c-<b>{N}</b>)

#### Request body

None

#### Response body

Field	Type	Description
Id	String	REST-SNMPv1- <b>{N}</b> , N is from 1 - 3
Name	String	Destination
Description	Array	This resource represents an event destination for a Redfish implementation.
Destination	String	This property shall contain a URI to the destination where the events will be sent.
Protocol	String	SNMPv2c
Context	String	Empty string.
EventFormatType	Boolean	Event
Status	Object	Expanded.
State	String	The state of the Event subscription, "Enabled" or "Disabled".
SubscriptionType	String	SNMPTrap

Field	Type	Description
SNMP	Object	Expanded.
TrapCommunity	String	The SNMP trap community string.

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Event subscriptions for SNMPv3- $\{N\}$ - $\{M\}$

Use the GET method to retrieve properties in event subscription entries for a server.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/EventService/Subscriptions/REST-SNMPv3- $\{N\}$ - $\{M\}$

#### Request body

None

#### Response body

Field	Type	Description
Id	String	REST-SMTPv3- $\{N\}$ - $\{M\}$ , where N is the snmpv3 user index ranging from 1-3, M is the subscription index ranging from 1-3.
Name	String	User name of SNMPv3.
Description	Array	This resource represents an event destination for a Redfish implementation.
Destination	String	This property shall contain a URI to the destination where the events will be sent.
Protocol	String	SNMPv3
Context	String	Empty string.
EventFormatType	Boolean	Event
Status	Object	Expanded.
State	String	The state of this subscription. Possible values are “Enabled” and “Disabled”.
SubscriptionType	String	SNMPTrap
SNMP	Object	Expanded.
TrapCommunity	String	null

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Create a subscription

Create a subscription for Redfish service to send event to subscriber.

## Request URL

POST https://<BMC\_IPADDR>/redfish/v1/EventService/Subscriptions

## Request body

Field	Type	Description
Destination	String	Required. This property shall contain a URI to the destination where the events will be sent.  HTTP/HTTPS URI if Protocol is Redfish;  RFC1157-defined URI if Protocol is SNMPv1;  RFC3411 and RFC3418 defined URI if Protocol is SNMPv3;  RFC5321-defined SMTP URI if Protocol is SMTP.
Protocol	String	Required. The support protocols are "Redfish", "SMTP", "SNMPv1" and "SNMPv3".
SubscriptionType	String	Optional. If not provided, the default value is "RedfishEvent".  Valid values: "RedfishEvent", "SSE"
DeliveryRetryPolicy	String	Optional. If not provided, the default value is "TerminateAfterRetries".  Valid values: "TerminateAfterRetries" or "SuspendRetries" or "RetryForever" or "RetryForeverWithBackoff"
EventFormatType	String	Optional. If not provided, the default value is "Event".  Valid values: "Event", "MetricReport"  (MetricReport type event is not supported yet)
Context	String	Optional. If not provided, the default value is empty.  A client-supplied string that is stored with the event destination subscription.
HttpHeaders	Array	Optional. If not provided, the default value is empty.  This is for setting HTTP headers, such as authorization information. This object will be null on a GET.
RegistryPrefixes	Array	Optional. If not provided, the default value is empty.  Item: string  Item count: maps to members under the resource /redfish/v1/Registries
MessageIds	Array	Optional. If not provided, the default value is empty.  A list of MessageIds that the service will only send. If this property is absent or the array is empty, then Events with any MessageId will be sent to the subscriber.
MetricReportDefinitions	Array	Optional. If not provided, the default value is empty.  A list of metric report definitions. If this property is an empty array or is absent, no filtering based upon MetricReportDefinition.

Field	Type	Description
ResourceTypes	Array	Optional. If not provided, the default value is empty.  A list of @odata.type values (Schema names) that can be specified in a ResourceType on a subscription.
OriginResources	Array	Optional. If not provided, the default value is empty.  A list of resources for which the service will only send related events. If this property is absent or the array is empty, then Events originating from any resource will be sent to the subscriber.
SubordinateResources	Boolean	Optional. If not provided, the default value is empty.  Whether the subscription is for events in the OriginResources array and its subordinate resources.
IncludeOriginOfCondition	Boolean	Optional. If not provided, the default value is false.  Whether the events subscribed to will also include the entire resource referenced the OriginOfCondition property.

### Response body

It responds the created subscription resource, refer the response body of Event subscription with GET method.

### Status code

HTTP Status Code	Error Message ID
201	Created
400	BadRequest, PropertyValueNotInList
500	InternalError

## DELETE – Delete a subscription

Use the DELETE method to delete subscription resource for Redfish service. Remove a subscription created for event to send to client listener.

### Request URL

DELETE [https://<BMC\\_IPADDR>/redfish/v1/EventService/Subscriptions/{random\\_ID}](https://<BMC_IPADDR>/redfish/v1/EventService/Subscriptions/{random_ID})

### Request body

None

### Response

None

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

## GET – SSE subscription

Create a subscription of Server-Sent Events for Redfish service to send event to client and keep the connection open.

### Request URL

GET https://<BMC\_IPADDR>/{{ServerSentEventUri}}

ServerSentEventUri: as specified in ServerSentEventUri property of EventService.

### Request body

None

### Response body

None

### Status code

None

---

## Event

This Resource is used to represent event information for a Redfish implementation.

Number of Resources	N/A
Resource Path	N/A
Schema file	Event

## Event properties

Properties in Event service resource for Redfish service.

### Request URL

N/A

### Request body

None

### Response body

Field	Type	Description
Id	String	Unique event Id.
Name	String	Redfish Event
Context	String	A context can be supplied at subscription time. This property is the context value supplied by the subscriber.
Events	Array	Item: event record Item count: 1
Events[N]	Object	Expanded.
EventTypes	String	This indicates the type of event sent, according to the definitions in the EventService.

Field	Type	Description
EventGroupld	Integer	0
Eventld	String	This is a unique instance identifier of an event. Client provides the Eventld when it is sent with SubmitTestEvent action.
EventTimestamp	String	This is time the event occurred.
MessageSeverity	String	Severity of the event. Valid values <ul style="list-style-type: none"> <li>• “OK”</li> <li>• “Warning”</li> <li>• “Critical”</li> </ul>
Memberld	String	This is the identifier for the member within the collection.
Message	String	Message text
MessageId	String	This is the key for this message which can be used to look up the message in a message registry.
MessageArgs	Array	Array of message arguments.
MessageArgs[N]	String	Message argument.
OriginOfCondition	String	/redfish/v1/Systems/1/LogServices/{AuditLog , PlatformLog}

**Status code**

N/A





---

## Chapter 20. Telemetry Management

---

### Resource TelemetryService

This Resource is used to represent telemetry service for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/TelemetryService
Schema file	TelemetryService

### GET – Telemetry service properties

Use the GET method to retrieve properties in Telemetry service resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/TelemetryService

#### Request body

None

#### Response body

Field	Type	Description
Description	String	This resource shall be used to represent a Metrics Service for a Redfish implementation.
Id	String	TelemetryService
Name	String	Telemetry Service
ServiceEnabled	Boolean	If FoD is 2 or higher, the value is true, otherwise is false.
SupportedCollectionFunctions	Array	"Average", "Minimum", or "Maximum"
Status	Object	The status of the telemetry service.
State	String	The state of the telemetry service.
Health	String	The health of the telemetry service.
MetricDefinitions	Link	The link to the collection of metric definitions.
MetricReportDefinitions	Link	The link to the collection of metric report definitions.
MetricReports	Link	The link to the collection of metric reports.
Actions	Object	Expanded.
#TelemetryService.SubmitTestMetricReport	Object	This action generates a metric report.
target	Link	Link to invoke action.
title	String	SubmitTestMetricReport
@Redfish.ActionInfo	Link	Link to the info of this action.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#TelemetryService.TelemetryService",
  "@odata.etag": "\"05F8DACB\"",
  "@odata.id": "/redfish/v1/TelemetryService",
  "@odata.type": "#TelemetryService.v1_3_1.TelemetryService",
  "Actions": {
    "#TelemetryService.SubmitTestMetricReport": {
      "@Redfish.ActionInfo": "/redfish/v1/TelemetryService/SubmitTestMetricReportActionInfo",
      "target": "/redfish/v1/TelemetryService/Actions/TelemetryService.SubmitTestMetricReport",
      "title": "SubmitTestMetricReport"
    }
  },
  "Description": "This resource shall be used to represent a Metrics Service for a Redfish implementation.",
  "Id": "TelemetryService",
  "MetricDefinitions": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions"
  },
  "MetricReportDefinitions": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions"
  },
  "MetricReports": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports"
  },
  "Name": "Telemetry Service",
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "SupportedCollectionFunctions": [
    "Maximum",
    "Minimum",
    "Average"
  ]
}
```

## GET – Action info of SubmitTestMetricReport

Use the GET method to retrieve properties in action info resource of SubmitTestMetricReport.

### Request URL

GET https://<BMC\_IPADDR>redfish/v1/TelemetryService/SubmitTestMetricReportActionInfo

### Request body

None

## Response body

Field	Type	Description
Id	String	SubmitTestMetricReport
Name	String	SubmitTestMetricReport
Description	String	This action is used to generate a metric report.
Parameters	Array	Items: object Item count: 2
Parameters[1]	Object	Expanded.
Name	String	"MetricReportName"
DataType	String	"String"
Required	String	true
Parameters[2]	Object	Expanded.
Name	String	GeneratedMetricReportValues
DataType	String	ObjectArray
ObjectDataType	String	Expanded.
Required	Boolean	True

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#ActionInfo.ActionInfo",
  "@odata.etag": "\"797005BA\"",
  "@odata.id": "/redfish/v1/TelemetryService/SubmitTestMetricReportActionInfo",
  "@odata.type": "#ActionInfo.v1_1_2.ActionInfo",
  "Description": "This action is used to generate a metric report.",
  "Id": "SubmitTestMetricReport",
  "Name": "SubmitTestMetricReport",
  "Parameters": [
    {
      "DataType": "String",
      "Name": "MetricReportName",
      "Required": true
    },
    {
      "DataType": "ObjectArray",
      "Name": "GeneratedMetricReportValues",
      "ObjectDataType": "#TelemetryService.v1_1_0.MetricValue",
      "Required": true
    }
  ]
}
```

## POST – Submit a test Metric Report

Use the POST method to send a test metric report. User can open a SSE stream with filter “EventFormatType eq ‘MetricReport’” for getting the test metric report. Example: [https://<bmc\\_ip>/redfish/v1/EventService/ServerSentEvent?\\$filter=EventFormatType eq ‘MetricReport’](https://<bmc_ip>/redfish/v1/EventService/ServerSentEvent?$filter=EventFormatType eq 'MetricReport')

Example:

[https://sseuri?\\$filter=EventFormatType eq ‘MetricReport’](https://sseuri?$filter=EventFormatType eq 'MetricReport')

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/TelemetryService/Actions/TelemetryService.SubmitTestMetricReport](https://<BMC_IPADDR>/redfish/v1/TelemetryService/Actions/TelemetryService.SubmitTestMetricReport)

### Request body

Field	Type	Description
MetricReportName	String	The name of the metric report in generated metric report.
GeneratedMetricReportValues	Array	Items: object Item count: 0 ~ N
GeneratedMetricReportValues[N]	Object	The content of the MetricReportValues in the generated metric report.
MetricDefinition	Link	The link to the metric.
MetricId	String	The metric definitions identifier for this metric.
MetricProperty	String	The URI for the property from which this metric is derived.
MetricValue	String	The metric value, as a string.
Timestamp	String	The time when the metric value is obtained.

### Response

None

### Status code

HTTP Status Code	Error Message ID
204	NoContent
500	InternalError

## Resource MetricReportDefinition

This Resource is used to represent MetricReportDefinition for a Redfish implementation.

Number of Resources	12 or 14. (Depends on machine type)
Resource Path	/redfish/v1/TelemetryService/MetricReportDefinitions/{Id}
Schema file	MetricReportDefinition MetricReportDefinitionCollection

## GET – Collection of MetricReportDefinition

Use the GET method to retrieve the properties MetricReportDefinition collection resource for Redfish service.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/TelemetryService/MetricReportDefinitions`

### Request body

None

### Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of MetricReportDefinition
Name	String	MetricReportDefinitions
Description	String	A Collection of MetricReportDefinition resource instances.

**Notes:** Collection of “MetricReportDefinition” may contain members below:

- CPUTemp
- CPUTempEvent
- InletAirTemp
- InletAirTempEvent
- PowerMetrics
- PowerMetricsEvent
- PowerSupplyStats
- PowerSupplyStatsEvent
- CPUPowerMetrics (Not supported on Lenovo AMD systems)
- CPUPowerMetricsEvent (Not supported on Lenovo AMD systems)
- CPUUtilizationStats (Not supported on Lenovo AMD systems)
- CPUUtilizationStatsEvent (Not supported on Lenovo AMD systems)
- MemoryUtilizationStats (Not supported on Lenovo AMD systems)
- MemoryUtilizationStatsEvent (Not supported on Lenovo AMD systems)

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricReportDefinitionCollection.MetricReportDefinitionCollection",
  "@odata.etag": "\"A14F176C\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions",
  "@odata.type": "#MetricReportDefinitionCollection.MetricReportDefinitionCollection",
  "Description": "A Collection of MetricReportDefinition resource instances.",
  "Members": [
```

```

    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPUTemp"
    },
    ...
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPUPowerMetricsEvent"
    }
  ],
  "Members@odata.count": 14,
  "Name": "MetricReportDefinitions"
}

```

## GET – MetricReportDefinition properties

Use the GET method to retrieve each MetricReportDefinition info.

### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/TelemetryService/MetricReportDefinitions/{Id}

### Response body

Field	Type	Description
Id	String	The identifier of this resource.
Name	String	The name of this resource.
Description	String	A set of metrics that are collected into a metric report.
ReportTimespan	String	Specifies the timespan duration of the metric report.
MetricReportDefinitionType	String	Specifies when the metric report is generated.
ReportActions	Array	The set of actions to perform when a metric report is generated.
ReportUpdates	String	“AppendWrapsWhenFull” if this property exists.
AppendLimit	Integer	25920 if this property exists.
Metrics	Array	The list of metrics to include in the metric report.
Metrics[1]	Object	Specifies a metric to include in the metric report.
MetricProperties	String	The set of URIs for the properties on which this metric is collected.
CollectionTimeScope	String	The scope of time scope over which the function is applied.
CollectionDuration	String	The duration over which the function is computed.
Wildcards	Array	The set of wildcards and their substitution values for the entries in the MetricProperties property.
Status	Object	The status for this resource.
State	String	The state for this resource.
MetricReport	String	The location where the resultant metric report is placed.
Schedule	Object	The schedule for generating the metric report.
RecurrenceInterval	String	The amount of time until the next occurrence occurs.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following examples JSON response describe the PowerMetrics and PowerMetricsEvent.

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricReportDefinition.MetricReportDefinition",
  "@odata.etag": "\"C8695E63\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPUPowerMetrics",
  "@odata.type": "#MetricReportDefinition.v1_4_1.MetricReportDefinition",
  "AppendLimit": 40,
  "Description": "A set of metrics that are collected into a metric report.",
  "Id": "CPUPowerMetrics",
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/CPUPowerMetrics"
  },
  "MetricReportDefinitionType": "OnRequest",
  "Metrics": [
    {
      "CollectionDuration": "PT30S",
      "CollectionTimeScope": "Interval",
      "MetricProperties": [
        "/redfish/v1/Systems/1/Processors/{PWild}/ProcessorMetrics#/ConsumedPowerWatt"
      ]
    }
  ],
  "Name": "CPUPowerMetrics",
  "ReportActions": [
    "LogToMetricReportsCollection"
  ],
  "ReportTimespan": "PT10M",
  "ReportUpdates": "AppendWrapsWhenFull",
  "Status": {
    "State": "Enabled"
  },
  "Wildcards": [
    {
      "Name": "PWild",
      "Values": [
        "1",
        "2"
      ]
    }
  ]
}
```

---

## Resource MetricReport

This Resource is used to represent MetricReport for a Redfish implementation.

Number of Resources	6 or 7. (Depends on machine type)
Resource Path	/redfish/v1/TelemetryService/MetricReports/{Id}
Schema file	MetricReportCollection MetricReport

## GET – Collection of MetricReport

Use the GET method to retrieve the properties MetricReport collection resource for Redfish service.

### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/TelemetryService/MetricReports`

### Request body

None

### Response body

Field	Type	Description
Name	String	MetricReports
Members	Array	Items: A reference link of the elements of MetricReport
Description	String	A Collection of MetricReport resource instances.

### Note:

Collection of “MetricReport” may contain members below:

- CPUtemp
- InletAirTemp
- PowerMetrics
- PowerSupplyStats
- CPUPowerMetrics (Not supported on Lenovo AMD systems)
- MemoryUtilizationStats (Not supported on Lenovo AMD systems)
- CPUUtilizationStats (Not supported on Lenovo AMD systems)

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricReportCollection.MetricReportCollection",
  "@odata.etag": "\"FB139188\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReports",
  "@odata.type": "#MetricReportCollection.MetricReportCollection",
  "Description": "A Collection of MetricReport resource instances.",
  "Members": [
```



```

    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/CPUTemp"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/InletAirTemp"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/PowerMetrics"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/PowerSupplyStats"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/CPUUtilizationStats"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/MemoryUtilizationStats"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/CPUPowerMetrics"
    }
  ],
  "Members@odata.count": 7,
  "Name": "MetricReports"
}

```

## GET – MetricReport properties

Use the GET method to retrieve each MetricReport info.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/TelemetryService/MetricReports/{Id}](https://<BMC_IPADDR>/redfish/v1/TelemetryService/MetricReports/{Id})

### Response body

Field	Type	Description
Id	String	The identifier of this resource.
Name	String	The name of this resource.
Description	String	The metric definitions used to create a metric report.
Timestamp	String	The time associated with the metric report in its entirety.
MetricReportDefinition	Link	The definitions in the metric report.
MetricValues	Array	An array of metric values for the metered items of this Metric.
MetricValues[N]	Object	A metric Value.
MetricId	String	The metric definitions identifier for this metric.
MetricProperty	String	The URI for the property from which this metric is derived.
MetricValue	String	The metric value, as a string.
Timestamp	String	The time when the metric is obtained.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricReport.MetricReport",
  "@odata.etag": "\"08BC0EA1\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReports/CPUPowerMetrics",
  "@odata.type": "#MetricReport.v1_4_2.MetricReport",
  "Description": "The metric definitions used to create a metric report.",
  "Id": "CPUPowerMetrics",
  "MetricReportDefinition": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPUPowerMetrics"
  },
  "MetricValues": [
    {
      "MetricProperty": "/redfish/v1/Systems/1/Processors/1/ProcessorMetrics#/ConsumedPowerWatt",
      "MetricValue": "71",
      "Timestamp": "2024-12-04T05:22:00+00:00"
    },
    ...
    {
      "MetricProperty": "/redfish/v1/Systems/1/Processors/2/ProcessorMetrics#/ConsumedPowerWatt",
      "MetricValue": "60",
      "Timestamp": "2024-12-04T05:31:30+00:00"
    }
  ],
  "MetricValues@odata.count": 40,
  "Name": "CPUPowerMetrics",
  "Timestamp": "2024-12-04T05:32:00+00:00"
}
```

---

## Resource MetricDefinition

This Resource is used to represent MetricDefinition for a Redfish implementation.

Number of Resources	2 or 4. (Depends on machine type)
Resource Path	/redfish/v1/TelemetryService/MetricDefinitions/{Id}
Schema file	MetricDefinition MetricDefinitionCollection

## GET – Collection of MetricDefinition

Use the GET method to retrieve the properties MetricDefinition collection resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/TelemetryService/MetricDefinitions](https://<BMC_IPADDR>/redfish/v1/TelemetryService/MetricDefinitions)

### Request body

None

## Response body

Field	Type	Description
Members	Array	Items: A reference link of the elements of MetricDefinition
Name	String	MetricDefinitions
Description	String	A Collection of MetricDefinition resource instances.

**Notes:** Collection of “MetricDefinition” may contain members below:

- AveragePowerSupplyInput
- AveragePowerSupplyOutput
- AverageCPUUtilization (not support on Lenovo AMD systems)
- AverageMemoryUtilization (not support on Lenovo AMD systems)

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricDefinitionCollection.MetricDefinitionCollection",
  "@odata.etag": "\"EE5B291D\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions",
  "@odata.type": "#MetricDefinitionCollection.MetricDefinitionCollection",
  "Description": "A Collection of MetricDefinition resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AveragePowerSupplyInput"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AveragePowerSupplyOutput"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageCPUUtilization"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageMemoryUtilization"
    }
  ],
  "Members@odata.count": 4,
  "Name": "MetricDefinitions"
}
```

## GET – MetricDefinition inventory properties

Use the GET method to retrieve each MetricDefinition info.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/TelemetryService/MetricDefinitions/{Id}](https://<BMC_IPADDR>/redfish/v1/TelemetryService/MetricDefinitions/{Id})

## Response body

Field	Type	Description
Id	String	The identifier of this resource.
Name	String	The name of this resource.
Description	String	The metadata information about a metric.
MetricType	String	The type of metric.
Implementation	String	The implementation of the metric.
PhysicalContext	String	The physical context of the metric.
MetricDataType	String	The data type of the metric.
Units	String	The units of measure for this metric.
CalculationAlgorithm	String	The calculation that is performed on a source metric to obtain the metric being defined.
CalculationTimeInterval	String	The time interval over which the metric calculation is performed.
IsLinear	Boolean	An indication of whether the metric values are linear versus non-linear.
Calculable	String	An indication of whether the metric can be used in a calculation.
Wildcards	Array	The wildcards and their substitution values for the entries in the MetricProperties array property.
MetricProperties	Array	The list of URIs with wildcards and property identifiers that this metric definition defines.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.etag": "\"0DD811F1\"",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageCPUUtilization",
  "@odata.type": "#MetricDefinition.v1_2_1.MetricDefinition",
  "Calculable": "NonSummable",
  "CalculationAlgorithm": "Average",
  "CalculationTimeInterval": "PT1S",
  "Description": "The metadata information about a metric.",
  "Id": "AverageCPUUtilization",
  "Implementation": "Calculated",
  "IsLinear": true,
  "MetricDataType": "Integer",
  "MetricProperties": [
    "/redfish/v1/Systems/1/ProcessorSummary/ProcessorMetrics#/BandwidthPercent"
  ],
  "MetricType": "Numeric",
  "Name": "AverageCPUUtilization",
  "PhysicalContext": "CPUSubsystem",
  "Units": "%"
}
```

}



---

## Chapter 21. Job Management

---

### Resource JobService

The resource represents a collection of jobs for the Redfish service. All job resources accessible through the interface link from the JobService resource.

Number of Resources	1
Resource Path	/redfish/v1/JobService
Schema file	JobService

### GET - Job management properties

Use the GET method to retrieve properties in JobService resource for Redfish service

#### Request URL

GET `https://<BMC_IPADDR>/redfish/v1/JobService`

#### Request body

None

#### Response body

Field	Type	Description
Description	String	The resource is used to represent the Job Service that allows scheduling of operations.
DateTime	String	The current DateTime setting of the Service with offset from UTC. Format: YYYY-MM-DDThh:mm:ss[+-]HH:MM
Id	String	Fixed string "JobService"
Jobs	Link	References to the Job collection.
Name	String	Fixed string "Job Service"
Service-Capabilities	Object	This type shall contain properties which describe the capabilities or supported features of this implementation of JobService.
Max-Jobs	Integer	Maximum number of Jobs supported. Value is 50.
Max-Steps	Integer Null	Maximum number of Job Steps supported. Value is 50.
Scheduling	Boolean	The value of this property shall indicate the support of scheduling of Jobs using the Schedule object within the Job resource.
Service-Enabled	Boolean	The value of this property shall be a boolean indicating whether this service is enabled.
Status	Object	This property shall specify a valid odata or Redfish property.
Health	String	This represents the health state of this resource in the absence of its dependent resources.

Field	Type	Description
Health-Rollup	String	This represents the overall health state from the view of this resource.
State	String	This indicates the known state of the resource, such as if it is enabled.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#JobService.JobService",
  "@odata.etag": "\"535A8108\"",
  "@odata.id": "/redfish/v1/JobService",
  "@odata.type": "#JobService.v1_0_4.JobService",
  "DateTime": "2024-12-04T05:25:52+00:00",
  "Description": "The resource is used to represent the Job Service that allows scheduling of operations.",
  "Id": "JobService",
  "Jobs": {
    "@odata.id": "/redfish/v1/JobService/Jobs"
  },
  "Name": "Job Service",
  "ServiceCapabilities": {
    "MaxJobs": 16,
    "MaxSteps": 30,
    "Scheduling": true
  },
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

## Resource Job

The resource represents a job implementation for the Redfish service.

Number of Resources	Number of jobs established
Resource Path	<ul style="list-style-type: none"> <li>/redfish/v1/JobService/Jobs/{PowerOff, PowerOn, Restart}</li> <li>/redfish/v1/JobService/Jobs/FW_Update_{N}</li> </ul>
Schema file	Job

## GET – Power schedule job properties

Use the GET method to retrieve properties in Job resource for Redfish service

### Request URL

GET https://<BMC\_IPADDR>/v1/JobService/Jobs/{PowerOff, PowerOn, Restart}



## Request body

None

## Response body

Field	Type	Description
Description	String	The resource is used to represent the settings of scheduled {Power Off Power On Restart} actions for a Redfish implementation.
HidePayload	Boolean	An indication of whether the contents of the payload should be hidden from view after the job has been created. If "true", responses do not return the payload. If "false", responses return the payload. If this property is not present when the job is created, the default is `false`.
Id	String	PowerOff, PowerOn, Restart
JobState	String	This property shall indicate the state of the job.
JobStatus	String	This property shall indicate the health status of the job.
Name	String	PowerOff, PowerOn, Restart
Schedule	Object	The schedule settings for this job.
EnabledDaysOfWeek	Array	Expanded.
EnabledDaysOfWeek[N]	String	Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled.
InitialStartTime	Date-Time	The date and time when the initial occurrence is scheduled to occur.
EnabledDaysOf-Week@Redfish.AllowableValues	Array	Items: string Item count: 8
EnabledDaysOf-Week@Redfish.AllowableValues[N]	String	"Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday", "Every"
RecurrenceInterval	String	The amount of time until the next occurrence occurs.
Name	String	The name of the schedule. Value: "Lenovo:{Power Off Power On Restart}"
StepOrder	Array	The serialized execution order of the job Steps.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Job.Job",
  "@odata.etag": "\"17C72A2E\"",
  "@odata.id": "/redfish/v1/JobService/Jobs/PowerOn",
  "@odata.type": "#Job.v1_1_1.Job",
  "Description": "The resource is used to represent the settings
    of scheduled Restart actions for a Redfish implementation."
}
```

```

"HidePayload": true,
"Id": "PowerOn",
"JobState": "Suspended",
"JobStatus": "OK",
"Name": "Power On",
"Schedule": {
  "EnabledDaysOfWeek": [],
  "EnabledDaysOfWeek@Redfish.AllowableValues": [
    "Monday",
    "Tuesday",
    "Wednesday",
    "Thursday",
    "Friday",
    "Saturday",
    "Sunday",
    "Every"
  ],
  "InitialStartTime": null,
  "Name": "Lenovo:PowerOn",
  "RecurrenceInterval": null
},
"StepOrder": []
}

```

## PATCH – Update power schedule job properties

Use the PATCH method to update properties in Job resource for Redfish service

### Request URL

PATCH [https://<BMC\\_IPADDR>/redfish/v1/JobService/Jobs/{PowerOff, PowerOn, Restart}](https://<BMC_IPADDR>/redfish/v1/JobService/Jobs/{PowerOff, PowerOn, Restart})

### Request body

Properties to be updated are shown as bellow, all of these properties can be changed individually.

Field	Type	Description
Schedule	Object	The schedule settings for this job.
Enable-dDaysOf-Week	Array	Expanded.
Enable-dDaysOf-Week[N]	String	Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled.
InitialStart-Time	Date-time	The date and time when the initial occurrence is scheduled to occur.

### Response body

The response returns same content as GET operation with updated properties.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## GET – Firmware update job properties

Use the GET method to retrieve properties in Job resource for Redfish service

### Request URL

GET https://<BMC\_IPADDR>/v1/JobService/Jobs/FW\_Update\_{N}

### Request body

None

### Response body

Field	Type	Description
Id	String	FW_Update_{N}
Name	String	Same as Id.
Description	String	This resource is used to represent a job for a Redfish implementation.
JobStatus	String	This property shall indicate the health status of the job.
JobState	String	This property shall indicate the state of the job.
Messages	Array	Indicates current update messages.
StartTime	String	The start time of this job.
EndTime	String	The end time of this job.
PercentComplete	Integer	The completion percentage of this job.
Steps	Link	A link to JobCollection.
StepOrder	Array	Items: string Item count: number of step jobs.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

### Example

The following example JSON response is returned:

```
{
  "@odata.context": "/redfish/v1/$metadata#Job.Job",
  "@odata.etag": "\"776850C7\"",
  "@odata.id": "/redfish/v1/JobService/Jobs/FW_Update_1",
  "@odata.type": "#Job.v1_1_1.Job",
  "Description": "This resource is used to represent a job for a Redfish implementation.",
  "EndTime": "2024-12-03T20:35:55+00:00",
  "Id": "FW_Update_1",
  "JobState": "Completed",
  "JobStatus": "OK",
  "Messages": [
    {
      "@odata.type": "#Message.v1_1_1.Message",
      "Message": "The target device '/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup' will be updated with
```

```

        image 'lnvgy_fw_xcc-dur_ihx407y-0.80_anyos_comp.uxz'.",
    "MessageArgs": [
        "/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup",
        "lnvgy_fw_xcc-dur_ihx407y-0.80_anyos_comp.uxz"
    ],
    "MessageId": "Update.1.0.1.TargetDetermined",
    "MessageSeverity": "OK",
    "Resolution": "None."
},
{
    "@odata.type": "#Message.v1_1_1.Message",
    "Message": "Device '/redfish/v1/UpdateService/FirmwareInventory/
        BMC-Backup' successfully updated with image
        'lnvgy_fw_xcc-dur_ihx407y-0.80_anyos_comp.uxz'.",
    "MessageArgs": [
        "/redfish/v1/UpdateService/FirmwareInventory/BMC-Backup",
        "lnvgy_fw_xcc-dur_ihx407y-0.80_anyos_comp.uxz"
    ],
    "MessageId": "Update.1.0.1.UpdateSuccessful",
    "MessageSeverity": "OK",
    "Resolution": "None."
}
},
{
    "Name": "FW_Update_1",
    "PercentComplete": 100,
    "StartTime": "2024-12-03T20:35:39+00:00",
    "StepOrder": [
        "BMC-Backup"
    ],
    "Steps": {
        "@odata.id": "/redfish/v1/JobService/Jobs/FW_Update_1/Steps"
    }
}
}

```

---

## Chapter 22. Certificate Management

---

### Resource CertificateService

This resource is used to represent the certificate service for a Redfish implementation.

Number of Resources	1
Resource Path	/redfish/v1/CertificateService
Schema file	CertificateService

### GET – Certificate service properties

Use the GET method to retrieve properties in CertificateService resource for Redfish service.

#### Request URL

GET https://<BMC\_IPADDR>/redfish/v1/CertificateService

#### Request body

None

#### Response body

Field	Type	Description
Id	String	CertificateService
Name	String	Certificate Service
Description	String	This resource is used to represent a certificate service for a Redfish implementation.
CertificateLocations	Link	The information about the location of certificates.
Actions	Object	Expanded.
#CertificateService. GenerateCSR	Object	This action makes a certificate signing request.
KeyCurveId@Redfish.AllowableValues	Array	["TPM_ECC_NIST_P256", "TPM_ECC_NIST_P384"]
KeyPairAlgorithm@Redfish.AllowableValues	Array	["TPM_ALG_ECDH", "TPM_ALG_RSA"]
KeyBitLength@Redfish.AllowableValues	Number	[2048, 3072, 4096]

#### Status code

HTTP Status Code	Error Message ID
500	InternalError

#### Example

The following example JSON response is returned:

```

{
  "@odata.context": "/redfish/v1/$metadata#CertificateService.CertificateService",
  "@odata.etag": "\"C46ABFF4\"",
  "@odata.id": "/redfish/v1/CertificateService",
  "@odata.type": "#CertificateService.v1_0_4.CertificateService",
  "Actions": {
    "#CertificateService.GenerateCSR": {
      "KeyUsage@Redfish.AllowableValues": [
        "DigitalSignature",
        "NonRepudiation",
        "KeyEncipherment"
      ],
      "keyBitLength@Redfish.AllowableValues": [
        2048,
        3072,
        4096
      ],
      "keyCurveId@Redfish.AllowableValues": [
        "TPM_ECC_NIST_P256",
        "TPM_ECC_NIST_P384"
      ],
      "keyPairAlgorithm@Redfish.AllowableValues": [
        "TPM_ALG_ECDH",
        "TPM_ALG_RSA"
      ],
      "target": "/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR",
      "title": "GenerateCSR"
    },
    "#CertificateService.ReplaceCertificate": {
      "CertificateType@Redfish.AllowableValues": [
        "PEM"
      ],
      "target": "/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate",
      "title": "ReplaceCertificate"
    }
  },
  "CertificateLocations": {
    "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
  },
  "Description": "This resource is used to represent a certificate service for a Redfish implementation.",
  "Id": "CertificateService",
  "Name": "Certificate Service"
}

```

## POST – Generate CSR

Use the POST method to generate a certificate signing request.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR](https://<BMC_IPADDR>/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR)

### Request body

Field	Type	Description
title	String	Generate a CSR file.
target	Link	The link of this action.

Field	Type	Description
Certificate-Collection	Object	Required. The link to the certificate collection where the certificate is installed after the certificate authority (CA) signs the certificate.
@odata.id	Link	Required. Allowable value: “/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates”
Country	String	Required. The two-letter country code of the organization making the request.
City	String	Required. The city or locality of the organization making the request.
Common-Name	String	Required. The fully qualified domain name of the component to secure.
State	String	Required. The state, province, or region of the organization making the request.
Organization	String	Required. The name of the organization making the request.
Alternative-Names	Array	Optional. The additional host names of the component to secure.
Alternative-Names[N]	String	The additional host names of the component to secure.
Challenge-Password	String	Optional. The challenge password to apply to the certificate for revocation requests.
ContactPerson	String	Optional. The name of the user making the request.
Email	String	Optional. The email address of the contact within the organization making the request.
GivenName	String	Optional. The given name of the user making the request.
Initials	String	Optional. The initials of the user making the request.
OrganizationalUnit	String	Optional. The name of the unit or division of the organization making the request.
Surname	String	Optional. The surname of the user making the request.
KeyCurveId	String	Optional. The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value.
KeyPairAlgorithm	String	Optional. The type of key-pair for use with signing algorithms.
KeyBitLength	String	Optional. The key bit length.
UnstructuredName	String	Optional. The unstructured name of the subject.
CSRString	String	PEM format string.
Certificate-Collection	Link	Indicates what the CSR is generated for which certificate collection.

### Response body

Field	Type	Description
CSRString	String	The string for the certificate signing request.
Certificate-Collection	Link	The link to the certificate collection where the certificate is installed.

### Status code

HTTP Status Code	Error Message ID
400	BadRequest, ActionParamMissing , ActionParamTypeError , ActionParamFormatError
500	InternalError

## POST – Replace Certificate

Use the POST method to replace a certificate.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate](https://<BMC_IPADDR>/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate)

### Request body

Field	Type	Description
title	String	Replace an existing certificate.
target	Link	The link of this action.
CertificateUri	Object	Required. The link to the certificate that is being replaced.
@odata.id	Link	The value shall be a certificate resource link.
Certificate-String	String	Required. The string for the certificate. Line breaks should be replaced to “\n” in this parameter.

### Response body

### Status code

HTTP Status Code	Error Message ID
400	BadRequest, ActionParamMissing , ActionParamTypeError , ActionParamFormatError
500	InternalError

---

## Resource CertificateLocations

This resource is used to represent all certificates installed on a given service.

Number of Resources	1
Resource Path	/redfish/v1/CertificateService/CertificateLocations
Schema file	CertificateLocations

## GET – Certificate locations properties

Use the GET method to retrieve properties in CertificateLocations resource for Redfish service.

### Request URL

GET [https://<BMC\\_IPADDR>/redfish/v1/CertificateService/CertificateLocations](https://<BMC_IPADDR>/redfish/v1/CertificateService/CertificateLocations)



## Request body

None

## Response body

Field	Type	Description
Id	String	CertificateLocations
Name	String	Certificate Locations
Description	String	This resource is used to represent the collection of certificate locations for a Redfish implementation.
Links	Object	Expanded.
Certificates	Array	Items: link Item count: N
Certificates[N]	Link	The value of this property is a URI reference to a resource of the certificate.

## Status code

HTTP Status Code	Error Message ID
500	InternalError

## Example

The following example JSON response is returned:

```
{
  "@odata.id": "/redfish/v1/CertificateService/CertificateLocations",
  "@odata.type": "#CertificateLocations.v1_0_0.CertificateLocations",
  "Description": "Defines a resource that an administrator can use in order
    to locate all certificates installed on a given service",
  "Id": "CertificateLocations",
  "Links": {
    "Certificates": [
      {
        "@odata.id": "/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/1"
      }
    ],
    "Certificates@odata.count": 1
  },
  "Name": "Certificate Locations",
  "error": {
    "@Message.ExtendedInfo": [
      {
        "@odata.type": "#Message.v1_1_1.Message",
        "Message": "The request failed due to an internal service error.
          The service is still operational.",
        "MessageArgs": [],
        "MessageId": "Base.1.16.0.InternalError",
        "MessageSeverity": "Critical",
        "Resolution": "Resubmit the request. If the problem persists,
          consider resetting the service."
      }
    ],
    "code": "Base.1.16.0.InternalError",
    "message": "The request failed due to an internal service error."
  }
}
```

```

    }
    The service is still operational."
}

```

## Resource Certificate

This resource is used to represent all certificate that proves the identify of a component, account, or service.

Number of Resources	N (depends on how many certificates installed in the system)
Resource Path	/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{Id}  /redfish/v1/Managers/1/SecurityPolicy/TLS/Client/TrustedCertificates/{Id}  /redfish/v1/Systems/1/KeyManagement/KMIPCertificates/{Id}  /redfish/v1/AccountService/LDAP/Certificates/{Id}  The {Id} reference the Id property which is defined in the Certificate schema file.
Schema file	Certificate

## GET – Certificate properties

Use the GET method to retrieve properties in Certificate resource for Redfish service.

### Request URL

```

GET https://<BMC_IPADDR>/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}
GET https://<BMC_IPADDR>/redfish/v1/Managers/1/SecurityPolicy/TLS/Client/TrustedCertificates/{Id}
GET https://<BMC_IPADDR>/redfish/v1/Systems/1/KeyManagement/KMIPCertificates/{Id}
GET https://<BMC_IPADDR>/redfish/v1/AccountService/LDAP/Certificates/{Id}

```

### Request body

None

### Response body

Field	Type	Description
Actions	Object	Available for /redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}
#Certificate.Rekey	Object	This action generates a new key-pair for a certificate and produces a certificate signing request.
KeyCurveId@Redfish.AllowableValues	Array	TPM_ECC_NIST_P384
KeyPairAlgorithm@Redfish.AllowableValues	Array	“TPM_ALG_ECDH” or “TPM_ALG_RSA”
#Certificate.Renew	Object	This action generates a certificate signing request by using the existing information and key-pair of the certificate.
CertificateString	String	The string for the certificate.

Field	Type	Description
CertificateType	String	The format of the certificate. Only supports "PEM".
Description	String	This resource is used to represent the certificate for a Redfish implementation.
Id	String	The index of this certificate resource.
Issuer	Object	The issuer of the certificate.
City	String	The city or locality of the organization of the entity.
CommonName	String	The fully qualified domain name of the entity.
Country	String	The country of the organization of the entity.
Email	String	The email address of the contact within the organization of the entity.
Organization	String	The name of the organization of the entity.
OrganizationalUnit	String	The name of the unit or division of the organization of the entity.
State	String	The state, province, or region of the organization of the entity.
KeyUsage	Array	The usage of the key contained in the certificate.
KeyUsage[N]	String	"DigitalSignature" or "NonRepudiation" or "KeyEncipherment".
Name	String	The name of this certificate resource.
Subject	Object	Expanded.
City	String	The city or locality of the organization making the request.
CommonName	String	The fully qualified domain name of the entity.
Country	String	The country of the organization of the entity.
Email	String	The e-mail address of the contact within the organization of the entity.
Organization	String	The name of the organization of the entity.
OrganizationalUnit	String	The name of the unit or division of the organization of the entity.
State	String	The state, province, or region of the organization of the entity.
ValidNotAfter	String	The date when the certificate is no longer valid.
ValidNotBefore	String	The date when the certificate becomes valid.

### Status code

HTTP Status Code	Error Message ID
500	InternalError

## POST – Rekey

Use the POST method to generate a new key-pair for a certificate and produces a certificate signing request.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}/Actions/Certificate.Rekey](https://<BMC_IPADDR>/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}/Actions/Certificate.Rekey)

### Request body

Field	Type	Description
KeyCurveId	String	Required. The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value. Allowable value is "TPM_ECC_NIST_P384".
KeyPairAlgorithm	String	Required. The type of key-pair for use with signing algorithms. Allowable value is "TPM_ALG_ECDH" or "TPM_ALG_RSA"
KeyBitLength	Integer	Optional. The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value.
ChallengePassword	String	Optional. The challenge password to apply to the certificate for revocation requests.

### Response body

Field	Type	Description
CSRString	String	The string for the certificate signing request.
Certificate	Link	The link to the certificate being rekeyed.

### Status code

HTTP Status Code	Error Message ID
400	BadRequest, ActionParamMissing, ActionParamTypeError, ActionParamFormatError
500	InternalError

## POST – Renew

Use the POST method to generate a certificate signing request by using the existing information and key-pair of the certificate.

### Request URL

POST [https://<BMC\\_IPADDR>/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}/Actions/Certificate.Renew](https://<BMC_IPADDR>/redfish/v1/Managers/1/NetworkProtocol/HTTPS/Certificates/{id}/Actions/Certificate.Renew)

### Request body

None

### Response body

Field	Type	Description
CSRString	String	The string for the certificate signing request.
Certificate	Link	The link to the certificate being rekeyed.

### Status code

HTTP Status Code	Error Message ID
400	BadRequest
500	InternalError

---

## Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area.

Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service.

Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document is not an offer and does not provide a license under any patents or patent applications. You can send inquiries in writing to the following:

*Lenovo (United States), Inc.  
1009 Think Place  
Morrisville, NC 27560  
U.S.A.  
Attention: Lenovo VP of Intellectual Property*

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary.

Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.

Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

## **Trademarks**

LENOVO, SYSTEM, NEXTSCALE, SYSTEM X, THINKSERVER, THINKSYSTEM, and XCLARITY are trademarks of Lenovo.

Intel is a trademark of Intel Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds.

Microsoft, Windows, Windows Server, Windows PowerShell, Hyper-V, Internet Explorer, and Active Directory are registered trademarks of the Microsoft group of companies.

Mozilla and Firefox are registered trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Nutanix is a trademark and brand of Nutanix, Inc. in the United States, other countries, or both.

Red Hat is a registered trademark of Red Hat, Inc. in the United States and other countries.

SUSE is a trademark of SUSE IP Development Limited or its subsidiaries or affiliates.

VMware vSphere is a registered trademark of VMware in the United States, other countries, or both.

All other trademarks are the property of their respective owners.

---

# Index

## A

Account management properties  
GET 15  
Account properties  
GET 20  
Action info of SubmitTestMetricReport  
GET 268  
authentication methods 1

## B

Battery properties  
GET 215  
BIOS attribute registries  
GET 224, 229  
BMC active log entries  
GET 168  
BMC Audit event log entries  
GET 171  
BMC Chassis maintenance log entries  
GET 178  
BMC Diagnostic log entries (DebugLog)  
GET 175  
BMC Diagnostic log entries (DebugLog2)  
GET 176  
BMC Diagnostic log entries (MPFA)  
GET 174  
BMC Diagnostic log entries (ServiceDataLog)  
GET 177  
BMC Ethernet properties  
GET 112  
BMC Maintenance event log entries  
GET 172  
BMC management properties  
GET 101  
BMC network services  
GET 130  
BMC Platform event log entries  
GET 169  
BMC serial interface properties  
GET 135  
BMC Service Advisor event log entries  
GET 173  
Boot options  
GET 235

## C

Certificate locations properties  
GET 290  
Certificate properties  
GET 292  
Certificate service properties  
GET 287  
Change BIOS password settings  
POST 221  
Chassis properties  
GET 38  
Clear event logs  
POST 165  
Collect BMC diagnostic Data  
POST 166  
Collection for accounts  
GET 19  
Collection for chassis

GET 37  
Collection for Enclosure  
GET 44  
Collection for firmware inventories on the server  
GET 242  
Collection for server  
GET 143  
Collection for sessions  
GET 10  
Collection of Batteries  
GET 215  
Collection of BMC log entries  
GET 167  
Collection of BMC log services  
GET 155  
Collection of BMC network interface properties  
GET 111  
Collection of Boot options  
GET 234  
Collection of dedicated network ports  
GET 70  
Collection of ethernet interface  
GET 127  
Collection of event subscriptions  
GET 256  
Collection of Fans  
GET 97  
Collection of host interface  
GET 126  
Collection of License  
GET 106  
Collection of MetricDefinition  
GET 276  
Collection of MetricReport  
GET 274  
Collection of MetricReportDefinition  
GET 271  
Collection of Network adapters  
GET 57  
Collection of Network device function  
GET 65  
Collection of PCIe Devices  
GET 182  
Collection of PCIe functions  
GET 186  
Collection of ports  
GET 61  
Collection of Power Supplies  
GET 82  
Collection of Processors  
GET 190  
Collection of Sensors  
GET 52  
Collection of server memories  
GET 179  
Collection of server network interfaces  
GET 120, 124  
Collection of storage controllers  
GET 197  
Collection of StoragePool managed by storage controller  
GET 212  
Collection of virtual media  
GET 137  
Collection of Volume managed by storage controller  
GET 205  
Create a custom role  
POST 31  
Create a session  
POST 12

Create a subscription  
POST 261  
Create a Volume  
POST 209  
Create an account  
POST 23

## D

DELETE  
Delete a Key 35  
Delete a License 108  
Delete a Role 32  
Delete a session 13  
Delete a subscription 263  
Delete a task 250  
Delete a Volume 211  
Delete an account 26  
Delete a Key  
DELETE 35  
Delete a License  
DELETE 108  
Delete a Role  
DELETE 32  
Delete a session  
DELETE 13  
Delete a subscription  
DELETE 263  
Delete a task  
DELETE 250  
Delete a Volume  
DELETE 211  
Delete an account  
DELETE 26  
Drive backplane properties  
GET 48  
Drives managed by storage controller  
GET 202

## E

Enable/disable host interface  
PATCH 129  
Enclosure properties  
GET 45  
Environment metrics properties  
GET 50  
Event properties 264  
Event service properties  
GET 251  
Event subscriptions  
GET 257  
Event subscriptions for SMTP-{N}  
GET 259  
Event subscriptions for SNMPv1-{N}  
GET 259  
Event subscriptions for SNMPv2c-{N}  
GET 260  
Event subscriptions for SNMPv3-{N}-{M}  
GET 261

## F

Fan properties  
GET 98  
Firmware inventory properties  
GET 243  
Firmware update job properties  
GET 285  
Functions of server PCIe functions

GET 187  
Functions of server PCIe Slots  
GET 188

## G

Generate CSR  
POST 288  
GET  
Account management properties 15  
Account properties 20  
Action info of SubmitTestMetricReport 268  
Battery properties 215  
BIOS attribute registries 224, 229  
BMC active log entries 168  
BMC Audit event log entries 171  
BMC Chassis maintenance log entries 178  
BMC Diagnostic log entries (DebugLog) 175  
BMC Diagnostic log entries (DebugLog2) 176  
BMC Diagnostic log entries (MPFA) 174  
BMC Diagnostic log entries (ServiceDataLog) 177  
BMC Ethernet properties 112  
BMC Maintenance event log entries 172  
BMC management properties 101  
BMC network services 130  
BMC Platform event log entries 169  
BMC serial interface properties 135  
BMC Service Advisor event log entries 173  
Boot options 235  
Certificate locations properties 290  
Certificate properties 292  
Certificate service properties 287  
Chassis properties 38  
Collection for accounts 19  
Collection for chassis 37  
Collection for Enclosure 44  
Collection for firmware inventories on the server 242  
Collection for server 143  
Collection for sessions 10  
Collection of Batteries 215  
Collection of BMC log entries 167  
Collection of BMC log services 155  
Collection of BMC network interface properties 111  
Collection of Boot options 234  
Collection of dedicated network ports 70  
Collection of ethernet interface 127  
Collection of event subscriptions 256  
Collection of Fans 97  
Collection of host interface 126  
Collection of License 106  
Collection of MetricDefinition 276  
Collection of MetricReport 274  
Collection of MetricReportDefinition 271  
Collection of Network adapters 57  
Collection of Network device function 65  
Collection of PCIe Devices 182  
Collection of PCIe functions 186  
Collection of ports 61  
Collection of Power Supplies 82  
Collection of Processors 190  
Collection of Sensors 52  
Collection of server memories 179  
Collection of server network interfaces 120, 124  
Collection of storage controllers 197  
Collection of StoragePool managed by storage controller 212  
Collection of virtual media 137  
Collection of Volume managed by storage controller 205  
Drive backplane properties 48  
Drives managed by storage controller 202  
Enclosure properties 45  
Environment metrics properties 50  
Event service properties 251



- Event subscriptions 257
- Event subscriptions for SMTP-**{N}** 259
- Event subscriptions for SNMPv1-**{N}** 259
- Event subscriptions for SNMPv2c-**{N}** 260
- Event subscriptions for SNMPv3-**{N}**-**{M}** 261
- Fan properties 98
- Firmware inventory properties 243
- Firmware update job properties 285
- Functions of server PCIe functions 187
- Functions of server PCIe Slots 188
- Host interface properties 128
- HostBootStrap account properties 22
- I/O Board or PCIe riser properties 49
- Job management properties 281
- Key properties 33–34
- License Properties 107
- LicenseService properties 105
- memory metrics properties in Memory 196
- memory metrics properties in MemorySummary 195
- Memory properties 180
- MetricDefinition inventory properties 277
- MetricReport properties 275
- MetricReportDefinition properties 272
- Network adapter properties 58
- Network device functions 66, 71
- Port properties 62
- Power management properties 73
- Power schedule job properties 282
- Power Supply properties 83
- PowerSubsystem properties 87
- PowerSupplyMetrics properties 85
- Processor metric properties 194
- Processor properties 191
- Processor summary metric properties 194
- Properties for firmware update service 237
- Resource for BIOS 219
- Retimer properties 47
- Role properties 26–27
- Sensor properties 53
- Server Ethernet interface properties 121
- Server Ethernet over USB properties 122
- Server network interface properties 125
- Server PCIe devices 183
- Server properties 144
- Service for BMC active logs 156
- Service for BMC Audit event logs 159
- Service for BMC Diagnostic logs 164
- Service for BMC event logs 157
- Service for BMC Maintenance event logs 160
- Service for BMC Service Advisor event logs 161
- Service for IPMI SEL log service 163
- Service root properties 5
- Session management properties 9
- Session properties 11
- SSE subscription 264
- Storage controller properties 198
- StoragePool managed by storage controller 212
- Systems PowerLimit properties 89
- Task properties 248
- Task service properties 247
- Telemetry service properties 267
- The pending BIOS settings 222
- The pending System settings 152
- Thermal management properties 90
- Thermal Metrics properties 95
- Thermal Subsystem properties 94
- Virtual media properties 138
- Volumes managed by storage controller 206

## H

- Host interface properties
  - GET 128

- HostBootStrap account properties
  - GET 22

## I

- I/O Board or PCIe riser properties
  - GET 49
- Initialize Volume
  - POST 210
- Insert/Eject a virtual media
  - PATCH 140

## J

- Job management properties
  - GET 281

## K

- Key properties
  - GET 33–34

## L

- Lenovo Extended Registries 2
- License Properties
  - GET 107
- LicenseService properties
  - GET 105

## M

- memory metrics properties in Memory
  - GET 196
- memory metrics properties in MemorySummary
  - GET 195
- Memory properties
  - GET 180
- MetricDefinition inventory properties
  - GET 277
- MetricReport properties
  - GET 275
- MetricReportDefinition properties
  - GET 272
- Multipart HTTP Push update for firmware
  - POST 241

## N

- Network adapter properties
  - GET 58
- Network device functions
  - GET 66, 71
- notices ccxcv

## P

- PATCH
  - Enable/disable host interface 129
  - Insert/Eject a virtual media 140
  - Update account properties 25
  - Update BMC Ethernet configurations 117
  - Update BMC Ethernet over USB configurations 119
  - Update BMC network service configurations 133

- Update chassis properties 43
- Update custom role privileges 32
- Update enclosure properties 46
- Update event service properties 254
- Update global account lockout properties and LDAP properties 18
- Update next-one-time boot configurations and other properties 151
- Update pending BIOS settings 223
- Update pending System settings 153
- Update power management properties 81
- Update power schedule job properties 284
- Update secure boot properties 230
- Update System PowerLimit properties 90
- Update timeout property 10
- Update user description 34
- Update verify remote server certificate property 239
- Update Volume settings 210
- Port properties
  - GET 62
- POST
  - Change BIOS password settings 221
  - Clear event logs 165
  - Collect BMC diagnostic Data 166
  - Create a custom role 31
  - Create a session 12
  - Create a subscription 261
  - Create a Volume 209
  - Create an account 23
  - Generate CSR 288
  - Initialize Volume 210
  - Multipart HTTP Push update for firmware 241
  - Rekey 293
  - Renew 294
  - Replace Certificate 290
  - Reset BIOS operation 222
  - Reset secure boot keys 232
  - Server reset operations 151
  - Simple update for firmware 240
  - Start update firmware 242
  - Submit a test event 255
  - Submit a test Metric Report 270
- Power management properties
  - GET 73
- Power schedule job properties
  - GET 282
- Power Supply properties
  - GET 83
- PowerSubsystem properties
  - GET 87
- PowerSupplyMetrics properties
  - GET 85
- Processor metric properties
  - GET 194
- Processor properties
  - GET 191
- Processor summary metric properties
  - GET 194
- Properties for firmware update service
  - GET 237

## R

- Rekey
  - POST 293
- Renew
  - POST 294
- Replace Certificate
  - POST 290
- Reset BIOS operation
  - POST 222
- Reset secure boot keys
  - POST 232

- Resource for BIOS
  - GET 219
- Retimer properties
  - GET 47
- Role properties
  - GET 26–27

## S

- Sensor properties
  - GET 53
- Server Ethernet interface properties
  - GET 121
- Server Ethernet over USB properties
  - GET 122
- Server network interface properties
  - GET 125
- Server PCIe devices
  - GET 183
- Server properties
  - GET 144
- Server reset operations
  - POST 151
- Service for BMC active logs
  - GET 156
- Service for BMC Audit event logs
  - GET 159
- Service for BMC Diagnostic logs
  - GET 164
- Service for BMC event logs
  - GET 157
- Service for BMC Maintenance event logs
  - GET 160
- Service for BMC Service Advisor event logs
  - GET 161
- Service for IPMI SEL log
  - GET 163
- Service root properties
  - GET 5
- Session management properties
  - GET 9
- Session properties
  - GET 11
- Simple update for firmware
  - POST 240
- SSE subscription
  - GET 264
- Start update firmware
  - POST 242
- Storage controller properties
  - GET 198
- StoragePool managed by storage controller
  - GET 212
- Submit a test event
  - POST 255
- Submit a test Metric Report
  - POST 270
- Systems PowerLimit properties
  - GET 89

## T

- Task properties
  - GET 248
- Task service properties
  - GET 247
- Telemetry service properties
  - GET 267
- The pending BIOS settings
  - GET 222
- The pending System settings
  - GET 152

Thermal management properties  
GET 90  
Thermal Metrics properties  
GET 95  
Thermal Subsystem properties  
GET 94  
Tools for Redfish 2  
trademarks ccxvi

## U

Update account properties  
PATCH 25  
Update BMC Ethernet configurations  
PATCH 117  
Update BMC Ethernet over USB configurations  
PATCH 119  
Update BMC network service configurations  
PATCH 133  
Update chassis properties  
PATCH 43  
Update custom role privileges  
PATCH 32  
Update enclosure properties  
PATCH 46  
Update event service properties  
PATCH 254  
Update global account lockout properties and LDAP properties  
PATCH 18

Update next-one-time boot configurations and other properties  
PATCH 151  
Update pending BIOS settings  
PATCH 223  
Update pending System settings  
PATCH 153  
Update power management properties  
PATCH 81  
Update power schedule job properties  
PATCH 284  
Update secure boot properties  
PATCH 230  
Update System PowerLimit properties  
PATCH 90  
Update timeout property  
PATCH 10  
Update user description  
PATCH 34  
Update verify remote server certificate property  
PATCH 239  
Update Volume settings  
PATCH 210

## V

Virtual media properties  
GET 138  
Volumes managed by storage controller  
GET 206





**Lenovo**