



# Supervyse OPF Redfish API User Guide

Revision 1.40

Dec. 2024



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## Revision History

Revision Number	Date	Author	Reviewer	Summary
1.0	2022-09-07	-	-	1. RV22.11 Release Document
1.1	2023-02-23	Jolin Tsai	Victor Wu	1. Add Trigger Schema.
1.2	2023-03-03	Hercu Lin	Victor Wu	1. Add Memory Resilience Technology (MRT) related schema (for Eagle Stream platform)
1.3	2023-04-10	Jolin Tsai	Victor Wu	1. Add FACT Log.
1.4	2023-04-13	Kevin WM Chen	Victor Wu	1. Add ResetActionInfo in ComputerSystem.

Revision Number	Date	Author	Reviewer	Summary
1.5	2023-04-20	Hercu Lin	Victor Wu	1. Add InsydeIPAccessCollection & InsydeIPAccessEntry.
1.6	2023-04-24	Ezra Lin	Victor Wu	1. Add AuditLog and EventLog(Redfish Internal Log) in LogServices. 2. Add AuditLog and EventLog(Redfish Internal Log) in LogEntry. 3. Add EventService and EventDestination description.
1.7	2023-05-05	Ezra Lin	Victor Wu	1. Add SyslogService schema
1.8	2023-05-10	Hercu Lin	Victor Wu	1. Add VM certificates to the relevant certificate schema
1.9	2023-05-10	Kevin WM Chen	Victor Wu	1. Add InsydeStorageControllerTTYLog schema.
1.10	2023-05-25	Kevin WM Chen	Victor Wu	1. Add ProtocolFeaturesSupported in service root schema.
1.11	2023-06-05	Kevin WM Chen	Victor Wu	1. Add SessionType in service root schema.
1.12	2023-06-06	Kevin WM Chen	Victor Wu	1. Remove row PATCH in subsection "Support Method and Privilege" in thermal schema.
1.13	2023-06-14	Ezra Lin	Victor Wu	1. Add action of clear VNC's sessions in SessionService schema.
1.14	2023-06-30	Jolin Tsai	Victor Wu	1. Add BootOption schema. 2. Remove FACT Log. 3. Remove Ref from the schema description.
1.15	2023-06-30	Kevin WM Chen	Victor Wu	1. Add property "Redundancy" and "Voltages to Power schema. 2. Remove some unsupported properties from Fan schema.
1.16	2023-07-05	Chenglin Chiang	Victor Wu	1. Add Redfish API List information
1.17	2023-07-10	Reeve Lin	Victor Wu	1. Changed the virtual media schema to match Insyde virtual media.
1.18	2023-07-13	Chenglin Chiang	Victor Wu	1. Add Manager's schema in Nvidia. 2. Add Chassis's schema in Nvidia. 3. Add Zone schema 4. Add Endpoint shcema

Revision Number	Date	Author	Reviewer	Summary
				<ul style="list-style-type: none"> <li>5. Add Switch shcema</li> <li>6. Add ComponentIntegrity shcema</li> <li>7. Add TrustedComponent shcema</li> <li>8. Add Fabric shcema</li> <li>9. Add Port shcema</li> <li>10. Add PortMetric shcema</li> </ul>
1.19	2023-07-24	Ezra Lin	Victor Wu	<ul style="list-style-type: none"> <li>1. Add PasswordExpiration property in ManagerAccount schema.</li> <li>2. Add Oem Action SignDoTKeyPairs and UnsignedDoTKeyPairs in ComputerSystems schema. (Only in Nvidia)</li> </ul>
1.20	2023-08-07	Hercu Lin	Victor Wu	<ul style="list-style-type: none"> <li>1. Remove MRT Project.</li> </ul>
1.21	2023-08-15	Jolin Tsai	Victor Wu	<ul style="list-style-type: none"> <li>1. Add SMTP event support</li> </ul>
1.22	2023-11-15	Kevin WM Chen	Victor Wu	<ul style="list-style-type: none"> <li>1. Remove LogService Journal</li> </ul>
1.23	2023-12-07	Chenglin Chiang	Victor Wu	<ul style="list-style-type: none"> <li>1. Update ProcessorMetrics information, ProcessorMetrics is only supported by NV OPF.</li> </ul>
1.24	2023-02-01	Ezra Lin	Victor Wu	<ul style="list-style-type: none"> <li>1. Add NetworkAdapterCollection, NetworkAdapter, NetworkAdapterMetrics, NetworkDeviceFunctionCollection, NetworkDeviceFunction, NetworkDeviceFunctionMetrics, InsydeNcsiCollection, InsydeNcsi, InsydeNcsiPackage information.</li> </ul>
1.25	2023-02-07	Ezra Lin	Victor Wu	<ul style="list-style-type: none"> <li>1. Add multiupdate in UpdateService</li> </ul>
1.26	2024-02-19	Kevin WM Chen	Victor Wu	<ul style="list-style-type: none"> <li>1. Remove property @etag from example of BootOptionCollection.</li> </ul>
1.27	2024-02-21	Kevin WM Chen	Victor Wu	<ul style="list-style-type: none"> <li>1. Remove property PCIeFunctions from sub-section Properties of ComputerSystem.</li> </ul>
1.28	2024-03-06	Kevin WM Chen	Victor Wu	<ul style="list-style-type: none"> <li>1. Add HTTPS as supported protocol in SimpleUpdate.</li> </ul>
1.29	2024-03-06	Chenglin Chiang	Victor Wu	<ul style="list-style-type: none"> <li>1. Add Simple Update BMC Image Setting Restore Default</li> <li>2. Add Workstation Update BMC Image Setting Restore Default</li> </ul>
1.30	2024-03-28	KevinWM Chen	Victor Wu	<ul style="list-style-type: none"> <li>1. Add description for property "Schedule" of schema "MetricReportDefinition".</li> </ul>

Revision Number	Date	Author	Reviewer	Summary
				<ol style="list-style-type: none"> <li>Add description for property "EndTime" of schema "Task".</li> <li>Add description for property "FirmwareVersion" of schema "PowerSupply".</li> </ol>
1.31	2024-04-02	Chenglin Chiang	Victor Wu	<ol style="list-style-type: none"> <li>Add Drive for RAID support LocationIndicatorActive FailState PFASState</li> <li>Add Drive for SATA support LocationIndicatorActive FailState PFASState</li> <li>Add Drive for NVME support LocationIndicatorActive FailState PFASState</li> </ol>
1.32	2024-04-08	KevinWM Chen	Victor Wu	<ol style="list-style-type: none"> <li>Add ExternalAccountProviderCollection and ExternalAccountProvider (RADIUS)</li> </ol>
1.33	2024-04-25	KevinWM Chen	Victor Wu	<ol style="list-style-type: none"> <li>Add Action SubmitTestMetricReport to TelemetryService.</li> <li>Add Oem Action ClearTestMetricReport to MetricReportCollection.</li> <li>Add Action and ActionInfo to Chassis.</li> </ol>
1.34	2024-04-26	KevinWM Chen	Victor Wu	<ol style="list-style-type: none"> <li>Add Property RemoteGroupDomain in AccountService.</li> </ol>
1.35	2024-06-27	Chenglin Chiang	Victor Wu	<ol style="list-style-type: none"> <li>Add Property FwUpdateTag in UpdateService.</li> </ol>
1.36	2024-09-26	Elsa Wu	Victor Wu	<ol style="list-style-type: none"> <li>Added Property HTTPBasicAuth control in AccountService.</li> <li>Added "LPDDR5_SDRAM" to property MemoryDeviceType.</li> <li>Add property SupportedUpdateImageFormats in UpdateService.</li> <li>Added Property IPv6Enabled in EthernetInterface to support get/set Ipv6Enable status.</li> <li>Added Property EstimatedDuration in task to support firmware update estimated time.</li> <li>Added Property ExcludeRegistryPrefix and ExcludeMessageId in Eventservice.</li> <li>Added Property ServiceIdentification in ServiceRoot.</li> <li>Added MultipleHTTPRequests to ProtocolFeaturesSupported in ServiceRoot.</li> </ol>

Revision Number	Date	Author	Reviewer	Summary
				9. Added Property LogicalContexts in MetricDefinition.
1.37	2024-10-21	Elsa Wu	Victor Wu	Partially add Redfish Action download/upload/delete config files for SDR in schema computer system
1.38	2024-11-20	Chenglin Chiang	Victor Wu	1. Added USBController schema in ComputerSystem
1.39	2024-01-08	Jolin Tsai		1. Add Port schema and PortMetrics schema 2. UpdatedProperties updated in InsydeNcsiPackage 3. Update DeleteSDR, DownloadDefaultSDR, DownloadSDRUpdate, UploadSDR and GenSystemDebugLog action target in ComputerSystem. 4. Added DiagnosticDataDetails, DiagnosticDataType and OEMDiagnosticDataType in LogService. 5. Added OemLogEntryCode in LogService Type : ALL. 6. Added DaylightSavingTime, EndDateTime, OffsetMinutes, StartDateTime and TimeZoneName in Manager. 7. Added Oem properties DbusLogEnable and SyslogService in Manager. 8. Update VirtualMedia.Certificate action target to InsydeOEMExtensions.PostCertificate in VirtualMedia. 9. Add ResumeSubscription and SuspendSubscription actions in EventDestination. 10. Add ExcludeMessageIds and ExcludeRegistryPrefixes in EventDestination. 11. Add InsydeBootProgress, CpldErr and CpldLastState in ComputerSystem. 12. Add PoweringChassis in PowerSupply. 13. Add SSDP Port and SSDP Protocol Enabled in NetworkProtocol. 14. Add Enabled in Sensor. 15. Add ISOCountryCodeOfOrigin in Assembly.
1.40	2024-01-10	Terry Hsu		1. Add LastResetCause in ComputerSystem

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# 1 Introduction

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This document is intended for, such as developers, users, and testers to understand the Redfish APIs supported by Insyde's OPF BMC firmware. If you are familiar with the Redfish protocol, you may like to start from sections 2 to directly focus on the implementation of OPF.

## 1.1 Features

Get System/Chassis information

- Chassis, ComputerSystem

Metrics and Metric Report

- MemoryMetrics, ProcessorMetrics (Nvidia), NetworkAdapterMetrics, NetworkDeviceFunctionMetrics, EnvironmentMetrics, ThermalMetrics, PowerSupplyMetrics, MetricReportDefinition, MetricReport, Triggers

Note: A metric is the value of a measurable quantity or quality. A metric can be an environmental sensor reading or the value of a digital counter, such as "number of bytes transferred". In Redfish, metrics are scattered throughout the Redfish resource as "metric properties".

The metric properties in the Redfish data model appear in a variety of ways:

JSON properties within a resource.

JSON properties within a complex JSON object within a resource.

Within a resource containing only metrics, such as the "MemoryMetrics" resource.

BMC Accounts, Privilege and Session Management

- AccountService, ExternalAccountProvider, PrivilegeRegistry, ManagerAccount, Role, SessionService, Session

BIOS Settings and Related Function.

- Bios, Bios Settings, BootOption, SecureBoot, InsydeSMBIOS, InsydePostCode

Network Card Information

- EthernetInterface, NetworkAdapterFunction, NetworkAdapter, InsydeNCSI

RAID and Storage Management

- StorageService, StoragePool, InsydeStorageControllerEvent, InsydeStorageControllerTTYLog, Volume, Drive (for SATA, RAID, NVME), StorageController (for RAID), Storage (for RAID)

Server Main Hardware Information

- Memory, Processor

Server Peripheral Hardware Devices Information

- PCIeDevice, PCIeFunction, Fabrics (Nvidia), Switch (Nvidia), Port (Nvidia), Fan

Sensors, Power, Thermal Information

- Power, PowerSubsystem, PowerSupply, Sensor, ThermalSubsystem, TelemetryService

FRU Information

- Assembly

System Event and Log services



- EventService, EventDestination, LogService, Log Entry, InsydeACDLog(Intel)

#### BMC Settings and Information

- VlanNetworkInterface, ManagerNetworkProtocol, Manager, InsydeIPAccessEntry

#### Software Information and Firmware Update

- UpdateService, SoftwareInventory

#### Redfish Software Functions

- Task, TaskService, JsonSchemaFile, MessageRegistryFile, MessageRegistry

#### SSL Certification, Certificate Management for Network Services

- CertificateService, CertificateLocations, Certificate

#### Virtual Media - Mount ISO Image from Network Server

- VirtualMedia

#### Communicate with Host and BIOS, Serial Port

- HostInterface

#### Using Redfish to launch iKVM over HTML5

- Manager

#### Get Host Name

- ManagerNetworkProtocol

#### Backup BMC and Factory Reset

- Manager

#### System power up/down/reboot/cycle

- ComputerSystem

## 1.2 Overview

The purpose of this document is to introduce the Redfish APIs supported by Insyde's OPF BMC firmware. It lists the available APIs with their URIs, the HTTP status codes, and also the supported methods and properties of each schema with brief descriptions.

## 1.3 Related Information

The following publications and sources of information are referred to by this document or may be useful to you:

- *Redfish Specification DSP0266, DMTF*
- *Redfish Resource and Schema Guide, DSP8010, DMTF, 2021.2*
- *Redfish Scalable Platforms Management API Specification, DMTF, 2019*
- *Common RAID Disk Data Format Specification, SNIA, 2009*
- *Platform Level Data Model for Platform Monitoring and Control Specification, DMTF, 2019*

## 1.4 Terms

The following terms are used throughout this document:

**BMC**

Baseboard Management Controller

**IPMI**

Intelligent Platform Management Interface

**NIC**

Network Interface Card

**DCPMM**

DC Persistent Memory Module



## 2 How to Use Redfish API tools

### 2.1 Postman

Download Postman: <https://www.postman.com/>

Enter Method and URI.

URI: located at Description in each schema in the Schemas section.

Method: GET for retrieving resources information, PATCH for updating a resource's properties, POST for creating a new resource or sending actions to Resources.

Choose Basic Auth and enter Username and Password in Authorization tab.

Enter payload in Body tab if needed.

Click Send to send the request.



## 2.2 Curl

Install Curl in Ubuntu: `sudo apt-get install curl`

Send GET request: `curl -u <username>:<password> -k -X GET https://<IP>/<Redfish\_URI>`

Send HEAD request: `curl -u <username>:<password> -k -I https://<IP>/<Redfish\_URI>`

Send PATCH request: `curl -u <username>:<password> -k -X PATCH https://<IP>/<Redfish\_URI> -d '<payload>'`

Send POST request: `curl -u <username>:<password> -k -X POST https://<IP>/<Redfish\_URI> -d '<payload>'`

Send DELETE request: `curl -u <username>:<password> -k -X DELETE https://<IP>/<Redfish\_URI>`

## 3 Redfish API

### 3.1 Redfish API List

The following Redfish defined URI's are supported by the Redfish Service.

Resource	Resource URI	Redfish Schema
ServiceRoot	/redfish/v1	ServiceRoot.v1_14_0.ServiceRoot
AccountService	/redfish/v1/AccountService	AccountService.v1_11_0.AccountService
ManagerAccountCollection	/redfish/v1/AccountService/Accounts	ManagerAccountCollection.ManagerAccountCollection
ManagerAccount	/redfish/v1/AccountService/Accounts/	ManagerAccount.v1_9_0.ManagerAccount
PrivilegeRegistry	/redfish/v1/AccountService/PrivilegeMap	PrivilegeRegistry.v1_1_4.PrivilegeRegistry
RoleCollection	/redfish/v1/AccountService/Roles	RoleCollection.RoleCollection
Role	/redfish/v1/AccountService/Roles/	Role.v1_3_1.Role
CertificateService	/redfish/v1/CertificateService	CertificateService.v1_0_4.CertificateService
CertificateLocations	/redfish/v1/CertificateService/CertificateLocations	CertificateLocations.v1_0_2.CertificateLocations
CertificateCollection	HTTPS certificates: /redfish/v1/Managers/{ManagerId}/NetworkProtocol/HTTPS/Certificates  LDAP certificates: /redfish/v1/AccountService/LDAP/Certificates  TrustStoreCertificate certificates: /redfish/v1/Managers/{ManagerId}/Truststore/Certificates  VM certificates: (Post) /redfish/v1/Managers/bmc/VirtualMedia/{VirtualMediaId}/Actions/Oem/InsydeOEMExtensions.PostCertificate	CertificateCollection.CertificateCollection

Resource	Resource URI	Redfish Schema
	(Get)  /redfish/v1/Managers/bmc/ VirtualMedia/Oem/Insyde/ Certificates	
Certificate	<p>HTTPS certificates: /redfish/v1/Managers/{ManagerId}/ NetworkProtocol/HTTPS/Certificates/ {CertificateId}</p> <p>LDAP certificates: /redfish/v1/AccountService/LDAP/ Certificates/{CertificateId}</p> <p>TrustStoreCertificate certificates: /redfish/v1/Managers/bmc/ Truststore/Certificates/ {CertificateId}</p> <p>VM certificates: (Post) /redfish/v1/Managers/bmc/VirtualMe dia/{VirtualMediaId}/Actions/Oem/ VirtualMedia.Certificate (Get) /redfish/v1/Managers/bmc/ VirtualMedia/Oem/Insyde/ Certificates/{CertificateId}</p>	Certificate.v1_6_0.Certificate
ChassisCollection	/redfish/v1/Chassis	ChassisCollection.ChassisCollection
Chassis	/redfish/v1/Chassis/	Chassis.v1_20_0.Chassis
Assembly	/redfish/v1/Chassis/{ChassisId}/ Assembly	Assembly.v1_3_0.Assembly
PowerSubsystem	/redfish/v1/Chassis/{ChassisId}/ PowerSubsystem	PowerSubsystem.v1_1_0.PowerSubs ystem
PowerSupplyCollection	/redfish/v1/Chassis/{ChassisId}/ PowerSubsystem/PowerSupplies	PowerSupplyCollection.PowerSupply Collection
PowerSupply	/redfish/v1/Chassis/{ChassisId}/ PowerSubsystem/PowerSupplies/	PowerSubsystem.v1_1_0.PowerSubs ystem
SensorCollection	/redfish/v1/Chassis/{ChassisId}/ Sensors	SensorCollection.SensorCollection
Sensor	/redfish/v1/Chassis/{ChassisId}/	Sensor.v1_5_0.Sensor

Resource	Resource URI	Redfish Schema
	Sensors/	
ThermalSubsystem	/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem	ThermalSubsystem.v1_0_0.ThermalSubsystem
ThermalMetrics	/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/ThermalMetrics	ThermalMetrics.v1_0_1.ThermalMetrics
FanCollection	/redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Fans	FanCollection.FanCollection
EventService	/redfish/v1/EventService	EventService.v1_8_0.EventService
EventDestinationCollection	/redfish/v1/EventService/Subscriptions	EventDestinationCollection.EventDestinationCollection
EventDestination	/redfish/v1/EventService/Subscriptions/	EventDestination.v1_12_0.EventDestination
JsonSchemaFileCollection	/redfish/v1/JsonSchemas	JsonSchemaFileCollection.JsonSchemaFileCollection
JsonSchemaFile	/redfish/v1/JsonSchemas/	JsonSchemaFile.v1_0_2.JsonSchemaFile
ManagerCollection	/redfish/v1/Managers	ManagerCollection.ManagerCollection
Manager	/redfish/v1/Managers/	Manager.v1_15_0.Manager
EthernetInterfaceCollection	Managers: /redfish/v1/Managers/{ManagerId}/EthernetInterfaces  Systems: /redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces	EthernetInterfaceCollection.EthernetInterfaceCollection
EthernetInterface	Managers: /redfish/v1/Managers/{ManagerId}/EthernetInterfaces/  Systems: /redfish/v1/Systems/{ComputerSystemId}/EthernetInterfaces/	EthernetInterface.v1_8_0.EthernetInterface
VlanNetworkInterfaceCollection	/redfish/v1/Managers/{ManagerId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs	VlanNetworkInterfaceCollection.VlanNetworkInterfaceCollection
VlanNetworkInterface	/redfish/v1/Managers/{ManagerId}/EthernetInterfaces/{EthernetInterfaceId}/VLANs/{VlanNetworkInterfaceId}	VlanNetworkInterface.v1_3_0.VlanNetworkInterface

Resource	Resource URI	Redfish Schema
HostInterfaceCollection	/redfish/v1/Managers/HostInterfaces	HostInterfaceCollection.HostInterfaceCollection
HostInterface	/redfish/v1/Managers/HostInterfaces/	HostInterface.v1_3_0.HostInterface
LogServiceCollection	/redfish/v1/Managers/LogServices /redfish/v1/Systems/LogServices	LogServiceCollection.LogServiceCollection
LogService	Managers: /redfish/v1/Managers/{ManagerId}/LogServices/  Systems: /redfish/v1/Systems/{ComputerSystemId}/LogServices/	LogService.v1_3_0.LogService
LogEntryCollection	Managers: /redfish/v1/Managers/{ManagerId}/LogServices/{LogServiceId}/Entries  Systems: /redfish/v1/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries	LogEntryCollection.LogEntryCollection
LogEntry	Managers: /redfish/v1/Managers/{ManagerId}/LogServices/{LogServiceId}/Entries/  Systems: /redfish/v1/Systems/{ComputerSystemId}/LogServices/{LogServiceId}/Entries/	LogEntry.v1_12_0.LogEntry
ManagerNetworkProtocol	/redfish/v1/Managers/{ManagerId}/NetworkProtocol	ManagerNetworkProtocol.v1_8_1.ManagerNetworkProtocol
VirtualMediaCollection	/redfish/v1/Managers/{ManagerId}/VirtualMedia	VirtualMediaCollection.VirtualMediaCollection
VirtualMedia	/redfish/v1/Managers/{ManagerId}/VirtualMedia/	VirtualMedia.v1_5_1.VirtualMedia
Oem	/redfish/v1/Managers/bmc#/Oem	OemManager.Oem
InsydeIPAccessCollection	/redfish/v1/Managers/{ManagerId}/Oem/Insyde/IPv4AccessCollection /redfish/v1/Managers/{ManagerId}/Oem/Insyde/IPv6AccessCollection	InsydeIPAccessCollection.InsydeIPAccessCollection

Resource	Resource URI	Redfish Schema
InsydeIPAccessEntry	/redfish/v1/Managers/{ManagerId}/Oem/Insyde/IPv4AccessCollection/ /redfish/v1/Managers/{ManagerId}/Oem/Insyde/IPv6AccessCollection/	InsydeIPAccessEntry.v1_0_0.InsydeIPAccessEntry
Fan	Managers:  /redfish/v1/Managers/#/Oem/OpenBmc/Fan  Chassis:  /redfish/v1/Chassis/{ChassisId}/ThermalSubsystem/Fans/	Managers: OemManager.Fan  Chassis:  Fan.v1_2_0.Fan
SyslogService	/redfish/v1/Managers/{ManagerId}/SyslogService	SyslogService.v1_0_0.SyslogService
MessageRegistryFileCollection	/redfish/v1/Registries	MessageRegistryFileCollection.MessageRegistryFileCollection
MessageRegistryFile	/redfish/v1/Registries/Base TaskEvent ResourceEvent OpenBMC	MessageRegistryFile.v1_1_3.MessageRegistryFile
ServiceConditions	/redfish/v1/ServiceConditions	ServiceConditions.v1_0_0.ServiceConditions
SessionService	/redfish/v1/SessionService	SessionService.v1_1_8.SessionService
SessionCollection	/redfish/v1/SessionService/Sessions	SessionCollection.SessionCollection
Session	/redfish/v1/SessionService/Sessions/	Session.v1_3_0.Session
StorageServiceCollection	/redfish/v1/StorageServices	StorageServiceCollection.StorageServiceCollection
StorageService	/redfish/v1/StorageServices/1	StorageService.v1_4_0.StorageService
StoragePoolCollection	/redfish/v1/StorageServices/1/StoragePools	StorageCollection.StorageCollection
StoragePool	/redfish/v1/StorageServices/1/StoragePools/	StoragePool
DriveCollection	Systems:  /redfish/v1/Systems/{ComputerSystemId}/Storage/SystemDisk1/Drives  StorageServices:  /redfish/v1/StorageServices/1/	DriveCollection.DriveCollection

Resource	Resource URI	Redfish Schema
	Drives	
Drive for NVME Drive for SATA Drive for RAID	Systems: /redfish/v1/Systems/ {ComputerSystemId}/Storage/ SystemDisk1/Drives/  StorageServices: /redfish/v1/StorageServices/1/ Drives/	Drive.v1_15_0.Drive
VolumeCollection for RAID	Systems: /redfish/v1/Systems/ {ComputerSystemId}/Storage/ {StorageId}/Volumes  StorageServices: /redfish/v1/StorageServices/ {StorageServicesId}/Volumes	VolumeCollection.VolumeCollection
Volume for RAID	Systems: /redfish/v1/Systems/ {ComputerSystemId}/Storage/ {StorageId}/Volumes/  StorageServices: /redfish/v1/StorageServices/ {StorageServicesId}/Volumes/	Volume
ComputerSystemCollection	/redfish/v1/Systems	ComputerSystemCollection.ComputerSystemCollection
ComputerSystem	/redfish/v1/Systems/	ComputerSystem.v1_18_0.ComputerSystem
Bios	/redfish/v1/Systems/ {ComputerSystemId}/Bios	Bios.v1_2_0.Bios
Bios Settings	/redfish/v1/Systems/ {ComputerSystemId}/Bios/Settings	Bios.v1_2_0.Bios
BootOptionCollection	/redfish/v1/Systems/system/ BootOptions	BootOptionCollection.BootOptionCollection
BootOption	/redfish/v1/Systems/ {ComputerSystemId}/BootOptions/	BootOption.v1_0_4.BootOption
MemoryCollection	/redfish/v1/Systems/ {ComputerSystemId}/Memory	MemoryCollection.MemoryCollection



Resource	Resource URI	Redfish Schema
Memory	/redfish/v1/Systems/{ComputerSystemId}/Memory/	Memory.v1_15_0.Memory
InsydeSMBIOS Settings	/redfish/v1/Systems/{ComputerSystemId}/Oem/Insyde/SMBIOS/Settings	InsydeSMBIOS.v1_0_0.InsydeSMBIOS
InsydePostCodeCollection	/redfish/v1/Systems/{ComputerSystemId}/Oem/Insyde/PostCode	InsydePostCodeCollection.InsydePostCodeCollection
InsydePostCode	/redfish/v1/Systems/{ComputerSystemId}/Oem/Insyde/PostCode/	InsydePostCode.v1_0_0.InsydePostCode
InsydePCIEFunctions	/redfish/v1/Systems/{ComputerSystemId}/Oem/Insyde/PCIEFunctions	InsydeOEMExtensions.v1_0_0.PCIEFunctions
ProcessorCollection	/redfish/v1/Systems/{ComputerSystemId}/Processors  /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors  /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId}/SubProcessors	ProcessorCollection.ProcessorCollection
Processor	/redfish/v1/Systems/{ComputerSystemId}/Processors/  /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/  /redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/SubProcessors/{ProcessorId}/SubProcessors/	Processor.v1_14_0.Processor
PCIEDeviceCollection	/redfish/v1/Systems/{ComputerSystemId}/PCIEDevices/	PCIEDeviceCollection.PCIEDeviceCollection
PCIEDevice	/redfish/v1/Systems/{ComputerSystemId}/PCIEDevices/{PCIEDeviceId}	PCIEDevice.v1_9_0
PCIEFunctionCollection	/redfish/v1/Systems/{ComputerSystemId}/PCIEDevices/{PCIEDeviceId}/PCIEFunctions	PCIEFunctionCollection.PCIEFunctionCollection
PCIEFunction	/redfish/v1/Systems/	PCIEFunction.v1_3_0.PCIEFunction

Resource	Resource URI	Redfish Schema
	{ComputerSystemId}/PCIeDevices/ {PCIeDeviceId}/PCIeFunctions/	
SecureBoot	/redfish/v1/Systems/ {ComputerSystemId}/SecureBoot	SecureBoot.v1_1_0.SecureBoot
StorageCollection	/redfish/v1/Systems/ {ComputerSystemId}/Storage	StorageCollection.StorageCollection
Storage	/redfish/v1/Systems/ {ComputerSystemId}/Storage/ SystemDisk1	Storage.v1_13_0.Storage
Storage for RAID	/redfish/v1/Systems/ {ComputerSystemId}/Storage/1	Storage.v1_13_0.Storage
StorageController for RAID	/redfish/v1/Systems/ {ComputerSystemId}/Storage/#/ StorageControllers/	Storage.v1_13_0.StorageController
InsydeStorageControllerEventCollection	/redfish/v1/Systems/ {ComputerSystemId}/Storage/ {StorageId}/StorageControllers/ {ContorllerId}/Oem/Insyde/Events	InsydeStorageControllerEventCollection.InsydeStorageControllerEventCollection
InsydeStorageControllerEvent	/redfish/v1/Systems/ {ComputerSystemId}/Storage/ {StorageId}/StorageControllers/ {ContorllerId}/Oem/Insyde/Events/	InsydeStorageControllerEvent.v1_0_0.InsydeStorageControllerEvent
InsydeStorageControllerTTYLog	/redfish/v1/Systems/ {ComputerSystemId}/Storage/ {StorageId}/StorageControllers/ {ContorllerId}/Oem/Insyde/TTYLog	InsydeStorageControllerTTYLog.v1_0_0.InsydeStorageControllerTTYLog
TaskService	/redfish/v1/TaskService	TaskService.v1_2_0.TaskService
TaskCollection	/redfish/v1/TaskService/Tasks	TaskCollection.TaskCollection
Task	/redfish/v1/TaskService/Tasks/	Task.v1_6_0.Task
TaskMonitor	/redfish/v1/TaskService/Tasks// Monitor/	
TelemetryService	/redfish/v1/TelemetryService	TelemetryService.v1_3_1.TelemetryService
MetricReportDefinitionCollection	/redfish/v1/TelemetryService/ MetricReportDefinitions	MetricReportDefinitionCollection.MetricReportDefinitionCollection
MetricReportDefinition	/redfish/v1/TelemetryService/ MetricReportDefinitions/	MetricReportDefinition.v1_4_1.MetricReportDefinition
MetricReportCollection	/redfish/v1/TelemetryService/ MetricReports	MetricReportCollection.MetricReportCollection

Resource	Resource URI	Redfish Schema
MetricReport	/redfish/v1/TelemetryService/ MetricReports/	MetricReport.v1_4_2.MetricReport
TriggersCollection	/redfish/v1/TelemetryService/ Triggers	TriggersCollection.TriggersCollection
Triggers	/redfish/v1/TelemetryService/ Triggers/	Triggers.v1_2_0.Triggers
UpdateService	/redfish/v1/UpdateService	UpdateService.v1_11_0.UpdateService
SoftwareInventoryCollection	/redfish/v1/UpdateService/ FirmwareInventory	SoftwareInventoryCollection.SoftwareInventoryCollection
SoftwareInventory	/redfish/v1/UpdateService/ FirmwareInventory/	SoftwareInventory.v1_7_0.SoftwareInventory

## 4 Common Properties

### 4.1 Common Properties

The following properties are defined for inclusion in every Redfish schema, and therefore may be encountered in any Response payload.

Other implemented properties will be listed in each Redfish Schema section "Properties".

Property	Description
@odata.id	The value of this property is the URI of resource. (Required)
@odata.type	The type of a resource. (Required)
Id	The Id property of a resource uniquely identifies the resource within the Resource Collection that contains it.
Name	The Name property is used to convey a human-readable moniker for a resource. (Required)

### 4.2 Status (Object property)

This property describes the status and health of a resource and its children.

Property	Description
Health	This represents the health state of this resource in the absence of its dependent resources. This property will be displayed if value exists.
HealthRollup	This represents the overall health state from the view of this resource. This property will be displayed if value exists.
State	This indicates the known state of the resource, such as if it is enabled.

### 4.3 Resource Collection

Every Resource Collection has the same set of supported properties, and the name of its schema contains "Collection".

All the resource within the "Members" property of Resource Collection follow same resource schema.

The number of array members within "Members" array depends on the scope of the Redfish Service or the configuration of the devices being managed.

Property	Description
@odata.id	The value of this property is the URI of resource. (Required)
@odata.type	The type of a resource. (Required)
Name	The Name property is used to convey a human-readable moniker for a resource.

	(Required)
Members	Contains the members of this collection. (Required)
→@odata.id	A link to a resource instance which is a member of this collection.
Members@odata.count	The number of items in a collection. (Required)

## 5 HTTPS Status

Status Code	Description
200 OK	The request was successfully completed and includes a representation in its body.
201 Created	A request that created a new resource completed successfully. The Location header shall be set to the canonical URI for the newly created resource.
202 Accepted	The request has been accepted for processing, but the processing has not been completed.
204 No Content	The request succeeded, but no content is being returned in the body of the response.
303 See Other	See Other redirect status response code indicates that the redirects don't link to the newly uploaded resources, but to another page (such as a confirmation page or an upload progress page).
304 Not Modified	The service has performed a conditional GET request where access is allowed, but the resource content has not changed.
400 Bad Request	The request could not be processed because it contains missing or invalid information (such as validation error on an input field, a missing required value, and so on).
401 Unauthorized	The authentication credentials included with this request are missing or invalid.
404 Not Found	The request specified a URI of a resource that does not exist.
405 Method Not Allowed	The HTTP verb specified in the request (e.g. DELETE, GET, HEAD, POST, PATCH) is not supported for this request URI.
409 Conflict	A creation or update request could not be completed, because it would cause a conflict in the current state of the resources supported by the platform.
412 Precondition Failed	Precondition (If Match or If Not Modified ) check failed.
500 Internal Server Error	The server encountered an unexpected condition that prevented it from fulfilling the request.
501 Not Implemented	Service does not currently support the functionality required to fulfill the request. This response is appropriate when the service does not recognize the request method and cannot support the method for any resource.

## 6 Query Parameters

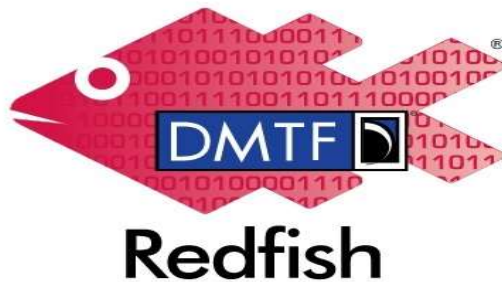
Query Parameter	Description
\$select=<string>	Returns a subset of the resource's properties that match the \$select expression. (not applies to resource collections)
\$filter=<string>	Applies to resource collections. Returns a subset of collection members that match the \$filter expression.
\$top=<int>	Applies to resource collections. Defines the number of members to show in the response. Minimum value is 1.
\$skip=<int>	Applies to resource collections. Returns a subset of the members in a resource collection. This paging query parameter defines the number of members in the resource collection to skip.

### 6.1 The select expression

The \$select query parameter indicates that the implementation should return a subset of the resource's properties that match the \$select expression. The syntax for properties in object types shall be the object and property names concatenated with a slash (/).

An example of \$select usage is:

[https://127.0.0.1/redfish/v1/Managers/bmc?\\$select=FirmwareVersion](https://127.0.0.1/redfish/v1/Managers/bmc?$select=FirmwareVersion)



```
{
  "@odata.id": "/redfish/v1/Managers/bmc",
  "@odata.type": "#Manager.v1_9_0.Manager",
  "FirmwareVersion": "v2.9.0-dev"
}
```

### 6.2 The filter expression

	Expression	Description	Example
1	()	Precedence grouping operator	\$filter=(Id eq '1638349878' or Id eq '1638349865_1')

<b>2</b>	<b>and</b>	Logical and operator.	\$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000
<b>3</b>	<b>eq</b>	Equal comparison operator.	\$filter=MessageId eq 'OpenBMC.0.1.DCPowerOff'
<b>4</b>	<b>ge</b>	Greater than or equal to comparison operator.	\$filter=AdditionalDataSizeBytes ge 74516
<b>5</b>	<b>gt</b>	Great than comparison operator.	\$filter=AdditionalDataSizeBytes gt 74516
<b>6</b>	<b>le</b>	Less than or equal to comparison operator.	\$filter=AdditionalDataSizeBytes le 73840
<b>7</b>	<b>lt</b>	Less than comparison operator	\$filter=AdditionalDataSizeBytes lt 73840
<b>8</b>	<b>ne</b>	Not equal comparison operator.	\$filter=Id ne '4'
<b>9</b>	<b>or</b>	Logical or operator.	\$filter=AdditionalDataSizeBytes gt 74600 or AdditionalDataSizeBytes lt 70000

When evaluating expressions, services shall use the following operator precedence:

- Grouping
- Logical negation
- Relational comparison. **gt** , **ge** , **lt** , and **le** all have equal precedence.
- Equality comparison. **eq** and **ne** both have equal precedence.
- Logical **and**
- Logical **or**




**Exmample1:** \$filter=(Id eq '1638349878' or Id eq '1638349865\_1')

```



https://127.0.0.1/redfish/v1/Systems/system/LogServices/EventLog/Entries?$filter=(Id eq '1638349878' or Id eq '1638349865_1')
{
  "Description": "Collection of EventLog Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries/1638349865_1",
      "@odata.type": "#LogEntry.v1_4_0.LogEntry",
      "Created": "2021-12-01T09:11:05+00:00",
      "EntryType": "Event",
      "Id": "1638349865_1",
      "Message": "$PRODUCT_PRODUCT_NAME Chassis with serial number $PRODUCT_SERIAL_NUMBER was installed.",
      "MessageArgs": [
        "$PRODUCT_PRODUCT_NAME",
        "Chassis",
        "$PRODUCT_SERIAL_NUMBER"
      ],
      "MessageId": "OpenBMC.0.1.InventoryAdded",
      "Name": "System Event Log Entry",
      "Severity": "OK"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries/1638349878",
      "@odata.type": "#LogEntry.v1_4_0.LogEntry",
      "Created": "2021-12-01T09:11:18+00:00",
      "EntryType": "Event",
      "Id": "1638349878",
      "Message": "Host system DC power is off",
      "MessageArgs": [],
      "MessageId": "OpenBMC.0.1.DCPowerOff",
      "Name": "System Event Log Entry",
      "Severity": "OK"
    }
  ],
  "Members@odata.count": 9,
  "Name": "System Event Log Entries"
}

```

**Exmapple2:** \$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000


[https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\\$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000](https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000)

90%

[https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\\$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000](https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeBytes lt 74000 and AdditionalDataSizeBytes gt 70000)

```

{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of BMC Dump Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/4",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 73840,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/4",
      "Created": "2021-12-02T01:49:18+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "4",
      "Name": "BMC Dump Entry"
    }
  ],
  "Members@odata.count": 4,
  "Name": "BMC Dump Entries"
}

```

**Example3:** \$filter=MessageId eq 'OpenBMC.0.1.DCPowerOff'

```
https://127.0.0.1/redfish/v1/Systems/system/LogServices/EventLog/Entries?$filter=MessageId eq 'OpenBMC.0.1.DCPowerOff'

{
  "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of System Event Log Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries/1638349878",
      "@odata.type": "#LogEntry.v1_4_0.LogEntry",
      "Created": "2021-12-01T09:11:18+00:00",
      "EntryType": "Event",
      "Id": "1638349878",
      "Message": "Host system DC power is off",
      "MessageArgs": [],
      "MessageId": "OpenBMC.0.1.DCPowerOff",
      "Name": "System Event Log Entry",
      "Severity": "OK"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries/1638350569",
      "@odata.type": "#LogEntry.v1_4_0.LogEntry",
      "Created": "2021-12-01T09:22:40+00:00"
```

#### Exmample4: \$filter=AdditionalDataSizeBytes ge 74516

[https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\\$filter=AdditionalDataSizeBytes ge 74516](https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeBytes ge 74516)
80%

```

Entries",
"Members": [
  {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/1",
    "@odata.type": "#LogEntry.v1_7_0.LogEntry",
    "AdditionalDataSizeBytes": 74516,
    "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/1",
    "Created": "1970-01-01T00:02:29+00:00",
    "DiagnosticDataType": "Manager",
    "EntryType": "Event",
    "Id": "1",
    "Name": "BMC Dump Entry"
  },
  {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/2",
    "@odata.type": "#LogEntry.v1_7_0.LogEntry",
    "AdditionalDataSizeBytes": 74884,
    "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/2",
    "Created": "2021-12-01T09:16:09+00:00",
    "DiagnosticDataType": "Manager",
    "EntryType": "Event",
    "Id": "2",
    "Name": "BMC Dump Entry"
  }
],
"Members@odata.count": 4,

```

**Exmample5:** \$filter=AdditionalDataSizeBytes gt 74516

https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\$filter=AdditionalDataSizeBytes gt 74516

https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\$filter=AdditionalDataSizeBytes gt 74516

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of BMC Dump Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/2",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 74884,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/2",
      "Created": "2021-12-01T09:16:09+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "2",
      "Name": "BMC Dump Entry"
    }
  ],
  "Members@odata.count": 4,
  "Name": "BMC Dump Entries"
}
```

**Example6:** \$filter=AdditionalDataSizeBytes le 73840

```
https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeB 8
{
  "Description": "Collection of BMC Dump Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/3",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 65388,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/3",
      "Created": "2021-12-02T01:49:10+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "3",
      "Name": "BMC Dump Entry"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/4",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 73840,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/4",
      "Created": "2021-12-02T01:49:18+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "4",
      "Name": "BMC Dump Entry"
    }
  ],
  "Members@odata.count": 2
}
```



**Example7:** \$filter=AdditionalDataSizeBytes lt 73840

[https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\\$filter=AdditionalDataSizeBytes lt 73840](https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeBytes lt 73840) 80

**Redfish** [https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\\$filter=AdditionalDataSizeBytes lt 73840](https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?$filter=AdditionalDataSizeBytes lt 73840)

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of BMC Dump Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/3",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 65388,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/3",
      "Created": "2021-12-02T01:49:10+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "3",
      "Name": "BMC Dump Entry"
    }
  ],
  "Members@odata.count": 4,
  "Name": "BMC Dump Entries"
}
```

# Exmample8: \$filter=Id ne '4'

https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\$filter=Id ne '4'

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of BMC Dump Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/1",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 74516,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/1",
      "Created": "1970-01-01T00:02:29+00:00",
      "DiagnosticDataType": "Manager",
      "EntryType": "Event",
      "Id": "1",
      "Name": "BMC Dump Entry"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/2",
      "@odata.type": "#LogEntry.v1_7_0.LogEntry",
      "AdditionalDataSizeBytes": 74884,
      "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/2",
      "Created": "2021-12-01T09:16:09+00:00",
      "DiagnosticDataType": "Manager"
    }
  ]
}
```



https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\$filter=Id ne '4'

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/2",
  "@odata.type": "#LogEntry.v1_7_0.LogEntry",
  "AdditionalDataSizeBytes": 74884,
  "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/2",
  "Created": "2021-12-01T09:16:09+00:00",
  "DiagnosticDataType": "Manager",
  "EntryType": "Event",
  "Id": "2",
  "Name": "BMC Dump Entry"
},
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/3",
  "@odata.type": "#LogEntry.v1_7_0.LogEntry",
  "AdditionalDataSizeBytes": 65388,
  "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/3",
  "Created": "2021-12-02T01:49:10+00:00",
  "DiagnosticDataType": "Manager",
  "EntryType": "Event",
  "Id": "3",
  "Name": "BMC Dump Entry"
}
],
"Members@odata.count": 4,
"Name": "BMC Dump Entries"
}
```

#### Exmample9: \$filter=AdditionalDataSizeBytes gt 74600 or AdditionalDataSizeBytes lt 70000

https://127.0.0.1/redfish/v1/Managers/bmc/LogServices/Dump/Entries?\$filter=AdditionalDataSizeBytes gt 74600 or AdditionalDataSizeBytes lt 70000

```
description: "Collection of BMC Dump Entries",
"Members": [
  {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/2",
    "@odata.type": "#LogEntry.v1_7_0.LogEntry",
    "AdditionalDataSizeBytes": 74884,
    "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/2",
    "Created": "2021-12-01T09:16:09+00:00",
    "DiagnosticDataType": "Manager",
    "EntryType": "Event",
    "Id": "2",
    "Name": "BMC Dump Entry"
  },
  {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/Dump/Entries/3",
    "@odata.type": "#LogEntry.v1_7_0.LogEntry",
    "AdditionalDataSizeBytes": 65388,
    "AdditionalDataURI": "/redfish/v1/Managers/bmc/LogServices/Dump/attachment/3",
    "Created": "2021-12-02T01:49:10+00:00",
    "DiagnosticDataType": "Manager",
    "EntryType": "Event",
    "Id": "3",
    "Name": "BMC Dump Entry"
  }
],
"Members@odata.count": 4,
```

# 7 Schemas

## 7.1 Service Root

### 7.1.1 Description

This object represents the root Redfish service.  
URI: <https://{ip}/redfish/v1/>

### 7.1.2 Support Method and Privilege

	No Auth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET	V					

### 7.1.3 Properties

Property	Type	Description
AccountService	object	This is a link to the Account Service.
AggregationService	object	See Nvidia Redfish User Guide for details.
Cables	object	See Intel/Nvidia Redfish User Guide for details.
CertificateService	object	This is a link to the CertificateService.
ComponentIntegrity	object	See Nvidia Redfish User Guide for details.
Chassis	object	This is a link to a collection of Chassis.
EventService	object	This is a link to the EventService.
Fabrics	object	See Nvidia Redfish User Guide for details.
JsonSchemas	object	This is a link to a collection of Json Schemas.
Links {	object	Link Collection
ManagerProvidingService	object	See Intel/Nvidia Redfish User

				Guide for details.
Sessions			object	Link to a collection of Session.
}				
Managers			object	This is a link to a collection of Managers.
Oem			object	See Intel Redfish User Guide for details.
Oem	Intel		object	See Intel Redfish User Guide for details.
	Intel	CupsService	object	See Intel Redfish User Guide for details.
	OpenBmc		object	See Intel Redfish User Guide for details.
	OpenBmc	CupsService	object	See Intel Redfish User Guide for details.
Product			string	See Nvidia Redfish User Guide for details.
ProtocolFeaturesSupported			object	The information about protocol features that the service supports.
ProtocolFeaturesSupported	DeepOperations		object	See Intel Redfish User Guide for details.
	DeepOperations	DeepPOST	boolean	See Intel/Nvidia Redfish User Guide for details.
		MaxLevels	boolean	See Intel/Nvidia Redfish User Guide for details.
		MaxLevels	integer	See Intel/Nvidia Redfish User Guide for details.
	ExcerptQuery		boolean	An indication of whether the service supports the excerpt query parameter.
	ExpandQuery		object	The information about the use of \$expand in the service.
	ExpandQuery	ExpandAll	boolean	An indication of whether the service supports the asterisk (``*) option of the \$expand query parameter.
		Levels	boolean	An indication of whether the service supports the \$levels option of the \$expand query parameter.

		Links	boolean	An indication of whether this service supports the tilde ( `~` ) option of the \$expand query parameter.
		MaxLevels	integer	The maximum \$levels option value in the \$expand query parameter.
		NoLinks	boolean	An indication of whether the service supports the period ( `.` ) option of the \$expand query parameter.
	FilterQuery		boolean	An indication of whether the service supports the \$filter query parameter.
	MultipleHTTPRequests		boolean	An indication of whether the service supports MultipleHTTPRequests
	OnlyMemberQuery		boolean	An indication of whether the service supports the only query parameter.
	SelectQuery		boolean	An indication of whether the service supports the \$select query parameter.
RedfishVersion			string	The version of the Redfish service.
Registries			object	This is a link to a collection of Registries.
ServiceConditions			object	See Nvidia Redfish User Guide for details.
ServiceIdentification			object	See Intel Redfish User Guide for details.
SessionService			object	This is a link to the Sessions Service.
StorageServices			object	Link to a collection of StorageServices.
Systems			object	This is a link to a collection of Systems.
Tasks			object	This is a link to the Task Service.
TelemetryService			object	This is a link to a collection of TelemetryService.
UpdateService			object	This is a link to the UpdateService.
UUID			string (uuid)	Unique identifier for a service

		instance. When SSDP is used, this value should be an exact match of the UUID value returned in a 200OK from an SSDP M-SEARCH request during discovery.
Vendor	string	See Nvidia Redfish User Guide for details.

### 7.1.4 Example

This example is the result of ServiceRoot schema's GET response.

```
{
  "@odata.id": "/redfish/v1",
  "@odata.type": "#ServiceRoot.v1_14_0.ServiceRoot",
  "AccountService": {
    "@odata.id": "/redfish/v1/AccountService"
  },
  "CertificateService": {
    "@odata.id": "/redfish/v1/CertificateService"
  },
  "Chassis": {
    "@odata.id": "/redfish/v1/Chassis"
  },
  "EventService": {
    "@odata.id": "/redfish/v1/EventService"
  },
  "Id": "RootService",
  "JsonSchemas": {
    "@odata.id": "/redfish/v1/JsonSchemas"
  },
  "Links": {
    "Sessions": {
      "@odata.id": "/redfish/v1/SessionService/Sessions"
    }
  },
  "Managers": {
    "@odata.id": "/redfish/v1/Managers"
  },
  "Name": "Root Service",
  "ProtocolFeaturesSupported": {
    "ExcerptQuery": true,
    "ExpandQuery": {
      "ExpandAll": true,
      "Levels": true,
      "Links": true,
      "MaxLevels": 6,
      "NoLinks": true
    },
    "FilterQuery": true,
    "OnlyMemberQuery": true,
    "SelectQuery": true,
    "MultipleHTTPRequests": false
  },
}
```

```

"RedfishVersion": "1.9.0",
"Registries": {
  "@odata.id": "/redfish/v1/Registries"
},
"SessionService": {
  "@odata.id": "/redfish/v1/SessionService"
},
"StorageServices": {
  "@odata.id": "/redfish/v1/StorageServices"
},
"Systems": {
  "@odata.id": "/redfish/v1/Systems"
},
"Tasks": {
  "@odata.id": "/redfish/v1/TaskService"
},
"TelemetryService": {
  "@odata.id": "/redfish/v1/TelemetryService"
},
"UUID": "80c007bb-4962-5990-9c44-062efc9b84f1",
"UpdateService": {
  "@odata.id": "/redfish/v1/UpdateService",
"ServiceIdentification": "Insyde Redfish"
}
}

```

## 7.2 AccountService

### 7.2.1 Description

The AccountService schema contains properties for managing user accounts. The properties are common to all user accounts, such as password requirements, and control features such as account lockout. The schema also contains links to the collections of Manager Accounts and Roles.

URI: <https://{ip}/redfish/v1/AccountService>

### 7.2.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH					V	

### 7.2.3 Properties

Property	Type	Description
AccountLockoutDuration	integer (seconds)	The time in seconds an account is locked out. If set to 0, no lockout occurs.
AccountLockoutThreshold	integer	The number of failed login attempts allowed before a user

		account is locked for a specified duration. A value of 0 means it is never locked.
Accounts	object	A link to a collection of Manager Accounts.
ActiveDirectory	object	The first ActiveDirectory external account provider this AccountService supports.
→ Authentication	object	This property contains the authentication information for the external account provider.
→→ AuthenticationType	string (enum)	This property contains the type of authentication used to connect to the external account provider.
→→ Password	string	This property is used with a PATCH to write the password for the account service. This property is null on a GET. If AuthenticationType is UsernameAndPassword.
→→ Username	string	This property contains the user name for the account service. If AuthenticationType is UsernameAndPassword.
→ 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	array (string, null)	The base distinguished names to use when searching the LDAP service.
→→→ GroupsAttribute	string	The attribute name that contains the Groups for a user.
→→→ UsernameAttribute	string	The attribute name that contains the Username.
→ RemoteRoleMapping	array	This property contains a collection of the mapping rules to convert the external account providers account information to the local Redfish Role.
→→ LocalRole	string	The name of the local role in which to map the remote user or group. This value will be displayed if LDAP Service configured.
→→ RemoteGroup	string	This property is 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. This value will be displayed if LDAP Service configured.
→→ RemoteGroupDomain	string	The name of the remote group domain, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links. This value will be displayed if LDAP Service configured.
→ ServiceAddresses	array (string, null)	This property contains the addresses of the user account providers this resource references. The format of this field depends on the Type. This value will be displayed if LDAP Service configured.

→ ServiceEnabled	boolean	This indicates whether this service is enabled.
AdditionalExternalAccountProviders	object	The additional external account providers that this Account Service uses.
HTTPBasicAuth	string (enum)	Indicates if HTTP Basic authentication is enabled for this service. (Only for G4 platforms)
LDAP	object	The first LDAP external account provider this AccountService supports.
→ Authentication	object	This property contains the authentication information for the external account provider.
→→ AuthenticationType	string (enum)	This property contains the type of authentication used to connect to the external account provider.
→→ Password	string	This property is used with a PATCH to write the password for the account service. This property is null on a GET. If AuthenticationType is UsernameAndPassword.
→→ Username	string	This property contains the username for the account service. If AuthenticationType is UsernameAndPassword.
→ Certificates	object	The link to a collection of LDAP 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	array (string, null)	The base distinguished names to use when searching the LDAP service.
→→→ GroupsAttribute	string	The attribute name that contains the Groups for a user.
→→→ UsernameAttribute	string	The attribute name that contains the Username.
→ RemoteRoleMapping	array	This property contains a collection of the mapping rules to convert the external account providers account information to the local Redfish Role.
→→ LocalRole	string	The name of the local role in which to map the remote user or group. This value will be displayed if LDAP Service configured.
→→ RemoteGroup	string	This property is 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. This value will be displayed if LDAP Service configured.
→→ RemoteGroupDomain	string	The name of the remote group domain, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links. This value will be displayed if LDAP Service configured.



→ ServiceAddresses	array (string, null)	This property contains the addresses of the user account providers this resource references. The format of this field depends on the Type. This value will be displayed if LDAP Service configured.
→ ServiceEnabled	boolean	This indicates whether this service is enabled.
MaxPasswordLength	integer	The maximum password length for this service.
MinPasswordLength	integer	The minimum password length for this service.
Oem	object	Oem extension object.
→ OpenBmc	object	OpenBmc Oem Extension Object.
→→ AuthMethods	object	Configuration describing which auth methods are enabled.
→→→ BasicAuth	boolean	The value of this property shall be a boolean indicating whether BasicAuth authorization is enabled.
→→→ Cookie	boolean	The value of this property shall be a boolean indicating whether Cookie authorization is enabled.
→→→ SessionToken	boolean	The value of this property shall be a boolean indicating whether SessionToken authorization is enabled.
→→→ TLS	boolean	The value of this property shall be a boolean indicating whether TLS authorization is enabled.
→→→ XToken	boolean	The value of this property shall be a boolean indicating whether XToken authorization is enabled.
PrivilegeMap	object	The link to the mapping of the privileges required to complete a requested operation on a URI associated with this Service.
Roles	object	A link to a collection of Roles.
ServiceEnabled	boolean	Indicates whether this service is enabled.

### 7.2.3.1 Example

This example is the result of AccountService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/AccountService",
  "@odata.type": "#AccountService.v1_11_0.AccountService",
  "AccountLockoutDuration": 300,
  "AccountLockoutThreshold": 10,
  "Accounts": {
    "@odata.id": "/redfish/v1/AccountService/Accounts"
  },
  "ActiveDirectory": {
    "Authentication": {
      "AuthenticationType": "UsernameAndPassword",
      "Password": null,

```

```

        "Username": ""
    },
    "LDAPService": {
        "SearchSettings": {
            "BaseDistinguishedNames": [
                ""
            ],
            "GroupsAttribute": "",
            "UsernameAttribute": ""
        }
    },
    "RemoteRoleMapping": [],
    "ServiceAddresses": [],
    "ServiceEnabled": false
},
"AdditionalExternalAccountProviders": {
    "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders"
},
>Description": "Account Service",
Id": "AccountService",
LDAP": {
    "Authentication": {
        "AuthenticationType": "UsernameAndPassword",
        "Password": null,
        "Username": ""
    },
    "Certificates": {
        "@odata.id": "/redfish/v1/AccountService/LDAP/Certificates"
    },
    "LDAPService": {
        "SearchSettings": {
            "BaseDistinguishedNames": [
                ""
            ],
            "GroupsAttribute": "",
            "UsernameAttribute": ""
        }
    },
    "RemoteRoleMapping": [],
    "ServiceAddresses": [],
    "ServiceEnabled": false
},
"MaxPasswordLength": 20,
"MinPasswordLength": 8,
Name": "Account Service",
Oem": {
    "OpenBMC": {
        "@odata.id": "/redfish/v1/AccountService#/Oem/OpenBMC",
        "@odata.type": "#OemAccountService.v1_0_0.AccountService",
        "AuthMethods": {
            "BasicAuth": true,
            "Cookie": true,
            "SessionToken": true,
            "TLS": true,
            "XToken": true
        }
    }
}

```

```

},
"PrivilegeMap": {
  "@odata.id": "/redfish/v1/AccountService/PrivilegeMap"
},
"Roles": {
  "@odata.id": "/redfish/v1/AccountService/Roles"
},
"ServiceEnabled": true
"HTTPBasicAuth": "Enable",
}

```

## 7.2.4 Updatable Properties

Property	Allowed value
LDAP	OBJECT
→ServiceEnabled	BOOLEAN
→ServiceAddresses	Valid IPv4 Address and Valid IPV6 Address. Should use " <a href="#">ldap://{ip}</a> " format, e.g. " <a href="#">ldap://192.168.11.111</a> ".
→Authentication	OBJECT
→→AuthenticationType	The type of authentication used to connect to the external account provider.
→→Username	STRING, a string of 4 to 128 alpha-numeric characters. Special symbols such as: dot(.), comma(,), hyphen(-), underscore(_), equal-to(=) are allowed.
→→Password	STRING, must be at least 1 character long. White space is not allowed and password is not more than 47 characters.
→LDAPService	OBJECT
→→SearchSettings	OBJECT
→→→BaseDistinguishedNames	The base distinguished names are used to search an external LDAP service.
→→→UsernameAttribute	The attribute name that contains the LDAP username entry.
→→→GroupsAttribute	The attribute name that contains the groups for a user on the LDAP user entry
→RemoteRoleMapping	OBJECT
→→RemoteGroup	STRING, Max size : 128
→→LocalRole	STRING, Must be [Administrator/Operator/User/NoAccess]
→→RemoteGroupDomain	STRING
ActiveDirectory	OBJECT
→ServiceEnabled	BOOLEAN
→ServiceAddresses	Valid IPv4 Address and Valid IPV6 Address. Should use " <a href="#">ldap://{ip}</a> " format, e.g. " <a href="#">ldap://192.168.11.111</a> ".

→Authentication	OBJECT
→→AuthenticationType	STRING, The type of authentication used to connect to the external account provider.
→→Username	STRING, a string of 4 to 128 alpha-numeric characters. Special symbols such as: dot(.), comma(,), hyphen(-), underscore(_), equal-to(=) are allowed.
→→Password	STRING, must be at least 1 character long. White space is not allowed and password is not more than 47 characters.
→LDAPService	OBJECT
→→SearchSettings	OBJECT
→→→BaseDistinguishedNames	STRING, The base distinguished names to use to search an external LDAP service.
→→→UsernameAttribute	STRING, The attribute name that contains the LDAP username entry.
→→→GroupsAttribute	STRING, The attribute name that contains the groups for a user on the LDAP user entry
→RemoteRoleMapping	OBJECT
→→RemoteGroup	STRING, Max size: 128
→→LocalRole	STRING, must be Administrator/Operator/User/NoAccess
→→RemoteGroupDomain	STRING
Oem	OBJECT
→ OpenBmc	OBJECT
→→ AuthMethods	OBJECT
→→→ BasicAuth	BOOLEAN
→→→ Cookie	BOOLEAN
→→→ SessionToken	BOOLEAN
→→→ TLS	BOOLEAN
→→→ XToken	BOOLEAN

#### 7.2.4.1 Example Payload

```
{
  "AccountLockoutThreshold": 4,
  "AccountLockoutDuration": 30
}
```

LDAP / ActiveDirectory example:

```
{
  "LDAP": {
```

```

    "Authentication": {
      "AuthenticationType": "UsernameAndPassword",
      "Password": "123",
      "Username": "usr1"
    },
    "LDAPService": {
      "SearchSettings": {
        "BaseDistinguishedNames": [
          "ou=bmc,dc=qa2,dc=test"
        ],
        "GroupsAttribute": "gidNumber",
        "UsernameAttribute": "cn"
      }
    },
    "RemoteRoleMapping": [
      {
        "LocalRole": "Administrator",
        "RemoteGroup": "admin",
        "RemoteGroupDomain": "dc=qa2,dc=test"
      },
      {
        "LocalRole": "Operator",
        "RemoteGroup": "operator",
        "RemoteGroupDomain": "dc=qa2,dc=test"
      }
    ],
    "ServiceEnabled": true,
    "ServiceAddresses": [
      "ldap://192.168.11.111"
    ]
  }
}

```

Oem example:

```

{
  "Oem": {
    "OpenBMC": {
      "AuthMethods": {
        "BasicAuth": true,
        "Cookie": true,
        "SessionToken": true,
        "TLS": true,
        "XToken": true
      }
    }
  }
}

```

## 7.3 ManagerAccountCollection

### 7.3.1 Description

A Collection of ManagerAccount resource instances. This schema indicates all users at BMC.  
 URI: <https://{ip}/redfish/v1/AccountService/Accounts>

### 7.3.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET			V		V	V
POST					V	

### 7.3.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).  
Default has one account: it is an administrator account for each customer request.

#### 7.3.3.1 Example

This example is the result of ManagerAccountCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/AccountService/Accounts",
  "@odata.type": "#ManagerAccountCollection.ManagerAccountCollection",
  "Description": "BMC User Accounts",
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Accounts/root"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Accounts Collection"
}
```

### 7.3.4 Establish Manager Account by POST

Description: This action is used to create ManagerAccount instances.

URI: https://{ip}/redfish/v1/AccountService/Accounts

Property	Required	Allowed Value
UserName	Yes	STRING
Password	Yes	STRING. The password should follow policy rule as below.
RoleId	Yes	EXISTED ROLE ID
Enabled	No	BOOLEAN
PasswordExpiration	No	STRING [0-9]{4}-(0[1-9] 1[0-2])-(0[1-9] 1[2-9] 0[0-9] 3[0-1])T(2[0-3] 0[01][0-9]):[0-5][0-9]:[0-5][0-9]([-+](0[0-9] 1[0-2]):([0-5][0-9]))?  Ex: 2023-08-26T00:00:00+00:00 Notice that 1. PasswordExpiration should not be earlier than creation time. 2. Refer to current system time before Post a new account that only allow to set from 1 day to 365 days with ISO 8601 format.

		3. PasswordExpiration's minimum unit is day, it means the hour, minute, second and timezone is not work. if you set PasswordExpiration as "2023-08-26T00:01:11+08:00", it will display "2023-08-26T00:00:00+00:00". 4. Allow for input empty string ("") to disable PasswordExpiration.
SNMP	No	OBJECT
→AuthenticationProtocol	No	"HMAC_MD5", "HMAC_SHA96", "HMAC128_SHA224", "HMAC192_SHA256", "HMAC256_SHA384", "HMAC384_SHA512", "None"
→EncryptionProtocol	No	"CFB128_AES128", "CBC_DES", "None" G4 platforms add : "CFB128_AES192", "CFB128_AES256"
→AuthenticationKey	No	STRING, min size 8, Max size 12
→EncryptionKey	No	STRING, min size 8, Max size 12
Oem	No	OBJECT
→ InsydeAccount	No	OBJECT
→→ IPMIMessaging	No	BOOLEAN, it allows OemAccountType include IPMI.
→→ Email	No	Valid Email address
→→ SNMPAccess	No	BOOLEAN
→→ SNMPAccessLevel	No	"ReadWrite", "ReadOnly"
→→ SNMPAccess	No	BOOLEAN
→→ SNMPAccessLevel	No	"ReadOnly", "ReadWrite"

### 7.3.4.1 Example Payload

#### Create Account

```
{
  "Enabled": true,
  "Password": "password",
  "UserName": "username",
  "RoleId": "Administrator"
}
```

#### Create Account with other no required porpeties

```
{
  "Enabled": true,
  "Password": "password",
  "UserName": "username",
  "RoleId": "Administrator",
  "PasswordExpiration": "2024-06-12T00:00:00+00:00",
  "SNMP": {
    "AuthenticationProtocol": "HMAC_MD5",
    "EncryptionProtocol": "CFB128_AES128",
    "AuthenticationKey": "123456789",
    "EncryptionKey": "123456789"
  },
}
```

```

    "Oem": {
      "InsydeAccount": {
        "SNMPAccess": true,
        "SNMPAccessLevel": "ReadWrite",
        "IPMIMessaging": true,
        "Email": "test@test.com"
      }
    }
  }
}

```

## 7.4 ManagerAccount

### 7.4.1 Description

The user accounts, owned by a Manager, are defined in this resource. Changes to a Manager Account may affect the current Redfish service connection if this manager is responsible for the Redfish service.

URI: <https://{ip}/redfish/v1/AccountService/Accounts/<AccountId>>

### 7.4.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET			V		V	V
PATCH					V	V
DELETE					V	

### 7.4.3 Properties

Property	Type	Description
AccountTypes	array (string (enum))	The account types.
Enabled	boolean	This property is used by a User Administrator to disable an account without having to delete the user information. When set to true, the user can login. When set to false, the account is administratively disabled and the user cannot login.
Links	object	This property shall specify a valid odata or Redfish property.
→ Role	object	The link to the Redfish role that defines the privileges for this account. See the Role schema for details on this property.
Locked	boolean	This property shall indicate whether the account service automatically locked the account because the AccountLockoutThreshold was exceeded.
Locked@Redfish.AllowableValues	array (string)	This term indicates to the client that the service supports the values for Locked.



Oem	object	Oem Extension Object.
→ Insyde	object	Insyde Extension Object.
→→ UID	integer	The id of the user.
→ InsydeAccount	object	Insyde Account Extension Object.
→→ CreationTime	string (date-time)	This indicates the time which user is created.
→→ Email	string	This property shall contain the email address for an IPMI user to contact. Allow for input null to clean Email.
→→ IPMIMessaging	boolean	This indicates whether available over every IPMI-specified interface.
→→ Privilege	object	This indicates user privilege level by channel.
→→→ ChannelId	string	This indicates the channel number.
→→→ MediumType	string	This indicates the medium type of channel. When the "MediumType" is Null, the "PrivilegeLevel" must be Null, it means the channel is not implemented.
→→→ PrivilegeLevel	string	This indicates the user privilege level in the channel. When the "MediumType" is not Null and "PrivilegeLevel" is Null, it means the channel can access without privilege.
→→ SNMPAccess	boolean	This indicates whether this user can access snmpv3
→→ SNMPAccessLevel	string	This indicates whether this user's access level on snmpv3
→→ SOLAccess	boolean	
Password	string	This property is used with a PATCH to write the password for the account. This property is null on a GET.
PasswordChangeRequired	boolean	An indication of whether the service requires that the password for this account be changed before further access to the account is allowed.
PasswordExpiration	string (date-time)	Indicates the date and time when this account password expires. If `null`, the account password never expires. Allow for input empty string ("") to disable PasswordExpiration. PasswordExpiration's minimum unit is day, it means the hour, minute, second and time zone is not work. if you set PasswordExpiration as "2023-08-26T00:01:11+08:00", it will display "2023-08-26T00:00:00+00:00".
RoleId	string	This property contains the Role for this account.
SNMP	object	The SNMP settings for this account. <b>Note:</b> The anonymous's account does not have SNMP.
→ AuthenticationKey	string	The secret authentication key for SNMPv3.

→ AuthenticationProtocol	string (enum)	The authentication protocol for SNMPv3.
→ EncryptionKey	string	The secret encryption key used in SNMPv3.
→ EncryptionProtocol	string (enum)	The encryption protocol for SNMPv3.
StrictAccountTypes	boolean	See Intel/Nvidia Redfish User Guide for details.
UserName	string	This property contains the username for the account.

### 7.4.3.1 Example

This example is the result of a GET response.

```
{
  "@odata.id": "/redfish/v1/AccountService/Accounts/root",
  "@odata.type": "#ManagerAccount.v1_9_0.ManagerAccount",
  "AccountTypes": [
    "Redfish"
  ],
  "Description": "User Account",
  "Enabled": true,
  "Id": "root",
  "Links": {
    "Role": {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  },
  "Locked": false,
  "Locked@Redfish.AllowableValues": [
    "false"
  ],
  "Name": "User Account",
  "Oem": {
    "Insyde": {
      "@odata.type": "#OemManagerAccount.Insyde",
      "UID": 1
    },
    "InsydeAccount": {
      "@odata.type": "#InsydeOEMExtensions.v1_0_0.InsydeAccount",
      "CreationTime": "2024-07-08T00:00:00+00:00",
      "Email": null,
      "IPMIMessaging": true,
      "Privilege": [
        {
          "ChannelId": "0",
          "MediumType": "IPMB(I2C)",
          "PrivilegeLevel": null
        },
        {
          "ChannelId": "1",
          "MediumType": "802.3 LAN",
          "PrivilegeLevel": "Administrator"
        },
        {
          "ChannelId": "2",
          "MediumType": "802.3 LAN",

```

```

    "PrivilegeLevel": "Administrator"
  },
  {
    "ChannelId": "3",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "4",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "5",
    "MediumType": "Other LAN",
    "PrivilegeLevel": "Administrator"
  },
  {
    "ChannelId": "6",
    "MediumType": "IPMB (I2C) ",
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "7",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "8",
    "MediumType": "Oem",
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "9",
    "MediumType": "IPMB (I2C) ",
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "10",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "11",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "12",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  {
    "ChannelId": "13",
    "MediumType": null,
    "PrivilegeLevel": null
  },
  },

```

```

    {
      "ChannelId": "14",
      "MediumType": "Oem",
      "PrivilegeLevel": null
    },
    {
      "ChannelId": "15",
      "MediumType": "System Interface",
      "PrivilegeLevel": null
    }
  ],
  "SNMPAccess": false,
  "SNMPAccessLevel": null,
  "SOLAccess": true
},
{
  "Password": null,
  "PasswordChangeRequired": false,
  "PasswordExpiration": null,
  "RoleId": "Administrator",
  "SNMP": {
    "AuthenticationKey": null,
    "AuthenticationProtocol": null,
    "EncryptionKey": null,
    "EncryptionProtocol": null
  },
  "UserName": "root"
}

```

## 7.4.4 Updatable Properties

Note: If you want patch "SNMP" object, you must fill "SNMP" object with "AuthenticationProtocol", "EncryptionProtocol", "AuthenticationKey" and "EncryptionKey" properties at the same request.

Property	Allowed value
Enabled	BOOLEAN
UserName	STRING
Password	STRING
PasswordExpiration	STRING [0-9]{4}-(0[1-9] 1[0-2])-(0[1-9] 1[1-2][0-9] 3[0-1])T(2[0-3] [01][0-9]):[0-5][0-9]:[0-5][0-9]([-+](0[0-9] 1[0-2]):([0-5][0-9]))?  Ex: 2023-08-26T00:00:00+00:00 Notice that 1. PasswordExpiration should not be earlier than creation time. 2. Refer to current system time before Post a new account that only allow to set from 1 day to 365 days with ISO 8601 format 3. PasswordExpiration's minimum unit is day, it means the hour, minute, second and timezone is not work. if you set PasswordExpiration as "2023-08-26T00:01:11+08:00", it will display "2023-08-26T00:00:00+00:00".

	4. Allow for input empty string ("") to disable PasswordExpiration.
RoleId	EXISTED ROLE ID
Locked	BOOLEAN, Allowed value which indicate in "Locked@Redfish.AllowableValues".
SNMP	OBJECT
→ AuthenticationProtocol	Allow Value { "HMAC_MD5", "HMAC_SHA96", "HMAC128_SHA224", "HMAC192_SHA256", "HMAC256_SHA384", "HMAC384_SHA512", "None" }
→ EncryptionProtocol	Allow Value { "CFB128_AES128", "CBC_DES", "None" }
→ AuthenticationKey	STRING, Max size 12
→ EncryptionKey	STRING, Max size 12
Oem	OBJECT
→ InsydeAccount	OBJECT
→→ IPMIMessaging	BOOLEAN
→→ Email	STRING
→→ SNMPAccess	BOOLEAN
→→ SNMPAccessLevel	Allow Value { "ReadOnly", "ReadWrite" }
→→ Privilege	ARRAY
→→→ ChannelId	STRING Max size 16 (Used to sepcific channel which you want to patch privilegelevel)
→→→ PrivilegeLevel	Allow Value { "User", "Administrator", "NoAccess", "Operator" }

#### 7.4.4.1 Example Payload

```
{
  "Enabled": true,
  "Password": "password",
  "UserName": "username",
  "RoleId": "Administrator",
  "SNMP": {
    "AuthenticationProtocol": "HMAC_MD5",
    "EncryptionProtocol": "CFB128_AES128",
    "AuthenticationKey": "123456789",
    "EncryptionKey": "123456789"
  },
  "Oem": {
    "InsydeAccount": {
      "SNMPAccess": true,
      "SNMPAccessLevel": "ReadWrite",
      "IPMIMessaging": true,
      "Email": "test@test.com",
      "Privilege": [
```

```
{
  {
    "ChannelId": "2",
    "PrivilegeLevel": "ReadOnly"
  },
  {
    "ChannelId": "3",
    "PrivilegeLevel": "Administrator"
  }
}
]
```

### 7.4.5 Remove Manager Account by DELETE

Description: Manager Accounts are removed with a Delete operation.  
URI: <https://{ip}/redfish/v1/AccountService/Accounts/<ACCOUNT ID>>

## 7.5 RoleCollection

### 7.5.1 Description

A Collection of Role resource instances. This schema indicates all roles at BMC.  
URI: <https://{ip}/redfish/v1/AccountService/Roles>

### 7.5.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.5.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.5.3.1 Example

This example is the result of RoleCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/AccountService/Roles",
  "@odata.type": "#RoleCollection.RoleCollection",
  "Description": "BMC User Roles",
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Operator"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/ReadOnly"
    }
  ]
}
```

```

    },
    {
        "@odata.id": "/redfish/v1/AccountService/Roles/NoAccess"
    }
],
"Members@odata.count": 4,
"Name": "Roles Collection"
}

```

## 7.6 Role

### 7.6.1 Description

This resource defines a user role to be used in conjunction with a Manager Account, and also it displays some information such as privileges, which are assigned to Role.

URI: <https://{ip}/redfish/v1/AccountService/Roles/<RoleId>>

### 7.6.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		✓				

### 7.6.3 Properties

Property	Type	Description
AssignedPrivileges	array (string (enum))	<p>The redfish privileges that this role includes.</p> <p><b>Login:</b> Can login to the service and read Resources.</p> <p><b>ConfigureManager:</b> Can configure managers.</p> <p><b>ConfigureComponents:</b> Can configure components that this service manages.</p> <p><b>ConfigureUsers:</b> Can configure users and their accounts.</p> <p><b>ConfigureSelf:</b> Can change the password for the current user account and log out of their own sessions.</p>
IsPredefined	boolean	An indication of whether the role is predefined by Redfish or an OEM rather than a client-defined role.
OemPrivileges	array (string)	The Oem extension redfish privileges that this role includes.
RoleId	string	This property shall contain the string name of the role. This property shall contain the same value as the Id property.

#### 7.6.3.1 Example

These examples are the result of Roles schema's GET response.  
This is "/redfish/v1/AccountService/Roles/Administrator" example:

```
{
  "@odata.id": "/redfish/v1/AccountService/Roles/Administrator",
  "@odata.type": "#Role.v1_3_1.Role",
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "Description": "Administrator User Role",
  "Id": "Administrator",
  "IsPredefined": true,
  "Name": "User Role",
  "OemPrivileges": [],
  "RoleId": "Administrator"
}
```

This is "/redfish/v1/AccountService/Roles/Operator" example:

```
{
  "@odata.id": "/redfish/v1/AccountService/Roles/Operator",
  "@odata.type": "#Role.v1_3_1.Role",
  "AssignedPrivileges": [
    "Login",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "Description": "Operator User Role",
  "Id": "Operator",
  "IsPredefined": true,
  "Name": "User Role",
  "OemPrivileges": [],
  "RoleId": "Operator"
}
```

This is "/redfish/v1/AccountService/Roles/ReadOnly" example:

```
{
  "@odata.id": "/redfish/v1/AccountService/Roles/ReadOnly",
  "@odata.type": "#Role.v1_3_1.Role",
  "AssignedPrivileges": [
    "Login",
    "ConfigureSelf"
  ],
  "Description": "ReadOnly User Role",
  "Id": "ReadOnly",
  "IsPredefined": true,
  "Name": "User Role",
  "OemPrivileges": [],
  "RoleId": "ReadOnly"
}
```

This is "/redfish/v1/AccountService/Roles/NoAccess" example:

```
{
  "@odata.id": "/redfish/v1/AccountService/Roles/NoAccess",
  "@odata.type": "#Role.v1_3_1.Role",
  "AssignedPrivileges": [],
  "Description": "NoAccess User Role",
  "Id": "NoAccess",
}
```



```

    "IsPredefined": true,
    "Name": "User Role",
    "OemPrivileges": [],
    "RoleId": "NoAccess"
  }

```

## 7.7 ExternalAccountProviderCollection

### 7.7.1 Description

A Collection of ExternalAccountProvider resource instances.  
 URI: https://{ip}/redfish/v1/AccountService/ExternalAccountProviders

### 7.7.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.7.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.7.3.1 Example

This example is the result of ExternalAccountProviderCollection's GET response.

```

{
  "@odata.context":
"/redfish/v1/$metadata#ExternalAccountProviderCollection.ExternalAccountProviderCollection",
  "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders",
  "@odata.type": "#ExternalAccountProviderCollection.ExternalAccountProviderCollection",
  "Description": "The collection of ExternalAccountProvider Resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders/RADIUS"
    }
  ],
  "Members@odata.count": 1,
  "Name": "External Account Provider Collection"
}

```

## 7.8 ExternalAccountProvider

### 7.8.1 Description

A remote service that can provide accounts for this manager to utilize for authentication.  
 URI: https://{ip}/redfish/v1/AccountService/ExternalAccountProviders/<ProviderId>

## 7.8.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH			V			

## 7.8.3 Properties

Property	Type	Description
Authentication	object	This property contains the authentication information for the external account provider.
→AuthenticationType	string (enum)	This property contains the type of authentication used to connect to the external account provider.(UsernameAndPassword or Token)
→Password	string	This property is used with a PATCH to write the password for the account service. This property is null on a GET.If AuthenticationType is UsernameAndPassword.
→Token	string	This property is used with a PATCH to write the token for the account. This property is null on a GET. If AuthenticationType is Token.
→Username	string	This property contains the user name for the account service. If AuthenticationType is UsernameAndPassword.
Oem	object	Oem extension object.
→ InsydeExtraSettings	object	This property contains the extra setting for this service
→→Port	integer	This indicates which port is used
RemoteRoleMapping	array	This property contains a collection of the mapping rules to convert the external account providers account information to the local Redfish Role.
→LocalRole	string	The name of the local role in which to map the remote user or group.
→RemoteGroup	string	This property is 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	array (string, null)	This property contains the addresses of the user account providers this resource references. The format of this field depends on the Type.
ServiceEnabled	boolean	This indicates whether this service is enabled.

### 7.8.3.1 Example

This example is the result of ExternalAccountProvider schema's GET response. This is "/redfish/v1/AccountService/ExternalAccountProviders/RADIUS" example:

```
{
```

```

"@odata.context":
"/redfish/v1/$metadata#ExternalAccountProvider.v1_3_0.ExternalAccountProvider",
"@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders/RADIUS",
"@odata.type": "#ExternalAccountProvider.v1_3_0.ExternalAccountProvider",
"Authentication": {
  "AuthenticationType": "Token",
  "Password": null,
  "Token": null,
  "Username": ""
},
>Description": "A remote RADIUS Service providing additional Accounts",
"Id": "RADIUS",
>Name": "Remote RADIUS Service",
"Oem": {
  "InsydeExtraSettings": {
    "@odata.type": "#InsydeOEMExtensions.ExtraSettings",
    "Port": 1812
  }
},
"RemoteRoleMapping": [
  {
    "LocalRole": "Callback",
    "RemoteGroup": ""
  },
  {
    "LocalRole": "ReadOnly",
    "RemoteGroup": ""
  },
  {
    "LocalRole": "Operator",
    "RemoteGroup": ""
  },
  {
    "LocalRole": "Administrator",
    "RemoteGroup": ""
  }
],
"ServiceAddresses": [
  "0.0.0.0",
  "::"
],
"ServiceEnabled": false
}

```

## 7.8.4 Updatable Properties

Property	Allowed value
ServiceEnabled	BOOLEAN
ServiceAddresses	Valid IPv4 Address and Valid IPV6 Address
Authentication	OBJECT
→Username	STRING, Max size : 64

→Password	STRING, Max size : 64
→Token	STRING, Max size : 64
Oem	OBJECT
→InsydeExtraSettings	OBJECT
→→SSLEnable	BOOLEAN
→→Port	[0-65535]
→→AuthTimeout	< MAX INT
RemoteRoleMapping	OBJECT
→RemoteGroup	STRING, Max size : 64
→LocalRole	STRING, Must be [Administrator Operator ReadOnly Callback]

### 7.8.4.1 Example Payload

```
{
  "ServiceEnabled": true,
  "ServiceAddresses": ["192.168.1.1"],
  "Authentication": {
    "Token": "test",
    "Username": "Username",
    "Password": "Password"
  },
  "RemoteRoleMapping": [
    {
      "RemoteGroup": "callback",
      "LocalRole": "Callback"
    },
    {
      "RemoteGroup": "readonly",
      "LocalRole": "ReadOnly"
    },
    {
      "RemoteGroup": "operator",
      "LocalRole": "Operator"
    },
    {
      "RemoteGroup": "admin",
      "LocalRole": "Administrator"
    }
  ],
  "Oem": {
    "InsydeExtraSettings": {
      "Port": 1813
    }
  }
}
```

## 7.9 CertificateService

### 7.9.1 Description

The CertificateService schema defines a Certificate Service which represents the actions available to manage certificates and links to where certificates are installed.

URI: <https://{ip}/redfish/v1/CertificateService>

### 7.9.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
POST			V	V		

### 7.9.3 Properties

Property	Type	Description
Actions	object	The available actions for this Resource.
CertificateLocations	object	Information regarding the location of certificates.

#### 7.9.3.1 Example

This example is the result of CertificateService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/CertificateService",
  "@odata.type": "#CertificateService.v1_0_4.CertificateService",
  "Actions": {
    "#CertificateService.GenerateCSR": {
      "target": "/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR"
    },
    "#CertificateService.ReplaceCertificate": {
      "CertificateType@Redfish.AllowableValues": [
        "PEM"
      ],
      "target":
"/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate"
    }
  },
  "CertificateLocations": {
    "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
  },
  "Description": "Actions available to manage certificates",
  "Id": "CertificateService",
  "Name": "Certificate Service"
}
```

## 7.9.4 Supported Actions

### 7.9.4.1 Replace Certificate

Description: This action is used to replace an existing certificate.

URI: <https://{ip}/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate>

Property	Allowed Value	Description
CertificateString	STRING	The string for the certificate.
CertificateType	"PEM"	The format of the certificate.
CertificateUri	OBJECT	
→@odata.id	SRING	A link to the certificate that is being replaced.

## 7.9.5 Example Payload

```
{
  "CertificateString": "-----BEGIN
CERTIFICATE-----\nMIICnjCAAgegAwIBAgIUJWazmVmUsRzNqB6U//LMxMLdhnkWDQYJKoZIhvcNAQEL\
nBQAwYTELMAkGA1UEBhMCc3MxCzAJBgNVBAGMANzMQswCQYDVQQLHDAJczELMAkG\
nA1UECgwCc3MxCzAJBgNVBAsMANzMQswCQYDVQQLHDAJczELMAkG\
nA1UECgwCc3MwHhcNMjMwNDE4MDU1MjMwWWhcNMjQwNDE3MDU1MjMwWjBhMQswCQYDVQQLHDAJczELMAkG\
nEwJzELMAkGA1UECgwCc3MxCzAJBgNVBAGMANzMQswCQYDVQQLHDAJczELMAkG\
nA1UECgwCc3MxCzAJBgNVBAMMANzMQswCQYDVQQLHDAJczELMAkG\
nA1UECgwCc3MxCzAJBgNVBAMMANzMQswCQYDVQQLHDAJczELMAkG\
nhkiG9w0BAQEFAAOBjQAwgYkCgYEAo7vpnulEXWR4r7EIjLnLnT2Vol4O3tEQB0wh\
nbKGPGR2JmY8qawRoQd19SzlFGL5Rc9OtwJ5yrWejoYhuWLI8GMusvW+siByn+Gr\nCX/PXfJt6S5t4PeXWzwm/\
gkQ6q8U2bqaqckp9yjmTKI7VKXJ30RgnQnqAQiUYKoi\nFA9+aPUCawEAAaNTMFEwHQYDVR0OBBYEFi+o/\
Z3qFhJf0ZNXUicB9fMMzrRGMB8G\nA1UdIwQYMBaAFi+o/Z3qFhJf0ZNXUicB9fMMzrRGMA8GA1UdEwEB/wQFMAMBAf8w\
nDQYJKoZIhvcNAQELBQADgYEAKHIYo9w53Lw9kFHg5ZyD/aHyqsT5U6aWuZQJhJLC\
nr9WkvltaxHI8fFr0NvvHANBOCQ2TQzMTvNm1b/XaKc87zC/SWfbdAeAbG/ZDcYsD\nxT5H9SgX2D90P5jmgXuui/\
vWHOTQIjZxmGimiGoZHBPMNuzK3xW/AZW9j1OtZuCO\n1Bw=\n-----END CERTIFICATE-----\n",
  "CertificateType": "PEM",
  "CertificateUri": {
    "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/0"
  }
}
```

```
{
  "CertificateString": "-----BEGIN CERTIFICATE-----\
nMIICnjCAAgegAwIBAgIUOY0k+ZLkrLrgAKwim3kDbL2XrrUwDQYJKoZIhvcNAQEL\
nBQAwYTELMAkGA1UEBhMCdHxzc3MxCzAJBgNVBAGMANR0MQswCQYDVQQLHDAJ0dDELMakG\
nA1UECgwCdHxzc3MxCzAJBgNVBAsMANR0MQswCQYDVQQLHDAJ0dDERMA8GCSqGSIB3DQEJ\
nARYCdHxzc3MwHhcNMjMwODEwMDUzNjA3WWhcNMjQwODE5MDUzNjA3WjBhMQswCQYDVQQLHDAJ0dDELMakG\
nEwJ0dDELMakGA1UECgwCdHxzc3MxCzAJBgNVBAGMANR0MQswCQYDVQQLHDAJ0dDELMakG\
nA1UECgwCdHxzc3MxCzAJBgNVBAMMANR0MQswCQYDVQQLHDAJ0dDELMakG\
nhkiG9w0BAQEFAAOBjQAwgYkCgYEA0u82ZtOvEhkw/sk2uH6+O1JNY0HuVRqbSt/w\nU7mmXP6BwqCnpAq2/\
qKVwqqagJLjvq9IYZBgMh/m2sgliTaIkDlkfbnvtlBwTY0I\nnvzhwDMITIK9/\
ziLbWDRpPiFwEpOhbmQqD3qBrC7V1BtoevdSrI3f1QwLWiYJI30h\
nxQTxAf8CAwEAAaNTMFEwHQYDVR0OBBYEFpNDAPIWdHbYSm81K+JGJyWmI5nHMB8G\
nA1UdIwQYMBaAFpNDAPIWdHbYSm81K+JGJyWmI5nHMA8GA1UdEwEB/wQFMAMBAf8w\
nDQYJKoZIhvcNAQELBQADgYEA80n39raS2FfuvJD+pSpcU+nNraYv5QZijwTqwf\
-----END CERTIFICATE-----"
```

```
ny0Z1lM3a82m6wrStMudD6e0KE01F3LMJb5v2wBwVBM3KNcTcCaJWn3MGeYKCDKJ\nz7M4iJg+nmTJQOoOvEywE/
q4GWVUBmKdxNf+EMfdOamXjE0+2uFvGDP+jASbxeHH\nDbY=\n-----END CERTIFICATE-----\n",
  "CertificateType": "PEM",
  "CertificateUri": {
    "@odata.id": "/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates/1"
  }
}
```

### 7.9.5.1 Generate CSR

Description: This action is used to make a certificate signing request.

URI: <https://{ip}/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR>

Property	Description
City	The city or locality of the organization making the request.
CommonName	The fully qualified domain name of the component to secure.
ContactPerson	The name of the user making the request.
Country	The two-letter country code of the organization making the request.
Organization	The name of the organization making the request.
OrganizationalUnit	The name of the unit or division of the organization making the request.
State	The state, province, or region of the organization making the request.
CertificateCollection	The link to the certificate collection where the certificate is installed after the certificate authority (CA) signs the certificate.
AlternativeNames	The additional host names of the component to secure.
CertificateCollection	A link to the certificate that is being replaced.
→@odata.id	
Email	The email address of the contact within the organization making the request.
GivenName	The given name of the user making the request.
Initials	The initials of the user making the request.
KeyBitLength	The length of the key, in bits,if needed based on the KeyPairAlgorithm parameter value.
KeyCurveId	The curve ID to use with the key,if needed based on the KeyPairAlgorithm parameter value.
KeyPairAlgorithm	The type of key-pair for use with signing algorithms.
KeyUsage	The usage of the key contained in the certificate.
Surname	A link to the certificate that is being replaced.
UnstructuredName	The unstructured name of the subject.

## 7.9.6 Example Payload

```
{
  "Country": "JP",
  "State": "Japan",
  "City": "Tokyo",
  "Organization": "Insyde",
  "OrganizationalUnit": "BMC",
  "CommonName": "Insyde.com",
  "Email": "test@insyde.com",
  "CertificateCollection": {
    "@odata.id": "/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates"
  }
}
```

## 7.9.7 How to use CertificateServices to GenerateCSR and ReplaceCertificate

Reference: [https://github.com/openbmc/openbmc-test-automation/blob/master/docs/certificate\\_generate.md](https://github.com/openbmc/openbmc-test-automation/blob/master/docs/certificate_generate.md)

Note: GenerateCSR only for **/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates** and **/redfish/v1/AccountService/LDAP/Certificates**

### 7.9.7.1 Steps to create and install CA signed certificate

To create and install a CA signed server certificate, follow these steps:

- A. Create your own SSL certificate authority
- B. Generate CSR for server certificate
- C. Create CA signed server certificate using CSR request
- D. Install CA signed server certificate

#### Create your own SSL certificate authority

1. Create private key for certificate authority(CA).

```
openssl genrsa -des3 -out rootCA.key 2048
```

Note: You will be prompted to give a password for private key. This password will be used whenever the private key is used.

2. Create a root CA certificate using the private key created in step 1.

```
openssl req -x509 -new -nodes -key rootCA.key -sha256 -days 1024 -out rootCA.pem
```

This will start an interactive script to enter information that will be incorporated into your certificate request.

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [AU]:**US**

State or Province Name (full name) [Some-State]:**Oregon**

Locality Name (eg, city) []:**Portland**



Organization Name (eg, company) [Default Company Ltd]:**XYZ**  
 Organizational Unit Name (eg, section) []:**IT**  
 Common Name (eg, YOUR name) []:**XYZ CERTIFICATE AUTHORITY**  
 Email Address []:**none@none.com**

### Generate CSR for server certificate

1. Create CSR request file (csr\_file.json) with all of the following fields.

Note: CertificateCollection only for **/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates** and **/redfish/v1/AccountService/LDAP/Certificates**

```
{
  "City": <City Name>,
  "CertificateCollection": {
    "@odata.id": "/redfish/v1/Managers/${MANAGER_ID}/NetworkProtocol/HTTPS/Certificates/"
  },
  "CommonName": "<BMC_IP>",
  "Country": <Country Name>,
  "Organization": <Organization Name>,
  "OrganizationalUnit": <Organization Unit Name>,
  "State": <State Name>,
  "KeyPairAlgorithm": <RSA/EC>
}
```

Example:

```
{
  "City": "Tokyo",
  "CertificateCollection": {
    "@odata.id": "/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates/"
  },
  "CommonName": "192.168.0.0",
  "Country": "JP",
  "Organization": "Insyde",
  "OrganizationalUnit": "BMC",
  "State": "Japan",
  "Email": "test@insyde.com",
  "KeyPairAlgorithm": "RSA"
}
```

2. Generate CSR request using the following Redfish command.

```
curl -k -u root:OpenBmc -X POST
https://${BMC_IP}/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR -d @csr_file.json
```

Response:

```
{
  "CSRString": "-----BEGIN CERTIFICATE REQUEST-----\n
nMIICyzCCAbMCAQEwYUxDzANBgNVBACMBkF1c3RpbjEUMBIGA1UEAwwLeHgueHgu\n
neHgueHgxG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA7+OoXRmA185W/5pB/nYjC5EdZ/atRppkIxjT4sXANZLxm6/\n
vKfR/BAxd5s8DYrifPjdfvJrv33cAPT6+pe/no/t793hdBx7Cwwzqlj3czfdbpvGp90I7BQ10vKCo/\n
NDmqeTm+5jphYpd8ZvKmbNC\nOfHV0sr3/dMPHME16aunDEHFJz1CzXpG5kSszRYbwcZrXC7rvmSi8UBX8BYoKWzx\n
nLAGdOYh9j5k/LVNQuKFJjQIfesYJ8fajgsJr8bj81o+bOzvG+zApvt+Ak8B8fqa7\nnvET4jbloeDuSi9D1/\n
Xax+2qx3vInIQOOZz3OCVjxNLZMWOA+P86z59e/6YkXOg/Q\n
nkXG4uQIDAQABAAWdQYJKoZIhvcNAQELBQADggEBAOTLICzJiYerbWa6VyXv/w8b\
```

```
nr160bNDvIRXJf8E2b5+27NlnZb+65WVa6oxE9Ai7UEN+mHkbnDpb2vujp/wuROER\
nrgmjstePJST+EqX5PuoSxbPhE0ucHw7dTzf9agfvNLlpgTUo/Lv9A2pCSDa5KZ13\nu96AFsFBjBuanUK2k7aoEc/
Rl7JhfXuaXNszzYqDgwIHggYWbZO7Ku7HHbY1qYGR\
nD0XaLUyXAgB76mcud004zu7swtJxDlM+c5+i0yqflWQiVWEAOW9HDeHvnYmShuT\n+HS1vhv+x/
9HDHoxiWot2Th18uzdf+F0446fR8uoIrGlz7KdNoxipUnVKfyXTg=\n-----END CERTIFICATE REQUEST-----\n",
  "CertificateCollection": {
    "@odata.id": "/redfish/v1/Managers/${MANAGER_ID}/NetworkProtocol/HTTPS/Certificates/"
  }
}
```

### 3. Convert response into .csr file (device.csr)

Note: Change the value of the resulting CSRString from step 2 to the following format. Replace **\n** with new line.

```
$ cat device.csr
-----BEGIN CERTIFICATE REQUEST-----
MIICyzCCABMAQAEwgYUxDzANBgNVBACMBKf1c3RpbjEUMBIGA1UEAwwLeHgueHgu
eHgueHgxChZAJBgNVBAYTA1VMTQ0wCwYEkw4DAgUwDUINBMR0wGwYDVR0IDBRTZXJz
ZXJhdXRoZXZ5a0aWNBhdGlvbjEUMBIGA1UECgwLQUJDIExpbWl0ZWQxChZAJBgNVBAGM
AkFVMiIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA7+OoXRmA185W/5pB
YjC5EdZ/atRPkIjT4sXANZLXm6/vkfr/Baxd5s8DYriPjdfvJRv33cAPT6+pe
o/t793hdBx7Cwwzqlj3czfdbpvGp90I7BQ1OvKCo/NDmqeTm+5jphYpd8ZvKmBNC
OfHV0sr3/dMPHME16aunDEHFJz1CzXpG5kSszRYbwcZrXC7rmvSi8UBX8BYoKWzz
lAGdOyH9j5k/LVNQuKFJjqlfesYJ8fajgsrJ8bj8l+o+bOzvG+aApvt+Ak8B8fa7
vET4jb1oeDuSi9D1/AA+2dq3vInlQOOZ3OCVjxNLZMWAOA+P86z596/6YkXOg/Q
kXG4uQIDAQABoAAwDQYJKoZIhvcNAQELBQADggEBAOTLICZJiYerbWa6VyXv/w8b
r160bNDvIRXJf8E2b5+27NinZb+65WVa6oxE9Ai7UEN+mHkbnDpb2vujp/wuROER
rgmjstePJST+EqX5PuoSxbPhE0ucHw7dTZf9agfvNLlpGTUo/Lv9A2pCSDa5KZ13
u96AFsFBjBuanUK2k7aoEc/Rl7JhfxAXNszzYqDgwIHggYWbZ07Ku7HHbY1qYGR
D0XaLUyXAxgB76mcud004zu7swTJxDlM+c5+i0yqfLWQiVWEAOW9HDeHvnYmShuT
+HS1vhv+x/9HDDHowxiWot2Th18uzdf+F0446rR8uolrG1z7KdNoxipUnVKfyXTg=
-----END CERTIFICATE REQUEST-----
```

## Create CA signed server certificate using CSR request

1. Use BMC generated CSR request (device.csr) to generate CA signed certificate (device.crt).

```
openssl x509 -req -in device.csr -CA rootCA.pem -CAkey rootCA.key -CAcreateserial -out device.crt -days 500 -sha256
```

Note: You will be prompted to give a password for private key.

2. Create JSON file (certificate.json) with the device.crt file created in step 1.

Note: Change the content of device.crt to match the format of CertificateString by replacing \n with a new line.

```
{
  "CertificateString": "-----BEGIN CERTIFICATE-----\nMIIDkTCCAnkCCQD7oPxudsyOjTANBgkqhkiG9w0BAQsFADCBjjELMAkGA1UEBhMC\nnVVMxuDZANBgNVBAGMBK9yZWdvbjERMA8GA1UEBwwIUIG9ydGxhbmQxDDAKBgNVBAoM\nnA1hZWJELMAkGA1UECwwCSVQxIjAgBgNVBAMMGVhZWibDRVJUSUZJQ0FURSBVBVRI\nnT1JJVfKxHDAaBgkqhkiG9w0BCQEWDW5vbWVAbm9uZS5jb20wHhcNMTEkx\nnMzQwWWhcNMjEwMTIOMDkxMzQwWjCBhTEPMA0GA1UEBwwGQXVzdGluMRQwEgYDVQQD\nnDAT4eC54eC54eDELMAkGA1UEBhMCVVMxDTALBgQrDgMCDANSU0ExHTAbBgNV\nnHSUMFFNlcnZickF1dGhlbnRpY2F0aW9uMRQwEgYDVQQKDAtBQkMgTGltXRIZDEL\nnMAkGA1UECAwCQVUwggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIABAQDv46hd\nmkFiMLkR1n9q2s+mQjGNPixcA1ktebr++R9H8EDF3mzwNiuJ8+N1+8lG\nfdwA9Pr6lj+3v3eF0HHsLDDOqWPdzN9lum8an3QjsFDU68oKj80Oap5Ob7mOmF\nnil3xm8qYE0I58dXSyv90w8cwTXpq6cMQcUnPULNekbmRKzNFhvBxmtcLuu+ZKLx\nnQFfwFigpbPGUAZ05iH2PmT8tU1C4oUmOoh96xgnx9qOCwmvxuPzWj5s7O8b7MCm+\nn34CTwHx+pru8RPIBvWh4O5KLOPX9drH7arHe8ichA45nPe4JWPE0tkxY4D4/zrPn\npiRc6D9CRcbi5AgMBAEwEwDQYJKoZIhvcNAQELBQADggEBAJ+xLxyfBBpRXov\nnoRVMyJSWRSSITfzvcZVMcbDXA WR591rdYPNmpmpuDSdtnlvJe33H9fyXRI1UMnw\nn5BYpJrVjxxyEvIyoxbJSkLxjko6TUJNl2w7bJcUDpwdYWuwuUc6Uf05c5LGSb4z\nnzbvFedSsW+3pHuFopuhU8d/SR14rjZiGpU2MBF+/"
```

```
yEyUXmQ5jiU69UwvIvbc0Zy\aquTL4O3aL1Lc9ACVUsQ7mTUS+niduIsZLvI+OWMShRo8CEUJ9BKijQJhwvUVf\
nUBNa1pVzonLxdt3eRTv93X4cu5ole6wO2DA19PWnlt/16XYw61/5naYckslQTRdc\ngvsIpb0=\n-----END CERTIFICATE-----",
  "CertificateType": "PEM",
  "CertificateUri":
  {
    "@odata.id": "/redfish/v1/Managers/${MANAGER_ID}/NetworkProtocol/HTTPS/Certificates/1"
  }
}
```

### Install CA signed server certificate

Replace server certificate using JSON file (above) with CA signed certificate details (certificate.json).

```
curl -k -u root:0penBmc -X POST https://${BMC_IP}/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate -d
@certificate.json
```

### Response:

```
{
  "@odata.id": "/redfish/v1/Managers/${MANAGER_ID}/NetworkProtocol/HTTPS/Certificates/1",
  "@odata.type": "#Certificate.v1_6_0.Certificate",
  "CertificateString": "-----BEGIN CERTIFICATE-----\n
mMIIDxjCCAq4CFcUNRshIpTgWpKjJ02Ss4FQnt94XMA0GCSqGSIb3DQEBCwUAMIG0\
nMQswCQYDVQQGEwJVUzEPMA0GA1UECAwGT3JlZ29uMREwDwYDVQQHDAhQcm90bGFu\
nZDEMMAoGA1UECgwDWFlaMQswCQYDVQQLEDAJJVDEiMCAGA1UEAwwZWFlaIENFULRJ\
nRklDQVRFIIEFVVEhPuklUWTEcMBOGCSqGSIb3DQEJARYNbmc9uZUBub251LmNvbTAE\
nFw0yNDAYMjYwNzI4MDdaFw0yNTA3MTAwNzI4MDdaMIGvMQ4wDAYDVQQHDAVub2t5\
nbzETMBEGA1UEAwwKSW5zeWRlLmNvbTELMakGA1UEBhMCSlAxHjAcBgkqhkiG9w0B\
nCQEW3Rlc3RAaW5zeWRlLmNvbTENMAcGBCsOAwIMA1JTEdMBsGA1UdJQwU2Vy\
ndmVYQXV0aGVudGljYXRpb24xZDZANBgNVBAoMBk1uc3lkZTEMAoGA1UECwwDQk1D\
nMQ4wDAYDVQQIDAVKYXBhb24xZDZANBgNVBQADggEPADCCAQoCggEB\
nALzkuwFBIRcaPX7EbaS69LJDgwh06sJfpu3/jvUKLumbHd4emDUQ1SAxkwcIy+eN\
nRmt5OxYqLTi3L46zPfT0Q8inVMCn2a10Yb0CVGfLoY3XuUIjVjUw3AK/SahJXhI6\
nAP6K12K4Xby0mJxUHj0YB1ISP+F5o2Ob+ziOPNNuBmRtAO3oWsPQKkgUh2E9Cv46\
n84KJuo5NDqIdNianWly8G7X7CVfhGNpBpReUAARlKMnGUOCGaM18lVEM2iRpj24F\nTrdTSdiEZLdbP8QsNyBJSX/\
OSjRarOo15eKksMHhsKbal4VIObi9HUQHnwMs+eGQ\
ndmBSLAotkv99XqaVNMmoDVECAwEAATANBgkqhkiG9w0BAQsFAAOCAQEAmly5gQh\
nnflvNEylnjZ+H3nIeC7mKPvD+2bfmCax00fP4frMVh5n3FefCzZHXWQJrX5P8fK\nnRyR/\
jaIsSBKCe+6tjujkl37Dlo2Tgb5Mi3HL8tdqpaTTK8PGFpk82MQQN7aS6Uf\
nC75vWEG0K+gjzkmGdN7fGyMSOkfPtjKUGv7nFM70zU68DJMugo3yGq01Dmi/fKns\
nOUN7tT14TaghLVkRTZWg3FUJWhI0XIzlaPFUDx+TFMsIEC0d/a3XwqeDQXgpm4Zl\nMMK0IkqEfxZEnq8PiAp8B0/\
aJSvRRRfurWrkE73x8IxmGnw5ZgQsNBYJstY/lu\n0RXk/zC1fWMGhw=\n-----END CERTIFICATE-----\n",
  "Description": "HTTPS certificate",
  "Id": "1",
  "Issuer": {
    "City": "Protland",
    "CommonName": "XYZ CERTIFICATE AUTHORITY",
    "Country": "US",
    "Organization": "XYZ",
    "OrganizationalUnit": "IT",
    "State": "Oregon"
  },
  "KeyUsage": [],
  "Name": "HTTPS certificate",
  "Subject": {
    "City": "Tokyo",
    "CommonName": "Insyde.com",
    "Country": "JP",
    "Organization": "Insyde",
    "OrganizationalUnit": "BMC",
  }
}
```

```
"State": "Japan"
},
"ValidNotAfter": "2025-07-09T19:28:07+00:00",
"ValidNotBefore": "2024-02-25T19:28:07+00:00"
}
```

## 7.10 CertificateLocations

### 7.10.1 Description

The CertificateLocations schema defines a resource that an administrator can use in order to locate all certificates installed on a given service.  
URI: <https://{ip}/redfish/v1/CertificateService/CertificateLocations>

### 7.10.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.10.3 Properties

Property	Type	Description
Links	object	Contains references to other resources that are related to this resource.
→ Certificates	array	This property is an array of references to the certificates installed on this service.

#### 7.10.3.1 Example

This example is the result of CertificateLocations schema's GET response.

```
{
  "@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/bmc/VirtualMedia/Oem/Insyde/Certificates/4"
      },
      {
        "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/1"
      },
      {
        "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/0"
      },
      {
        "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/2"
      }
    ]
  }
}
```

```

    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/3"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/NetworkProtocol/HTTPS/Certificates/1"
    },
    {
      "@odata.id": "/redfish/v1/AccountService/LDAP/Certificates/1"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/Truststore/Certificates/1"
    }
  ],
  "Certificates@odata.count": 8
},
{Name": "Certificate Locations"
}

```

## 7.11 CertificateCollection

### 7.11.1 Description

A Collection of Certificate resource instances.

- HTTPS certificates:

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/NetworkProtocol/HTTPS/Certificates>

- LDAP certificates:

URI: <https://{ip}/redfish/v1/AccountService/LDAP/Certificates>

- TrustStoreCertificate certificates:

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Truststore/Certificates>

- VM certificates:

- (Post)

- URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia/<VMID>/Actions/Oem/InsydeOEMExtensions.PostCertificate>

- (Get)

- URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia/Oem/Insyde/Certificates>

- System Boot HTTPS certificates:

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Boot/Certificates>

- EroT certificates: (See Nvidia Redfish User Guide for details)

URI: <https://{ip}/redfish/v1/Chassis/<ERoT Chassis ID>/Certificates>

## 7.11.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
POST			V			

## 7.11.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.11.3.1 Example

This example is the result of CertificateCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#CertificateCollection.CertificateCollection",
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates",
  "@odata.type": "#CertificateCollection.CertificateCollection",
  "Description": "A Collection of VM certificate instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/3"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/4"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/2"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/0"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/1"
    }
  ],
  "Members@odata.count": 5,
  "Name": "VM Certificates Collection"
}
```

## 7.11.4 Establish Certificate by POST

Description: Certificates are installed by posting to the CertificateCollection.

Property	Required	Allowed Value
CertificateString	Yes	The string for the certificate.
CertificateType	Yes	"PEM"

## 7.12 Certificate

### 7.12.1 Description

The Certificate resource describes a certificate used to prove the identify of a component, account, or service.

- HTTPS certificates:

URI: `https://{ip}/redfish/v1/Managers/<ManagerID>/NetworkProtocol/HTTPS/Certificates/{CertificateId}`

- LDAP certificates:

URI: `https://{ip}/redfish/v1/AccountService/LDAP/Certificates/{CertificateId}`

- TrustStoreCertificate certificates:

URI: `https://{ip}/redfish/v1/Managers/<ManagerID>/Truststore/Certificates/{CertificateId}`

- VM certificates:

URI: `https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia/Oem/Insyde/Certificates/{CertificateId}`

- System Boot HTTPS certificates:

URI: `https://{ip}/redfish/v1/Systems/<SystemID>/Boot/Certificates/{CertificateId}`

- EroT certificates: (See Nvidia Redfish User Guide for details.)

URI: `https://{ip}/redfish/v1/Chassis/<ERoT Chassis ID>/Certificates`

### 7.12.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
DELETE			V			

### 7.12.3 Properties

The property of Issuer and Subject won't be displayed if not configured when generating the certificate file.

Property	Type	Description
CertificateString	string	The string for the certificate.
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.

→ DomainComponents	array (string, null)	See Intel/Nvidia Redfish User Guide for details
→ 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 (string (enum))	The usage of the key contained in the certificate.
Subject	object	The subject 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.
→ DomainComponents	array (string, null)	See Intel/Nvidia Redfish User Guide for details
→ 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 (date-time)	The date when the certificate is no longer valid.
ValidNotBefore	string (date-time)	The date when the certificate becomes valid.

### 7.12.3.1 Example

This example is the result of Certificate schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/Oem/Insyde/Certificates/3",
  "@odata.type": "#Certificate.v1_0_0.Certificate",
  "CertificateString": "-----BEGIN CERTIFICATE-----\n
nMIIIEWzCCA0OgAwIBAgIUPzdxcnu6c3TqrmVOB1M3L5i02XkwDQYJKoZIhvcNAQEL\n
nBQAwbwCzAJBgNVBAYTAlVTMREwDwYDVQQIDAhvOZxcgWW9yazEwMBQGA1UEBwwN\n
nTmV3IFlvcmsgQ2l0eTEuMBsGA1UECgwUQm91bmN5IEhnc3RsZXMsIEluYy4xITAf\n
nBgNVBAsMGElpbmlzdHJ5IG9mIFdhdGVyIFNsaWRlcEaMBGGA1UEAwRc2VydMvy\n
nX0lQX2FkZHZJlc3MxJDAiBgkqhkiG9w0BCQEWFWFkbWluQHlvdXJfZG9tYWluLmNv\n
nbTAeFw0yMjA4MTcwOTQ0MTBaFw0yMzA4MTcwOTQ0MTBaMIG8MQswCQYDVQGEwJV\n
nUzERMA8GA1UECAwITmV3IFlvcmsxFjAUBgNVBAcMDU5ldyBZb3JrIENpdHkxHTAb\n
nBgNVBAoMFEJvdW5jeSBdYXN0bGVzLCBjbmuMSEwHwYDVQQLDBhNaW5pc3RyeSBv\n
nZiBXYXRlcibTGlkZXMxGjAYBgNVBAMEMXNlcnZlc19JUF9hZGRyZXNzMSQwIgYJ\n
nKoZIhvcNAQkBFhVhZG1pbk5b3VyX2RvbWVpbi5jb20wgqEiMA0GCSqGSIb3DQEB\n
nAQUAA4IBDwAwgGEKAoIBAQCstaqyID8OEbfgn6A6KnxHMPJXTwztFedfsLNqzhX\n
njuFMezKIzfdlOnOcIdIV0PKQQRd6xt63QE6bTKuMbejim0PE1AUNYv71aq6YYat\n
nVLJpctJkiZUeefiEoKSIE3t93w90PAYpurZOHZeWbg6W+cfdxn0vA8Q5rW6Yua2v\n
nEfl21fKoQOE1T6rKyip6ks9B8iDb4qbUx7CK2Y8/t6Ci4wf/hvUCDh3MtJ0mleqj\n
nlt03jUTQv9xe6gnwz9djvymCCohC8ZoJsr5xp/Zptp3pPU+bHJnYo2eEmo3DZ2\n
ngkTu9RydHxBmV2165VQBxdmPrWdwC84QPEKI33qvmXFAgMBAAGjUzBRMB0GA1Ud\n
nDgQWBBQyGT4JA6Twdse6ktrzl7G6YFrrOzAfBgNVHSMEGDAWBgBQyGT4JA6Twdse6\n
nkrzl7G6YFrrOzAPBgNVHRMBAf8EBTADAQH/MA0GCSqGSIb3DQEBcUUA4IBAQCb\n
nRmIdtEBkFodor7MmER6VJ6tWGXUre6QFbeaOPOYFLFDZV0ki1wldzA2ezfpFUm0C\
-----"
```



```

nSX402McD0gYQAYhQs8rtqIN2EVEJdBfMMfhEbK99EnRy2cCyO1oPeg7L7M9yJ/L1\nbf5/tUJ0NziodBR8hXOccGof/
5rcYUXZ1kpVQo7xP2Uhib8TRLDEImTEXrDDqzKJ\nnWSpWHkhUeIdArt+pggOHdZJHKeDfVG/i/Uy/
h1CFpO6UHY9PaTUlN0pfXqB6sHf\nT/Via+EI0/kEm97ebJubxafDgVO7rOr9Gj9ZqfOj119o/019iKW8MO23f2MdnCN0\
nxjqsdR8auGT97VelDE4U\n-----END CERTIFICATE-----\n",
  "Description": "3",
  "Id": "2",
  "Issuer": {
    "City": "New York City",
    "CommonName": "server_IP_address",
    "Country": "US",
    "Organization": "Bouncy Castles",
    "State": "New York"
  },
  "KeyUsage": [],
  "Name": "3",
  "Subject": {
    "City": "New York City",
    "CommonName": "server_IP_address",
    "Country": "US",
    "Organization": "Bouncy Castles",
    "State": "New York"
  },
  "ValidNotAfter": "2023-08-16T21:44:10+00:00",
  "ValidNotBefore": "2022-08-16T21:44:10+00:00"
}

```

## 7.12.4 Remove Certificate by DELETE

Description: Certificate can be removed by Deleting the Certificate resource.

- LDAP certificates:

URI: <https://{ip}/redfish/v1/AccountService/LDAP/Certificates/{CertificateId}>

- TrustStoreCertificate certificates:

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Truststore/Certificates/{CertificateId}>

- VM certificates:

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia/Oem/Insyde/Certificates/{CertificateId}>

- System Boot HTTPS certificates:

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Boot/Certificates/{CertificateId}>

## 7.13 ChassisCollection

### 7.13.1 Description

A Collection of Chassis resource instances.

URI: <https://{ip}/redfish/v1/Chassis>

### 7.13.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.13.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.13.3.1 Example

This example is the result of ChassisCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis",
  "@odata.type": "#ChassisCollection.ChassisCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/NCSI"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/R4000_Chassis"
    }
  ],
  "Members@odata.count": 4,
  "Name": "Chassis Collection"
}
```

## 7.14 Chassis

### 7.14.1 Description

The Chassis schema represents the physical components of a system. This resource represents the sheet-metal confined spaces and logical zones such as racks, enclosures, chassis and all other containers. Subsystems (like sensors) that operate outside of a system's data plane (meaning the resources are not accessible to software running on the system) are linked either directly or indirectly through this resource.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>>

※ There are no AssetTag and Version properties in FRU Board Info

### 7.14.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self

GET		V				
PATCH				V		

### 7.14.3 Properties

Property	Type	Description
Actions	object	See Intel/Nvidia/AMD Redfish User Guide for details.
Assembly	object	The link to the assembly properties for this chassis.
AssetTag	string	This property shall contain an identifying string that tracks the chassis for inventory purposes.
ChassisType	string	The type of physical form factor of the chassis.
Controls	object	See Nvidia Redfish User Guide for details.
EnvironmentMetrics	object	See Nvidia Redfish User Guide for details.
IndicatorLED	string (enum)	This property shall contain the indicator light state for the indicator light associated with this system.
Links	object	The links to other Resources that are related to this Resource.
→ ComputerSystems	object	An array of references to the computer systems contained in this chassis. This will only reference ComputerSystems that are directly and wholly contained in this chassis.
→ ContainedBy	object	See Nvidia Redfish User Guide for details.
→ ManagedBy	object	An array of references to the Managers responsible for managing this chassis.
→ Processors	object	See Nvidia Redfish User Guide for details.
→ Switches	object	See Nvidia Redfish User Guide for details.
Location	object	See Nvidia Redfish User Guide for details.
→ PartLocation	object	See Nvidia Redfish User Guide for details.
→→ LocationType		See Nvidia Redfish User Guide for details.
→→ ServiceLabel		See Nvidia Redfish User Guide for details.
LocationIndicatorActive	boolean	An indicator allowing an operator to physically locate this resource. (Optional)
LogServices	object	See Nvidia Redfish User Guide for details.
Manufacturer	string	The manufacturer of this chassis.
Model	string	The model number of the chassis.

NetworkAdapters	object	The link to the collection of network adapter in the equipment and sub-components.
Oem	object	Oem extension object.
→ InsydeFRUData	object	Oem extension object for FruData.
→→ FRUInfo		Refs to below.
→ Nvidia	object	See Nvidia Redfish User Guide for details.
→→ HardwareWriteProtected		See Nvidia Redfish User Guide for details.
→→ HardwareWriteProtectedControl		See Nvidia Redfish User Guide for details.
→→ PartNumber		See Nvidia Redfish User Guide for details.
→→ PCIeReferenceClockCount		See Nvidia Redfish User Guide for details.
→→ SerialNumber		See Nvidia Redfish User Guide for details.
→→ StaticPowerHint		See Nvidia Redfish User Guide for details.
→→→ CpuClockFrequencyHz		See Nvidia Redfish User Guide for details.
→→→→ AllowableMax		See Nvidia Redfish User Guide for details.
→→→→ AllowableMin		See Nvidia Redfish User Guide for details.
→→→→ SetPoint		See Nvidia Redfish User Guide for details.
→→→ PowerEstimationWatts		See Nvidia Redfish User Guide for details.
→→→→ Reading		See Nvidia Redfish User Guide for details.
→→→→ State		See Nvidia Redfish User Guide for details.
→→→ TemperatureCelsius		See Nvidia Redfish User Guide for details.
→→→→ AllowableMax		See Nvidia Redfish User Guide for details.
→→→→ AllowableMin		See Nvidia Redfish User Guide for details.
→→→→ SetPoint		See Nvidia Redfish User Guide for details.
→→→ WorkloadFactor		See Nvidia Redfish User Guide for details.
→→→→ AllowableMax		See Nvidia Redfish User Guide for details.
→→→→ AllowableMin		See Nvidia Redfish User Guide for details.
→→→→ SetPoint		See Nvidia Redfish User Guide for details.
PartNumber	string	The part number of the chassis.
PCIeDevices	object	See Nvidia Redfish User Guide for details.

PCIESlots	object	See Nvidia Redfish User Guide for details.
Power	object	See Intel/AMD Redfish User Guide for details.
PowerState	string (enum)	The current power state of the chassis.
PowerSubsystem	object	The link to the power subsystem properties for this chassis.
Sensors	object	The link to the collection of sensors located in the equipment and sub-components.
SerialNumber	string	The serial number of the chassis.
SKU	string	See Nvidia Redfish User Guide for details.
Status	object	See Common Properties <i>Status Object</i> .
Thermal	object	See Intel/AMD Redfish User Guide for details.
ThermalSubsystem	object	The link to the thermal subsystem properties for this chassis.
TrustedComponents	object	See Nvidia Redfish User Guide for details.

#### Object of InsydeFRUData

Property	Type	Description
Board	object	The extra information of the board. Ref Object of FruInfoArea
Chassis	object	The extra information of the chassis. Ref Object of FruInfoArea
FRUDeviceID	string	The FRU device ID
Language	string	Custom product info area fields
Product	object	The extra information of the product.. Ref Object of FruInfoArea

#### Object of FruInfoArea

Property	Type	Description
Extra	array	The FRU information collection of extra info. If support.
FRUFileId	string	The FRU information FRU File Id. If support.
Manufacturer	string	The FRU information Manufacturer Field. If support.
ManufacturerDateTime	string	The FRU information manufacturer date time Field. If support.
Name	string	The FRU information Name Field. If support.
PartNumber	string	The FRU information Part Number Field. If support.
Serial	string	The FRU information Serial Field. If support.

Type	string	The FRU information type. If support.
------	--------	---------------------------------------

### 7.14.3.1 Example

This example is the result of Chassis schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard",
  "@odata.type": "#Chassis.v1_23_0.Chassis",
  "Actions": {
    "#Chassis.Reset": {
      "@Redfish.ActionInfo": "/redfish/v1/Chassis/AC_Modular_Baseboard/ResetActionInfo",
      "target": "/redfish/v1/Chassis/AC_Modular_Baseboard/Actions/Chassis.Reset"
    }
  },
  "Assembly": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly"
  },
  "AssetTag": ".....",
  "ChassisType": "RackMount",
  "Id": "AC_Modular_Baseboard",
  "IndicatorLED": "Off",
  "Links": {
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/system"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/bmc"
      }
    ]
  },
  "LocationIndicatorActive": false,
  "Manufacturer": "Insyde Software Corp.",
  "Model": "ArcherCityM",
  "Name": "AC_Modular_Baseboard",
  "NetworkAdapters": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/NetworkAdapters"
  },
  "Oem": {
    "InsydeFRUData": {
      "@odata.type": "#InsydeOEMExtensions.v1_0_0.FRUData",
      "FRUInfo": [
        {
          "Board": {
            "FRUFileId": "FRU Ver 0.01",
            "Manufacturer": "Insyde Software Corp.",
            "ManufacturerDateTime": "1996-01-01T00:00:00+00:00",
            "Name": "ArcherCityM",
            "PartNumber": ".....",
            "Serial": ".....",
          },
          "Chassis": {
```

```

        "Extra": [
            "",
            ".....",
            "",
            "....."
        ],
        "PartNumber": ".....",
        "Serial": ".....",
        "Type": "Rack Mount Chassis"
    },
    "FRUDeviceID": "0",
    "Language": "English",
    "Name": "Baseboard",
    "Product": {
        "FRUFileId": null,
        "Manufacturer": "Insyde Software Corp.",
        "Name": "ArcherCityM",
        "PartNumber": ".....",
        "Serial": ".....",
    }
},
{
    "FRUDeviceID": "2",
    "Language": "English",
    "Name": "PwrSupply1FRU",
    "Product": {
        "FRUFileId": null,
        "Manufacturer": "SOLUM CO., LTD.",
        "Name": "IS162F22",
        "PartNumber": "G36234-016",
        "Serial": "PSSF162202ACNS1622A4BL4Q1705",
    }
},
{
    "FRUDeviceID": "3",
    "Language": "English",
    "Name": "PwrSupply2FRU"
}
]
}
},
"PartNumber": ".....",
"Power": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Power"
},
"PowerState": "On",
"PowerSubsystem": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/PowerSubsystem"
},
"Sensors": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Sensors"
},
"SerialNumber": ".....",
"Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
}

```

```

},
  "ThermalSubsystem": {
    "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/ThermalSubsystem"
  }
}

```

## 7.14.4 Updatable Properties

Property	Allowed value	Description
LocationIndicatorActive	True	The Indicator LED is lit.
	False	The Indicator LED is off.
IndicatorLED	Lit	The Indicator LED is lit.
	Off	The Indicator LED is off.
Oem	OBJECT	See Nvidia Redfish User Guide for details.
→ Nvidia	OBJECT	See Nvidia Redfish User Guide for details.
→→ PartNumber	STRING	See Nvidia Redfish User Guide for details.
→→ SerialNumber	STRING	See Nvidia Redfish User Guide for details.
→→ StaticPowerHint	OBJECT	See Nvidia Redfish User Guide for details.
→→→ CpuClockFrequencyHz	OBJECT	See Nvidia Redfish User Guide for details.
→→→→ SetPoint	DOUBLE	See Nvidia Redfish User Guide for details.
→→→→ TemperatureCelsius	OBJECT	See Nvidia Redfish User Guide for details.
→→→→→ SetPoint	DOUBLE	See Nvidia Redfish User Guide for details.
→→→→ WorkloadFactor	OBJECT	See Nvidia Redfish User Guide for details.
→→→→→ SetPoint	DOUBLE	See Nvidia Redfish User Guide for details.
AutomaticBackgroundCopyEnabled	BOOLEAN	See Nvidia Redfish User Guide for details.
InbandUpdatePolicyEnabled	BOOLEAN	See Nvidia Redfish User Guide for details.

### 7.14.4.1 Example Payload

```

{
  "IndicatorLED": "Lit",
  "LocationIndicatorActive": false
}

```



## 7.15 Assembly

### 7.15.1 Description

This Resource shall represent an assembly for a Redfish implementation. Assembly information contains details about a device, such as part number, serial number, manufacturer, and production date. It also provides access to the original data for the assembly.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/Assembly>

### 7.15.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.15.3 Properties

Property	Type	Description
Assemblies	array	These properties shall define assembly records for a Redfish implementation.
ISOCountryCodeOfOrigin	string	The manufacturing country of origin, using the ISO 3166-1 country code.
→ Location	object	See Nvidia Redfish User Guide for details.
→→ PartLocation	object	See Nvidia Redfish User Guide for details.
→→→ LocationType	string	See Nvidia Redfish User Guide for details.
→ MemberId	string	This property shall uniquely identify the member within the collection. For services supporting Redfish v1.6 or higher, this value shall contain the zero-based array index.
→ Model	string	See Nvidia Redfish User Guide for details.
→ PartNumber	string	This property shall contain the part number of the assembly.
→ PhysicalContext	string (enum)	See Nvidia Redfish User Guide for details.
→ Producer	string	This property shall contain the name of the company that produced or manufactured the assembly. This value shall be equal to the 'Manufacturer' field value in a PLDM FRU structure, if applicable, for the assembly.
→ ProductionDate	string (date-time)	This property shall contain the date of production or manufacture for the assembly. The time of day portion of the property shall be 00:00:00Z , if the time of day is unknown.
→ SerialNumber	string	This property shall contain a manufacturer-allocated number that identifies the assembly
→ Vendor	string	See Nvidia Redfish User Guide for details.

→ Version	string	This property shall contain the hardware version of the assembly as determined by the vendor or supplier.
-----------	--------	-----------------------------------------------------------------------------------------------------------

### 7.15.3.1 Example

This example is the result of Assembly schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly",
  "@odata.type": "#Assembly.v1_3_0.Assembly",
  "Assemblies": [
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly#/Assemblies/0",
      "MemberId": "0",
      "Name": "Baseboard",
      "PartNumber": ".....",
      "SerialNumber": "....."
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly#/Assemblies/1",
      "MemberId": "1",
      "Name": "ArcherCityM",
      "PartNumber": ".....",
      "Producer": "Insyde Software Corp.",
      "ProductionDate": "1996-01-01T00:00:00+00:00",
      "SerialNumber": "....."
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly#/Assemblies/2",
      "MemberId": "2",
      "Name": "ArcherCityM",
      "PartNumber": ".....",
      "Producer": "Insyde Software Corp.",
      "SerialNumber": ".....",
      "Version": "....."
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Assembly#/Assemblies/3",
      "MemberId": "3",
      "Name": "IS162F22",
      "PartNumber": "G36234-016",
      "Producer": "SOLUM CO., LTD.",
      "SerialNumber": "PSSF162202ACNS1622A4BL4Q1705",
      "Version": "11A"
    }
  ],
  "Id": "Assembly",
  "Name": "Assembly"
}
```

## 7.16 SensorCollection

### 7.16.1 Description

This resource shall represent a resource collection of Sensor instances for a Redfish implementation.

URI: https://{ip}/redfish/v1/Chassis/<ChassisID>/Sensors

### 7.16.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.16.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.16.3.1 Example

This example is the result of SensorCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors",
  "@odata.type": "#SensorCollection.SensorCollection",
  "Description": "Collection of Sensors for this Chassis",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/BMC_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU1_PVCCD_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU1_PVCCFA_EHV_FIVRA_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU1_South_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU1_VCCIN_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU2_PVCCD_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU2_PVCCFA_EHV_FIVRA_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/CPU2_PVCCIN_VR_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/Inlet_BRD_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/Left_Rear_Board_Temp"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/Right_Rear_Board_Temp"
    },
  ]
}
```

```

    "@odata.id": "/redfish/v1/Chassis/AC_Baseboard/Sensors/SSB_Temp"
  },
  "Members@odata.count": 12,
  "Name": "Sensors"
}

```

## 7.17 Sensor

### 7.17.1 Description

This Resource represents a Sensor for a Redfish implementation.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/Sensors/<SensorId>>

### 7.17.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.17.3 Properties

Property	Type	Description
Enabled	boolean	Indicates whether the sensor is enabled and provides a reading.
Reading	number	The sensor value.
ReadingRangeMax	number	The maximum possible value for this sensor. Display if supported.
ReadingRangeMin	number	The minimum possible value for this sensor. Display if supported.
ReadingType	string (enum)	The type of sensor.
ReadingUnits	string	The units of the reading and thresholds.
RelatedItem	array	See Nvidia Redfish User Guide for details.
Status	object	See Common Properties <i>Status Object</i> .
Thresholds	object	The set of thresholds defined for a sensor. Display if supported.
→ LowerCaution	object	The value at which the reading is below normal range.
→ LowerCritical	object	The value at which the reading is below normal range but not yet fatal.
→ UpperCaution	object	The value at which the reading is above normal range.
→ UpperCritical	object	The value at which the reading is above normal range but not yet fatal.
→→ Reading	number	The threshold value.

### 7.17.3.1 Example

This example is the result of Sensor schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/Sensors/BMC_Temp",
  "@odata.type": "#Sensor.v1_5_0.Sensor",
  "Id": "BMC_Temp",
  "Name": "BMC Temp",
  "Reading": 36.125,
  "ReadingRangeMax": 127.0,
  "ReadingRangeMin": -128.0,
  "ReadingType": "Temperature",
  "ReadingUnits": "Cel",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "Thresholds": {
    "LowerCaution": {
      "Reading": 5.0
    },
    "LowerCritical": {
      "Reading": 0.0
    },
    "UpperCaution": {
      "Reading": 110.0
    },
    "UpperCritical": {
      "Reading": 115.0
    }
  }
}
```

## 7.18 PowerSubsystem

### 7.18.1 Description

This PowerSubsystem schema contains the definition for the power subsystem of a chassis.  
URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/PowerSubsystem>

### 7.18.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.18.3 Properties

Property	Type	Description
PowerSupplies	object	The link to the collection of power supplies within this subsystem.

Status	object	The status and health of the resource and its subordinate or dependent resources. See Common Properties Status Object
--------	--------	-----------------------------------------------------------------------------------------------------------------------

### 7.18.3.1 Example

This example is the result of PowerSubsystem schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/PSU0/PowerSubsystem",
  "@odata.type": "#PowerSubsystem.v1_1_0.PowerSubsystem",
  "Id": "PowerSubsystem",
  "Name": "Power Subsystem",
  "PowerSupplies": {
    "@odata.id": "/redfish/v1/Chassis/PSU0/PowerSubsystem/PowerSupplies"
  },
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

## 7.19 PowerSupplyCollection

### 7.19.1 Description

The collection of PowerSupply resource instances.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/PowerSubsystem/PowerSupplies>

### 7.19.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.19.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

Whether there would have members is depended on platform ([Members@odata.count](#) is possible to be 0). At least one power supply will be registered under chassis id "PSU0".

### 7.19.3.1 Example

This example is the result of PowerSupplyCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/PowerSubsystem/PowerSupplies",
  "@odata.type": "#PowerSupplyCollection.PowerSupplyCollection",
  "Description": "The collection of PowerSupply resource instances AC_Modular_Baseboard",
  "Members": [
    {

```

```

      "@odata.id": "/redfish/v1/Chassis/AC_Modular_Baseboard/PowerSubsystem/PowerSupplies/
powersupply1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Power Supply Collection"
}

```

## 7.20 PowerSupply

### 7.20.1 Description

The PowerSupply schema describes a power supply unit.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/PowerSubsystem/PowerSupplies/<PowerSupplyId>>

### 7.20.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.20.3 Properties

Property	Type	Description
EfficiencyRatings	array	This property shall contain an array of efficiency ratings for this power supply.
→ EfficiencyPercent	number (%)	This property shall contain the rated efficiency, as a percentage, 0 to 100 , of this power supply at the specified load.
Links	object	The links to other resources that are related to this resource.
→ PoweringChassis	array	An array of links to the chassis that are directly powered by this power supply.
Manufacturer	string	The manufacturer of this power supply.
Metrics	object	The link to the power supply metrics resource associated with this power supply.
Model	string	The model number for this power supply.
PartNumber	string	This property shall contain the part number as defined by the manufacturer for this power supply.
SerialNumber	string	The serial number for this power supply.
Status	object	The status and health of the resource and its subordinate or dependent resources. See Common Properties Status Object

### 7.20.3.1 Example

This example is the result of PowerSupplyCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/PSU0/PowerSubsystem/PowerSupplies/PSU0",
  "@odata.type": "#PowerSupply.v1_4_0.PowerSupply",
  "EfficiencyRatings": [
    {
      "EfficiencyPercent": 90
    }
  ],
  "Id": "PSU0",
  "Manufacturer": "DELTA",
  "Metrics": {
    "@odata.id": "/redfish/v1/Chassis/PSU0/PowerSubsystem/PowerSupplies/PSU0/Metrics"
  },
  "Model": "ECD56020022-N",
  "Name": "PSU0",
  "PartNumber": " ",
  "SerialNumber": "THAKN2307006X",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

## 7.21 PowerSupplyMetrics

### 7.21.1 Description

The PowerSupplyMetrics schema contains definitions for the metrics of a power supply.  
URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/PowerSubsystem/PowerSupplies/<PowerSupplyID>/Metrics>

### 7.21.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.21.2.1 Example

This example is the result of PowerSupplyMetrics schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/GPU_0/PowerSubsystem/PowerSupplies/PSU1/Metrics",
  "@odata.type": "#PowerSupplyMetrics.v1_0_1.PowerSupplyMetrics",
  "Id": "PowerSupplyMetrics",
  "Name": "Chassis Power Metrics"
}
```



## 7.22 ThermalSubsystem

### 7.22.1 Description

This ThermalSubsystem schema contains the definition for the thermal subsystem of a chassis.  
URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/ThermalSubsystem>

### 7.22.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.22.3 Properties

Property	Type	Description
FanRedundancy	array (object)	See Intel Redfish User Guide for details.
→ MaxSupportedInGroup	integer	See Intel Redfish User Guide for details.
→ MinNeededInGroup	integer	See Intel Redfish User Guide for details.
→ RedundancyGroup	array	See Intel Redfish User Guide for details.
→ RedundancyType	string (enum)	See Intel Redfish User Guide for details.
→ Status	object	See Intel Redfish User Guide for details.
Fans	object	The link to the collection of fans within this subsystem.
Status	object	The status and health of the resource and its subordinate or dependent resources. See Common Properties Status Object
ThermalMetrics	object	The link to the summary of thermal metrics for this subsystem.

#### 7.22.3.1 Example

This example is the result of ThermalSubsystem schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/Baseboard_0/ThermalSubsystem",
  "@odata.type": "#ThermalSubsystem.v1_0_0.ThermalSubsystem",
  "Fans": {
    "@odata.id": "/redfish/v1/Chassis/Baseboard_0/ThermalSubsystem/Fans"
  },
  "Id": "ThermalSubsystem",
  "Name": "Thermal Subsystem",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "ThermalMetrics": {
```

```

    "@odata.id": "/redfish/v1/Chassis/Baseboard_0/ThermalSubsystem/ThermalMetrics"
  }
}

```

## 7.23 ThermalMetrics

### 7.23.1 Description

The ThermalMetrics schema represents the thermal metrics of a chassis.  
 URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/ThermalSubsystem/ThermalMetrics>

### 7.23.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.23.3 Properties

Property	Type	Description
TemperatureReadingsCelsius	array (excerpt)	The temperature readings from all related sensors for this device.
→DataSourceUri	string (URI)	The link to the resource that provides the data for this sensor.
→DeviceName	string	The name of the device.
→Reading	number	The sensor value.

#### 7.23.3.1 example

This example is the result of ThermalMetrics schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#ThermalMetrics.ThermalMetrics",
  "@odata.id": "/redfish/v1/Chassis/Onyx_Baseboard/ThermalSubsystem/ThermalMetrics",
  "@odata.type": "#ThermalMetrics.v1_0_1.ThermalMetrics",
  "Description": "The ThermalMetrics schema represents the thermal metrics of a chassis.",
  "Id": "ThermalMetrics",
  "Name": "Thermal Metrics",
  "TemperatureReadingsCelsius": [
    {
      "DataSourceUri": "/redfish/v1/Chassis/Onyx_Baseboard/Sensors/TMP468_P0_CCD1",
      "DeviceName": "TMP468_P0_CCD1",
      "Reading": 67.135
    }
  ]
}

```

## 7.24 FanCollection

### 7.24.1 Description

The collection of Fan resource instances.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/ThermalSubsystem/Fans>

### 7.24.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.24.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.24.3.1 Example

This example is the result of FanCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans",
  "@odata.type": "#FanCollection.FanCollection",
  "Description": "The collection of Fan resource instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_1_A"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_1_B"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_2_A"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_2_B"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_3_A"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_3_B"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_4_A"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_4_B"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_5_A"
    },
  ],
}
```

```
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_5_B"
},
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_6_A"
},
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_6_B"
},
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/PSU0_FAN_SPD_OUT"
},
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/PSU1_FAN_SPD_OUT"
},
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/PSU2_FAN_SPD_OUT"
}
],
"Members@odata.count": 15,
"Name": "Fan Collection"
}
```

## 7.25 Fan

### 7.25.1 Description

The Fan schema describes a cooling fan unit for a computer system or similar devices contained within a chassis.  
URI: <https://{ip}/redfish/v1/Chassis/<ChassisId>/ThermalSubsystem/Fans/<FanId>>

### 7.25.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.25.3 Properties

Property	Type	Description
SpeedPercent	object (excerpt)	The fan speed reading.
→DataSourceUri	string (URI)	The link to the resource that provides the data for this sensor.
→Reading	number	The PWM value.
→SpeedRPM	number ({rev}/min)	The rotational speed.

#### 7.25.3.1 Example

This example is the result of Fan schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/BMC_0/ThermalSubsystem/Fans/FAN_1_A",
  "@odata.type": "#Fan.v1_2_0.Fan",
  "Id": "FAN_1_A",
  "Name": "FAN 1 A",
  "SpeedPercent": {
    "DataSourceUri": "/redfish/v1/Chassis/BMC_0/Sensors/FAN_1_A",
    "Reading": 0,
    "SpeedRPM": 24600
  }
}
```

## 7.26 JsonSchemaFileCollection

### 7.26.1 Description

The JsonSchemaFileCollection schema describes a collection of JSON Schema file instances.  
URI: <https://{ip}/redfish/v1/JsonSchemas>

### 7.26.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.26.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.26.3.1 Example

This example is the result of JsonSchemaFileCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/JsonSchemas",
  "@odata.context": "/redfish/v1/$metadata#JsonSchemaFileCollection.JsonSchemaFileCollection",
  "@odata.type": "#JsonSchemaFileCollection.JsonSchemaFileCollection",
  "Name": "JsonSchemaFile Collection",
  "Description": "Collection of JsonSchemaFiles",
  "Members@odata.count": 57,
  "Members": [
    {
      "@odata.id": "/redfish/v1/JsonSchemas/AccountService"
    },
    {
      "@odata.id": "/redfish/v1/JsonSchemas/ActionInfo"
    },
    {
      "@odata.id": "/redfish/v1/JsonSchemas/Assembly"
    },
    ...
    ...
    ...
  ]
}
```

```

...
},
{
  "@odata.id": "/redfish/v1/JsonSchemas/redfish-payload-annotations"
},
{
  "@odata.id": "/redfish/v1/JsonSchemas/redfish-schema"
}
]
}

```

## 7.27 JsonSchemaFile

### 7.27.1 Description

The JsonSchemaFile schema contains the properties that describe the locations, as URIs, of a Redfish Schema definition that a Redfish Service implements or references.

URI: <https://{ip}/redfish/v1/JsonSchemas/<JsonSchemasId>>

### 7.27.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.27.3 Properties

Property	Type	Description
Languages	array (string)	The language code for the schema file.
Schema	string	The @odata.type name this schema describes.
Location	array	Location information for this schema file.
→ Language	string	The language code for the schema file.
→ Uri	string (URI)	The link to locally available URI for schema.
→ PublicationUri	string (URI)	The link to publicly available (canonical) URI for schema.

#### 7.27.3.1 Example

This example is the result of JsonSchemaFile schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#JsonSchemaFile.JsonSchemaFile",
  "@odata.id": "/redfish/v1/JsonSchemas/AccountService",
  "@odata.type": "#JsonSchemaFile.v1_0_2.JsonSchemaFile",
  "Name": "AccountService Schema File",
  "Schema": "#AccountService.AccountService",
  "Description": "AccountService Schema File Location",

```

```
{
  "Id": "AccountService",
  "Languages": [
    "en"
  ],
  "Languages@odata.count": 1,
  "Location": [
    {
      "Language": "en",
      "PublicationUri": "http://redfish.dmtf.org/schemas/v1/AccountService.json",
      "Uri": "/redfish/v1/JsonSchemas/AccountService/AccountService.json"
    }
  ],
  "Location@odata.count": 1
}
```

## 7.28 ManagerCollection

### 7.28.1 Description

A Collection of Manager resource instances.

URI: https://{ip}/redfish/v1/Managers

### 7.28.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.28.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.28.3.1 Example

This example is the result of ManagerCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers",
  "@odata.type": "#ManagerCollection.ManagerCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Manager Collection"
}
```

## 7.29 Manager

### 7.29.1 Description

This is the schema definition for a Manager. Examples of managers are BMCs, Enclosure Managers, Management Controllers and other subsystems assigned manageability functions.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>>

### 7.29.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH			V			
POST			V			

### 7.29.3 Properties

Property	Type	Description
Actions	object	The available actions for this Resource.
AdditionalFirmwareVersions	object	See Intel/Nvidia Redfish User Guide for details.
→ Bootloader	string	See Intel Redfish User Guide for details.
→ Kernel	string	See Intel Redfish User Guide for details.
CommandShell	object	Information about the Command Shell provided by this manager.
→ConnectTypesSupported	array (string (enum))	This object is used to enumerate the Command Shell connection types allowed by the implementation.
→MaxConcurrentSessions	integer	Indicates the maximum number of service sessions, regardless of protocol, this manager is able to support.
→ServiceEnabled	boolean	Indicates if the service is enabled for this manager.
DateTime	string (date-time)	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 in +HH:MM format.
DaylightSavingTime	object	The daylight saving time settings for this manager.
→ EndDateTime	string	The end date and time with UTC offset of daylight saving time.



	(date-time)	
→ OffsetMinutes	integer	The daylight saving time offset in minutes.
→ StartDateTime	string (date-time)	The start date and time with UTC offset of daylight saving time.
→ TimeZoneName	integer	The time zone of the manager when daylight saving time is in effect.
EthernetInterfaces	object	This is a reference to a collection of NICs that this manager uses for network communication.  It is here that clients will find NIC configuration options and settings.
FirmwareVersion	string	The firmware version of this Manager.
GraphicalConsole	object	The value of this property shall contain the information about the Graphical Console service of this manager.
→ConnectTypesSupported	array (string (enum))	This object is used to enumerate the Command Shell connection types allowed by the implementation.
→MaxConcurrentSessions	integer	Indicates the maximum number of service sessions, regardless of protocol, this manager is able to support.
→ServiceEnabled	boolean	Indicates if the service is enabled for this manager.
HostInterfaces	object	This is a reference to a Resource Collection of type HostInterfaceCollection.
LastResetTime	string (date-time)	The date and time when the manager was last reset or rebooted.
Links	object	Contains references to other resources that are related to this resource.
→ ActiveSoftwareImage	object	This property is an link to the running firmware image.
→ManagerForChassis	array	This property is an array of references to the chassis that this manager has control over.
→ManagerForServers	array	This property is an array of references to the systems that this manager has control over.
→ ManagerInChassis	object	The link to the chassis where this manager is located.
→ SoftwareImages	array	This property shall contain an array of links to the SoftwareInventory Resources that represent the firmware images that apply to this manager.

LogServices	object	This is a reference to a collection of Logs used by the manager.
ManagerType	string (enum)	This property represents the type of manager that this resource represents.
Manufacturer	string	See Nvidia Redfish User Guide for details.
Model	string	The model information of this Manager as defined by the manufacturer.
NetworkProtocol	object	This is a reference to the network services and their settings that the manager controls.  It is here that clients will find network configuration options as well as network services.
Oem	object	Oem Extension Object.
→ IPAccessControl	object	Oem extension object for IP Access Control.
→→ IPv4AccessControl	object	A reference to the IPv4 Access Control associated with this manager.
→→ IPv6AccessControl	object	A reference to the IPv6 Access Control associated with this manager.
→Nvidia		See Nvidia Redfish User Guide for details.
→→ FirmwareBuildType		See Nvidia Redfish User Guide for details.
→→ OTPProvisioned		See Nvidia Redfish User Guide for details.
→→ SMBPBIFencingPrivilege		See Nvidia Redfish User Guide for details.
→→ UptimeSeconds		See Nvidia Redfish User Guide for details.
→OpenBmc		OpenBmc Oem Extension Object.
→→Certificates		TrustStoreCertificate certificates.
→→SyslogService		An SyslogService describes the Rsyslog configuration.
→→ Fan		See Intel Redfish User Guide for details.
→→→ FanControllers		See Intel Redfish User Guide for details.
→→→ FanZones		See Intel Redfish User Guide for details.
→→→ PidControllers		See Intel Redfish User Guide for details.
→→→ Profile		See Intel Redfish User Guide for details.
→→→ Profile@Redfish.AllowableValues		See Intel Redfish User Guide for details.
→→→ StepwiseControllers		See Intel Redfish User Guide for details.

→→ NodeManager		See Intel Redfish User Guide for details.
→ Insyde	object	
→→ DbusLogEnable	bool	Indicates if DBus log is enabled.
→ SyslogService	object	A reference to the syslog service associated with this manager.
PartNumber	string	See Nvidia Redfish User Guide for details.
PowerState	string (enum)	This is the current power state of the Manager.
SerialConsole	object	Information about the Serial Console service provided by this manager.
→ConnectTypesSupported	array (string (enum))	This object is used to enumerate the Command Shell connection types allowed by the implementation.
→MaxConcurrentSessions	integer	Indicates the maximum number of service sessions, regardless of protocol, this manager is able to support.  Note that we don't set limit on this number. Here will provide a estimated number, but the actual capability is depended on machine's ability.
→ServiceEnabled	boolean	Indicates if the service is enabled for this manager.
SerialNumber	string	See Nvidia Redfish User Guide for details.
ServiceEntryPointUUID	string (uuid)	The UUID of the Redfish Service that is hosted by this manager.
Status	object	See Common Properties <i>Status Object</i> .
UUID	string (uuid)	The Universal Unique Identifier (UUID) for this Manager.
VirtualMedia	object	This is a reference to the Virtual Media services for this particular manager.

### 7.29.3.1 Example

This example is the result of Manager schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.id": "/redfish/v1/Managers/bmc",
  "@odata.type": "#Manager.v1_15_0.Manager",
  "Actions": {
    "#Manager.Reset": {
      "@Redfish.ActionInfo": "/redfish/v1/Managers/bmc/ResetActionInfo",
      "target": "/redfish/v1/Managers/bmc/Actions/Manager.Reset"
    },
    "#Manager.ResetToDefaults": {
      "ResetType@Redfish.AllowableValues": [
```

```

        "ResetAll"
    ],
    "target": "/redfish/v1/Managers/bmc/Actions/Manager.ResetToDefaults"
},
"Oem": {
    "#InsydeOEMExtensions.VMInstance": {
        "target": "/redfish/v1/Managers/bmc/Actions/Oem/InsydeOEMExtensions.VMInstance"
    }
},
},
"CommandShell": {
    "ConnectTypesSupported": [
        "SSH",
        "IPMI"
    ],
    "MaxConcurrentSessions": 4,
    "ServiceEnabled": true
},
"DateTime": "1970-01-02T19:19:28+00:00",
"DateTimeLocalOffset": "+00:00",
"Description": "Baseboard Management Controller",
"EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces"
},
"FirmwareVersion": "35.23.34.2207",
"GraphicalConsole": {
    "ConnectTypesSupported": [
        "KVMIP"
    ],
    "MaxConcurrentSessions": 4,
    "ServiceEnabled": true
},
"HostInterfaces": {
    "@odata.id": "/redfish/v1/Managers/bmc/HostInterfaces"
},
"Id": "bmc",
"LastResetTime": "2010-04-15T05:45:18+00:00",
"Links": {
    "ActiveSoftwareImage": {
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bmc_active"
    },
    "ManagerForChassis": [
        {
            "@odata.id": "/redfish/v1/Chassis/Onyx_Baseboard"
        }
    ],
    "ManagerForChassis@odata.count": 1,
    "ManagerForServers": [
        {
            "@odata.id": "/redfish/v1/Systems/system"
        }
    ],
    "ManagerForServers@odata.count": 1,
    "ManagerInChassis": {
        "@odata.id": "/redfish/v1/Chassis/Onyx_Baseboard"
    },
    "SoftwareImages": [

```

```

        {
            "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bmc_active"
        }
    ],
    "SoftwareImages@odata.count": 1
},
"LogServices": {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices"
},
"ManagerType": "BMC",
"Model": "OpenBmc",
"Name": "OpenBmc Manager",
"NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/bmc/NetworkProtocol"
},
"Oem": {
    "@odata.context": "/redfish/v1/$metadata#OemManager.Oem",
    "@odata.id": "/redfish/v1/Managers/bmc#/Oem",
    "@odata.type": "#OemManager.Oem",
    "IPAccessControl": {
        "IPv4AccessControl": {
            "@odata.id": "/redfish/v1/Managers/bmc/Oem/Insyde/IPv4AccessCollection"
        },
        "IPv6AccessControl": {
            "@odata.id": "/redfish/v1/Managers/bmc/Oem/Insyde/IPv6AccessCollection"
        }
    },
    "OpenBmc": {
        "@odata.context": "/redfish/v1/$metadata#OemManager.OpenBmc",
        "@odata.id": "/redfish/v1/Managers/bmc#/Oem/OpenBmc",
        "@odata.type": "#OemManager.OpenBmc",
        "Certificates": {
            "@odata.id": "/redfish/v1/Managers/bmc/Truststore/Certificates"
        },
        "SyslogService": {
            "@odata.id": "/redfish/v1/Managers/bmc/SyslogService"
        }
    }
},
"PowerState": "On",
"SerialConsole": {
    "ConnectTypesSupported": [
        "IPMI",
        "SSH"
    ],
    "MaxConcurrentSessions": 15,
    "ServiceEnabled": true
},
"ServiceEntryPointUUID": "1a651c94-5290-4209-9577-c195c79a95f0",
"Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
},
"UUID": "17c3d40b-cca6-46e6-b5f9-70b6bf0b7f1c",
"VirtualMedia": {
    "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia"
}

```

```
}
}
```

## 7.29.4 ActionInfo

### 7.29.4.1 ResetActionInfo

Description: Deliver allowable values of ResetType.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/ResetActionInfo>

#### 7.29.4.1.1 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

#### 7.29.4.1.2 Properties

Property	Type	Description
Parameters		An array of object.
→AllowableValues		The current allowable values for ResetType, including "ForceRestart" and "GracefulRestart."
→DataType		The data type of value of ResetType.
→Name		ResetType.
→Required		Determine if argument ResetType was required when doing action.

### Example

This example is the result of a GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/ResetActionInfo",
  "@odata.type": "#ActionInfo.v1_2_0.ActionInfo",
  "Id": "ResetActionInfo",
  "Name": "Reset Action Info",
  "Parameters": [
    {
      "AllowableValues": [
        "GracefulRestart",
        "ForceRestart"
      ],
      "DataType": "String",
      "Name": "ResetType",
      "Required": true
    }
  ]
}
```

## 7.29.5 Supported Actions

### 7.29.5.1 Reset Manager

Description: The reset action resets/reboots the manager.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Actions/Manager.Reset>

Property	Allowed Value	Description
ResetType	ForceRestart	This action shall reset the system represented by the Resource.
	GracefulRestart	

#### 7.29.5.1.1 Example Payload

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

### 7.29.5.2 ResetToDefaultsType

Description: The factory reset action will factory reset with selected preserve configuration.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Actions/Manager.ResetToDefaults>

Property	Allowed Value	Description
ResetToDefaultsType	ResetAll	The type of reset to defaults.

#### 7.29.5.2.1 Example Payload

```
{
  "ResetToDefaultsType": "ResetAll"
}
```

### 7.29.5.3 VMInstance

Description: The factory reset action for VM.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Actions/Oem/InsydeOEMExtensions.VMInstance>

Property	Allowed Value
VMInstance	Allowed Value [1 ~ maxVM]

#### 7.29.5.3.1 Example Payload

```
{
  "VMInstance": 1
}
```

### 7.29.5.4 Backup BMC Setting

Description: The backup action generate BMC backup setting.

URI: <https://{ip}/redfish/v1/Managers/{ManagerId}/Actions/Oem/InsydeOEMExtensions.BackupBMCSettings>

- BMC Backup Setting will create in BMC console /tmp/backup256.bin
- If want to restore this backup file, please check action info of Update Service.

Property	Description
N/A	N/A

## 7.29.6 Updatable Properties

Property	Allowed value
DateTime	[0-9]{4}-(0[1-9] 1[0-2])-(0[1-9] 1[1-2][0-9] 3[0-1])T(2[0-3] 01)[0-9]:[0-5][0-9]:[0-5][0-9]([+-](0[0-9] 1[0-2]):([0-5][0-9]))?  Ex: 2020-08-26T00:01:19+00:00 2020-08-26T00:01:19
DateTimeLocalOffset	STRING, EX: "+08:00"
Links	OBJECT
→ActiveSoftwareImage	OBJECT
→→@odata.id	Valid url of the running firmware image.

### 7.29.6.1 Example Payload

1.Check that bmc date time is set to NTP by hand

```
busctl get-property xyz.openbmc_project.Settings /xyz/openbmc_project/time/sync_method xyz.openbmc_project.Time.Synchronization TimeSyncMethod
```

2.Set the time synchronization method of BMC

#Set BMC time synchronization method to NTP

```
busctl set-property xyz.openbmc_project.Settings /xyz/openbmc_project/time/sync_method xyz.openbmc_project.Time.Synchronization TimeSyncMethod s "xyz.openbmc_project.Time.Synchronization.Method.NTP"
```

#Set BMC time synchronization method to Manual

```
busctl set-property xyz.openbmc_project.Settings /xyz/openbmc_project/time/sync_method xyz.openbmc_project.Time.Synchronization TimeSyncMethod s "xyz.openbmc_project.Time.Synchronization.Method.Manual"
```

```
{
  "DateTime": "2024-06-18T02:24:00",
  "DateTimeLocalOffset": "+08:00"
}
```

## 7.30 EthernetInterfaceCollection

### 7.30.1 Description

A Collection of EthernetInterface resource instances.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/EthernetInterfaces>



## 7.30.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

## 7.30.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.30.3.1 Example

This example is the result of EthernetInterfaceCollection schema's GET response.

This is "/redfish/v1/Managers/bmc/EthernetInterfaces" example:

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces",
  "@odata.type": "#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "Description": "Collection of EthernetInterfaces for this Manager",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces/eth0"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces/eth1"
    },
    {
      "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces/ncsi0"
    }
  ],
  "Members@odata.count": 3,
  "Name": "Ethernet Network Interface Collection"
}
```

## 7.31 EthernetInterface

### 7.31.1 Description

The EthernetInterface schema represents a single, logical ethernet interface or network interface controller (NIC).  
URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/EthernetInterfaces/<InterfaceId>>

### 7.31.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH				V		

### 7.31.3 Properties

Property	Type	Description
DHCPv4	object	DHCPv4 configuration for this interface.
→ DHCPEnabled	boolean	Determines whether DHCPv4 is enabled on this interface.
→ UseDNSServers	boolean	An indication of whether this interface uses DHCP v4-supplied DNS servers.
→ UseDomainName	boolean	An indication of whether this interface uses a DHCP v4-supplied domain name.
→ UseNTPServers	boolean	An indication of whether the interface uses DHCP v4-supplied NTP servers.
DHCPv6	object	DHCPv6 configuration for this interface.
→ OperatingMode	string (enum)	Determines the DHCPv6 operating mode for this interface.
→ UseDNSServers	boolean	An indication of whether this interface uses DHCP v6-supplied DNS servers.
→ UseDomainName	boolean	An indication of whether this interface uses a DHCP v6-supplied domain name.
→ UseNTPServers	boolean	An indication of whether the interface uses DHCP v6-supplied NTP servers.
EthernetInterfaceType	string (enum)	See Intel/Nvidia Redfish User Guide for details.
FQDN	string	The complete, fully qualified domain name that DNS obtains for this interface.
HostName	string	The DNS Host Name, without any domain information.
InterfaceEnabled	boolean	This indicates whether this interface is enabled.
IPv6Enabled	boolean	This indicates whether IPv6 is enabled. (Only for G4 platforms)
IPv4Addresses	array (object)	The IPv4 addresses currently assigned to this interface.
→Address		This is the IPv4 Address.
→AddressOrigin		This indicates how the address was determined.
→Gateway		This is the IPv4 gateway for this address.
→SubnetMask		This is the IPv4 Subnet mask.
IPv4StaticAddresses	array (object)	The IPv4 static addresses assigned to this interface.
→Address		This is the IPv6 Address.

→AddressOrigin		This indicates how the address was determined.
→AddressState		The current RFC4862-defined state of this address.
→PrefixLength		This is the IPv6 Address Prefix Length.
IPv6Addresses	array (object)	The IPv6 addresses currently assigned to this interface.
→Address		This is the IPv6 Address.
→AddressOrigin		This indicates how the address was determined.
→Gateway		This is the IPv4 gateway for this address.
→SubnetMask		This is the IPv4 Subnet mask.
IPv6AddressPolicyTable	array	An array that represents the RFC6724-defined address selection policy table.
IPv6DefaultGateway	string	The IPv6 default gateway address to this interface.
IPv6StaticAddresses	array (object)	The IPv6 static addresses assigned to this interface.
→Address		This is the IPv4 Address.
→AddressOrigin		This indicates how the address was determined.
→AddressState		The current RFC4862-defined state of this address.
→PrefixLength		This is the IPv6 Address Prefix Length.
LinkStatus	string (enum)	The link status of this interface (port).
MACAddress	string	This is the currently configured MAC address of the (logical port) interface.
MTUSize	integer	See Intel/Nvidia Redfish User Guide for details.
NameServers	array (string)	This represents DNS name servers that are currently in use on this interface.
SpeedMbps	integer (Mbit/s)	This is the current speed in Mbps of this interface.
StatelessAddressAutoConfig	object	See Intel/Nvidia Redfish User Guide for details.
→IPv6AutoConfigEnabled	boolean	See Intel/Nvidia Redfish User Guide for details.
StaticNameServers	array (string, null)	The statically-defined set of DNS server IPv4 and IPv6 addresses.
Status	object	See Common Properties <i>Status Object</i> .

### 7.31.3.1 Example

This example is the result of EthernetInterface schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/EthernetInterfaces/eth0",
  "@odata.type": "#EthernetInterface.v1_8_0.EthernetInterface",
  "DHCPv4": {
    "DHCPEnabled": true,
    "UseDNSServers": true,
    "UseDomainName": false,
    "UseNTPServers": true
  },
  "DHCPv6": {
    "OperatingMode": "Disabled",
    "UseDNSServers": true,
    "UseDomainName": false,
    "UseNTPServers": true
  },
  "Description": "Management Network Interface",
  "FQDN": "amd-obmc",
  "HostName": "amd-obmc",
  "IPv4Addresses": [
    {
      "Address": "192.168.9.9",
      "AddressOrigin": "DHCP",
      "Gateway": "192.168.8.254",
      "SubnetMask": "255.255.252.0"
    }
  ],
  "IPv4StaticAddresses": [],
  "IPv6AddressPolicyTable": [],
  "IPv6Addresses": [],
  "IPv6DefaultGateway": "0:0:0:0:0:0:0:0",
  "IPv6StaticAddresses": [],
  "Id": "eth0",
  "InterfaceEnabled": true,
  "Ipv6Enable": true,
  "LinkStatus": "LinkUp",
  "MACAddress": "00:00:1a:1e:69:6b",
  "Name": "Manager Ethernet Interface",
  "NameServers": [
    "192.168.8.254"
  ],
  "SpeedMbps": 1000,
  "StaticNameServers": [],
  "Status": {
    "Health": null,
    "HealthRollup": null,
    "State": "Enabled"
  }
}
```

## 7.31.4 Updatable Properties

Property	Allowed value	Description
DHCPv4	OBJECT	
→DHCPEnabled	BOOLEAN	
→UseDNSServers	BOOLEAN	
→UseDomainName	BOOLEAN	
→UseNTPServers	BOOLEAN	
DHCPv6	OBJECT	
→OperatingMode	"Enabled"	DHCPv6 is Enabled.
	"Disabled"	DHCPv6 is disabled
→UseDNSServers	BOOLEAN	
→UseDomainName	BOOLEAN	
→UseNTPServers	BOOLEAN	
FQDN	Valid fully qualified domain name for this interface.	
HostName	STRING	
InterfaceEnabled	BOOLEAN	
IPv4StaticAddresses	OBJECT	
→Address	Valid IPv6 Address.	
→Gateway	Valid IPv4 Address.	
→SubnetMask	Valid IPv4 Address.	
IPv6StaticAddresses	OBJECT	
→Address	Valid IPv4 Address.	
→PrefixLength	[0-128]	
IPv6StaticDefaultGateways	OBJECT	
→Address	Valid IPv6 Address.	
StaticNameServers	Valid IPv4 or IPv6 Address.	

### 7.31.4.1 Example Payload

```
{
```

```

"HostName": "HostName",
"FQDN": "HostName",
"InterfaceEnabled": true,
"IPv4StaticAddresses": [
  {
    "Address": "192.168.1.1",
    "SubnetMask": "255.255.255.0",
    "Gateway": "192.168.1.254"
  }
],
"DHCPv4": {
  "UseNTPServers": false,
  "UseDNSServers": false
},
"StaticNameServers": [
  "192.168.1.2"
]
}

```

## 7.32 LogServiceCollection

### 7.32.1 Description

A Collection of LogService resource instances.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/LogServices>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/LogServices>

### 7.32.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		✓				

### 7.32.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.32.3.1 Example

These examples are the result of LogServiceCollection schema's GET response. This is "/redfish/v1/Managers/<ManagerID> /LogServices" example:

```

{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices",
  "@odata.type": "#LogServiceCollection.LogServiceCollection",
  "Description": "Collection of LogServices for this Manager",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/LogServices/AuditLog"
    },
    {

```

```

    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/EventLog"
  }
],
"Members@odata.count": 2,
"Name": "Open BMC Log Services Collection"
}

```

## 7.33 LogService

### 7.33.1 Description

This resource represents the log service for the resource or service to which it is associated.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/LogServices/<LogType>>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/LogServices/<LogType>>

- Redfish eventlog: /redfish/v1/Systems/<SystemID>/LogServices/EventLog/
- BIOS PostCode: /redfish/v1/Systems/<SystemID>/LogServices/PostCodes/
- SEL Log: /redfish/v1/Systems/<SystemID>/LogServices/ALL/
- Redfish Internal Eventlog: /redfish/v1/Managers/<ManagerID>/LogServices/EventLog/
- Audit Log: /redfish/v1/Managers/<ManagerID>/LogServices/AuditLog/

### 7.33.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
POST			V			

### 7.33.3 Properties

Property	Type	Description
Actions	object	The available actions for this Resource.
DateTime	string (date-time)	This property shall contain the current date and time with UTC offset of the log service.
DateTimeLocalOffset	string	This property shall contain the offset from UTC time that the DateTime property contains.
DiagnosticDataDetails	array	The detailed information for the data collected with the CollectDiagnosticData action.
→ DiagnosticDataType	string (enum)	The type of diagnostic data to collect with the CollectDiagnosticData action.

→ OEMDiagnosticDataT ype	string	The OEM-defined type of diagnostic data to collect with the CollectDiagnosticData action.
Entries	object	References to the log entry collection.
OverWritePolicy	string (enum)	The overwrite policy for this service that takes place when the log is full. <b>WrapsWhenFull</b> : When full, new entries to the log overwrite earlier entries

### 7.33.3.1 Example

These examples are the result of LogService schema's GET response.  
This is "/redfish/v1/Managers/<ManagerID>/LogServices/AuditLog" example:

```
{
  "@odata.id": "/redfish/v1/Systems/system/LogServices/AuditLog",
  "@odata.type": "#LogService.v1_3_0.LogService",
  "Actions": {
    "#LogService.ClearLog": {
      "target": "/redfish/v1/Managers/bmc/LogServices/AuditLog/Actions/LogService.ClearLog"
    }
  },
  "DateTime": "1970-01-01T00:33:47+00:00",
  "DateTimeLocalOffset": "+00:00",
  "Description": "The LogService schema contains properties for monitoring and configuring a Log Service",
  "DiagnosticDataDetails": [
    {
      "DiagnosticDataType": "OS",
      "OEMDiagnosticDataType": null
    }
  ],
  "Entries": {
    "@odata.id": "/redfish/v1/Managers/bmc/LogServices/AuditLog/Entries"
  },
  "Id": "AuditLog",
  "Name": "AuditLog Log Entry Collection",
  "OverWritePolicy": "WrapsWhenFull"
}
```

## 7.33.4 Supported Actions

### 7.33.4.1 Clear Log

Description: This action is used to clear the log for this Log Service.  
Example URI to clear EventLog:

<https://{ip}/redfish/v1/Systems/system/LogServices/EventLog/Actions/LogService.ClearLog>

Property	Description
N/A	N/A



## 7.34 LogEntryCollection

### 7.34.1 Description

A Collection of LogEntry resource instances.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/LogServices/<LogTYPE>/Entries>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/LogServices/<LogTYPE>/Entries>

- Redfish eventlog: /redfish/v1/Systems/<SystemID>/LogServices/EventLog/Entries
- BIOS PostCode: /redfish/v1/Systems/<SystemID>/LogServices/PostCodes/Entries
- SEL Log: /redfish/v1/Systems/<SystemID>/LogServices/ALL/Entries
- Redfish Internal Eventlog: /redfish/v1/Managers/<ManagerID> /LogServices/EventLog/Entries
- Audit Log: /redfish/v1/Managers/<ManagerID> /LogServices/AuditLog/Entries

### 7.34.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.34.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.34.3.1 Example

These examples are the result of LogEntryCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Description": "Collection of System Event Log Entries",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/LogServices/EventLog/Entries/48",
      "@odata.type": "#LogEntry.v1_12_0.LogEntry",
      "Created": "1970-01-01T00:00:48+00:00",
      "EntryType": "Event",
      "Id": "48",
      "Message": "The system interface is in the unprovisioned state.",
      "MessageArgs": [],
      "MessageId": "OpenBMC.0.1.SystemInterfaceUnprovisioned",
      "Name": "System Event Log Entry",
      "Severity": "Critical"
    },
    ...
    ...
    ...
  ]
}
```

```

1
}

```

## 7.35 LogEntry

### 7.35.1 Description

This resource defines the record format for a log.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/LogServices/<LogTYPE>/Entries/<EntryId>>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/LogServices/<LogTYPE>/Entries/<EntryId>>

- Redfish eventlog: /redfish/v1/Systems/<SystemID> /LogServices/EventLog/Entries/
- BIOS PostCode: /redfish/v1/Systems/<SystemID> /LogServices/PostCodes/Entries/
- SEL Log: /redfish/v1/Systems/<SystemID>/LogServices/ALL/Entries/
- Redfish Internal Eventlog: /redfish/v1/Managers/<ManagerID> /LogServices/EventLog/Entries/
- Audit Log: /redfish/v1/Managers/<ManagerID> /LogServices/AuditLog/Entries/

### 7.35.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.35.3 Properties

#### 7.35.3.1 LogService Type : ALL

Property	Type	Description
Created	string (date-time)	The time the log entry was created.
EntryCode	string (enum)	If the EntryType is SEL, this will have the entry code for the log entry. "Event": "A Redfish-defined message.", "Oem": "An entry in an OEM-defined format.", "SEL": "A legacy IPMI System Event Log (SEL) entry."
EntryType	string (enum)	This is the type of log entry.
EventId	string	This is a unique instance identifier of an event.
EventTimestamp	string (date-time)	If present, this LogEntry records an event and the value shall contain the date and time when the event occurred.

GeneratorId	string	An identifier of the device that has generated the IPMI SEL Event Record.
Message	string	This property decodes from EntryType: If it is Event then it is a message string. Otherwise, it is SEL or Oem specific. In most cases, this will be the actual Log Entry.
MessageId	string	This property decodes from EntryType. If the EntryType is Event, then it is a message id. If the EntryType is SEL, then it contains the Event Data. Otherwise, it is OEM specific.
OemLogEntryCode	string	The OEM-specific entry code, if the LogEntryCode type is OEM.
SensorNumber	integer	This property decodes from EntryType. If the EntryType is SEL, it is the sensor number. If the EntryType is Event, then the count of events. Otherwise, it is OEM specific.
SensorType	string (enum)	If the EntryType is SEL, this will have the sensor type that the log entry pertains to.
Severity	string (enum)	This is the severity of the log entry.
Oem	object	Oem extension object.
→ Insyde	object	
→→TotalCount	integer	The number of LogEntry

### 7.35.3.2 LogService Type : Audit Log

Property	Type	Description
Created	string (date-time)	The time the log entry was created.
EntryType	string (enum)	This is the type of log entry.
Id	string	The Id of the log entry.
Message	string	The message of the log entry.
Severity	string (enum)	This is the severity of the log entry.

### 7.35.3.3 LogService Type: Other Log types

Property	Type	Description
Created	string (date-time)	The time the log entry was created.
EntryType	string (enum)	This is the type of log entry.
Id	string	The Id of the log entry.
Message	string	The message of the log entry.

MessageArgs	array (string)	The arguments for the message of the log entry.
MessageId	string	The MessageId of the log entry.
Severity	string (enum)	This is the severity of the log entry.

### 7.35.3.4 Example

These examples are the result of LogEntry schema's GET response.

This is "/redfish/v1/Managers/<ManagerID> /LogServices/EventLog/Entries/2130" example:

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/LogServices/EventLog/Entries/2130",
  "@odata.type": "#LogEntry.v1_12_0.LogEntry",
  "Created": "1970-01-01T00:35:30+00:00",
  "EntryType": "Event",
  "EventId": "7467e1a9-6151-4642-9d94-4fb413a40a51",
  "Id": "2130",
  "Message": "The requested resource of type #Chassis.v1_14_0.Chassis named 'RackMount' was not found.",
  "MessageArgs": [
    "#Chassis.v1_14_0.Chassis",
    "RackMount"
  ],
  "MessageId": "Base.1.11.ResourceNotFound",
  "Name": "Log Entry 2130",
  "Severity": "Critical"
}
```

## 7.36 ManagerNetworkProtocol

### 7.36.1 Description

Settings for a network protocol associated with a manager.

URI: https://{ip}/redfish/v1/Managers/<ManagerID>/NetworkProtocol

### 7.36.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH			V			

### 7.36.3 Properties

Property	Description
FQDN	This property shall contain the fully qualified domain name for the manager.

HostName	The DNS Host Name of this manager, without any domain information.
HTTP	Settings for this Manager's HTTP support.
→Port	Indicates the protocol port.
→ProtocolEnabled	Indicates if the protocol is enabled or disabled. If this configured to be false, web server can not receive any Redfish requests.
HTTPS	Settings for this Manager's HTTPS protocol support.
→Certificates	This is a reference to a collection of certificates used for HTTPS by this manager.
→Port	The protocol port.
→ProtocolEnabled	An indication of whether the protocol is enabled.
IPMI	Settings for this Manager's IPMI-over-LAN protocol support.
→Port	Indicates the protocol port.
→ProtocolEnabled	Indicates if the protocol is enabled or disabled.
NTP	Settings for this Manager's NTP support.
→ NTPServers	List of valid IPv4 or IPv6 Address.
→ ProtocolEnabled	Indicates if the protocol is enabled or disabled. If this configured to be false, web server can not receive any Redfish requests.
SNMP	The settings for this manager's SNMP support.
→ CommunityStrings	The SNMP community strings.
→→ AccessMode	The access level of the SNMP community.
→→ CommunityString	The SNMP community string.
→ EnableSNMPv1	Indicates if access via SNMPv1 is enabled.
→ EnableSNMPv2c	Indicates if access via SNMPv2c is enabled.
→ EnableSNMPv3	Indicates if access via SNMPv3 is enabled.
→Port	Indicates the protocol port.
→ProtocolEnabled	An indication of whether the protocol is enabled.
SSH	The protocol port.
→Port	Indicates the protocol port.
→ProtocolEnabled	Indicates if the protocol is enabled or disabled.
SSH	Settings for this Manager's SSH (Secure Shell) protocol support.
→Port	Indicates the protocol port.

→ProtocolEnabled	Indicates if the protocol is enabled or disabled.
SSDP	
→Port	Indicates the protocol port.
→ProtocolEnabled	Indicates if the protocol is enabled or disabled.
Status	See Common Properties <i>Status Object</i> .

### 7.36.3.1 Example

This example is the result of ManagerNetworkProtocol schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/BMC_0/NetworkProtocol",
  "@odata.type": "#ManagerNetworkProtocol.v1_8_1.ManagerNetworkProtocol",
  "Description": "Manager Network Service",
  "FQDN": "BMC000000000000",
  "HTTP": {
    "Port": 0,
    "ProtocolEnabled": false
  },
  "HTTPS": {
    "Certificates": {
      "@odata.id": "/redfish/v1/Managers/BMC_0/NetworkProtocol/HTTPS/Certificates"
    },
    "Port": 443,
    "ProtocolEnabled": true
  },
  "HostName": "BMC000000000000",
  "IPMI": {
    "Port": 623,
    "ProtocolEnabled": true
  },
  "Id": "NetworkProtocol",
  "NTP": {
    "NTPServers": [],
    "ProtocolEnabled": true
  },
  "Name": "Manager Network Protocol",
  "SNMP": {
    "CommunityStrings": [
      {
        "AccessMode": "Limited",
        "CommunityString": "limitedString"
      },
      {
        "AccessMode": "Full",
        "CommunityString": "fullString"
      }
    ],
    "EnableSNMPv1": false,
    "EnableSNMPv2c": false,
    "EnableSNMPv3": true,
    "Port": 161,
    "ProtocolEnabled": true
  }
}
```

```

},
"SSDP": {
  "Port": 1900,
  "ProtocolEnabled": true
},
"SSH": {
  "Port": 22,
  "ProtocolEnabled": true
},
"Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Enabled"
}
}

```

### 7.36.4 Updatable Properties

Property	Allowed value
IPMI	OBJECT
→ProtocolEnabled	BOOLEAN
NTP	OBJECT
→ NTPServers	List of valid IPv4 or IPv6 Address.
→ProtocolEnabled	BOOLEAN
SNMP	OBJECT
→ CommunityStrings	OBJECT
→→ AccessMode	STRING
→→ CommunityString	STRING
→ EnableSNMPv1	BOOLEAN
→ EnableSNMPv2c	BOOLEAN
→ ProtocolEnabled	BOOLEAN
SSH	OBJECT
→ ProtocolEnabled	BOOLEAN
SSDP	OBJECT
→ ProtocolEnabled	BOOLEAN

#### 7.36.4.1 Payload Example

```

{
  "IPMI": {

```

```

    "ProtocolEnabled": true
  },
  "NTP": {
    "NTPServers": [
      "time3.google.com",
      "time1.google.com"
    ],
    "ProtocolEnabled": true
  },
  "SNMP" : {
    "EnableSNMPv1" : true,
    "EnableSNMPv2c" : true,
    "CommunityStrings": [
      {
        "AccessMode": "Limited",
        "CommunityString": "limitedString"
      },
      {
        "AccessMode": "Full",
        "CommunityString": "fullString"
      }
    ]
  },
  "SSH": {
    "ProtocolEnabled": true
  }
}

```

## 7.37 VirtualMediaCollection

### 7.37.1 Description

A Collection of VirtualMedia resource instances.

URI: https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia

### 7.37.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.37.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.37.3.1 Example:

This example is the result of VirtualMediaCollection schema's GET response.

```

{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia",
  "@odata.type": "#VirtualMediaCollection.VirtualMediaCollection",
  "Members": [

```



```
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/0"
},
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/1"
},
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/2"
},
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/3"
},
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/4"
}
],
"Members@odata.count": 5,
"Name": "Virtual Media Services"
}
```

## 7.38 VirtualMedia

### 7.38.1 Description

The VirtualMedia schema contains properties related to monitoring and control of an instance of virtual media such as a remote CD, DVD, or USB device. Virtual media functionality is provided by a Manager for a system or device.  
URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia/<VirtualMediaId>>

### 7.38.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST				V		

### 7.38.3 Properties

Property	Description
Actions	The available actions for this Resource.
ConnectedVia	Current virtual media connection methods. <b>Applet:</b> Connected to a client application. <b>NotConnected:</b> No current connection. <b>Oem:</b> Connected through an OEM-defined method. <b>URI:</b> Connected to a URI location
Image	The URI of the location of the selected image.

Inserted	Indicates if virtual media is inserted in the virtual device.
MediaTypes	<p>This is the media types supported as virtual media.s</p> <p><b>CD:</b> A CD-ROM format (ISO) image</p> <p><b>Floppy:</b> A floppy disk image</p> <p><b>USBStick:</b> An emulation of a USB storage device</p> <p><b>DVD:</b> A DVD-ROM format image</p>
Password	The password to be used when accessing the URI specified by the Image parameter.
Status	See Common Properties Status Object
TransferMethod	Network protocol to use with the image.
TransferProtocolType	Transfer method to use with the given Image.
UserName	The username to be used when accessing the URI specified by the Image parameter.
VerifyCertificate	An indication of whether the service will verify the certificate of the server referenced by the Image property prior to completing the remote media connection.
WriteProtected	Indicates the media is write protected.

### 7.38.3.1 Example

This example is the result of VirtualMedia schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/1",
  "@odata.type": "#VirtualMedia.v1_5_1.VirtualMedia",
  "Actions": {
    "#InsydeOEMExtensions.v1_0_0.PostCertificate": {
      "target":
"/redfish/v1/Managers/bmc/VirtualMedia/1/Actions/Oem/InsydeOEMExtensions.PostCertificate"
    },
    "#VirtualMedia.InsertMedia": {
      "@Redfish.ActionInfo": "/redfish/v1/Managers/bmc/VirtualMedia/1/InsertMediaActionInfo",
      "target": "/redfish/v1/Managers/bmc/VirtualMedia/1/Actions/VirtualMedia.InsertMedia"
    },
    "Oem": {
      "#InsydeOEMExtensions.v1_0_0.Certificate": {
        "target":
"/redfish/v1/Managers/bmc/VirtualMedia/1/Actions/Oem/VirtualMedia.Certificate"
      }
    }
  },
  "ConnectedVia": "Applet",
  "Id": "1",
  "Image": null,
  "Inserted": true,
  "MediaTypes": [
```

```

        "USBStick"
    ],
    "Name": "Virtual Removable Media",
    "Password": null,
    "Status": {
        "Health": "OK",
        "HealthRollup": "OK",
        "State": "Enabled"
    },
    "TransferMethod": "Stream",
    "TransferProtocolType": "OEM",
    "UserName": "",
    "VerifyCertificate": false,
    "WriteProtected": true
}

```

## 7.38.4 ActionInfo

### 7.38.4.1 InsertMediaActionInfo

Description: Deliver allowable values of this action.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia /<VM ID>/InsertMediaActionInfo>

#### 7.38.4.1.1 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

#### 7.38.4.1.2 Properties

Property	Description
Parameters	An array of object.
→AllowableValues	The current allowable values.
→DataType	The data type of value
→Name	Property name.
→Required	Determine if argument was required when doing action.

### Example

This example is the result of a GET response.

```

{
    "@odata.id": "/redfish/v1/Managers/bmc/VirtualMedia/0/InsertMediaActionInfo",
    "@odata.type": "#ActionInfo.v1_2_0.ActionInfo",
    "Id": "InsertMediaActionInfo",
    "Name": "Virtual Media Insert Media Action Info",
    "Parameters": [

```

```
{
  {
    "DataType": "String",
    "Name": "Image",
    "Required": true
  },
  {
    "DataType": "String",
    "Name": "UserName",
    "Required": false
  },
  {
    "DataType": "String",
    "Name": "Password",
    "Required": false
  },
  {
    "DataType": "String",
    "Name": "TransferProtocolType",
    "Required": false,
    "TransferProtocolType@Redfish.AllowableValues": [
      "CIFS",
      "NFS",
      "HTTPS",
      "OEM"
    ]
  }
}
```

## 7.38.5 Supported Actions

### 7.38.5.1 Insert Media

Description: This action is used to attach remote media to virtual media.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia /<VM ID>/Actions/VirtualMedia.InsertMedia>

#### 7.38.5.1.1 NFS

Property	Required	Allowed Value
Image	Yes	The URI of the remote media to attach
TransferProtocolType	No	"NFS"

#### Example Payload of NFS

```
{"Image": "nfs://", "TransferProtocolType": "NFS"}
```

#### 7.38.5.1.2 NFS with kerberos

Property	Required	Allowed Value
Image	Yes	The URI of the remote media to attach

TransferProtocolType	No	"NFS"
----------------------	----	-------

#### Example Payload of NFS with kerberos

```
{"Image":"nfsv4://", "TransferProtocolType": "NFS"}
```

#### 7.38.5.1.3 CIFS

Property	Required	Allowed Value
Image	Yes	The URI of the remote media to attach
Password	Yes	STRING
TransferProtocolType	No	"CIFS"
UserName	Yes	STRING

#### Example Payload of CIFS

```
{"Image":"/", "UserName":"", "Password":"", "TransferProtocolType":"CIFS"}
```

```
{"Image":"cifs://", "UserName":"", "Password":"", "TransferProtocolType":"CIFS"}
```

#### 7.38.5.1.4 HTTPS

Property	Required	Allowed Value
Image	Yes	The URI of the remote media to attach
Password	No	STRING
TransferProtocolType	No	"HTTPS"
UserName	No	STRING
VerifyCertificate	No	true, false

#### Example Payload of HTTPS

```
{"Image":"https://", "UserName":"", "Password":"", "VerifyCertificate": ""}
```

```
{"Image":"https://", "UserName":"", "Password":""}
```

```
{"Image":"https_crt://", "UserName":"", "Password":""}
```

**Note:** It is recommended to use https, which is the standard protocol, instead of https and https\_crt.

#### 7.38.5.1.5 Eject Media

Description: This action is used to detach remote media from virtual media.

URI: https://{ip}/redfish/v1/Managers/<ManagerID>/VirtualMedia /<VM ID>/Actions/VirtualMedia.EjectMedia

Property	Description
N/A	N/A

## 7.39 HostInterfaceCollection

### 7.39.1 Description

A Collection of HostInterface resource instances.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/HostInterfaces>

### 7.39.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.39.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.39.3.1 Example

This example is the result of HostInterfaces schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#HostInterfaceCollection.HostInterfaceCollection",
  "@odata.id": "/redfish/v1/Managers/bmc/HostInterfaces",
  "@odata.type": "#HostInterfaceCollection.HostInterfaceCollection",
  "Name": "Host Interface Collection",
  "Description": "The collection of hostInterface Resource instances.",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/HostInterfaces/1"
    }
  ]
}
```

## 7.40 HostInterface

### 7.40.1 Description

The properties associated with a single, Host Interface.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/HostInterfaces/<HostInterfaceId>>

## 7.40.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH			V			

## 7.40.3 Properties

Property	Description
AuthenticationModes	Indicates the authentication modes available on this interface.
CredentialBootstrapping	See Nvidia Redfish User Guide for details.
→ EnableAfterReset	See Nvidia Redfish User Guide for details.
→ Enabled	See Nvidia Redfish User Guide for details.
→ RoleId	See Nvidia Redfish User Guide for details.
ExternallyAccessible	Indicates whether this interface is accessible by external entities.
FirmwareAuthEnabled	See Intel/AMD Redfish User Guide for details.
FirmwareAuthRoleId	See Intel/AMD Redfish User Guide for details.
HostInterfaceType	This interface is a Network Host Interface.
KernelAuthEnabled	See Intel/AMD Redfish User Guide for details.
KernelAuthRoleId	See Intel/AMD Redfish User Guide for details.
InterfaceEnabled	Indicates whether this interface is enabled.
Links	The links to other resources that are related to this resource.
→ ComputerSystems	An array of links to the computer systems connected to this host interface.
→ CredentialBootstrappingRole	See Nvidia Redfish User Guide for details.
→ FirmwareAuthRole	See Intel/AMD Redfish User Guide for details.
→ KernelAuthRole	See Intel/AMD Redfish User Guide for details.
Oem	Oem extension object.
→ InsydeUpdateTag	Oem extension object for Insyde updateTag. Possibly value for BIOSSetup, SMBIOS, PCIE, BOOTOption,

	<p>BOOTOrder, OSDeployment, SATA, BIOSRegistries, NetworkAdapter.</p> <p>empty: BIOS doesn't provide related information.</p> <p>identical: BIOS has uploaded related information.</p> <p>different: BMC has changed related settings.</p>
→→ BIOSFEATUREVER	This indicates the protocol version of bios feature.
→→ BMCFEATUREVER	This indicates the protocol version of bmc feature.
→→ BIOSSetup	Indicates the status of bios setup.
→→ SMBIOS	Indicates the status of smbios.
→→ PCIE	Indicates the status of pcie.
→→ SATA	Indicates the status of sata.
→→ PCIECRC	This indicates the crc of pcie information.
→→ SATACRC	This indicates the crc of sata information.
→→ AEP	Indicates the status of AEP.
→→ SecureBootEnable	
→→ SecureBootAction	
→→ SecureBootDatabasePKAction	
→→ SecureBootDatabaseKEKAction	
→→ SecureBootDatabaseDBAction	
→→ SecureBootDatabaseDBXAction	
→→ SecureBootFileExist	
→→ HttpsCertificateTag	Indicates the Https Certificate Tag
→→ ResetBiosToDefaultsPending	
→→ BIOSRegistries	Indicates the status of bios Registries.
→→ BOOTOption	Indicates the status of boot option.
→→ BOOTOrder	Indicates the status of boot order.
→→ NetworkAdapter	Indicates the status of network adapter.
→→ OSDeployment	Indicates the status of os deployment.
→ PendingAction	The bios will act according to the data in the pending action.



→→ ActionID_16	Indicates the Add Https Boot Certificate
→→→ ActionID	Indicates the number of Action ID
→→→ ActionName	Indicates the action name
→→→ Description	Describe the function of action id
→→→ Done	Does Bios have a certificate installed?
→→→ Parameter	List all certificate by system boot.
→→→→ CertificateString	The string for the certificate.
→→→→ CertificateType	The format of the certificate.
→→→→ UefiSignatureOwner	The UEFI signature owner for this certificate.
→→ ActionID_17	Indicates the Replace Https Boot Certificate
→→→ ActionID	Indicates the number of Action ID
→→→ ActionName	Indicates the action name
→→→ Description	Describe the function of action id
→→→ Done	Does Bios have a certificate replaced?
→→→ Parameter	List all certificate by system boot.
→→→→ CertificateString	The string for the certificate.
→→→→ CertificateType	The format of the certificate.
→→→→ Index	The index of the certificate.
→→→→ UefiSignatureOwner	The UEFI signature owner for this certificate.
→→ ActionID_18	Indicates the Delete Https Boot Certificate
→→→ ActionID	Indicates the number of Action ID
→→→ ActionName	Indicates the action name
→→→ Description	Describe the function of action id
→→→ Done	Does Bios have a certificate removed?
→→→ Parameter	List all certificate by system boot.
→→→→ CertificateString	The string for the certificate.
→→→→ CertificateType	The format of the certificate.
→→→→ Index	The index of the certificate.
→→→→ UefiSignatureOwner	The UEFI signature owner for this certificate.

### 7.40.3.1 Example

This example is the result of HostInterfaces schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#HostInterface.HostInterface",
  "@odata.id": "/redfish/v1/Managers/BMC_0/HostInterfaces/1",
  "@odata.type": "#HostInterface.v1_3_0.HostInterface",
  "Id": "1",
  "Description": "The properties associated with a Host Interface.",
  "Name": "Host Interface",
  "InterfaceEnabled": true,
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "AuthenticationModes": [
    "AuthNone",
    "BasicAuth",
    "RedfishSessionAuth"
  ],
  "ExternallyAccessible": false,
  "HostInterfaceType": "NetworkHostInterface",
  "Links": {
    "ComputerSystems@odata.count": 1,
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/system"
      }
    ]
  },
  "Oem": {
    "InsydeUpdateTag": {
      "BIOSFEATUREVER": "",
      "BMCFEATUREVER": "2.0",
      "BIOSSetup": "empty",
      "SMBIOS": "empty",
      "PCIE": "empty",
      "SATA": "empty",
      "PCIECRC": "",
      "SATACRC": "",
      "AEP": "",
      "SecureBootEnable": "",
      "SecureBootAction": "",
      "SecureBootDatabasePKAction": "",
      "SecureBootDatabaseKEKAction": "",
      "SecureBootDatabaseDBAction": "",
      "SecureBootDatabaseDBXAction": "",
      "SecureBootFileExist": "NonExist",
      "ResetBiosToDefaultsPending": "",
      "BIOSRegistries": "empty",
      "BOOTOption": "empty",
      "BOOTOrder": "empty",
      "NetworkAdapter": "empty",
      "OSDeployment": "empty",
      "@odata.type": "#InsydeOEMExtensions.UpdateTag"
    },
    "PendingAction": {
```

```

"@odata.type": "#InsydeOEMExtensions.PendingAction",
"ActionID_16": {
  "ActionID": 16,
  "ActionName": "AddHttpsBootCertificate",
  "Description": "The Parameter index property is 1 base.",
  "Done": false,
  "Parameter": []
},
"ActionID_17": {
  "ActionID": 17,
  "ActionName": "ReplaceHttpsBootCertificate",
  "Description": "The Parameter index property is 1 base.",
  "Done": false,
  "Parameter": []
},
"ActionID_18": {
  "ActionID": 18,
  "ActionName": "DeleteHttpsBootCertificate",
  "Description": "The Parameter index property is 1 base.",
  "Done": false,
  "Parameter": []
}
}
}
}

```

#### 7.40.4 Updatable Properties

Property	Allowed value
CredentialBootstrapping	See Nvidia Redfish User Guide for details.
→RoleId	See Nvidia Redfish User Guide for details.
→Enabled	See Nvidia Redfish User Guide for details.
→EnableAfterReset	See Nvidia Redfish User Guide for details.
FirmwareAuthEnabled	See Intel/AMD Redfish User Guide for details.
FirmwareAuthRoleId	See Intel/AMD Redfish User Guide for details.
KernelAuthEnabled	See Intel/AMD Redfish User Guide for details.
KernelAuthRoleId	See Intel/AMD Redfish User Guide for details.
Oem	
→ PendingAction	
→→ ActionID_16	
→→→ Done	BOOLEAN
→→ ActionID_17	

→→→ Done	BOOLEAN
→→ ActionID_18	
→→→ Done	BOOLEAN

#### 7.40.4.1 Example Payload

```
{
  "Oem": {
    "PendingAction": {
      "ActionID_16": {
        "Done": true
      },
      "ActionID_17": {
        "Done": true
      },
      "ActionID_18": {
        "Done": true
      }
    }
  }
}
```

## 7.41 BootOptionCollection

### 7.41.1 Description

A Collection of BootOption resource instances.  
 URI: https://{ip}/redfish/v1/Systems/<SystemID>/BootOptions

### 7.41.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET			V			

### 7.41.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.41.3.1 Example

This example is the result of BootOptionCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#BootOptionCollection.BootOptionCollection",
  "@odata.id": "/redfish/v1/Systems/system/BootOptions",
  "@odata.type": "#BootOptionCollection.BootOptionCollection",
  "Name": "Boot Option Collection",
  "Description": "Boot Option Collection",
  "Members@odata.count": 3,
```

```

"Members": [
  {
    "@odata.id": "/redfish/v1/Systems/system/BootOptions/Boot0002"
  },
  {
    "@odata.id": "/redfish/v1/Systems/system/BootOptions/Boot000B"
  },
  {
    "@odata.id": "/redfish/v1/Systems/system/BootOptions/Boot0001"
  }
]
}

```

## 7.42 BootOption

### 7.42.1 Description

This is the schema definition for the BootOption resource. It represents the properties of a bootable device available in the System.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/BootOptions/<BootOptionId>>

### 7.42.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				
PATCH				V		

### 7.42.3 Properties

Property	Description
Alias	The alias of this Boot Source.
BootOptionEnabled	A flag that shows if the Boot Option is enabled.
BootOptionReference	The unique boot option string that is referenced in the BootOrder.
DisplayName	The user-readable display string of the Boot Option.
UefiDevicePath	The UEFI device path used to access this UEFI Boot Option.

#### 7.42.3.1 Example

This example is the result of BootOption schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#BootOption.BootOption",
  "@odata.id": "/redfish/v1/Systems/system/BootOptions/Boot0001",
  "@odata.type": "#BootOption.v1_0_4.BootOption",
  "Alias": "None",

```

```
"BootOptionEnabled": true,
"BootOptionReference": "Boot0001",
"Description": "EFI Internal Shell",
"DisplayName": "EFI Internal Shell",
"Id": "Boot0001",
"Name": "Boot Option",
"UefiDevicePath": "Fv(9AEF2E52-DEAD-4F63-B895-3A504A3E63C4)/FvFile(7C04A583-9E3E-4F1C-AD65-E05268D0B4D1)"
}
```

## 7.42.4 Updatable Properties

Property	Allowed value
BootOptionEnabled	BOOLEAN

### 7.42.4.1 Example Payload

```
{
  "BootOptionEnabled": true
}
```

## 7.43 MessageRegistryFileCollection

### 7.43.1 Description

A Collection of MessageRegistryFile resource instances.  
URI: <https://{ip}/redfish/v1/Registries>

### 7.43.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.43.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.43.3.1 Example

This example is the result of MessageRegistryFileCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Registries",
  "@odata.type": "#MessageRegistryFileCollection.MessageRegistryFileCollection",
  "Description": "Collection of MessageRegistryFiles",
  "Members": [
    {

```

```
        "@odata.id": "/redfish/v1/Registries/Base"
    },
    {
        "@odata.id": "/redfish/v1/Registries/TaskEvent"
    },
    {
        "@odata.id": "/redfish/v1/Registries/ResourceEvent"
    },
    {
        "@odata.id": "/redfish/v1/Registries/OpenBMC"
    },
    {
        "@odata.id": "/redfish/v1/Registries/BiosAttributeRegistry"
    }
],
"Members@odata.count": 5,
"Name": "MessageRegistryFile Collection"
}
```

## 7.44 MessageRegistryFile

### 7.44.1 Description

This is the schema definition for the Schema File locator resource.  
URI: <https://{ip}/redfish/v1/Registries/Base|TaskEvent|ResourceEvent|OpenBMC>

### 7.44.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.44.3 Properties

Property	Description
Languages	Language codes for the schemas available.
Location	Location information for this schema file.
→Language	The language code for the file the schema is in.
→PublicationUri	Link to publicly available (canonical) URI for schema, if provided
→Uri	Link to locally available URI for schema.
Registry	The Registry Name, Major and Minor version used in MessageID construction.

#### 7.44.3.1 Example

This example is the result of MessageRegistryFile schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Registries/Base",
  "@odata.type": "#MessageRegistryFile.v1_1_3.MessageRegistryFile",
  "Description": "DMTF Base Message Registry File Location",
  "Id": "Base",
  "Languages": [
    "en"
  ],
  "Languages@odata.count": 1,
  "Location": [
    {
      "Language": "en",
      "PublicationUri": "https://redfish.dmtf.org/registries/Base.1.11.0.json",
      "Uri": "/redfish/v1/Registries/Base/Base"
    }
  ],
  "Location@odata.count": 1,
  "Name": "Base Message Registry File",
  "Registry": "Base.1.11.0"
}
```

## 7.45 MessageRegistry

### 7.45.1 Description

This is the schema definition for all Message Registries. It represents the properties for the registries themselves. The MessageId is formed per the Redfish specification. It consists of the RegistryPrefix concatenated with the version concatenated with the unique identifier for the message registry entry.

URI: [https://ip/redfish/v1/Registries/\(MessageRegistryFile\)/\(MessageRegistryFile\)](https://ip/redfish/v1/Registries/(MessageRegistryFile)/(MessageRegistryFile))

### 7.45.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.45.3 Properties

Property	Description
@Redfish.Copyright	The term is applied to Redfish payload samples to specify copyright information. It would not generally be used in production payloads, if provided
Language	This is the RFC 5646 compliant language code for the registry.
Messages	The pattern property indicates that a free-form string is the unique identifier for the message within the registry.
→→ ArgDescriptions	The MessageArgs descriptions, in order, used for this message.
→→ArgLongDescriptio	The MessageArgs normative descriptions, in order, used for this message.



ns	
→→ Deprecated	The reason the message has been deprecated.
→→ Description	A short description of how and when to use this message.
→→ Message	The actual message.
→→ MessageSeverity	The severity of the message.
→→ NumberOfArgs	The number of arguments in the message.
→→ ParamTypes	The data types of the message arguments, prior to conversion to strings for inclusion in a message.
→→ Resolution	Used to provide suggestions on how to resolve the situation that caused the error.
→→ Severity	The severity of the message.
→→ VersionAdded	The registry version which added this message.
→→VersionDeprecated	The registry version when the message was deprecated.
OwningEntity	This is the organization or company that publishes this registry.
RegistryPrefix	This is the single word prefix used to form a messageID structure.
RegistryVersion	This is the message registry version which is used in the middle portion of a messageID.

### 7.45.3.1 Example

This is "<https://redfish.dmtf.org/registries/Base.1.11.0.json>" example:

```
{
  "@Redfish.Copyright": "Copyright 2014-2021 DMTF. All rights reserved.",
  "@odata.type": "#MessageRegistry.v1_4_0.MessageRegistry",
  "Id": "Base.1.11.0",
  "Name": "Base Message Registry",
  "Language": "en",
  "Description": "This registry defines the base messages for Redfish",
  "RegistryPrefix": "Base",
  "RegistryVersion": "1.11.0",
  "OwningEntity": "DMTF",
  "Messages": {
    "TaskAborted": {
      "ArgDescriptions": [],
      "ArgLongDescriptions": [],
      "Deprecated": null,
      "Description": "A task has completed with errors.",
      "Message": "The task with Id '%1' has completed with errors.",
      "MessageSeverity": "Critical",
      "NumberOfArgs": 1,
      "ParamTypes": [
        "string"
      ]
    }
  }
}
```

```

    "Resolution": "None.",
    "Severity": "Critical",
    "VersionAdded": null,
    "VersionDeprecated": null
  },
  .
  .
  .
  .
  "ServiceDisabled": {
    "Description": "Indicates that the operation failed because the service, such as the
account service, is disabled and cannot accept requests.",
    "LongDescription": "This message shall be used to indicate that the operation failed
because the service, such as the account service, is disabled and cannot accept requests.",
    "Message": "The operation failed because the service at %1 is disabled and cannot
accept requests.",
    "Severity": "Warning",
    "MessageSeverity": "Warning",
    "NumberOfArgs": 1,
    "ParamTypes": [
      "string"
    ],
    "ArgDescriptions": [
      "The URI of the disabled service."
    ],
    "ArgLongDescriptions": [
      "This argument shall contain the URI of the disabled service."
    ],
    "Resolution": "Enable the service and resubmit the request if the operation failed."
  }
}
}
```

7.46 SessionService

7.46.1 Description

This is the schema definition for the Session Service. It represents the properties for the service itself and has links to the actual list of sessions.  
URI: https://{ip}/redfish/v1/SessionService

7.46.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		
POST				V		

### 7.46.3 Properties

Property	Description
Actions	The available actions for this Resource.
ServiceEnabled	This indicates whether this service is enabled. If set to false, the Session Service is disabled and any attempt to access it will fail.  This means new sessions cannot be created, old sessions cannot be deleted though established sessions may continue operating.
Sessions	Link to a collection of Sessions.
SessionTimeout	This is the number of seconds of inactivity that a session may have before the session service closes the session due to inactivity.  Default timeout: 1800 sec
Status	See Common Properties <i>Status Object</i>

#### 7.46.3.1 Example

This example is the result of SessionService schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionService.SessionService",
  "@odata.id": "/redfish/v1/SessionService",
  "@odata.type": "#SessionService.v1_1_8.SessionService",
  "Id": "SessionService",
  "Name": "SessionService",
  "Description": "The SessionService schema describes the Session Service and its properties,
with links to the actual list of sessions.",
  "Actions": {
    "Oem": {
      "#InsydeOEMExtensions.v1_0_0.ClearVNCSession": {
        "target":
"/redfish/v1/SessionService/Actions/Oem/InsydeOEMExtensions.ClearVNCSession"
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "ServiceEnabled": true,
  "SessionTimeout": 1800,
  "Sessions": {
    "@odata.id": "/redfish/v1/SessionService/Sessions"
  }
}
```

### 7.46.4 Updatable Properties

Property	Allowed value
----------	---------------

SessionTimeout	30~86400, Notice that it only affects new session which generate after update SessionTimeout
----------------	----------------------------------------------------------------------------------------------

#### 7.46.4.1 Example Payload

```
{
  "SessionTimeout": 2000
}
```

### 7.46.5 Supported Action

#### 7.46.5.1 Clear VNC Session by POST

This action is used to clear all of VNC's session

URI: https://<IP>/redfish/v1/SessionService/Actions/Oem/InsydeOEMExtensions.ClearVNCSession

## 7.47 SessionCollection

### 7.47.1 Description

A Collection of Session resource instances.

URI: https://{ip}/redfish/v1/SessionService/Sessions

### 7.47.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST	V					

### 7.47.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.47.3.1 Example

This example is the result of SessionCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionCollection.SessionCollection",
  "@odata.id": "/redfish/v1/SessionService/Sessions",
  "@odata.type": "#SessionCollection.SessionCollection",
  "Name": "Session Collection",
  "Description": "The SessionCollection schema describes a collection of session instances.",
  "Members": [],
  "Members@odata.count": 0
}
```

## 7.47.4 Establish Sessions by POST

Description: Sessions are established by posting to the SessionCollection.  
URI: https://{ip}/redfish/v1/SessionService/Sessions

Property	Required	Allowed Value
Password	Yes	STRING
UserName	Yes	STRING

### 7.47.4.1 Example Payload

We use default username "root" and password "0penBmc" as example.

```
{
  "UserName": "root",
  "Password": "0penBmc"
}
```

## 7.48 Session

### 7.48.1 Description

The Session resource describes a single connection (session) between a client and a Redfish service instance.  
URI: https://{ip}/redfish/v1/SessionService/Sessions/<SessionId>

### 7.48.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
DELETE					V	V

### 7.48.3 Properties

Property	Description
SessionType	The active session type.
UserName	The UserName for the account for this session.

### 7.48.3.1 Example

This example is the result of Session schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#Session.Session",
  "@odata.id": "/redfish/v1/SessionService/Sessions/vZQYjOTosst65Bjd4WV1",
  "@odata.type": "#Session.v1_3_0.Session",
  "Id": "vZQYjOTosst65Bjd4WV1",
}
```

```

    "Name": "User Session",
    "Description": "Manager User Session",
    "UserName": "root",
    "SessionType": "Redfish",
    "@odata.etag": "90126a4db0f2a1a3735b09cb1fba27a7"
  }

```

## 7.48.4 Remove Sessions by DELETE

Description: Sessions can be removed by Deleting the Session resource.  
 URI: https://{ip}/redfish/v1/SessionService/Sessions/[ID]

## 7.49 StorageServiceCollection

### 7.49.1 Description

A collection of references to Storage Service resource instances.  
 URI: https://{ip}/redfish/v1/StorageServices

### 7.49.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.49.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.49.3.1 Example

This example is the result of StorageServiceCollection schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#StorageServiceCollection.StorageServiceCollection",
  "@odata.id": "/redfish/v1/StorageServices",
  "@odata.type": "#StorageServiceCollection.StorageServiceCollection",
  "Name": "StorageServiceCollection",
  "Description": "A collection of references to Storage Service resource instances.",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/StorageServices/1"
    }
  ]
}

```

## 7.50 StorageService

### 7.50.1 Description

This resource shall be used to represent resources that are managed by a storage service.

URI: <https://{ip}/redfish/v1/StorageServices/1>

### 7.50.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.50.3 Properties

Property	Description
Drives	A collection that indicates all the drives managed by this storage service. Contains a link to a resource.
StoragePools	An array of references to StoragePools. Contains a link to a resource.
StorageSubsystems	The value shall be a link to a collection of type StorageCollection having members that represent storage subsystems managed by this storage service.
Volumes	An array of references to Volumes managed by this storage service. Contains a link to a resource.

#### 7.50.3.1 Example

This example is the result of StorageService schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#StorageService.StorageService",
  "@odata.id": "/redfish/v1/StorageServices/1",
  "@odata.type": "#StorageService.v1_4_0.StorageService",
  "Id": "1",
  "Name": "1",
  "Description": "A storage service.",
  "Drives": {
    "@odata.id": "/redfish/v1/StorageServices/1/Drives"
  },
  "Volumes": {
    "@odata.id": "/redfish/v1/StorageServices/1/Volumes"
  },
  "StoragePools": {
    "@odata.id": "/redfish/v1/StorageServices/1/StoragePools"
  },
  "StorageSubsystems": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage"
    }
  ]
}
```

```

1
}

```

## 7.51 StoragePoolCollection

### 7.51.1 Description

This collection shall contain references to all StoragePool resource instances sharing the same parent resource.  
URI: https://{ip}/redfish/v1/StorageServices/1/StoragePools

### 7.51.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.51.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.51.3.1 Example

This example is the result of StoragePoolCollection schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#StoragePoolCollection.StoragePoolCollection",
  "@odata.id": "/redfish/v1/StorageServices/1/StoragePools",
  "@odata.type": "#StoragePoolCollection.StoragePoolCollection",
  "Name": "StoragePoolCollection",
  "Description": "A Collection of StoragePool resource instances.",
  "Members@odata.count": 0,
  "Members": []
}

```

## 7.52 StoragePool

### 7.52.1 Description

A container of data storage capable of providing capacity conforming to one of its supported classes of service.  
URI: https://{ip}/redfish/v1/StorageServices/1/StoragePools/<StoragePoolId>

### 7.52.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
HEAD		V				



### 7.52.3 Properties

Property	Description
Capacity	The value of this property shall provide an information about the actual utilization of the capacity within this storage pool.
→ Data	An array of references to StoragePools. Contains a link to a resource.
→→ AllocatedBytes	The number of bytes currently allocated by the storage system in this data store for this data type.
Links	Contains references to other resources that are related to this resource.
→ DedicatedSpareDrives	This property shall only contain references to Drive entities which are currently assigned as a dedicated spare and are able to support this StoragePool.

## 7.53 DriveCollection

### 7.53.1 Description

An instance of this resource shall reference the set of Drive resources known in the scope of its use.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/Drives>

URI: <https://{ip}/redfish/v1/StorageServices/1/Drives>

### 7.53.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	Configure Self
GET		V				

### 7.53.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.53.3.1 Example

This example is the result of DriveCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#DriveCollection.DriveCollection",
  "@odata.id": "/redfish/v1/StorageServices/1/Drives",
  "@odata.type": "#DriveCollection.DriveCollection",
  "Description": "A Collection of Drive resource instances.",
  "Name": "Drive Collection",
  "Members@odata.count": 33,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/SystemDisk1/Drives/NVMe1"
```

```

    },
    ...
    ...
    ...
  ]
}

```

## 7.54 Drive for NVME

### 7.54.1 Description

The Drive schema represents a single physical disk drive for a system, including links to associated Volumes.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/SystemDisk1/Drives/<DriveId>>

URI: <https://{ip}/redfish/v1/StorageServices/1/Drives/<DriveId>>

### 7.54.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		

### 7.54.3 Properties

Note: Property shows null or doesn't display if device was unable to obtain.

Property	Description
Model	This is the model number for the drive. (BIOS and NVMe-MI can access)
SerialNumber	The serial number for this drive. (BIOS and DBus can access)
PartNumber	The part number for this drive. (Only NVMe-MI can access)
Revision	The revision of this Drive. This is typically the firmware/hardware version of the drive. (BIOS and NVMe-MI can access)
Protocol	The protocol this drive is using to communicate to the storage controller. (BIOS and NVMe-MI can access)
MediaType	The type of media contained in this drive. (BIOS and NVMe-MI can access)
Manufacturer	This is the manufacturer of this drive. (Only NVMe-MI can access)
AssetTag	The user assigned asset tag for this drive. (Only NVMe-MI can access)

CapacityBytes	The size in bytes of this Drive. (BIOS and NVMe-MI can access)
Status	See Common Properties <i>Status Object</i> . (Only NVMe-MI can access)
PredictedMediaLifeLeftPercent	The percentage of reads and writes that are predicted to still be available for the media. (Only NVMe-MI can access)
NegotiatedSpeedGbs	The speed which this drive is currently communicating to the storage controller in Gigabits per second. (Only NVMe-MI can access)
StatusIndicator	The state of the status indicator, used to communicate status information about this drive. (Only NVMe-MI can access)
Oem	Oem extension object.
→ InsydeNVMeState	Oem extension object for NVMe state. (Only NVMe-MI can access)
→→ PCIeVendorID	PCIe Vendor ID.
→→ PCIeDeviceID	PCIe Device ID.
→→ PCIeSubsystemVendorID	PCIe Subsystem Vendor ID.
→→ PCIeSubsystemDeviceID	PCIe Subsystem Device ID.
→→ PCIeBusNumber	PCIe Bus Number.
→→ PCIe0LinkSpeed	Indicates link speeds supported by the PCIe port.
→→ PCIe0LinkWidth	Indicates PCIe link width for this NVM Subsystem port.
→→ PCIe1LinkSpeed	Indicates link speeds supported by the PCIe port.
→→ PCIe1LinkWidth	Indicates PCIe link width for this NVM Subsystem port.
→→ PCIeLinkActive	Indicate the PCIe link is up.
→→ Powered	Indicate an NVM Subsystem is fully powered.
→→ Functional	Indicate an NVM Subsystem is functional.
→→ ResetRequired	Indicate the NVM Subsystem does not need a reset to resume normal operation.
→→ CompositeTemperature	This field indicates the current temperature in degrees Celsius.
→→ SmartWarning	Oem SmartWarning object. (Only NVMe-MI can access)
→→→ AvailableSpareThreshold	This value is set to "true" when the available spare has fallen below the available spare threshold.

→→→ TemperatureThreshold	This value is set to "true" when a temperature is above an over temperature threshold or below an under temperature threshold.
→→→ ReliabilityDegraded	This value is set to "true" when NVM Subsystem reliability has been degraded due to significant media related errors or an internal error.
→→→ MediaReadOnly	This value is set to "true" when the media has been placed in read only mode.
→→→ VolatileMemoryBackupFailed	This value is set to "true" when the volatile memory backup device has failed.
→ InsydeDrive	Oem extension object for Drives.(Only supports U.2) (BIOS and NVMe-MI can access)
→→ FailState	The Fail State of SATA Drives.(Only supports U.2)
→→ PFASState	The PFA State of SATA Drives(Only supports U.2)
LocationIndicatorActive	An indicator allowing an operator to physically locate this resource.(Only supports U.2)

#### 7.54.4 Updatable Properties

Property	Allowed value
LocationIndicatorActive	BOOLEAN

#### 7.54.5 Example Payload

```
{
  "LocationIndicatorActive": true
}
```

### 7.55 Drive for SATA

#### 7.55.1 Description

The Drive Schema represents a single physical disk drive for a system.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/SystemDisk1/Drives/<DriveId>>

URI: <https://{ip}/redfish/v1/StorageServices/1/Drives/<DriveId>>

#### 7.55.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

PATCH				V		
-------	--	--	--	---	--	--

### 7.55.3 Properties

Property	Description
CapacityBytes	The size in bytes of this Drive.
MediaType	The type of media contained in this drive.
Model	This is the model number for the drive.
SerialNumber	The serial number for this drive.
PhysicalLocation	The location of the drive.
→ PartLocation	The part location within the placement.
→→LocationOrdinalValue	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	The type of location of the part, such as slot, bay, socket and slot.
RotationSpeedRPM	The rotation speed of this drive, in revolutions per minute (RPM).
Revision	The revision of this drive. This is typically the firmware or hardware version of the drive.
Oem	Oem extension object.
→Controller	The controller of this drive
→ InsydeDrive	Oem extension object for Drives.(Only supports U.2)
→→ FailState	The Fail State of SATA Drives.(Only supports U.2)
→→ PFASState	The PFA State of SATA Drives(Only supports U.2)
LocationIndicatorActive	An indicator allowing an operator to physically locate this resource. (Only supports U.2)

### 7.55.4 Updatable Properties

Property	Allowed value
LocationIndicatorActive	BOOLEAN

### 7.55.5 Example Payload

```
{
  "LocationIndicatorActive": true
}
```

## 7.56 Drive for RAID

### 7.56.1 Description

The Drive schema represents a single physical disk drive for a system, including links to associated Volumes.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/Drives/<DriveId>>

URI: <https://{ip}/redfish/v1/StorageServices/1/Drives/<DriveId>>

### 7.56.2 Support Method and Privilege

	NoAuth	Login	ConfigureMa nager	ConfigureCo mponents	ConfigureUs ers	ConfigureSel f
GET		V				
POST				V		
PATCH				V		

### 7.56.3 Properties

Note: Property shows null if device was unable to obtain.

Property	Description
Model	This is the model number for the drive.
SerialNumber	The serial number for this drive.
Revision	The revision of this Drive. This is typically the firmware/hardware version of the drive.
Protocol	The protocol this drive is using to communicate to the storage controller.
MediaType	The type of media contained in this drive.
Manufacturer	This is the manufacturer of this drive.
SKU	This is the SKU for this drive.
PartNumber	The part number for this drive.
Status	See Common Properties <i>Status Object</i> .
CapacityBytes	The size in bytes of this Drive.
FailurePredicted	Is this drive currently predicting a failure in the near future.
HotspareType	The type of hotspare this drive is currently serving as.
EncryptionAbility	The encryption abilities of this drive.

EncryptionStatus	The status of the encrytion of this drive.
BlockSizeBytes	The size of the smallest addressible unit (Block) of this drive in bytes.
CapableSpeedGbs	The speed which this drive can communicate to a storage controller in ideal conditions in Gigabits per second.
NegotiatedSpeedGbs	The speed which this drive is currently communicating to the storage controller in Gigabits per second.
RotationSpeedRPM	The rotation speed of this Drive in Revolutions per Minute (RPM).
PredictedMediaLifeLeftPercent	The percentage of reads and writes that are predicted to still be available for the media.
StatusIndicator	The state of the status indicator, used to communicate status information about this drive.
IndicatorLED	The state of the indicator LED, used to identify the drive.
Actions	The available actions for this Resource.
Oem	Oem extension object.
→ InsydeDrives	Oem extension object for Drives.
→→ CopyBackProgressPercent	The copy back progress percent
→→ PatrolReadProgressPercent	The patrol read progress percent
→→ SlotNumber	The slot number of drive.
→→ StorageControllerReference	This indicates the reference storagecontroller index.
→→ DriveState	The state of standbyoffline drive.
→→ RawId	This indicates the drive index.
→→ AddtionalState	This indicates the additional state of drive.
→→ SMART	The oem extension object for SMART Reading.
→→→ Available	This indicates if the SAMRT reading is available.
→→→ Awake	This indicates if the Awake operation is available.
→→→ HealthGood	This indicates the health status.
→→→ OfflineDataCollectionStatus	This indicates the off line Data Collection status.
→→→ TotalOfflineDataCollectionSeconds	This indicates the Total off line Data Collection Seconds.

→→→ SelfTestExecutionStatus	This indicates the Self Test Execution Status.
→→→ SelfTestExecutionPercentRemaining	This indicates the Self Test Execution Percent Remaining.
→→→ ConveyanceTestAvailable	This indicates if the Awake operation is available.
→→→ ShortAndExtendedTestAvailable	This indicates if the Awake operation is available.
→→→ StartTestAvailable	This indicates if the Awake operation is available.
→→→ AbortTestAvailable	This indicates if the Awake operation is available.
→→→ ShortTestPollingMinutes	This indicates the short test polling minutes.
→→→ ExtendedTestPollingMinutes	This indicates the extended test polling minutes.
→→→ ConveyanceTestPollingMinutes	This indicates the conveyance test polling minutes.
→→→ BadSectors	This indicates the conveyance test polling minutes.
→→→ PowerOn	The value of this property shall be the amount of time the Memory module was powered on during its lifetime.
→→→ PowerCycle	The value of this property shall be number of power cycles over the lifetime.
→→→ RPM	This indicates the RPM status.
→→→ OverallHealth	This indicates the drive overall health.
→→→ Temperature	The temperature of drive.
→→→ Attribute	The object for smart attributes.
→→→→ SmartAttributes[]	The smart attributes by index if support MCTP
→→ FailState	The Fail State of SATA Drives.(Only supports U.2)
→→ PFASState	The PFA State of SATA Drives(Only supports U.2)
LocationIndicatorActive	An indicator allowing an operator to physically locate this resource.(Only supports U.2)
Links	Contains references to other resources that are related to this resource.
→ Volumes	An array of references to the volumes contained in this drive. This will reference Volumes that are either wholly or only partly contained by this drive.

### 7.56.3.1 Example

This example is the result of Drive for Raid's GET response.

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



```

"@odata.etag": "45dada377c136679a879d597cb4342c6",
"@odata.id": "/redfish/v1/StorageServices/1/Drives/0",
"@odata.type": "#Drive.v1_9_0.Drive",
"Actions": {
  "Oem": {
    "#InsydeOEMExtensions.StartLocatePD": {
      "target":
"/redfish/v1/StorageServices/1/Drives/0/Actions/Oem/InsydeOEMExtensions.StartLocatePD"
    },
    "#InsydeOEMExtensions.StopLocatePD": {
      "target":
"/redfish/v1/StorageServices/1/Drives/0/Actions/Oem/InsydeOEMExtensions.StopLocatePD"
    }
  }
},
"BlockSizeBytes": 0,
"CapableSpeedGbs": null,
"CapacityBytes": null,
"Description": null,
"EncryptionAbility": null,
"EncryptionStatus": null,
"FailurePredicted": null,
"HotspareType": null,
"Id": "0",
"IndicatorLED": null,
"Manufacturer": null,
"MediaType": null,
"Model": null,
"Name": "Physical Disk 0",
"NegotiatedSpeedGbs": null,
"Oem": {
  "InsydeDrives": {
    "@odata.type": "#InsydeOEMExtensions.RaidDrive",
    "AdditionalState": null,
    "CopyBackProgressPercent": null,
    "DriveState": null,
    "PatrolReadProgressPercent": null,
    "RawId": null,
    "SMART": {
      "AbortTestAvailable": null,
      "Attribute": null,
      "Available": null,
      "Awake": null,
      "BadSectors": null,
      "ConveyanceTestAvailable": null,
      "ConveyanceTestPollingMinutes": null,
      "ExtendedTestPollingMinutes": null,
      "HealthGood": null,
      "OfflineDataCollectionStatus": null,
      "OverallHealth": null,
      "PowerCycle": null,
      "PowerOn": null,
      "RPM": null,
      "SelfTestExecutionPercentRemaining": null,
      "SelfTestExecutionStatus": null,
      "ShortAndExtendedTestAvailable": null,
      "ShortTestPollingMinutes": null,

```

```

        "StartTestAvailable": null,
        "Temperature": null,
        "TotalOfflineDataCollectionSeconds": null
    },
    "SlotNumber": null,
    "StorageControllerReference": 0
},
"PartNumber": null,
"PredictedMediaLifeLeftPercent": null,
"Protocol": null,
"Revision": null,
"RotationSpeedRPM": null,
"SKU": null,
"SerialNumber": null,
"Status": {
    "State": "Absent"
},
"StatusIndicator": null
}

```

## 7.56.4 Supported Actions

### 7.56.4.1 OEM Make Dedicated Hotspare

Description: This action is used to make dedicated hotspare for specific volume.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.MakeDedicatedHotspare>

Property	Description
VolumeID	Indicates the Volume ID.

#### 7.56.4.1.1 Example Payload

```

{
    "VolumeID": "Broadcom10"
}

```

### 7.56.4.2 OEM MakeGlobalHotspare

Description: This action is used to make global hotspare for all system.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.MakeGlobalHotspare>

Property	Description
N/A	N/A

### 7.56.4.3 OEM Remove Hotspare

Description: This action is used to remove hotspare.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.RemoveHotspare

Property	Description
N/A	N/A

#### 7.56.4.4 OEM Start Replace PD

Description: This action is used to replace the drive.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.StartReplacePD

Property	Description
DriveID	Indicates the Drive ID.

##### 7.56.4.4.1 Example Payload

```
{
  "DriveID": "1"
}
```

#### 7.56.4.5 OEM Stop Replace PD

Description: This action is used to stop replacing the drive.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.StopReplacePD

Property	Description
N/A	N/A

#### 7.56.4.6 OEM Start Locate PD

Description: This action is used to start locating the drive.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.StartLocatePD

Property	Description
N/A	N/A

#### 7.56.4.7 OEM Stop Locate PD

Description: This action is used to stop locating the drive.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1/Drives/<DriveID>/Action/Oem/InsydeOEMExtensions.StopLocatePD

Property	Description
----------	-------------

N/A	N/A
-----	-----

## 7.56.5 Updatable Properties

Property	Allowed value
LocationIndicatorActive	BOOLEAN

## 7.56.6 Example Payload

```
{
  "LocationIndicatorActive": true
}
```

# 7.57 VolumeCollection for RAID

## 7.57.1 Description

A Collection of Storage resource instances.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/Volumes

URI: https://{ip}/redfish/v1/StorageServices/<StorageServicesId>/Volumes

## 7.57.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

## 7.57.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.57.3.1 Example

This example is the result of VolumeCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#VolumeCollection.VolumeCollection",
  "@odata.type": "#VolumeCollection.VolumeCollection",
  "@odata.id": "/redfish/v1/StorageServices/1/Volumes",
  "Name": "Storage Volume Collection",
  "Members@odata.count": 0,
  "Members": []
}
```

## 7.58 Volume for RAID

### 7.58.1 Description

Volume contains properties used to describe a volume, virtual disk, LUN, or other logical storage entity for any system.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/Volumes/<VolumeId>>

URI: <https://{ip}/redfish/v1/StorageServices/<StorageServicesId>/Volumes/<VolumeId>>

### 7.58.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		
POST				V		
DELETE				V		

### 7.58.3 Properties

Property	Description
Status	See Common Properties <i>Status Object</i> .
CapacityBytes	The size in bytes of this Drive.
VolumeType	The type of this volume.
Encrypted	Is this Volume encrypted.
BlockSizeBytes	The size of the smallest addressable unit (Block) of this drive in bytes.
Links	Contains references to other resources that are related to this resource.
→ Drives	An array of references to the drives which contain this volume. This will reference Drives that either wholly or only partly contain this volume.
Operations	An operation currently running on this resource.
→ OperationName	The name of the operation.
→ PercentageComplete	The percentage of the operation that has been completed.
OptimumIOSizeBytes	The size in bytes of this Volume's optimum IO size.
Actions	The available actions for this Resource.

Oem	Oem extension object.
→ InsydeVolume	Oem extension object for volume..
→→ RaidLevel	The raid level of the volume.
→→ State	The state of the volume.
→→ ReadPolicy	The read policy of the volume.
→→ WritePolicy	The write policy of the volume.
→→ IoPolicy	The IO policy of the volume.
→→ AccessPolicy	The access policy of the volume.
→→ DiskCachePolicy	The disk cache policy of the volume.
→→ StripSize	The strip size of the volume.
→→ BadBlocks	Check whether the volume has bad blocks.
→→ StorageControllerReference	This indicates the reference storagecontroller index.

### 7.58.3.1 Example

This example is the result of Volume GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#Volume.Volume",
  "@odata.etag": "47e8369d8a1e8b402c61d197266a4c33",
  "@odata.id": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1",
  "@odata.type": "#Volume.v1_5_0.Volume",
  "Actions": {
    "#Volume.ChangeRAIDLayout": {
      "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Volume.ChangeRAIDLayout"
    },
    "#Volume.CheckConsistency": {
      "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Volume.CheckConsistency"
    },
    "Oem": {
      "#InsydeOEMExtensions.CancelCheckConsistency": {
        "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Oem/InsydeOEMExtensions.CancelCheckConsistency"
      },
      "#InsydeOEMExtensions.ChangeLDConfig": {
        "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Oem/InsydeOEMExtensions.ChangeLDConfig"
      },
      "#InsydeOEMExtensions.StartLocateLD": {
        "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Oem/InsydeOEMExtensions.StartLocateLD"
      },
      "#InsydeOEMExtensions.StopLocateLD": {
```

```

        "target": "/redfish/v1/Systems/system/Storage/1/Volumes/Broadcom0_1/Actions/Oem/
        InsydeOEMExtensions.StopLocateLD"
    }
}
},
"BlockSizeBytes": 512,
"CapacityBytes": 249510756352,
"Description": "Logical Disk Broadcom0_1",
"Encrypted": false,
"Id": "Broadcom0_1",
"Links": {
    "Drives": [
        {
            "@odata.id": "/redfish/v1/Systems/system/Storage/1/Drives/1"
        },
        {
            "@odata.id": "/redfish/v1/Systems/system/Storage/1/Drives/2"
        }
    ]
},
"Name": "Test",
"Oem": {
    "InsydeVolume": {
        "@odata.type": "#InsydeOEMExtensions.RaidVolume",
        "AccessPolicy": "Read Write",
        "BadBlocks": false,
        "DiskCachePolicy": "Enable",
        "IoPolicy": "Direct IO",
        "RaidLevel": "1",
        "ReadPolicy": "No Read Ahead",
        "State": "Optimal",
        "StorageControllerReference": 0,
        "StripSize": 64,
        "WritePolicy": "Write Through"
    }
},
"Operations": [
    {
        "OperationName": null,
        "PercentageComplete": null
    }
],
"OptimumIOSizeBytes": 512,
"RAIDType": "1",
"Status": {
    "Health": "OK",
    "State": "Enabled"
},
"StripSizeBytes": 64
}

```

## 7.58.4 Updatable Properties

Property	Allowed value	Description
ReadPolicy	"Read Ahead"	Reads sequential sectors of the virtual disk.

	"No Read Ahead"	Disable read ahead.
WritePolicy	"Write Through"	Send a write-request completion signal only after the data is written to the disk.
	"Write Back"	Send a write-request completion signal as soon as the data is in the controller cache but has not yet been written to disk.
	"Write Cached"	writes data to the write cache before writing data to the physical disk.
IoPolicy	"Direct IO"	The reads are not buffered in cache memory.
	"Cached IO"	The reads are buffered in cache memory.
AccessPolicy	"Read Write"	Data is readable and writable.
	"Read Only"	Data is read only.
	"Blocked"	Data is inaccessible.
DiskCachePolicy	"Unchanged"	Leave Disk Cache Policy unchanged.
	"Enable"	Disk Cache Policy is enabled.
	"Disable"	Disk Cache Policy is disabled.

#### 7.58.4.1 Example Payload

```
{
  "Oem": {
    "InsydeVolume": {
      "ReadPolicy": "Read Ahead",
      "WritePolicy": "Write Through",
      "IoPolicy": "Direct IO",
      "AccessPolicy": "Read Write",
      "DiskCachePolicy": "Enable"
    }
  }
}
```

### 7.58.5 Supported Actions

#### 7.58.5.1 Check Consistency

Description: This action is used to force a check of the Volume's parity or redundant data to ensure it matches calculated values.

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>/Actions/Volume.CheckConsistency>

Property	Description
----------	-------------



N/A	N/A
-----	-----

### 7.58.5.2 OEM Cancel Check Consistency

Description: This action I used to cancel consistency check for volume.

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>/Actions/Oem/InsydeOEMExtensions.CancelCheckConsistency>

Property	Description
N/A	N/A

### 7.58.5.3 OEM Start Locate LD

Description: This action is used to start locate LD.

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>/Actions/Oem/InsydeOEMExtensions.StartLocateLD>

Property	Description
N/A	N/A

### 7.58.5.4 OEM Stop Locate LD

Description: This action is used to stop locate LD.

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>/Actions/Oem/InsydeOEMExtensions.StopLocateLD>

Property	Description
N/A	N/A

### 7.58.5.5 OEM Change LD Config

Description: This action is used to change a Virtual Drive Configuration.

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>/Actions/Oem/InsydeOEMExtensions.ChangeLDConfig>

Property	Allowed Value	Description
RaidLevel	"0"	Striped array with no parity.
	"1"	Mirrored array.
	"5"	Striped array with rotating parity, optimized for short, multi-threaded transfers.
	"6"	Similar to RAID-5, but with dual rotating parity physical disks, toleratingtwo physical disk failures.
SelectedDriveIds[]	STRING	Indicates the drive IDs.

### 7.58.5.5.1 Example Payload

```
{
  "RaidLevel": "1",
  "SelectedDriveIds": [
    "1", "2"
  ]
}
```

## 7.58.6 Remove Volume by DELETE

Description: Volume can be removed by Deleting the Volume resource.

URI: <https://{ip}/redfish/v1/StorageServices/<STORAGESERVICE ID>/Volumes/<VOLUME ID>>

URI: <https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/Volumes/<VOLUME ID>>

## 7.59 ComputerSystem Collection

### 7.59.1 Description

A Collection of ComputerSystem resource instances.

URI: <https://{ip}/redfish/v1/Systems>

### 7.59.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.59.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.59.3.1 Example

This example is the result of a ComputerSystem Collection schema's response. In this example, the SystemID is "system".

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

## 7.60 ComputerSystem

### 7.60.1 Description

This object represents the root Redfish service.  
 URI: <https://{ip}/redfish/v1/Systems/<SystemID>>  
 Default SystemID is "system".

### 7.60.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		
POST				V		

### 7.60.3 Properties

Property	Description
Actions	The available actions for this Resource.
AssetTag	The user definable tag that can be used to track this computer system for inventory or other client purposes.
Bios	The link to the BIOS settings associated with this system
BiosVersion	The version of the system BIOS or primary system firmware.
Boot	Information about the boot settings for this system.
→ AutomaticRetryConfig	See Intel Redfish User Guide for details.
→ AutomaticRetryConfig@Redfish.AllowableValues	See Intel Redfish User Guide for details.
→ BootNext	The BootOptionReference of the Boot Option to perform a one-time boot from when BootSourceOverrideTarget is UefiBootNext.
→ BootOptions	A reference to the collection of the UEFI Boot Options associated with this Computer System.
→ BootOrder	Ordered array of BootOptionReference strings representing the persistent Boot

	Order associated with this computer system.
→ BootSourceOverrideEnabled	Describes the state of the Boot Source Override feature.
→ BootSourceOverrideMode	The BIOS Boot Mode (either Legacy or UEFI) to be used when BootSourceOverrideTarget boot source is booted from.
→ BootSourceOverrideMode@Redfish.AllowableValues	The allowable values of BootSourceOverrideMode. It contains "Legacy" and "UEFI".
→ BootSourceOverrideTarget	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is true.
→ BootSourceOverrideTarget@Redfish.AllowableValues	The allowable values of BootSourceOverrideTarget. It contains "None", "Pxe", "Hdd", "Cd", "Diags", "BiosSetup" and "Usb".
→ StopBootOnFault	See Intel Redfish User Guide for details.
→ TrustedModuleRequiredToBoot	See Intel Redfish User Guide for details.
→ UefiTargetBootSourceOverride	The UEFI device path of the device from which to boot when BootSourceOverrideTarget is UefiTarget.
BootProgress	See Nvidia Redfish User Guide for details.
→ LastState	See Nvidia Redfish User Guide for details.
Certificates	The link to a collection of certificates for device identity and attestation.
EthernetInterfaces	See Intel/AMD Redfish User Guide for details.
FabricAdapters	See Intel Redfish User Guide for details.
GraphicalConsole	The information about the graphical console (KVM-IP) service of this system.
→ ConnectTypesSupported	This property enumerates the graphical console connection types that the implementation allows.
→ MaxConcurrentSessions	The maximum number of service sessions, regardless of protocol, that this system can support.
→ ServiceEnabled	An indication of whether the service is

	enabled for this system.
HostWatchdogTimer	The host watchdog timer functionality for this system.
→ FunctionEnabled	<p>This property indicates only that a user has enabled the timer.</p> <p>To activate the timer, installation of additional host-based software is necessary; an update to this property does not initiate the timer.</p>
→ Status	See Common Properties Status Object.
→ TimeoutAction	The action to perform when the watchdog timer reaches its timeout value.
HostingRoles	The hosting roles that this computer system supports.
IndicatorLED	The state of the indicator LED, used to identify the drive.
LastResetCause	The last reset cause of the system.
LastResetTime	The date and time when the system was last reset or rebooted.
Links	An array of links to the endpoints that connect to this system.
→ Chassis	An array of references to the chassis in which this system is contained.
→ ManagedBy	An array of references to the Managers responsible for this system.
LocationIndicatorActive	An indicator allowing an operator to physically locate this resource.
LogServices	A reference to the collection of Log Services associated with this system.
Manufacturer	The manufacturer or OEM of this system. ManufacturerId
ManufacturingMode	See Intel Redfish User Guide for details.
Memory	A reference to the collection of Memory associated with this system.
MemorySummary	This object describes the central memory of the system in general detail.
→ Status	See Common Properties <i>Status Object</i>

→TotalSystemMemoryGiB	The total configured operating system-accessible memory (RAM), measured in GiB.
Model	The product name for this system, without the manufacturer name.
Oem	Oem extension object.
→ InsydeACDLog	See Intel Redfish User Guide for details.
→→ ACDLog	See Intel Redfish User Guide for details.
→ InsydeNcsi	Oem extension object for Ncsi.
→→ Ncsi	This is a reference to a Ncsi.
→ InsydePCIEFunctions	Systems PCIe Functions informations
→→ PCIEFunctions	A reference to the PCIe Functions associated with this system.
→ InsydePostCode	This resource shall be used to represent a Resource Collection of Post Code instances.
→→ PostCode	This is a reference to a Post Code.
→ InsydeSMBIOS	Oem extension object for SMBIOS.
→→ SMBIOS	A reference to the SMBIOS associated with this system.
→ InsydeBootProgress	Oem extension object for Boot Progress.
→→ CpldLastState	This indicates the CPLD last state.
→→ CpldErr	This indicates the CPLD error.
PartNumber	The part number for this system.
PCIEDevices	The link to a collection of PCIe devices that this computer system uses. (Only show when detect PCIe device)
PowerMode	See Nvidia Redfish User Guide for details.
PowerMode@Redfish.AllowableValues	See Nvidia Redfish User Guide for details.
PowerRestorePolicy	The desired power state of the system when power is restored after a power loss.
PowerState	This is the current power state of the system.
Processors	A reference to the collection of Processors associated with this system.

ProcessorSummary	This object describes the central processors of the system in general detail.
→ CoreCount	The number of processor cores in the system.
→ Count	The number of physical processors in the system.
→ Model	The processor model for the primary or majority of processors in this system.
SecureBoot	The link to the UEFI Secure Boot associated with this system.
SerialConsole	The serial console services that this system provides.
→ IPMI	The connection details for an IPMI Serial-over-LAN service
→→ ServiceEnabled	An indication of whether the service is enabled for this system.
→ MaxConcurrentSessions	The maximum number of service sessions, regardless of protocol, that this system can support.
→ SSH	The connection details for an SSH serial console service.
→→ HotKeySequenceDisplay	The hotkey sequence available for the user to exit the serial console session.
→→ Port	The protocol port.
→→ ServiceEnabled	An indication of whether the service is enabled for this system.
SerialNumber	The serial number for this system.
SKU	The manufacturer SKU for this system.
Storage	The link to the collection of storage devices associated with this system.
SystemType	The type of computer system represented by this resource.
UUID	See Nvidia/Intel Redfish User Guide for details.

### 7.60.3.1 Example

This example is the result of a ComputerSystem schema's response. In this example, the SystemID is "system".

```
{
  "@odata.id": "/redfish/v1/Systems/system",
  "@odata.type": "#ComputerSystem.v1_18_0.ComputerSystem",
  "Actions": {
    "#ComputerSystem.Reset": {
      "@Redfish.ActionInfo": "/redfish/v1/Systems/system/ResetActionInfo",
      "target": "/redfish/v1/Systems/system/Actions/ComputerSystem.Reset"
    },
    "Oem": {
      "#InsydeOEMExtensions.v1_0_0.DeleteSDR": {
        "target": "/redfish/v1/Systems/system/Actions/Oem/InsydeOEMExtensions.DeleteSDR"
      },
      "#InsydeOEMExtensions.v1_0_0.DownloadDefaultSDR": {
        "target":
"/redfish/v1/Systems/system/Actions/Oem/InsydeOEMExtensions.DownloadDefaultSDR"
      },
      "#InsydeOEMExtensions.v1_0_0.DownloadSDRUpdate": {
        "target":
"/redfish/v1/Systems/system/Actions/Oem/InsydeOEMExtensions.DownloadSDRUpdate"
      },
      "#InsydeOEMExtensions.v1_0_0.UploadSDR": {
        "target": "/redfish/v1/Systems/system/Actions/Oem/InsydeOEMExtensions.UploadSDR"
      },
      "InsydeOEMExtensions.v1_0_0.GenSystemDebugLog": {
        "target":
"/redfish/v1/Systems/system/Actions/Oem/InsydeOEMExtensions.GenSystemDebugLog"
      }
    }
  },
  "AssetTag": "",
  "Bios": {
    "@odata.id": "/redfish/v1/Systems/system/Bios"
  },
  "BiosVersion": "NA",
  "Boot": {
    "BootNext": "",
    "BootOptions": {
      "@odata.id": "/redfish/v1/Systems/system/BootOptions"
    },
    "BootOrder": [],
    "BootOrderPropertySelection": "BootOrder",
    "BootSourceOverrideEnabled": "Disabled",
    "BootSourceOverrideMode": "Legacy",
    "BootSourceOverrideMode@Redfish.AllowableValues": [
      "Legacy",
      "UEFI"
    ],
    "BootSourceOverrideTarget": "None",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None",
      "Pxe",
      "Hdd",
      "Cd",
      "BiosSetup",
      "Usb",
      "UefiShell",
      "UefiBootNext",
      "UefiTarget"
    ]
  }
}
```



```

    ],
    "UefiTargetBootSourceOverride": ""
  },
  "BootProgress": {
    "LastState": "None"
  },
  "Description": "Computer System",
  "GraphicalConsole": {
    "ConnectTypesSupported": [
      "KVMIP"
    ],
    "MaxConcurrentSessions": 4,
    "ServiceEnabled": true
  },
  "HostWatchdogTimer": {
    "FunctionEnabled": false,
    "Status": {
      "State": "Enabled"
    },
    "TimeoutAction": "ResetSystem"
  },
  "HostingRoles": [
    "StorageServer"
  ],
  "Id": "system",
  "IndicatorLED": "Off",
  "Links": {
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/AC_Baseboard"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/bmc"
      }
    ]
  },
  "LocationIndicatorActive": false,
  "LogServices": {
    "@odata.id": "/redfish/v1/Systems/system/LogServices"
  },
  "Manufacturer": "Intel Corporation",
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/system/Memory"
  },
  "MemoryDomains": {
    "@odata.id": "/redfish/v1/Systems/system/MemoryDomains"
  },
  "MemorySummary": {
    "Status": {
      "Health": "OK",
      "HealthRollup": "OK",
      "State": "Disabled"
    },
    "TotalSystemMemoryGiB": 0
  },

```

```

"Model": "ArcherCity",
"Name": "system",
"Oem": {
  "InsydePostCode": {
    "@odata.type": "#InsydeOEMExtensions.v1_0_0.PostCode",
    "PostCode": {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PostCode"
    }
  },
  "InsydeSMBIOS": {
    "@odata.type": "#InsydeOEMExtensions.v1_0_0.SMBIOS",
    "SMBIOS": {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/SMBIOS"
    }
  }
},
"PCIeDevices": [],
"PCIeDevices@odata.count": 0,
"PartNumber": "",
"PowerRestorePolicy": "AlwaysOff",
"PowerState": "Off",
"ProcessorSummary": {
  "Count": 0,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK"
  }
},
"Processors": {
  "@odata.id": "/redfish/v1/Systems/system/Processors"
},
"SecureBoot": {
  "@odata.id": "/redfish/v1/Systems/system/SecureBoot"
},
"SerialConsole": {
  "IPMI": {
    "ServiceEnabled": true
  },
  "MaxConcurrentSessions": 15,
  "SSH": {
    "HotKeySequenceDisplay": "Press ~. to exit console",
    "Port": 2200,
    "ServiceEnabled": true
  }
},
"SerialNumber": "",
"Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Disabled"
},
"Storage": {
  "@odata.id": "/redfish/v1/Systems/system/Storage"
},
"SystemType": "Physical"
}

```

## 7.60.4 Updatable Properties

Property	Allowed value	Description
LocationIndicatorActive	BOOLEAN	
Boot		
→BootSourceOverrideTarget	"None"	Boot from the normal boot device.
	"Pxe"	Boot from the Pre-Boot EXecution (PXE) environment.
	"Hdd"	Boot from a hard drive.
	"Cd"	Boot from the CD/DVD disc
	"BiosSetup"	Boot to the BIOS Setup Utility.
	"UefiShell"	Boot to the UEFI Shell.
	"Usb"	Boot from a USB device as specified by the system BIOS.
	"UefiBootNext"	Boot to the UEFI device that the BootNext property specifies.
	"UefiTarget"	Boot to the UEFI device specified in the UefiTargetBootSourceOverride property.
→BootSourceOverrideEnabled	"Continuous"	The system will boot to the target specified in the BootSourceOverrideTarget until this property is set to Disabled.
	"Disabled"	The system will boot normally.
	"Once"	On its next boot cycle, the system will boot (one time) to the Boot Source Override Target.
→BootOrder	STRING ARRAY	The value of this property shall be an ordered array of BootOptionReference strings representing the persistent Boot Order of this computer system.
→BootNext	STRING	
→UefiTargetBootSourceOverride	STRING	
WatchdogTimer		
→FunctionEnabled	Boolean	
→TimeoutAction	"None"	
	"PowerCycle"	
	"PowerDown"	

	"ResetSystem"	
PowerRestorePolicy	"AlwaysOn"	
	"AlwaysOff"	
	"LastState"	
AssetTag	STRING	
IndicatorLED	"Lit"	
	"Blinking"	
	"Off"	

### 7.60.4.1 Example Payload

```
{
  "AssetTag": "intel",
  "LocationIndicatorActive": false,
  "Boot": {
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Usb",
    "UefiTargetBootSourceOverride": ""
  },
  "HostWatchdogTimer": {
    "FunctionEnabled": false,
    "TimeoutAction": "ResetSystem"
  },
  "PowerRestorePolicy": "LastState",
  "IndicatorLED": "Off"
}
```

## 7.60.5 Supported Actions

### 7.60.5.1 Reset Computer System

Description: This action is used to reset the host  
URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/ComputerSystem.Reset>

Property	Allowed Value	Description
ResetType	On	Turn on the unit.
	ForceOff	Turn off the unit immediately (non-graceful shutdown).
	GracefulShutdown	Shut down gracefully and power off.
	GracefulRestart	Shut down gracefully and restart the system.
	ForceRestart	Shut down immediately and non-gracefully and restart the system.

	Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
	PowerCycle	Power cycle the unit.

#### 7.60.5.1.1 Example payload:

```
{
  "ResetType": "ForceOff"
}
```

### 7.60.5.2 GenSystemDebugLog

Description: Generate system debug log.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/Oem/InsydeOEMExtensions.GenSystemDebugLog>

Property	Allowed Value
N/A	N/A

### 7.60.6 ActionInfo

#### 7.60.6.1 ResetActionInfo

Descriptions: Deliver allowable values of ResetType.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/ResetActionInfo/>

##### 7.60.6.1.1 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

##### 7.60.6.1.2 Properties

Property	Description
Parameters	An array of object.
→AllowableValues	The current allowable values for ResetType, including "On", "ForceOff", "ForceOn", "ForceRestart", "GracefulRestart", "GracefulShutdown", "PowerCycle" and "Nmi".
→DataType	The data type of value of ResetType.
→Name	ResetType.

→Required	Determine if argument ResetType was required when doing action.
-----------	-----------------------------------------------------------------

### 7.60.6.1.3 Example

This example is the result of a GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/ResetActionInfo",
  "@odata.type": "#ActionInfo.v1_1_2.ActionInfo",
  "Id": "ResetActionInfo",
  "Name": "Reset Action Info",
  "Parameters": [
    {
      "AllowableValues": [
        "On",
        "ForceOff",
        "ForceOn",
        "ForceRestart",
        "GracefulRestart",
        "GracefulShutdown",
        "PowerCycle",
        "Nmi"
      ],
      "DataType": "String",
      "Name": "ResetType",
      "Required": true
    }
  ]
}
```

## 7.60.7 DebugLogs

Descriptions: Download tar file for system debug log.

URI: <https://{ip}/DebugLogs.tar.xz>

### 7.60.7.1 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				

## 7.60.8 DownloadDefaultSDRAction

Description: This action is used to download config files with default SDR , and generate the file DefaultSDR.tar in the /tmp path.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/Oem/InsydeOEMExtensions.DownloadDefaultSDR>

### 7.60.8.1 Support Method and Privilege

	NoAuth	Logi n	ConfigureManage r	Configure Component s	ConfigureUser s	ConfigureSel f
POST				V		

### 7.60.8.2 DownloadSDRUpdateAction

Description: This action is used to download config files for SDR update , and generate the file SDRUpdate.tar in the /tmp path.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/Oem/InsydeOEMExtensions.DownloadSDRUpdate>

### 7.60.8.3 Support Method and Privilege

	NoAuth	Logi n	ConfigureManage r	Configure Component s	ConfigureUser s	ConfigureSel f
POST				V		

### 7.60.8.4 UploadSDRAction

Description: This action is used to upload config files for SDR update

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/Oem/InsydeOEMExtensions.UpioadSDR>

### 7.60.8.5 Support Method and Privilege

	NoAuth	Logi n	ConfigureManage r	Configure Component s	ConfigureUser s	ConfigureSel f
POST				V		

### 7.60.8.6 DeleteSDRAction

Description: This action is used to upload config files for SDR update

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Actions/Oem/InsydeOEMExtensions.DeleteSDR>

### 7.60.8.7 Support Method and Privilege

	NoAuth	Logi n	ConfigureManage r	Configure Component s	ConfigureUser s	ConfigureSel f
POS				V		

T						
---	--	--	--	--	--	--

### 7.60.8.8 Example payload:

Function Description: You can delete the following 4 files (all or single at a time)

- /usr/share/ipmi-providers/sdr-update/sensor\_config.yaml
- /usr/share/ipmi-providers/sdr-update/fru\_config.yaml
- /usr/share/ipmi-providers/sdr-update/entity-map.json
- /usr/share/ipmi-providers/sdr-update/oem-map.json

Description: Redfish post with Parameter will delete the file under the specified path.

```
{
  "FilePath": "/usr/share/ipmi-providers/sdr-update/sensor_config.yaml"
}
```

Description: Substituting an empty parameter will delete all files under the specified path  
/usr/share/ipmi-providers/sdr-update/.

```
{
  "FilePath": ""
}
```

## 7.61 Bios

### 7.61.1 Description

The Bios schema contains properties related to the BIOS Attribute Registry. The Attribute Registry describes the system-specific BIOS attributes and Actions for changing to BIOS settings. Changes to the BIOS typically require a system reset before they take effect.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Bios>

### 7.61.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST				V		

### 7.61.3 Properties

Property	Description
@Redfish.Settings	This type describes the settings of a resource.
→ SettingsObject	Reference to the resource the client may PATCH to in order to change this resource.
Actions	The available actions for this Resource.



AttributeRegistry	The Resource ID of the Attribute Registry that has the system-specific information about a BIOS resource.
Attributes	The list of BIOS attributes specific to the manufacturer or provider.
Links	The links to other resources that are related to this resource.
→ ActiveSoftwareImage	The link to the software inventory that represents the active BIOS firmware image.
→ SoftwareImages	The images that are associated with this BIOS.
Oem	Oem extension object.
→ InsydeBios	Insyde bios extension object.
→→ DeployNumber	The deploy number of Insyde bios.
ResetBiosToDefaultsPending	An indication of whether there is a pending request to reset the BIOS attributes to default values.

### 7.61.3.1 Exmaple

This example is the result of BIOS schema's GET response.

```
{
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_3_4.Settings",
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/system/Bios/Settings"
    }
  },
  "@odata.id": "/redfish/v1/Systems/system/Bios",
  "@odata.type": "#Bios.v1_2_0.Bios",
  "Actions": {
    "#Bios.ChangePassword": {
      "target": "/redfish/v1/Systems/system/Bios/Actions/Bios.ChangePassword"
    },
    "#Bios.ResetBios": {
      "target": "/redfish/v1/Systems/system/Bios/Actions/Bios.ResetBios"
    }
  },
  "AttributeRegistry": "BiosAttributeRegistry",
  "Attributes": {},
  "Description": "BIOS Configuration Service",
  "Id": "BIOS",
  "Links": {
    "ActiveSoftwareImage": {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bios_active"
    },
    "SoftwareImages": [
      {
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bios_active"
      }
    ]
  },
}
```

```

    "SoftwareImages@odata.count": 1
  },
  "Name": "BIOS Configuration",
  "ResetBiosToDefaultsPending": false
}

```

## 7.61.4 Supported Actions

### 7.61.4.1 Change Password

Description: This action is used to reset the BIOS password.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Bios/Actions/Bios.ChangePassword>

Notice that BIOS has their own rule.

The password policy on the BIOS side as below:

The BIOS uses passwords to prevent unauthorized tampering with the server setup. Both User and Administrator passwords are supported by the BIOS. There are some password set rules should be followed:

1. The length of the password is between 3 -20 characters.
2. The password is not case sensitive. i.e. A = a, B = b... Z = z.
3. Using numeric or non-alphanumeric as password are also accessible. i.e. 1234...!@#\$\$%^...
4. If user type wrong passwords, system will limit the three times retry.
5. Once password set, a password can be cleared by null string.

If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If the correct password is entered, the user is granted Administrator privilege in the Setup Menu. Else, User privilege is granted.

If BOTH the Administrator's password and the User's password are set, then the password is prompted during POST. If the Administrator's password is entered, then the user is granted Administrator privilege in the Setup Menu. If the User's password is entered, User privilege is granted in the Setup Menu. If the user enters an incorrect password three times in a row during the boot sequence, the system will prevent to continue trying. A system reset is required for entering password again. This feature makes it difficult to break the password by guessing at it. User can't set user password if there is no Administrator password set.

Property	Required	Allowed Value
PasswordName	Yes	"Supervisor" , "User"
OldPassword	Yes	STRING, Length should be between 3~20
NewPassword	Yes	STRING, Length should be between 3~20

#### 7.61.4.1.1 Example Payload

```

{
  "PasswordName": "Supervisor",
  "OldPassword": "Old",
  "NewPassword": "New"
}

```

### 7.61.4.2 Reset Bios

Description: This action resets the BIOS attributes to default.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Bios/Actions/Bios.ResetBios>

## 7.62 Bios Settings

### 7.62.1 Description

The Bios schema contains properties related to the BIOS Attribute Registry. The Attribute Registry describes the system-specific BIOS attributes and Actions for changing to BIOS settings. Changes to the BIOS typically require a system reset before they take effect.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Bios/Settings>

### 7.62.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		

### 7.62.3 Properties

Property	Description
AttributeRegistry	The Resource ID of the Attribute Registry that has the system-specific information about a BIOS resource.
Attributes	The list of BIOS attributes specific to the manufacturer or provider.
Oem	Oem extension object.
→ InsydeBios	Insyde bios extension object.
→→ DeployNumber	The deploy number of Insyde bios.

### 7.62.3.1 Example

This example is the result of Bios Settings schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Bios/Settings",
  "@odata.type": "#Bios.v1_2_0.Bios",
  "AttributeRegistry": "BiosAttributeRegistry",
  "Attributes": {
    "InsydeH2O_Version": "A62.002",
    "Release_Date": "11/09/2021",
    "Processor_Type": "Genuine Intel(R) CPU $0000%@",
    "System_Bus_Speed": "100 MHz",
    "System_Memory_Speed": "2666 MT/s",
  }
}
```

```
"Cache_RAM": "10240 KB",
"Total_Memory": "32768 MB",
"Language": "English",
"Numlock": "On",
"SCU_Resolution": "1024*768",
"USB_BIOS_Support": "Enabled",
"USB_BIOS_Support_1": "Enabled",
"BIOS_Guard": "Unsupported",
    .
    .
    .
    "x022DSensor_Type": "",
    "x022DSensor_Number": "",
    "x022DEvent_Type": "",
    "x022DEvent_Type_ID": ""
},
"Id": "Settings",
"Name": "Bios Pending Settings",
"Oem": {
    "InsydeBios": {
        "@odata.type": "#InsydeBios.v1_0_0.BiosId",
        "DeployNumber": "Qmlvc0F0dHJpYnV0ZVJlZ2lzdHJ5SDJPLjEuMC4wOzA1LjYxLjE4LjAwMDk="
    }
}
```

7.62.4 Updateable Properties

Property	Allowed value
Attributes	OBJECT

7.62.4.1 Example Payload

```
{
  "Attributes": {
    "Add_Boot_Options_2": "Auto",
    "Adjust_NonBIOS_Boot_Options": "Enabled",
    "Asset_Tag": "",
    .
    .
    .
  }
}
```

7.63 MemoryCollection

7.63.1 Description

A Collection of Memory resource instances.  
URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Memory>

### 7.63.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.63.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.63.3.1 Example

This example is the result of MemoryCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Memory",
  "@odata.type": "#MemoryCollection.MemoryCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Memory/ProcessorModule_0_Memory_0"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Memory/GPU_0_DRAM_0"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Memory Module Collection"
}
```

## 7.64 Memory

### 7.64.1 Description

This is the schema definition of the Memory and its configuration.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Memory/<MemoryID>>

This is the schema definition of the CPU Cache Memory and its configuration.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorsID>/CacheMemory/<CacheMemoryID>>

**Note: CacheMemory only supports BHS**

### 7.64.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.64.3 Properties (Memory)

Property	Description
AllowedSpeedsMHz	Speed bins supported by this Memory.
BaseModuleType	The base module type of Memory.
BusWidthBits	Bus Width in bits.
CacheSizeMiB	Total size of the cache portion memory in MiB.
CapacityMiB	Memory Capacity in mebibytes (MiB).
DataWidthBits	Data Width in bits.
EnvironmentMetrics( <b>G3 Only supports NV platform</b> )	See Nvidia Redfish User Guide for details.
ErrorCorrection	Error correction scheme supported for this memory.
FirmwareRevision	Revision of firmware on the Memory controller.
Location	The location of the memory.
→ PartLocation	The part location within the placement.
→→ ServiceLabel	The label of the part location, such as a silk-screened name or a printed label.
LogicalSizeMiB	Total size of the logical memory in MiB.
Manufacturer	The Memory manufacturer.
MemoryDeviceType	Type details of the Memory.
MemoryLocation	Memory connection information to sockets and memory controllers.
→ Channel	The channel number to which the memory is connected.
→ MemoryController	The memory controller number to which the memory is connected.
→ Slot	The slot number to which the memory is connected.
→ Socket	The socket number to which the memory is connected.
MemoryMedia	Media of this Memory.
MemorySubsystemControllerManufacturerID	The manufacturer ID of the memory subsystem controller of this memory module.
MemorySubsystemControllerProductID	The product ID of the memory subsystem controller of this memory module.
MemoryType	The type of Memory.

Metrics	A reference to the Metrics associated with this Memory.
ModuleManufacturerID	The manufacturer ID of this memory module.
ModuleProductID	The product ID of this memory module.
NonVolatileSizeMiB	Total size of the non-volatile portion memory in MiB.
Oem	Oem extension object.
→ Nvidia	See Nvidia Redfish User Guide for details.
→→RowRemappingFailed	See Nvidia Redfish User Guide for details.
→→RowRemappingPending	See Nvidia Redfish User Guide for details.
→ InsydeMemory	Oem extension object for Memory.
→→ AssetTag	The asset tag of this memory.
OperatingMemoryModes	Memory modes supported by the memory.
OperatingSpeedMhz	Operating speed of Memory in MHz or MT/s as appropriate.
PartNumber	The product part number of this device.
RankCount	Number of ranks available in the Memory.
SerialNumber	The product serial number of this device.
Status	See Common Properties <i>Status Object</i>
VolatileSizeMiB	Total size of the volatile portion memory in MiB.

#### 7.64.4 Properties (Cache Memory)(Only supports BHS)

Property	Description
CacheLevel	The level of the cache memory.
CacheSizeMiB	Total size of the cache portion memory in MiB.
Enabled	An indication of whether this memory is enabled.
ErrorCorrection	Error correction scheme supported for this memory device.
Links	The links to other resources that are related to this resource.
→ Processors	An array of links to the processors associated with this memory device.
MemoryType	The type of memory device.

Status	The status and health of the resource and its subordinate or dependent resources.
--------	-----------------------------------------------------------------------------------

## 7.65 InsydeSMBIOS Settings

### 7.65.1 Description

The SMBIOS schema contains properties related to the SMBIOS Attribute. Changes to the SMBIOS typically require a system reset before they take effect.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/SMBIOS/Settings>

### 7.65.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		

### 7.65.3 Properties

Property	Description
SMBIOS_Table	The manufacturer/provider-specific list of SMBIOS attributes.

#### 7.65.3.1 Example

This example is the result of InsydeSMBIOS Settings schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Bios/Settings",
  "@odata.type": "#InsydeSMBIOS.v1_0_0.InsydeSMBIOS",
  "Id": "Settings",
  "Name": "SMBIOS Pending Setting",
  "SMBIOS_Table": {}
}
```

### 7.65.4 Updatable Properties

Property	Allowed value
SMBIOS_Table	Depends on writable properties.

```
"1_1_Manufacturer": null,
"1_1_Product_Name": null,
"1_1_Version": null,
"1_1_Serial_Number": null,
```



```
"1_1_UUID": null,
"2_2_Manufacturer": null,
"2_2_Product": null,
"2_2_Version": null,
"2_2_Serial_Number": null,
"2_3_Manufacturer": null,
"2_3_Product": null,
"2_3_Version": null,
"2_3_Serial_Number": null,
"3_4_Manufacturer": null,
"3_4_Chassis_Type": null,
"3_4_Version": null,
"3_4_Serial_Number": null,
"3_4_Asset_Tag_Number": null,
"11_18_OEM_Strings": null
```

## 7.66 InsydePCIEFunctions

### 7.66.1 Description

This schema defines supported PCIEFunctions on this System.

URI: <https://{ip}/redfishv1/Systems/<SystemID>/Oem/Insyde/PCIEFunctions>

### 7.66.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET			V			

### 7.66.3 Properties

Property	Description
InsydePCIEInfo	A collection of PCIEFunctions.
→BDF	Bus Device FunctionId Information.
→Component	The Component of this PCIEFunction.
→Vendor	The vendor of this PCIEFunction.
→VendorId	The VendorId of this PCIEFunction.
→Device	The Device of this PCIEFunction.
→DeviceId	The DeviceId of this PCIEFunction.
→Class	The class of this PCIEFunction.
→SubClass	The SubClass of this PCIEFunction.
→Interface	The Interface of this PCIEFunction.

→ClassCode	The ClassCode of this PCIEFunction.
→RevisionId	This revision of this PCIEFunction.
→SubsystemId	The SubsystemId of this PCIEfunction.
→ SubsystemVendorId	The SubsystemVendorId of this PCIEFunction.

### 7.66.3.1 Example

This example is the result of InsydePCIEFunctions schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#InsydePCIEFunctions.InsydePCIEFunctions",
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PCIEFunctions",
  "@odata.type": "#InsydePCIEFunctions.v1_0_0.InsydePCIEFunctions",
  "Id": "PCIEFunctions",
  "Name": "InsydePCIEInfo",
  "Description": "This schema defines supported PCIEFunctions on this System.",
  "InsydePCIEInfo": [
    {
      "BDF": "00:00.0",
      "Component": "SoC",
      "Vendor": "Intel Corporation",
      "VendorId": "0x8086",
      "Device": "Memory Map/Intel VT-d Registers",
      "DeviceId": "0x09A2",
      "SubSystem": null,
      "Class": "Generic system peripheral",
      "SubClass": "System peripheral",
      "Interface": null,
      "ClassCode": "0x088000",
      "RevisionId": "0x20",
      "SubsystemId": "0x09A2",
      "SubsystemVendorId": "0x8086"
    },
    ...
    ...
    ...
  ]
}
```

## 7.67 ProcessorCollection

### 7.67.1 Description

A Collection of Processor resource instances.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorId>/SubProcessors>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorId>/SubProcessors/<CoreId>/SubProcessors>

Notice that platform whose CPU informations are managed by HPM architecture will not have available SubProcessors schemas (like NVIDIA Oberon platform).

### 7.67.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.67.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.67.3.1 Example

This example is the result of ProcessorCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#ProcessorCollection.ProcessorCollection",
  "@odata.id": "/redfish/v1/Systems/system/Processors",
  "@odata.type": "#ProcessorCollection.ProcessorCollection",
  "Description": "The ProcessorCollection contains a collection of processor instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Processors/cpu0"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Processor Collection"
}
```

## 7.68 Processor

### 7.68.1 Description

This is the schema definition for the Processor resource. It represents the properties of a processor attached to a System

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorId>>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorId>/SubProcessors/<CoreID>>

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Processors/<ProcessorId>/SubProcessors/<CoreID>/SubProcessors/<ThreadID>>

Notice that platform whose CPU informations are managed by HPM architecture will not have available SubProcessors schemas (like NVIDIA Oberon platform).

Notice that Core and Threads will have limited properties as all the Main processors properties (like TotalCores, TotalThreads, and TotalEnabledCores) are not applicable for Cores & Threads.

## 7.68.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

## 7.68.3 Properties

All properties listed below are "optional" unless specified otherwise.

Property	Description
@Redfish.Settings	See Nvidia Redfish User Guide for details.
→ SettingsObject	See Nvidia Redfish User Guide for details.
EnvironmentMetrics	See Nvidia Redfish User Guide for details.
FPGA	See Nvidia Redfish User Guide for details.
→ FpgaType	See Nvidia Redfish User Guide for details.
FirmwareVersion	See Nvidia Redfish User Guide for details.
Links	See Nvidia Redfish User Guide for details.
→ Chassis	See Nvidia Redfish User Guide for details.
→ Memory	See Nvidia Redfish User Guide for details.
→ PCIeDevice	See Nvidia Redfish User Guide for details.
→ PCIeFunctions	See Nvidia Redfish User Guide for details.
Metrics	See Nvidia Redfish User Guide for details.
Ports	See Nvidia Redfish User Guide for details.
Location	The location of the memory.
→ PartLocation	The part location within the placement.
→→ ServiceLabel	The label of the part location, such as a silk-screened name or a printed label.
Socket	The socket or location of the processor.
ProcessorType	The type of processor
ProcessorArchitecture	The architecture of the processor.
InstructionSet	The instruction set of the processor
Manufacturer	The processor manufacturer.
Model	The product model number of this device.

SerialNumber	The serial number of the processor.
PartNumber	The part number of the processor.
ProcessorId	Identification information for this processor.
→ IdentificationRegisters	This property contain the raw manufacturer-provided processor-specific identification registers of this processor's features.
→ EffectiveFamily	The effective Family for this processor.
→ EffectiveModel	The effective Model for this processor.
→ Step	The step value for this processor.
MaxSpeedMHz	The maximum clock speed of the processor.
TotalCores	The total number of cores contained in this processor.
TotalEnabledCores	The total number of enabled cores that this processor contains.
TotalThreads	The total number of execution threads supported by this processor.
Status	See Common Properties <i>Status Object</i> .
ProcessorMemory[]	This type describes the memory directly attached or integrated within a processor.(collection)
→ MemoryType	The type of memory used by this processor.
→ CapacityMiB	The memory capacity in MiB.
→ SpeedMHz	The operating speed of the memory in MHz.
SubProcessors[]	The link to the collection of subprocessors associated with this system, such as cores or threads, that are part of a processor.
Oem	Oem extension object.
→ Nvidia	See Nvidia Redfish User Guide for details.
→→ MIGModeEnabled	See Nvidia Redfish User Guide for details.
→ InsydeProcessor	Oem extension object for processor.
→→ CurrentSpeedMHz	See Intel Redfish User Guide for details.
→→ VoltageVolt	The voltage for this processor.
→→ SocketType	The socket type for this processor.
→→ AssetTag	The asset tag for this processor.
→→ ProcessorStatus	The status for this processor.
→→→MemoryType	The type of memory used by this processor. (Only existed when get data from SMBIOS)

→→→CapacityKB	The memory capacity in KB. (Only existed when get data from SMBIOS)
AppliedOperatingConfig	See Intel Redfish User Guide for details.
BaseSpeedPriorityState	See Intel Redfish User Guide for details.
HighSpeedCoreIDs	See Intel Redfish User Guide for details.
Oem	See Intel Redfish User Guide for details.
→ Intel	See Intel Redfish User Guide for details.
→→ DynamicFeature	See Intel Redfish User Guide for details.
→→ MeteringFeature	See Intel Redfish User Guide for details.
→→ ProvisionFeature	See Intel Redfish User Guide for details.
→→ StateFeature	See Intel Redfish User Guide for details.
OperatingConfigs	See Intel Redfish User Guide for details.
Version	See Intel Redfish User Guide for details.

## 7.69 SecureBoot

### 7.69.1 Description

The SecureBoot schema contains UEFI Secure Boot information and represents properties for managing the UEFI Secure Boot functionality of a system.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/SecureBoot>

### 7.69.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH				V		
POST				V		

### 7.69.3 Properties

Property	Description
Actions	The available actions for this Resource.
SecureBootCurrentBoot	Secure Boot state during the current boot cycle.

SecureBootDatabases	A link to the collection of UEFI Secure Boot databases.
SecureBootEnable	An indication of whether UEFI Secure Boot is enabled.
SecureBootMode	Current Secure Boot Mode.

### 7.69.3.1 Example

This example is the result of SecureBoot schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/SecureBoot",
  "@odata.type": "#SecureBoot.v1_1_0.SecureBoot",
  "Actions": {
    "#SecureBoot.ResetKeys": {
      "@ResetKeysType@Redfish.AllowableValues": [
        "ResetAllKeysToDefault",
        "DeleteAllKeys",
        "DeletePK"
      ],
      "target": "/redfish/v1/Systems/system/SecureBoot/Actions/SecureBoot.ResetKeys"
    }
  },
  "Description": "This Resource contains a UEFI Secure Boot Resource for a Redfish implementation.",
  "Id": "SecureBoot",
  "Name": "SecureBoot Current Settings",
  "SecureBootCurrentBoot": null,
  "SecureBootDatabases": {
    "@odata.id": "/redfish/v1/Systems/system/SecureBoot/SecureBootDatabases"
  },
  "SecureBootEnable": null,
  "SecureBootMode": null
}
```

## 7.69.4 Updatable Properties

Property	Allowed value
SecureBootEnable	BOOLEAN

### 7.69.4.1 Example Payload

```
{
  "SecureBootEnable": true
}
```

## 7.69.5 Supported Actions

### 7.69.5.1 Reset key

Description: This action resets the Secure Boot keys.

URI: <https://{ip}/redfish/v1/Systems/<SystemId>/SecureBoot/Actions/SecureBoot.ResetKeys>

Property	Allowed Value	Description
ResetKeyType	"ResetAllKeysToDefault"	Reset the content of all UEFI Secure Boot key databases (PK, KEK, DB, DBX) to their default values.
	"DeleteAllKeys"	Delete the content of all UEFI Secure Boot key databases (PK, KEK, DB, DBX). This puts the system in Setup Mode.
	"DeletePK"	Delete the content of the PK UEFI Secure Boot database. This puts the system in Setup Mode.

#### 7.69.5.1.1 Example Payload

```
{
  "ResetKeyType": "ResetAllKeysToDefault"
}
```

## 7.70 SecureBootDatabasesCollection

### 7.70.1 Description

A Collection of SecureBootDatabases resource instances.

URI: <https://{ip}/redfish/v1/Systems/system/SecureBoot/SecureBootDatabases>

### 7.70.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.70.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.70.3.1 Example

This example is the result of SecureBootDatabases schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/SecureBoot/SecureBootDatabases",
  "@odata.type": "#SecureBootDatabaseCollection.SecureBootDatabaseCollection",
  "Description": "The collection of SecureBootDatabase resource instances.",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "SecureBoot DataBase Collection"
}
```



## 7.71 SecureBootDatabases

### 7.71.1 Description

The SecureBootDatabase schema describes a UEFI Secure Boot database used to store certificates or hashes  
URI: <https://{ip}/redfish/v1/Systems/system/SecureBoot/SecureBootDatabases/<SecureBootDatabaseID>>

### 7.71.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.71.3 Properties

Property	Description
Action	This action is used to reset the UEFI Secure Boot keys of this database.
Certificates	The value of this property shall be a link to a resource collection of type CertificateCollection.
DatabaseId	This property contains the name of the UEFI Secure Boot database.
Signatures	The value of this property shall be a link to a resource collection of type SignatureCollection.

## 7.72 StorageCollection

### 7.72.1 Description

A Collection of Storage resource instances.  
URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage>

### 7.72.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.72.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.72.3.1 Example

This example is the result of Storage schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#StorageCollection.StorageCollection",
  "@odata.id": "/redfish/v1/Systems/system/Storage",
  "@odata.type": "#StorageCollection.StorageCollection",
  "Name": "Storage Collection",
  "Description": "The StorageCollection schema contains a collection of storage instances.",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/SystemDisk1"
    }
  ]
}
```

## 7.73 Storage

### 7.73.1 Description

Storage defines a storage subsystem and its respective properties. A storage subsystem represents a set of storage controllers (physical or virtual) and the resources such as volumes that can be accessed from that subsystem.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/SystemDisk1>

### 7.73.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.73.3 Properties

Property	Description
Drives	The set of drives attached to the storage controllers represented by this resource.
Status	See Common Properties Status Object.

## 7.74 Storage for RAID

### 7.74.1 Description

Storage defines a storage subsystem and its respective properties. A storage subsystem represents a set of storage controllers (physical or virtual) and the resources such as volumes that can be accessed from that subsystem.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/1>

### 7.74.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf

GET		V				
-----	--	---	--	--	--	--

### 7.74.3 Properties

Property	Description
Drives	The set of drives attached to the storage controllers represented by this resource.
Volumes	The set of volumes produced by the storage controllers represented by this resource.
Status	See Common Properties <i>Status Object</i> .
StorageControllers	The set of storage controllers represented by this resource. See next section "StorageController for RAID" for more information.

#### 7.74.3.1 Example

This example is the result of Storage schema's GET response. In the example, the SystemID is "system".

```
{
  "@odata.context": "/redfish/v1/$metadata#Storage.Storage",
  "@odata.id": "/redfish/v1/Systems/system/Storage/1",
  "@odata.type": "#Storage.v1_11_0.Storage",
  "Id": "1",
  "Description": "Storage System",
  "Name": "Storage System",
  "Status": {
    "State": "Disabled",
    "Health": "OK"
  },
  "Drives": [],
  "Volumes": {
    "@odata.id": "/redfish/v1/Systems/system/Storage/1/Volumes"
  },
  "StorageControllers": []
}
```

## 7.75 StorageController for RAID

### 7.75.1 Description

Storage defines a storage subsystem and its respective properties. A storage subsystem represents a set of storage controllers (physical or virtual) and the resources such as volumes that can be accessed from that subsystem.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>#/StorageControllers/<StorageControllersId>>

### 7.75.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
--	--------	-------	-------------------	----------------------	-----------------	---------------

GET		V				
POST				V		

### 7.75.3 Properties

Property	Description
AssetTag	The asset tag for the controller.
Status	This type describes the status and health of a resource and its children.
SpeedGbps	The speed of the storage controller interface.
FirmwareVersion	The firmware version of this storage Controller.
Manufacturer	This is the manufacturer of this storage controller.
Model	This is the model number for the storage controller.
SKU	The SKU for this storage controller.
SerialNumber	The serial number for this storage controller.
PartNumber	The part number for this storage controller.
SupportedControllerProtocols	This represents the protocols by which this storage controller can be communicated to.
SupportedDeviceProtocols	This represents the protocols which the storage controller can use to communicate with attached devices.
Actions	The available actions for this Resource.
Oem	Oem extension object.
→ InsydeControllers	Oem extension object for storage controllers.
→→ SeqNumNewestEvent	The newest sequential number of event.
→→ SeqNumOldestEvent	The oldest sequential number of event.
→→ SeqNumLastClearEvent	The last clear sequential number of event.
→→ SeqNumLastCleanShutdownEvent	The last clear shutdown sequential number of event.
→→ SeqNumThisSessionBootEvent	This session boot sequential number of event.
→→ IoPolicySupport	This property if IO policy is supported.
→→ BBUPresent	The present of the BBU module.
→→ BBUStatus	The status of the BBU module.
→→ BBUName	The name of the BBU module.

→→ BBUType	The type of the BBU module.
→→ BBUTemperatureCelsius	The temperature of the BBU module.
→→ BBUVoltageMilliVolts	The Voltage(mV) of the BBU module. The temperature of the BBU module.
→→ BBUCurrentMilliAmps	The Current(mA) of the BBU module.
→→ BBUSerialNumber	The serial number of the BBU module.
→→ BBUHealthPercent	The health percentage of BBU module.
→→ BBURemainingBatteryPercent	The Remaining Battery percentage of the BBU module.
→→ Memory	This indicates the Memory Capacity.
→→ PackageVersion	This indicates the version of the controller package.
→→ JunctionTemperature	The temperature of the Storage Controller.
→→ PCIVendorID	This property shall contain the PCI vendor ID of the controller.
→→ PCIDeviceID	This property shall contain the PCI device ID of the controller.
→→ PCISubVersionID	This property shall contain the PCI sub version ID of the controller.
→→ PCISubSystemID	This property shall contain the PCI device ID of the controller.
→→ BIOSVersion	This property shall contain the BIOS version of the controller.
→→ UEFIVersion	This property shall contain the UEFI version of the controller.
→→ ExpanderFWVersion	This property shall contain the expander firmware version of the controller.
→→ SEEPROM	This property shall contain the SEEPROM of the controller.
→→ MemoryChangeable	This property shall contain the memory changeable of the controller.
→→ MemoryCorrectErrCount	This property shall contain the memory correct error count of the controller.
→→ MemoryUnCorrectErrCount	This property shall contain the memory uncorrect error count of the controller.
→→ Chip	This property shall contain the chip of the controller.
→→ ExpanderTemp	This property shall contain the expander temperature of the controller.

→→ HostInterface	This property shall contain the host interface of the controller.
→→ PortCount	This property shall contain the port count of the controller.
→→ TTYLog	The link to a collection of the TTY logs of the controller.
→→ Events	The link to a collection of the events logs of the controller.
→ CreateRaidVolume	This object indicates the allowable value for creating raid volume.
→→ MaxSize	The max size to create raid volume.
→→ PossibleRaidLevel	The Possible Raid Level to create raid volume.
→→ FreeDriveIds	The Free Drive Ids to create raid volume.
→→ StripeSize	The Stripe Size to create raid volume.
→→ AccessPolicy	The Access Policy to create raid volume.
→→ DiskCachePolicy	The Disk Cache Policy to create raid volume.
→→ InitState	The Init State to create raid volume.
→ ForeignConfiguration	This object indicates the allowable value for Foreign Configuration.
→→ TargetId	The Target Id of foreign configuration.
→→ RaidLevel	The Raid Level of foreign configuration.
→→ Size	The Size of foreign configuration.
→→ State	The State of foreign configuration.
→ PDList	The physical disk list of this controller.
→→ DeviceId	The device Id of physical disk.
→→ EnclosureDeviceId	The enclosure device Id of physical disk.
→→ SlotNumber	The SlotNumber of physical disk.
→→ ConnectedPortBitmap	The connected port bitmap of physical disk.
→→ SASAddress	The SAS address of foreign configuration.

### 7.75.3.1 Example

This example is the result of StorageControllers GET response. In this examples, the SystemID is "system".

```
{
  "@odata.id": "/redfish/v1/Systems/system/Storage/1#/StorageControllers/0",
  "@odata.type": "#Storage.v1_4_0.StorageController",
  "Actions": {
    "Oem": {
```

```

        "#InsydeOEMExtensions.ClearConfiguration": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.ClearConfiguration"
        },
        "#InsydeOEMExtensions.ClearEvents": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.ClearEvents"
        },
        "#InsydeOEMExtensions.ClearForeignConfiguration": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.ClearForeignConfiguration"
        },
        "#InsydeOEMExtensions.CreateVolumeBasicData": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.CreateVolumeBasicData"
        },
        "#InsydeOEMExtensions.CreateVolumeParameters": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.CreateVolumeParameters"
        },
        "#InsydeOEMExtensions.GetFreeRaidResource": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.GetFreeRaidResource"
        },
        "#InsydeOEMExtensions.ImportForeignConfiguration": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.ImportForeignConfiguration"
        },
        "#InsydeOEMExtensions.ScanForeignConfiguration": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.ScanForeignConfiguration"
        },
        "#InsydeOEMExtensions.StartPatrolRead": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.StartPatrolRead"
        },
        "#InsydeOEMExtensions.StopPatrolRead": {
            "target": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Actions/Oem/
InsydeOEMExtensions.StopPatrolRead"
        }
    },
    "AssetTag": null,
    "FirmwareVersion": "5.170.01-3483",
    "Links": {
        "StorageServices": [
            {
                "@odata.id": "/redfish/v1/StorageServices/1"
            }
        ]
    },
    "Manufacturer": "Broadcom",
    "MemberId": "0",
    "Model": "AVAGO MegaRAID SAS 9440-8i",
    "Name": "Broadcom RAID/HBA Controller",
    "Oem": {
        "InsydeControllers": {

```

```

"@odata.type": "#InsydeOEMExtensions.RaidControllers",
"BBUCurrentMilliAmps": null,
"BBUHealthPercent": null,
"BBUName": null,
"BBUPresent": false,
"BBURemainingBatteryPercent": null,
"BBUSerialNumber": null,
"BBUStatus": null,
"BBUTemperatureCelsius": null,
"BBUType": null,
"BBUVoltageMilliVolts": null,
"BIOSVersion": "7.17.00.0_0x07110200",
"Chip": "MegaRAID Tri-Mode SAS3408",
"CreateRaidVolume": {
  "AccessPolicy": [],
  "DiskCachePolicy": [],
  "FreeDriveIds": [],
  "InitState": [],
  "MaxSize": 0,
  "PossibleRaidLevel": [],
  "StripeSize": []
},
"Events": {
  "@odata.id":
"/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events"
},
"ExpanderFWVersion": null,
"ExpanderTemp": null,
"ForeignConfiguration": {
  "RaidLevel": "",
  "Size": 0,
  "State": "",
  "TargetId": ""
},
"HostInterface": "PCIe",
"IoPolicySupport": false,
"JunctionTemperature": 45,
"Memory": 0,
"MemoryChangeable": "No",
"MemoryCorrectErrCount": 0,
"MemoryUnCorrectErrCount": 0,
"PCIDeviceID": "0x0017",
"PCISubSystemID": "0x9440",
"PCISubVersionID": "0x1000",
"PCIVendorID": "0x1000",
"PDList": [],
"PackageVersion": "51.17.0-3971",
"PortCount": 8,
"SEEPROM": null,
"SeqNumLastCleanShutdownEvent": 9,
"SeqNumLastClearEvent": 2,
"SeqNumNewestEvent": 213,
"SeqNumOldestEvent": 1,
"SeqNumThisSessionBootEvent": 208,
"TTYLog": {
  "@odata.id":
"/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/TTYLog"

```



```
    },
    "UEFIVersion": null
  },
  "PartNumber": null,
  "SKU": null,
  "SerialNumber": "SP84924552",
  "SpeedGbps": 12,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "SupportedControllerProtocols": [
    "PCIe"
  ],
  "SupportedDeviceProtocols": [
    "SAS",
    "SATA"
  ]
}
```

## 7.75.4 Supported Actions

### 7.75.4.1 GetFreeRaidResource

Description: This action is used to get free raid resource.  
URI: https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.GetFreeRaidResource

Property	Description
N/A	N/A

### 7.75.4.2 CreateVolumeBasicData

Description: This action is used to active the first stage to create RAID.  
URI: https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.CreateVolumeBasicData

Property	Description
RaidLevel	Selected Raid Level.
SelectedDriveIds	Selected Drive Ids.

#### 7.75.4.2.1 Example Payload

```
{
  "RaidLevel": "1",
  " SelectedDriveIds ": [
    "1",
    "2"
  ]
}
```

}

### 7.75.4.3 CreateVolumeParameters

Description: This action is used to create volume parameters.

URI: https://{ip}/redfish/v1/Systems/<SYSTEM ID>/Storage/<STORAGE

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.CreateVolumeParameters

Property	Allowed value	Description
Name	STRING	Volume Name.
Size	NUMBER	Volume Size.
StripeSize	16, 32, 64, 128, 256, 512, 1024	The Stripe Size to create raid volume.
AccessPolicy	"Read Write"	Set access policy to read write.
	"Read Only"	Set access policy to read only.
	"Blocked"	Set access policy to blocked.
DiskCachePolicy	"Unchanged"	Set disk cache policy to Unchanged.
	"Enable"	Set disk cache policy to enabled.
	"Disable"	Set disk cache policy to disabled.
InitState	"No Init"	Set init state to no init.
	"Quick Init"	Set init state to quick init.
	"Full Init"	Set init state to full init.

#### 7.75.4.3.1 Example Payload

```
{
  "Name": "VolumeName",
  "Size": 237952,
  "StripeSize": 256,
  "AccessPolicy": "Read Only",
  "DiskCachePolicy": "Enable",
  "InitState": "No Init"
}
```

### 7.75.4.4 ScanForeignConfiguration

Description: This action is used to scan foreign configuration.

URI: https://{ip}/redfish/v1/Systems/<SYSTEM ID>/Storage/<STORAGE

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ScanForeignConfiguration

Property	Description
N/A	N/A

### 7.75.4.5 ImportForeignConfiguration

Description: This action is used to import foreign configuration.

URI: [https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE](https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ImportForeignConfiguration)

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ImportForeignConfiguration

Property	Description
N/A	N/A

### 7.75.4.6 ClearForeignConfiguration

Description: This action is used to clear foreign configuration.

URI: [https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE](https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ClearForeignConfiguration)

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ClearForeignConfiguration

Property	Description
N/A	N/A

### 7.75.4.7 StartPatrolRead

Description: This action is used to start patrol read.

URI: [https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE](https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.StartPatrolRead)

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.StartPatrolRead

Property	Description
N/A	N/A

- **StopPatrolRead**

Description: This action is used to stop patrol read.

URI: [https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE](https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.StopPatrolRead)

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.StopPatrolRead

Property	Description
N/A	N/A

- **ClearConfiguration**

Description: This action is used to clear configuration.

URI: [https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE](https://{ip}/redfish/v1/Systems/<SYSYEM ID>/Storage/<STORAGE ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ClearConfiguration)

ID>/StorageControllers/<StorageControllers ID>/Actions/Oem/InsydeOEMExtensions.ClearConfiguration

Property	Description
N/A	N/A

- **Clear Events**

Description: This action is used to clear events of the storage controller.



URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/StorageControllers/<StorageControllerId>/Actions/Oem/InsydeOEMExtensions.ClearEvents

Property	Description
N/A	N/A

## 7.76 InsydeStorageControllerEventCollection for RAID

### 7.76.1 Description

A Collection of Storage Controller Event resource instances.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/StorageControllers/<ControllerId>/Oem/Insyde/Events

### 7.76.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.76.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.76.3.1 Example

This example is the result of InsydeStorageControllerEventCollection's GET response.

```
{
  "@odata.context":
"/redfish/v1/$metadata#InsydeStorageControllerEventCollection.InsydeStorageControllerEventCollection",
  "@odata.etag": "436d5fc0959d70711f8e89c5a32501e4",
  "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events",
  "@odata.type":
"#InsydeStorageControllerEventCollection.InsydeStorageControllerEventCollection",
  "Description": "A Collection of Storage Controller Event resource instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/213"
    }
  ]
}
```

```

      "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/9"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/208"
    }
  ],
  "Members@odata.count": 5,
  "Name": "InsydeStorageControllerEventCollection"
}
```

## 7.77 InsydeStorageControllerEvent

### 7.77.1 Description

This schema contains Storage Controller Event information.  
URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/StorageControllers/<ControllerId>/Oem/Insyde/Events/<EventsId>

### 7.77.2 Support Method and Privilege

	NoAuth	Login	ConfigureMa nager	ConfigureCo mponents	ConfigureUs ers	ConfigureSel f
GET		V				

### 7.77.3 Properties

Property	Description
Count	The start time of post code.
Data	The object for post code.
→ Description	Indicates the time offset with start time.
→ Level	The level of event.
→ SeqNo	The Description of event.
→ EventId	The event Id.
→ Time	The timestamp of event.

#### 7.77.3.1 Example

This example is the result of InsydeStorageControllerEvent's GET response.

```

{
  "@odata.context":
"/redfish/v1/$metadata#InsydeStorageControllerEvent.InsydeStorageControllerEvent",
  "@odata.etag": "102dd30fd6c592877f78f42cbc5273dd",

```

```
"@odata.id": "/redfish/v1/Systems/system/Storage/1/StorageControllers/0/Oem/Insyde/Events/1",
"@odata.type": "#InsydeStorageControllerEvent.v1_0_0.InsydeStorageControllerEvent",
"Count": 35,
"Data": [
  {
    "Description": "Test event: 'LogInit initial erase'",
    "EventId": 43,
    "Level": "Information",
    "SeqNo": 1,
    "Time": " Time elapsed since power on : 0 years, 0 months, 0 days; 0:0:1 (h:m:s)"
  },
  ...
],
"Description": "The InsydeStorageControllerEvent schema contains properties related to the
Insyde Storage Controller Event.",
"Id": "1",
"Name": "1"
}
```

# 7.78 InsydeStorageControllerTTYLog

## 7.78.1 Description

This schema contains Storage Controller TTYLog information.  
URI: https://{ip}/redfish/v1/Systems/<SystemID>/Storage/<StorageId>/StorageControllers/<ControllerId>/Oem/Insyde/TTYLog

## 7.78.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

## 7.78.3 Properties

Property	Description
TTYLog	This indicates the tty log.

### 7.78.3.1 Example

This example is the result of InsydeStorageControllerTTYLog's GET response.

```
{
  "@odata.context":
"/redfish/v1/$metadata#InsydeStorageControllerTTYLog.InsydeStorageControllerTTYLog",
  "@odata.etag": "2eff75895d345308acd3b86498393704",
  "@odata.id": "/redfish/v1/Systems/123456789abcdef/Storage/1/StorageControllers/0/Oem/Insyde/TTYLog",
  "@odata.type": "#InsydeStorageControllerTTYLog.v1_0_0.InsydeStorageControllerTTYLog",
  "Description": "The InsydeStorageControllerEvent schema contains properties related to the
Insyde Storage Controller TTY log.",
}
```

```

    "Id": "InsydeStorageControllerTTYLog",
    "Name": "InsydeStorageControllerTTYLog",
    "TTYLog": [
        "TTY Log for Controller 0xe02600000, nonPersistentAddr:f50000000 \\n",
        "T51.538: C0:skinnyCacheMemAllocForPrebootApps: allocating CacheMem for Preboot Apps\\n",
        ...
        "Done. TTY Log for Controller 0xe\\n"
    ]
}

```

## 7.79 PCIeDeviceCollection

### 7.79.1 Description

A Collection of PCIeDevice resource instances.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/PCIeDevices>

URI: <https://{ip}/redfish/v1/ChassisId/<ChassisID>/PCIeDevices>

### 7.79.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.79.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.79.3.1 Example

This example is the result of PCIeDeviceCollection GET response.

```

{
    "@odata.id": "/redfish/v1/Systems/system/PCIeDevices",
    "@odata.type": "#PCIeDeviceCollection.PCIeDeviceCollection",
    "Description": "Collection of PCIe Devices",
    "Members": [],
    "Members@odata.count": 0,
    "Name": "PCIe Device Collection"
}

```

## 7.80 PCIeDevice

### 7.80.1 Description

This is the schema definition for the PCIeDevice resource. It represents the properties of a PCIeDevice attached to a System.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/PCIeDevices/{PCIeDeviceId}

URI: https://{ip}/redfish/v1/Chassis/<ChassisID>/PCIeDevices/{PCIeDeviceId}

## 7.80.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

## 7.80.3 Properties

Property	Description
AssetTag	The user-assigned asset tag for this PCIe device.
DeviceType	The value of this property shall be the device type of the PCIe device such as SingleFunction or MultiFunction.
FirmwareVersion	The version of firmware for this PCIe device.
Manufacturer	This is the manufacturer of this PCIe device.
Model	The model number for the PCIe device.
PartNumber	The part number for this PCIe device.
PCIeFunctions	The link to the collection of PCIe functions associated with this PCIe device.
SerialNumber	The serial number for this PCIe device.
SKU	The SKU for this PCIe device.

## 7.81 PCIeFunctionCollection

### 7.81.1 Description

The collection of PCIeFunction Resource instances.

URI: https://{ip}/redfish/v1/Systems/<SystemID>/PCIeDevices/{PCIeDeviceId}/PCIeFunctions

URI: https://{ip}/redfish/v1/Chassis/<ChassisID>/PCIeDevices/{PCIeDeviceId}/PCIeFunctions

### 7.81.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf



GET		V				
-----	--	---	--	--	--	--

### 7.81.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.81.3.1 Example

This example is the result of PCIeFunctionCollection GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/PCIeDevices/1/PCIeFunctions",
  "@odata.type": "#PCIeFunctionCollection.PCIeFunctionCollection",
  "Description": "Collection of PCIe Functions for PCIe Device 1",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/PCIeDevices/1/PCIeFunctions/0_02"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/PCIeDevices/1/PCIeFunctions/0_20"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/PCIeDevices/1/PCIeFunctions/0_21"
    }
  ],
  "Members@odata.count": 3,
  "Name": "PCIe Function Collection"
}
```

## 7.82 PCIeFunction

### 7.82.1 Description

This is the schema definition for the PCIeFunction resource. It represents the properties of a PCIeFunction attached to a System.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/PCIeDevices/{PCIeDeviceId}/PCIeFunctions/<FunctionId>>

URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/PCIeDevices/{PCIeDeviceId}/PCIeFunctions/<FunctionId>Support>  
Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.82.2 Properties

Property	Description
ClassCode	The Class Code of this PCIe function.
DeviceClass	The class for this PCIe Function.

DeviceId	The Device ID of this PCIe function.
FunctionId	The PCIe Function identifier.
FunctionType	The type of the PCIe function.
Links	Contains references to other resources that are related to this resource.
→PCIeDevice	A reference to the PCIeDevice on which this function resides.
RevisionId	The Revision ID of this PCIe function.
SubsystemId	The Subsystem ID of this PCIe function.
SubsystemVendorId	The Subsystem Vendor ID of this PCIe function.
VendorId	The Vendor ID of this PCIe function.

## 7.83 TaskService

### 7.83.1 Description

The Task Service of a Redfish service allows scheduling and execution of long-duration processes. It represents the properties for the Task Service itself and has links to the actual collection of Task resources.

URI: <https://{ip}/redfish/v1/TaskService>

### 7.83.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.83.3 Properties

Property	Description
CompletedTaskOverWritePolicy	Overwrite policy of completed tasks.
DateTime	The current date and time for task service, with UTC offset.
LifeCycleEventOnTaskStateChange	An indication of whether service sends an event when task state changes.
ServiceEnabled	This indicates whether this service is enabled.
Status	See Common Properties Status Object.
Tasks	References to the Tasks collection.

### 7.83.3.1 Example

This example is the result of TaskService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TaskService",
  "@odata.type": "#TaskService.v1_2_0.TaskService",
  "CompletedTaskOverWritePolicy": "Oldest",
  "DateTime": "2024-08-16T01:20:34+00:00",
  "Id": "TaskService",
  "LifecycleEventOnTaskStateChange": true,
  "Name": "Task Service",
  "ServiceEnabled": true,
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  },
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService/Tasks"
  }
}
```

## 7.84 TaskCollection

### 7.84.1 Description

A Collection of Task resource instances.  
URI: https://{ip}/redfish/v1/TaskService/Tasks

### 7.84.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.84.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.84.3.1 Example

This example is the result of TaskCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TaskService/Tasks",
  "@odata.type": "#TaskCollection.TaskCollection",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "Task Collection"
}
```

## 7.85 Task

### 7.85.1 Description

This resource contains information about a specific Task scheduled by or being executed by a Redfish service's Task Service.

URI: <https://{ip}/redfish/v1/TaskService/Tasks/<TaskId>>

### 7.85.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.85.3 Properties

Property	Description
EndTime	The date-time stamp that the task was last completed. (Display if task completed)
Messages	This is an array of messages associated with the task.
→ MessageId	This is the key for this message which can be used to look up the message in a message registry.
→ Message	This is the human readable message, if provided.
→ Severity	This is the severity of the errors.
→ Resolution	Used to provide suggestions on how to resolve the situation that caused the error.
Oem	Oem extension object.
→ InsydeTask	
→→ StateDescription	
Payload	The HTTP and JSON request payload details for this task, unless they are hidden from view by the service.
→ HttpHeaders	An array of HTTP headers that this task includes.
→ HttpOperation	The HTTP operation to perform to execute this task.
→ JsonBody	The JSON payload to use in the execution of this task.
→ TargetUri	The URI of the target for this task.
PercentComplete	The completion percentage of this Task.
StartTime	The date-time stamp that the task was last started.

TaskMonitor	The URI of the Task Monitor for this task.
TaskState	The state of the task.
TaskStatus	This is the completion status of the task.
EstimatedDuration	Estimated Time for firmware update to Generate Task

### 7.85.3.1 Example

This example is the result of Task schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TaskService/Tasks/0",
  "@odata.type": "#Task.v1_6_0.Task",
  "EndTime": "2024-06-12T09:31:33+00:00",
  "EstimatedDuration": "15min",
  "Id": "0",
  "Messages": [
    {
      "@odata.type": "#Message.v1_0_0.Message",
      "Message": "The task with id 0 has started.",
      "MessageArgs": [
        "0"
      ],
      "MessageId": "TaskEvent.1.0.1.TaskStarted",
      "Resolution": "None.",
      "Severity": "OK"
    },
    {
      "@odata.type": "#Message.v1_0_0.Message",
      "Message": "The task with id 0 has Completed.",
      "MessageArgs": [
        "0"
      ],
      "MessageId": "TaskEvent.1.0.1.TaskCompletedOK",
      "Resolution": "None.",
      "Severity": "OK"
    }
  ],
  "Name": "Task 0",
  "Oem": {
    "InsydeTask": {
      "@odata.type": "#InsydeOEMExtensions.v1_0_0.Task",
      "StateDescription": ""
    }
  },
  "Payload": {
    "HttpHeaders": [
      "User-Agent: PostmanRuntime/7.37.3",
      "Accept: */*",
      "Host: 192.168.11.88",
      "Accept-Encoding: gzip, deflate, br",
      "Connection: keep-alive",
      "Content-Length: 0",
      "Location:
/redfish/v1/ComponentIntegrity/ERoT_CPU_0/Actions/SPDMGetSignedMeasurements/data"
```

```
    },
    "HttpOperation": "POST",
    "JsonBody": "null",
    "TargetUri": "/redfish/v1/ComponentIntegrity/ERoT_CPU_0/Actions/SPDMGetSignedMeasurements"
  },
  "PercentComplete": 100,
  "StartTime": "2024-06-12T09:31:32+00:00",
  "TaskMonitor": "/redfish/v1/TaskService/Tasks/0/Monitor",
  "TaskState": "Completed",
  "TaskStatus": "OK"
}
```

## 7.86 TaskMonitor

### 7.86.1 Description

Clients can use this uri to monitor asynchronous operation.  
URI: <https://{ip}/redfish/v1/TaskService/Tasks/<TaskId>/Monitor/>

### 7.86.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.86.3 Properties

Property	Description
TaskState	The state of the task.
TaskStatus	This is the completion status of the task.

#### 7.86.3.1 Example

This example is the result of TaskMonitor schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TaskService/Tasks/3",
  "@odata.type": "#Task.v1_6_0.Task",
  "Id": "3",
  "TaskState": "Running",
  "TaskStatus": "OK"
}
```

## 7.87 TelemetryService

### 7.87.1 Description

The TelemetryService schema describes a Telemetry Service. The Telemetry Service is used to for collecting and reporting metric data within the Redfish Service.

URI: https://{ip}/redfish/v1/TelemetryService

### 7.87.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			

### 7.87.3 Properties

Property	Description
Actions	The available actions for this Resource.
LogicalContexts	The logical contexts related to the metric.
MaxReports	The maximum number of metric reports that this service supports.
MetricDefinitions	See Intel/AMD Redfish User Guide for details.
MetricReportDefinitions	A link to the collection of Metric Report Definitions.
MetricReports	A link to the collection of Metric Reports.
MinCollectionInterval	The minimum time interval between gathering metric data that this service allows.
Status	This property describes the status and health of the resource and its children.
SupportedCollectionFunctions	See Intel Redfish User Guide for details.
Triggers	This property shall contain a link to a resource collection of type TriggersCollection.

#### 7.87.3.1 Example

This example is the result of TelemetryService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TelemetryService",
  "@odata.type": "#TelemetryService.v1_3_1.TelemetryService",
  "Actions": {
    "#TelemetryService.SubmitTestMetricReport": {
```

```

        "target":
"/redfish/v1/TelemetryService/Actions/TelemetryService.SubmitTestMetricReport"
    },
    "Id": "TelemetryService",
    "MaxReports": 10,
    "MetricReportDefinitions": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions"
    },
    "MetricReports": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReports"
    },
    "MinCollectionInterval": "PT1.000S",
    "Name": "Telemetry Service",
    "Status": {
        "State": "Enabled"
    },
    "Triggers": {
        "@odata.id": "/redfish/v1/TelemetryService/Triggers"
    }
}

```

## 7.87.4 Supported Actions

### 7.87.4.1 SubmitTestMetricReport

Description: This action is used to add a test member to MetricReportCollection.

Example URI to create test MetricReport:

<https://{ip}/redfish/v1/TelemetryService/Actions/TelemetryService.SubmitTestMetricReport>

Property	Allowed Value	Description
MetricReportName	STRING	Name of MetricReport.
GeneratedMetricReportValues	ARRAY of Object	User defined MetricReport attributes. The size of array is 1 so far.
→MetricId	STRING	User-defined Id of the MetricReport.
→MetricProperty	STRING	User-defined URI of the MetricReport.
→MetricValue	STRING	User-defined value of the MetricReport.
→Timestamp	STRING	Timestamp.

### 7.87.4.2 Example Payload of SubmitTestMetricReport

```

{
  "MetricReportName": "MyMetric",
  "GeneratedMetricReportValues": [
    {
      "MetricId": "VOUT_READING",
      "MetricProperty": "/redfish/v1/Chassis/Onyx_Baseboard/Sensors/SOC_VOUT/Reading",
      "MetricValue": "20",
      "Timestamp": "2019-02-05T18:00:00Z"
    }
  ]
}

```



```
}
1
}
```

## 7.88 MetricReportDefinitionCollection

### 7.88.1 Description

A Collection of MetricReportDefinitionresource instances.

URI: https://{ip}/redfish/v1/TelemetryService/MetricReportDefinitions

### 7.88.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			

### 7.88.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.88.3.1 Example

This example is the result of MetricReportDefinitionCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions",
  "@odata.type": "#MetricReportDefinitionCollection.MetricReportDefinitionCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/MyMetric"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Metric Definition Collection"
}
```

### 7.88.4 Establish MetricReportDefinition by POST

Description: To establish a new Metric Report Definition, clients POST an MetricReportDefinition to the MetricReportDefinitionCollection.

URI: https://{ip}/redfish/v1/TelemetryService/MetricReportDefinitions

Property	Required	Allowed Value
Id	Yes	STRING
MetricReportDefinitionType	Yes	STRING. "Periodic" or "OnRequest"

ReportActions	Yes	ARRAY-STRING "RedfishEvent" or "LogToMetricReportsCollection"
Schedule	Yes (When MetricReportDefinitionType is Periodic)	OBJECT
→ RecurrenceInterval	Yes	STRING which follow pattern "-?P(\\d+D)?(T(\\d+H)?(\\d+M)?(\\d+(\\.\\d+)?)S)??". Notice that add 3 digit limit for each unit to prevent overflow calculation.
Metrics	Yes	OBJECT
→ MetricId	Yes	STRING
→ MetricProperties	Yes	ARRAY-STRING

### 7.88.5 Example Payload

```
{
  "Id": "MyMetric",
  "Metrics": [
    {
      "MetricId": "BMC_Temp_reading",
      "MetricProperties": [
        "/redfish/v1/Chassis/AC_Baseboard/Sensors/BMC_Temp/Reading"
      ]
    }
  ],
  "MetricReportDefinitionType": "Periodic",
  "ReportActions": [
    "RedfishEvent",
    "LogToMetricReportsCollection"
  ],
  "Schedule": {
    "RecurrenceInterval": "PT1S"
  }
}
```

## 7.89 MetricReportDefinition

### 7.89.1 Description

A set of metrics that are collected into a metric report.

URI: <https://{ip}/redfish/v1/TelemetryService/MetricReportDefinitions/<MetricReportDefinitionId>>

### 7.89.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf

GET		V				
DELETE			V			

### 7.89.3 Properties

Property	Description
MetricReportDefinitionType	Specifies when the metric report is generated.
ReportActions	Specifies the actions to perform when a metric report is generated.
ReportUpdates	When logging metric reports, specifies how subsequent metric reports are handled in relationship to an existing metric report created from the metric report definition. This property always display "Overwrite".
Status	This property describes the status and health of the resource and its children.
MetricReport	Specifies the location where the resultant metric report is placed.
Schedule	Specifies the schedule for generating the metric report. (Display if supported, NVIDIA is not support)
→RecurrenceInterval	If the schedule present, the metric report is generated at an interval specified by Schedule.RecurrenceInterval property.

#### 7.89.3.1 Example

```
{
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/MyMetric",
  "@odata.type": "#MetricReportDefinition.v1_4_1.MetricReportDefinition",
  "Id": "MyMetric",
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/MyMetric"
  },
  "MetricReportDefinitionType": "Periodic",
  "Metrics": [
    {
      "MetricId": "BMC_Temp_reading",
      "MetricProperties": [
        "/redfish/v1/Chassis/AC_Baseboard/Sensors/BMC_Temp/Reading"
      ]
    }
  ],
  "Name": "MyMetric",
  "ReportActions": [
    "RedfishEvent",
    "LogToMetricReportsCollection"
  ],
  "ReportUpdates": "Overwrite",
}
```

```

"Schedule": {
  "RecurrenceInterval": "PT1.000S"
},
"Status": {
  "State": "Enabled"
}
}

```

## 7.89.4 Remove MetricReportDefinition by Delete

Description: MetricReportDefinition can be removed by Deleting the MetricReportDefinition resource.

URI: <https://{ip}/redfish/v1/TelemetryService/MetricReportDefinitions/<MetricReportDefinitionId>>

## 7.90 MetricReportCollection

### 7.90.1 Description

A Collection of MetricReport resource instances.

URI: <https://{ip}/redfish/v1/TelemetryService/MetricReports>

### 7.90.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.90.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.90.3.1 Example

This example is the result of MetricReportCollection schema's GET response.

```

{
  "@odata.id": "/redfish/v1/TelemetryService/MetricReports",
  "@odata.type": "#MetricReportCollection.MetricReportCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReports/MyMetric"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Metric Report Collection"
}

```

## 7.91 MetricReport

### 7.91.1 Description

The metric definitions used to create a metric report.

URI: <https://{ip}/redfish/v1/TelemetryService/MetricReports/<MetricReportId>>

### 7.91.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.91.3 Properties

#### TestMetricReport

Property	Description
MetricValues	An array of metric values for the metered items of this Metric.
→MetricId	The metric definitions identifier for this metric.
→Timestamp	The time when the value of the metric is obtained.
→MetricProperty	The URI for the property from which this metric is derived.

#### • Others

Property	Description
MetricReportDefinition	The metric definitions used to create a metric report.
Timestamp	The time when the value of the metric is obtained.
MetricValues	An array of metric values for the metered items of this Metric.
→MetricDefinition	The value identifies this resource. Note that here list raw data only.
→Timestamp	The time when the value of the metric is obtained.
→MetricProperty	The URI for the property from which this metric is derived.
→MetricId	The metric definitions identifier for this metric.

### 7.91.4 Example

```
{
  "@odata.id": "/redfish/v1/TelemetryService/MetricReports/MyMetric",
  "@odata.type": "#MetricReport.v1_4_2.MetricReport",
  "Id": "MyMetric",
  "MetricReportDefinition": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/MyMetric"
```

```

},
"MetricValues": [
  {
    "MetricDefinition": {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/Temperature"
    },
    "MetricId": "BMC_Temp_reading",
    "MetricProperty": "/redfish/v1/Chassis/AC_Baseboard/Sensors/BMC_Temp/Reading",
    "MetricValue": "27.500000",
    "Timestamp": "2023-07-11T06:24:03+00:00"
  }
],
"Name": "MyMetric",
"Timestamp": "2023-07-11T06:26:17+00:00"
}

```

## 7.92 TriggersCollection

### 7.92.1 Description

The collection of Triggers resource instances.  
 URI: https://{ip}/redfish/v1/TelemetryService/Triggers

### 7.92.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			

### 7.92.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.92.3.1 Example

This example is the result of TriggersCollection schema's GET response.

```

{
  "@odata.id": "/redfish/v1/TelemetryService/Triggers",
  "@odata.type": "#TriggersCollection.TriggersCollection",
  "Members": [],
  "Members@odata.count": 0,
  "Name": "Triggers Collection"
}

```

### 7.92.4 Establish Trigger by POST

Description: To establish a new Trigger, clients POST an Trigger to the TriggersCollection.  
 URI: https://{ip}/redfish/v1/TelemetryService/Triggers

Property	Required	Allowed Value
----------	----------	---------------

Id	Yes	STRING
Name	Yes	STRING
MetricType	Yes	STRING. Allowable values are "Discrete" and "Numeric".
TriggerActions	Yes	ARRAY-STRING. The allowable values of string are "LogToLogService", "RedfishEvent" and "RedfishMetricReport".
DiscreteTriggerCondition	Yes (If MetricType was "Discrete")	STRING. The condition when a discrete metric triggers. The allowable values are "Specified" and "Changed".
DiscreteTriggers	Yes (If MetricType was "Discrete")	ARRAY-OBJECT. The list of discrete triggers.
→ Name	No	STRING.
→ Value	Yes (If MetricType was "Discrete")	STRING. The discrete metric value that constitutes a trigger event.
→ DwellTime	Yes (If MetricType was "Discrete")	STRING. The duration the sensor value must violate the threshold before the threshold is activated.
→ Severity	Yes (If MetricType was "Discrete")	STRING. The severity of the event message.
NumericThresholds	Yes (If MetricType was "Numeric")	ARRAY of STRING-OBJECT. The thresholds when a numeric metric triggers.
→ LowerCritical	Yes (If MetricType was "Numeric")	The value at which the reading is below normal range and requires attention.
→→ Activation	Yes (If MetricType was "Numeric")	STRING. The direction of crossing that activates this threshold. The allowable values are "Either", "Decreasing" and "Increasing".
→→ DwellTime	Yes (If MetricType was "Numeric")	STRING. The duration the sensor value must violate the threshold before the threshold is activated.
→→ Reading	Yes (If MetricType was "Numeric")	STRING. The threshold value.
→ UpperCritical	Yes (If MetricType was "Numeric")	The value at which the reading is above normal range and requires attention.
→→ Activation	Yes (If MetricType was	STRING. The direction of crossing



	"Numeric")	that activates this threshold. The allowable values are "Either", "Decreasing" and "Increasing".
→→ DwellTime	Yes (If MetricType was "Numeric")	STRING. The duration the sensor value must violate the threshold before the threshold is activated.
→→ Reading	Yes (If MetricType was "Numeric")	STRING. The threshold value.
MetricProperties	Yes	ARRAY-STRING. An array of URIs with wildcards and property identifiers for this trigger.
Links	Yes	The links to other resources that are related to this resource.
→ MetricReportDefinitions	Yes	The metric report definitions that generate new metric reports when a trigger condition is met and when the TriggerActions property contains RedfishMetricReport.

### 7.92.5 Example Payload

```
{
  "Id": "TestTrigger",
  "MetricType": "Discrete",
  "TriggerActions": [
    "RedfishEvent"
  ],
  "DiscreteTriggerCondition": "Specified",
  "DiscreteTriggers": [
    {
      "Value": "55.88",
      "DwellTime": "PT0.001S",
      "Severity": "Warning"
    },
    {
      "Name": "My discrete trigger",
      "Value": "55.88",
      "DwellTime": "PT0.001S",
      "Severity": "OK"
    },
    {
      "Value": "55.88",
      "DwellTime": "PT0.001S",
      "Severity": "Critical"
    }
  ],
  "MetricProperties": [
    "/redfish/v1/Chassis/AC_Baseboard/Thermal#/Fans/0/Reading"
  ],
  "Links": {
    "MetricReportDefinitions": []
  }
}
```

```
}
}

{
  "Id": "TestTrigger2",
  "Name": "My Numeric Trigger",
  "MetricType": "Numeric",
  "TriggerActions": [
    "RedfishEvent",
    "RedfishMetricReport"
  ],
  "NumericThresholds": {
    "UpperCritical": {
      "Reading": 50,
      "Activation": "Increasing",
      "DwellTime": "PT0.001S"
    },
    "UpperWarning": {
      "Reading": 48.1,
      "Activation": "Increasing",
      "DwellTime": "PT0.004S"
    }
  },
  "MetricProperties": [
    "/redfish/v1/Chassis/AC_Baseboard/Thermal#/Temperatures/6/ReadingCelsius"
  ],
  "Links": {
    "MetricReportDefinitions": []
  }
}
```

# 7.93 Triggers

## 7.93.1 Description

The Triggers schema describes a trigger that applies to metrics.  
URI: <https://{ip}/redfish/v1/TelemetryService/Triggers/<TriggersID>>

## 7.93.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
DELETE			V			

## 7.93.3 Properties

Property	Description
MetricProperties	An array of URIs with wildcards and property identifiers for this

	trigger.
MetricType	The metric type of the trigger
NumericThresholds	The thresholds when a numeric metric triggers.
→ LowerCritical	The value at which the reading is below normal range and requires attention.
→→ Activation	The direction of crossing that activates this threshold.
→→ DwellTime	The duration the sensor value must violate the threshold before the threshold is activated.
→→ Reading	The threshold value.
→ UpperCritical	The value at which the reading is above normal range and requires attention.
→→ Activation	The direction of crossing that activates this threshold.
→→ DwellTime	The duration the sensor value must violate the threshold before the threshold is activated.
→→ Reading	The threshold value.
TriggerActions	The actions that the trigger initiates.
Links	The links to other resources that are related to this resource.
→ MetricReportDefinitions	The metric report definitions that generate new metric reports when a trigger condition is met and when the TriggerActions property contains RedfishMetricReport.

### 7.93.3.1 Remove Trigger by DELETE

Description: Trigger can be removed by Deleting the Trigger resource.  
URI: <https://{ip}/redfish/v1/TelemetryService/Triggers/<TriggersID>>

## 7.94 UpdateService

### 7.94.1 Description

This is the schema definition for the Update Service. It represents the properties for the service itself and has links to collections of firmware and software inventory.  
URI: <https://{ip}/redfish/v1/UpdateService>

### 7.94.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

<b>PATCH</b>				V		
<b>POST</b>				V		

### 7.94.3 Properties

Property	Description
Actions	The available actions for this Resource.
FirmwareInventory	An inventory of software.
HttpPushUri	The URI used to perform an HTTP or HTTPS push update to the Update Service.
HttpPushUriOptions	The options for HttpPushUri-provided software updates
→ HttpPushUriApplyTime	The settings for when to apply HttpPushUri-provided software.
→→ ApplyTime	The time when to apply the HttpPushUri-provided software update.
HttpPushUriTargets	An array of URIs that indicate where to apply the update image.
HttpPushUriTargetsBusy	An indication of whether any client has reserved the HttpPushUriTargets property.
MaxImageSizeBytes	The maximum size in bytes of the software update image that this service supports.
MultipartHttpPushUri	See Intel Redfish User Guide for details.
Oem	Oem Extension Object.
→ ApplyOptions	See Intel/AMD Redfish User Guide for details.
→→ ClearConfig	See Intel/AMD Redfish User Guide for details.
→ InsydeOSDeployment	The details of Insyde OS deployment.
→→ OSDeploymentID	The ID of OS deployment. Default is empty UUID "00000000-0000-0000-0000-000000000000"
→→ OSDeployment	Indicates if OS deployment is enabled.
→→ DevPortNum	Indicates the device port. Default is "-1"
→→ VMSlot	Indicates the inserted virtual media.
→ InsydePushUpdate	This type contains Insyde PushUpdate Setting information
→→ FwUpdateTag	See Nvidia Redfish User Guide for details.
→→ RestoreDefault	Indicates if Restore Default Setting is enabled <b>(Notice only work in BMC update)</b>

→ OpenBmc	See Intel Redfish User Guide for details.
→→ PFRInformation	See Intel Redfish User Guide for details.
→→→ ACMCheckpoint	See Intel Redfish User Guide for details.
→→→ BIOSActiveVersion	See Intel Redfish User Guide for details.
→→→ BIOSCheckpoint	See Intel Redfish User Guide for details.
→→→ BIOSRecoveryVersion	See Intel Redfish User Guide for details.
→→→ BIOSUpdateIntent	See Intel Redfish User Guide for details.
→→→ BMCActiveVersion	See Intel Redfish User Guide for details.
→→→ BMCCheckpoint	See Intel Redfish User Guide for details.
→→→ BMCRecoveryVersion	See Intel Redfish User Guide for details.
→→→ BMCUpdateIntent	See Intel Redfish User Guide for details.
→→→ CPLDRoTReleaseVersion	See Intel Redfish User Guide for details.
→→→ CPLDRoTSVN	See Intel Redfish User Guide for details.
→→→ CPLDRoTStaticIdentifier	See Intel Redfish User Guide for details.
→→→ LastPanicReason	See Intel Redfish User Guide for details.
→→→ LastRecoveryReason	See Intel Redfish User Guide for details.
→→→ MajorErrorCode	See Intel Redfish User Guide for details.
→→→ MinorErrorCode	See Intel Redfish User Guide for details.
→→→ PanicEventCount	See Intel Redfish User Guide for details.
→→→ PlatformState	See Intel Redfish User Guide for details.
→→→ RecoveryCount	See Intel Redfish User Guide for details.
→→→ UFMCommandTrigger	See Intel Redfish User Guide for details.
→→→ UFMCommandTrigger	See Intel Redfish User Guide for details.
→→→ UFMProvisioningCommand	See Intel Redfish User Guide for details.
→→→ UFMProvisioningStatus	See Intel Redfish User Guide for details.
→→→ UFMReadFIFO	See Intel Redfish User Guide for details.
→→→ UFMWriteFIFO	See Intel Redfish User Guide for details.
SoftwareInventory	See Nvidia Redfish User Guide for details.
ServiceEnabled	An indication of whether this service is enabled.

SupportedUpdateImageFormats	This property shall contain the image format types supported by the service. (Only for G4 platforms)
-----------------------------	------------------------------------------------------------------------------------------------------

### 7.94.3.1 Update Service Example

This example is the result of UpdateService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/UpdateService",
  "@odata.type": "#UpdateService.v1_11_0.UpdateService",
  "Actions": {
    "#UpdateService.SimpleUpdate": {
      "TransferProtocol@Redfish.AllowableValues": [
        "TFTP",
        "HTTPS"
      ],
      "target": "/redfish/v1/UpdateService/Actions/UpdateService.SimpleUpdate"
    },
    "Oem": {
      "#InsydeOEMExtensions.OSdeployment": {
        "@Redfish.ActionInfo":
"/redfish/v1/UpdateService/Oem/Insyde/OSdeploymentActionInfo",
        "target": "/redfish/v1/UpdateService/Actions/Oem/InsydeOEMExtensions.OSdeployment"
      },
      "#InsydeOEMExtensions.PushUpdate": {
        "target": "/redfish/v1/UpdateService/Actions/Oem/InsydeOEMExtensions.PushUpdate"
      }
    }
  },
  "Description": "Service for Software Update",
  "FirmwareInventory": {
    "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory"
  },
  "HttpPushUri": "/redfish/v1/UpdateService",
  "HttpPushUriOptions": {
    "ForceUpdate": false,
    "HttpPushUriApplyTime": {
      "ApplyTime": "Immediate"
    }
  },
  "HttpPushUriTargets": [],
  "HttpPushUriTargetsBusy": false,
  "Id": "UpdateService",
  "MaxImageSizeBytes": 209715200,
  "Name": "Update Service",
  "Oem": {
    "InsydeOSDeployment": {
      "@odata.type": "#InsydeOEMExtensions.v1_0_0.OSDeployment",
      "DevPortNum": -1,
      "OSDeployment": false,
      "OSDeploymentID": "00000000-0000-0000-0000-000000000000",
      "VMSlot": ""
    },
    "InsydePushUpdate": {
      "@odata.type": "#InsydeOEMExtensions.v1_0_0.PushUpdate",
      "RestoreDefault": false
    }
  }
},
```

```

"ServiceEnabled": true,
"SoftwareInventory": {
  "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory"
},
"Status": {
  "Conditions": [],
  "Health": "OK",
  "State": "Enabled"
}
"SupportedUpdateImageFormats": [
  "VendorDefined"
]
}

```

## 7.94.4 Supported Actions

Support BMC, BIOS update.

### 7.94.4.1 Update

Description: This action is used to update software components.

URI: <https://{ip}/redfish/v1/UpdateService/>

We use curl command as a sample.

#### Step 1:

```
curl -k -H 'Content-Type: application/json' -X PATCH -d '{"HttpPushUriOptions": {"HttpPushUriApplyTime": {"ApplyTime": "Immediate"}}}' https://root:OpenBmc@${ip}/redfish/v1/UpdateService/
```

#### Step 2: Setting RestoreDefault (Notice only work in BMC update)

```
curl -k -H 'Content-Type: application/json' -X PATCH -d '{"Oem": {"InsydePushUpdate": {"RestoreDefault": false}}}' https://root:OpenBmc@${ip}/redfish/v1/UpdateService/
```

#### Step 3:

```
uri=$(curl -k -H 'Content-Type: application/json' https://root:OpenBmc@${ip}/redfish/v1/UpdateService | jq -r '.HttpPushUri')
```

#### Step 4:

```
curl -k -H 'Content-Type: application/json' -H 'Content-Type: application/octet-stream' -X POST -T https://root:OpenBmc@${ip}${uri}
```

### 7.94.4.2 Multipart Update

Description: This action is used to update software components.

Property	Required	Allowed Value
UpdateParameters	Yes	OBJECT
→ Targets	Yes	only accept "/redfish/v1/Managers/bmc"
→ @Redfish.OperationApplyTime	No (Default: OnReset)	Immediate OnReset

#### 7.94.4.2.1 Example:

```
curl -k -u root:OpenBmc -X POST -H "Content-Type:multipart/form-data" -F 'UpdateParameters={"Targets":
["/redfish/v1/Managers/bmc"], "@Redfish.OperationApplyTime": "Immediate"}' -F
'UpdateFile=@;type=application/octet-stream' https://redfish/v1/UpdateService
```

#### 7.94.4.3 Simple Update

Description: This action is used to update software components.

URI: https://{ip}/redfish/v1/UpdateService/Actions/UpdateService.SimpleUpdate

Property	Required	Allowed Value
ImageURI	Yes	"<PROTOCOL>://<IMAGE_URI>"
TransferProtocol	No	TFTP, HTTPS
RestoreDefault	No	BOOLEAN (Notice only work in BMC update)

##### 7.94.4.3.1 Example Payload

```
{
  "ImageURI": "192.168.1.1/test.bin",
  "TransferProtocol": "TFTP",
  "RestoreDefault": true
}
```

#### 7.94.4.4 OEM InsydeOSDeployment

Description: This action is used to trigger Insyde OS deployment. It is a comprehensive OS deployment solution that enables Host to capture an image of OS. Notice user should reboot Host manually to let BIOS finish related process

URI: https://{ip}/redfish/v1/UpdateService/Actions/Oem/InsydeOEMExtensions.OSdeployment

Property	Required	Allowed Value
ImageURI	Yes	"<PROTOCOL>://<IMAGE_URI>"
TransferProtocol	No	CIFS/NFS/HTTPS
UserName	No	STRING
Password	No	STRING

##### 7.94.4.4.1 Example Payload

```
{
  "ImageURI": "/",
  "UserName": "",
  "Password": "",
  "TransferProtocol": "CIFS"
}
```

#### 7.94.4.5 OEM Push Update

Description: This action is used to update software components without the need to setup file server.





(Currently only supports Restore User configuration)

URI: https://{ip}/redfish/v1/UpdateService/Actions/Oem/InsydeOEMExtensions.PushUpdate

Property	Required	Allowed Value
ImageURI	Yes	"<PROTOCOL>://<IMAGE_URI>"
TransferProtocol	No	TFTP, HTTPS

#### 7.94.4.5.1 Example Payload

```
{
  "ImageURI": "192.168.11.69/test.tar",
  "TransferProtocol": "TFTP"
}
```

## 7.95 SoftwareInventoryCollection

### 7.95.1 Description

A Collection of SoftwareInventory resource instances.

URI: https://{ip}/redfish/v1/UpdateService/FirmwareInventory

### 7.95.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.95.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.95.3.1 Example

This example is the result of SoftwareInventoryCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory",
  "@odata.type": "#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bios_active"
    },
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bmc_active"
    },
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/cpld_active"
    },
  ]
}
```

```
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/me"
      },
      {
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/psu_active"
      }
    ],
    "Members@odata.count": 5,
    "Name": "Software Inventory Collection"
  }
}
```

## 7.96 SoftwareInventory

### 7.96.1 Description

This schema defines an inventory of software components.  
URI: <https://{ip}/redfish/v1/UpdateService/FirmwareInventory/<SoftwareInventoryId>>

### 7.96.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.96.3 Properties

Property	Description
RelatedItem	The IDs of the Resources associated with this software inventory item.
Status	See Common Properties Status Object.
Updateable	The Update Service can be updated to change properties such as ServiceEnabled.
Version	A string representing the version of this software.

#### 7.96.3.1 Example

This example is the result of SoftwareInventory schema's GET response.

```
{
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/bmc_active",
  "@odata.type": "#SoftwareInventory.v1_7_0.SoftwareInventory",
  "Description": "BMC image",
  "Id": "bmc_active",
  "Name": "Software Inventory",
  "RelatedItem": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc"
    }
  ],
  "RelatedItem@odata.count": 1,
}
```

```

"Status": {
  "Health": "OK",
  "HealthRollup": "OK",
  "State": "Enabled"
},
"Updateable": true,
"Version": "35.23.20.1203"
}

```

## 7.97 InsydePostCodeCollection

### 7.97.1 Description

A Collection of Post Code resource instances.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/PostCode>

### 7.97.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.97.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.97.3.1 Example

This example is the result of InsydePostCodeCollection schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#InsydePostCodeCollection.InsydePostCodeCollection",
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PostCode",
  "@odata.type": "#InsydePostCodeCollection.InsydePostCodeCollection",
  "Name": "Post Code Collection",
  "Description": "A Collection of Post Code resource instances.",
  "Members@odata.count": 2,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PostCode/Current"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PostCode/Previous"
    }
  ]
}

```

## 7.98 InsydePostCode

### 7.98.1 Description

This schema contains post code information.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/PostCode/<PostId>>

### 7.98.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.98.3 Properties

Property	Description
StartTime	The start time of post code.
PostCode	The object for post code.
→ TimeOffset	Indicates the time offset with start time.
→ PostCode	Indicates the post code.
→ Message	Indicated the message of post code.

### 7.98.4 Example

```
{
  "@odata.context": "/redfish/v1/$metadata#InsydePostCode.InsydePostCode",
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/PostCode/Current",
  "@odata.type": "#InsydePostCode.v1_0_0.InsydePostCode",
  "Description": "This schema contains post code information.",
  "Id": "Current",
  "Name": "Current",
  "PostCode": [
    {
      "Message": "Enter BDS entry",
      "PostCode": "0x10",
      "TimeOffset": "28012:59.367"
    },
    {
      "Message": "Microcode load begin",
      "PostCode": "0x02",
      "TimeOffset": "28012:59.368"
    },
    {
      "Message": "CPU reset",
      "PostCode": "0x01",
      "TimeOffset": "28012:59.368"
    }
  ]
}
```

```
{
  "Message": "Microcode load begin",
  "PostCode": "0x02",
  "TimeOffset": "28012:59.368"
},
{
  "Message": "CRAM init begin",
  "PostCode": "0x03",
  "TimeOffset": "28012:59.369"
}
],
"StartTime": "Thu Jan 1 00:00:00 1970"
}
```

## 7.99 PrivilegeRegistry

### 7.99.1 Description

The PrivilegeRegistry schema describes the operation-to-privilege mappings  
 URI: <https://{ip}/redfish/v1/AccountService/PrivilegeMap>

### 7.99.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET	V					

### 7.99.3 Properties

Property	Description
PrivilegesUsed	The set of Redfish standard privileges used in this mapping.
Mappings	The mappings between entities and the relevant privileges that access those entities
→ Entity	The Resource name, such as "Manager"
→ ResourceURIOverrides	The privilege overrides of Resource URIs. (Noticed that this object will appear if the customer implement resource override)
→→ Targets	The set of URIs, Resource types, or properties.
→→ OperationMap	Refs below
→ PropertyOverrides	The privilege overrides of Property. (Noticed that this object will appear if the customer implement property override)
→ → Targets	The set of URIs, Resource types, or properties.
→→ OperationMap	Refs below

→ OperationMap	Refs below
----------------	------------

Property	Description
OperationMap	The specific privileges required to complete a set of HTTP operations.
→ GET	The privilege required to complete an HTTP GET operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource
→ HEAD	The privilege required to complete an HTTP HEAD operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource
→ PATCH	The privilege required to complete an HTTP PATCH operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource
→ POST	The privilege required to complete an HTTP POST operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource
→ PUT	The privilege required to complete an HTTP PUT operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource
→ DELETE	The privilege required to complete an HTTP DELETE operation
→→ Privilege	An array of privileges that are required to complete a specific HTTP operation on a Resource

### 7.99.3.1 Example

This example is the result of PrivilegeRegistry schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#PrivilegeRegistry.PrivilegeRegistry",
  "@odata.id": "/redfish/v1/AccountService/PrivilegeMap",
  "@odata.type": "#PrivilegeRegistry.v1_1_4.PrivilegeRegistry",
  "Id": "PrivilegeRegistry",
  "Name": "Privilege Mapping array",
  "Description": "Privilege Mapping array collection",
  "PrivilegesUsed": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureComponents",
    "ConfigureSelf",
    "NoAuth"
  ],
  "Mappings": [
```

```
{
  "Entity": "RedfishMetadataFile",
  "OperationMap": {
    "GET": [
      {
        "Privilege": [
          "NoAuth"
        ]
      }
    ],
    "HEAD": [
      {
        "Privilege": [
          "NoAuth"
        ]
      }
    ]
  }
},
...
...
...
]
```

# 7.100 InsydeIPAccessCollection

## 7.100.1 Description

A Collection of InsydeIPAccess resource instances.  
URI: https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/(IPv4AccessCollection|IPv6AccessCollection)

## 7.100.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET			V			
PATCH			V			
POST			V			

## 7.100.3 Properties

Property	Description
ServiceEnabled	Indicates if the Access Control is enabled.

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.100.3.1 Example

This example is the result of InsydeIPAccessCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#InsydeIPAccessCollection.InsydeIPAccessCollection",
  "@odata.type": "#InsydeIPAccessCollection.InsydeIPAccessCollection",
  "@odata.id": "/redfish/v1/Managers/bmc/Oem/Insyde/IPv4AccessCollection",
  "Name": "IPv4AccessCollection",
  "Description": "The collection of IPAccess Control Resource instances.",
  "ServiceEnabled": true,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/bmc/Oem/Insyde/IPv4AccessCollection/1"
    }
  ],
  "Members@odata.count": 1,
}
```

### 7.100.4 Establish IP Access Rule by POST

Description: IP access rule are established by posting to the InsydeIPAccessCollection.

URI: https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv4AccessCollection

URI: https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv6AccessCollection

**PS:Before POST, confirm whether ServiceEnabled is true.**

Property	Required	Allowed Value	Description
Type	Yes	"IPMASK"	Use IP mask as IP control method.
		"IPRANGE"	Use IP range as IP control method.
		"MAC"	Use mac address as IP control method.
		"PORT"	Use port as IP control method.
Policy	Yes	"ACCEPT"	Allow the connection.
		"DROP"	Drop the connection.
IPMask	No		Set this object if type is IPMASK.
→ IP	Yes	Valid IPv4 or IPv6 Address.	
→ Prefix	No	Valid net mask prefix.	
IPRange	No		Set this object if type is IPRANGE.
→ Start	Yes	Valid IPv4 or IPv6 address.	
→ End	Yes	Valid IPv4 or IPv6 address.	
MAC	No	Valid MAC address.	Set this object if type is MAC.
Port	No	Valid port number.	Set this object if type is PORT.



→ Protocol	No	"UDP","TCP"	
→ Start	Yes	Valid port number.	
→ End	Yes	Valid port number.	

### 7.100.4.1 Example Payload

```
{
  "Type": "IPMASK",
  "Policy": "ACCEPT",
  "IPMask": {
    "IP": "192.168.1.1"
  }
}
```

```
{
  "Type": "IPRANGE",
  "Policy": "DROP",
  "IPRange": {
    "Start": "192.168.1.1",
    "End": "192.168.1.2"
  }
}
```

```
{
  "Type": "MAC",
  "Policy": "DROP",
  "MAC": "AA:BB:CC:DD:EE:FF"
}
```

```
{
  "Type": "PORT",
  "Policy": "DROP",
  "Port": {
    "Protocol": "TCP",
    "Start": 1000,
    "End": 1001
  }
}
```

### 7.100.5 Updatable Properties

Property	Allowed value
ServiceEnabled	BOOLEAN

### 7.100.5.1 Example Payload

```
{
  "ServiceEnabled": true
}
```

## 7.101 InsydeIPAccessEntry

### 7.101.1 Description

This schema contains IP access entry settings.

URI: [https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/\(IPv4AccessCollection|IPv6AccessCollection\)/<EntryId>](https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/(IPv4AccessCollection|IPv6AccessCollection)/<EntryId>)

### 7.101.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET			V			
PATCH			V			
PUT			V			
DELETE			V			

### 7.101.3 Properties

Property	Description
Type	The type for IP control.
Policy	The policy for this IP Access Control.
IPMask	The settings of IP Mask type for this IPv6 Access Control.
→ Prefix	This is the IPv6 Address Prefix Length.
→ IP	This is the IPv6 Address.
IPRange	The settings of IP Range type for this IP Access Control.
→ Start	The start address of IP range.
→ End	The end address of IP range.
MAC	The settings of mac type for this IP Access Control.
Port	The settings of port type for this IP Access Control.
→ Protocol	Indicate the port protocol settings.
→ Start	The start port of type port.
→ End	The end port of type port.

### 7.101.3.1 Example

This example is the result of InsydeIPAccessEntry schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#InsydeIPAccessEntry.InsydeIPAccessEntry",
  "@odata.type": "#InsydeIPAccessEntry.v1_0_0.InsydeIPAccessEntry",
  "@odata.id": "/redfish/v1/Managers/bmc/Oem/Insyde/IPv4AccessCollection/1",
  "Description": "The IPAccess Control Resource instances.",
  "Id": "1",
  "Name": "1",
  "Type": "IPMASK",
  "Policy": "ACCEPT",
  "IPMask": {
    "IP": "192.168.1.1",
    "Prefix": null
  },
  "IPRange": {
    "Start": null,
    "End": null
  },
  "Port": {
    "Protocol": null,
    "Start": null,
    "End": null
  },
  "MAC": null
}
```

### 7.101.4 Updatable Properties

Property	Allowed Value	Description
Type	"IPMASK"	Use IP mask as IP control method.
	"IPRANGE"	Use IP range as IP control method.
	"MAC"	Use mac address as IP control method.
	"PORT"	Use port as IP control method.
Policy	"ACCEPT"	Allow the connection.
	"DROP"	Drop the connection.
IPMask		Set this object if type is IPMASK.
→ IP	Valid IPv4 or IPv6 Address.	
→ Prefix	Valid net mask prefix	
IPRange		Set this object if type is IPRANGE.
→ Start	Valid IPv4 or IPv6 address.	
→ End	Valid IPv4 or IPv6 address.	

MAC	Valid MAC address.	Set this object if type is MAC.
Port	Valid port number.	Set this object if type is PORT.
→ Protocol	"UDP","TCP"	
→ Start	Valid port number.	
→ End	Valid port number.	

### 7.101.4.1 Example Payload

```
{
  "Type": "IPMASK",
  "Policy": "ACCEPT",
  "IPMask": {
    "IP": "192.168.1.1"
  }
}
```

```
{
  "Type": "IPRANGE",
  "Policy": "DROP",
  "IPRange": {
    "Start": "192.168.1.1",
    "End": "192.168.1.2"
  }
}
```

```
{
  "Type": "MAC",
  "Policy": "DROP",
  "MAC": "AA:BB:CC:DD:EE:FF"
}
```

```
{
  "Type": "PORT",
  "Policy": "DROP",
  "Port": {
    "Protocol": "TCP",
    "Start": 1000,
    "End": 1001
  }
}
```

### 7.101.5 Insert IP Access Rule by PUT

Description: IP access rule are established by putting to the InsydeIPAccessEntry.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv4AccessCollection/<EntryId>>

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv6AccessCollection/<EntryId>>

The list of rule instance order will re-generator after PUT.

Example:

IF List have EntryId [1,2,3,4,5] then Insert EntryId [4], The list will be [1,2,3,4,5,6] the new rule is 4, The rule 4 -> rule 5, rule 5-> rule 6

Property	Required	Allowed Value	Description
Type	Yes	"IPMASK"	Use IP mask as IP control method.
		"IPRANGE"	Use IP range as IP control method.
		"MAC"	Use mac address as IP control method.
		"PORT"	Use port as IP control method.
Policy	Yes	"ACCEPT"	Allow the connection.
		"DROP"	Drop the connection.
IPMask	No		Set this object if type is IPMASK.
→ IP	Yes	Valid IPv4 or IPv6 Address.	
→ Prefix	No	Valid net mask prefix.	
IPRange	No		Set this object if type is IPRANGE.
→ Start	Yes	Valid IPv4 or IPv6 address.	
→ End	Yes	Valid IPv4 or IPv6 address.	
MAC	No	Valid MAC address.	Set this object if type is MAC.
Port	No	Valid port number.	Set this object if type is PORT.
→ Protocol	No	"UDP","TCP"	
→ Start	Yes	Valid port number.	
→ End	Yes	Valid port number.	

### 7.101.5.1 Example Payload

```
{
  "Type": "IPMASK",
  "Policy": "ACCEPT",
  "IPMask": {
    "IP": "192.168.1.1"
  }
}
```

```
{
  "Type": "IPRANGE",
  "Policy": "DROP",
  "IPRange": {
    "Start": "192.168.1.1",

```

```

    "End": "192.168.1.2"
  }
}

```

```

{
  "Type": "MAC",
  "Policy": "DROP",
  "MAC": "AA:BB:CC:DD:EE:FF"
}

```

```

{
  "Type": "PORT",
  "Policy": "DROP",
  "Port": {
    "Protocol": "TCP",
    "Start": 1000,
    "End": 1001
  }
}

```

### 7.101.6 Remove IP Access Rule by Delete

Description: IP access rule are removed by deleting to the InsydeIPAccessEntry.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv4AccessCollection/<EntryId>>

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/Oem/Insyde/IPv6AccessCollection/<EntryId>>

The list of rule instance order will re-generator after Delete.

#### Example:

IF List have EntryId [1,2,3,4,5] then Delete EntryId [4], The list will be [1,2,3,4] the rule 5 -> rule 4.

## 7.102 Event Service

### 7.102.1 Description

URI: <https://{ip}/redfish/v1/EventService>

The EventService schema describes the Event service.

### 7.102.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			
PATCH			V			

### 7.102.3 Properties

Property	Description
Actions	The available actions for this Resource.
DeliveryRetryAttempts	<p>This is the number of attempts an event posting is retried before the subscription is terminated. Default value: 3</p> <p>This retry is at the service level, meaning the HTTP POST to the Event Destination was returned by the HTTP operation as unsuccessful (4xx or 5xx return code) or an HTTP timeout occurred this many times before the Event Destination subscription is terminated.</p>
DeliveryRetryIntervalSeconds	The interval, in seconds, between retry attempts for sending any event. Default value: 30.
EventFormatTypes	The content types of the message that this service can send to the event destination.
RegistryPrefixes	The list of the prefixes of the message registries that can be used for the RegistryPrefixes properties on a subscription.
ResourceTypes	The list of @odata.type values, or schema names, that can be specified in the ResourceTypes array in a subscription.
SSEFilterPropertiesSupported	This property shall contain the properties that are supported in the \$filter query parameter for the URI indicated by the ServerSentEventUri property, as described by the Redfish Specification.
→ EventFormatType	This property shall indicate whether this service supports filtering by the EventFormatType property.
→ MessageId	This property shall indicate whether this service supports filtering by the MessageIds property.
→ MetricReportDefinition	This property shall indicate whether this service supports filtering by the MetricReportDefinitions property.
→ OriginResource	This property shall indicate whether this service supports filtering by the OriginResources property.
→ RegistryPrefix	This property shall indicate whether this service supports filtering by the RegistryPrefixes property.
→ ResourceType	This property shall indicate whether this service supports filtering by the ResourceTypes property.
ServerSentEventUri	This property shall contain a URI that specifies an HTML5 Server-Sent Event-conformant endpoint. (Only Nvidia platform, doesn't show)
ServiceEnabled	This indicates whether this service is enabled.
SMTP	Settings for SMTP event delivery.

→ ServerAddress	The address of the SMTP server for IPV4.
→ Port	The destination SMTP port.
→ FromAddress	The 'from' email address of the outgoing email.
→ Username	The username for authentication with the SMTP server.
→ Password	The password for authentication with the SMTP server. The value is null in responses.
→ Authentication	The authentication method for the SMTP server.
→ ConnectionProtocol	The connection type to the outgoing SMTP server.
Status	See Common Properties <i>Status Object</i> .
Subscriptions	The link to a collection of event destinations. Contains a link to a resource.
ExcludeMessageId	An indication of whether the service supports filtering by the ExcludeMessageIds property.
ExcludeRegistryPrefix	An indication of whether the service supports filtering by the ExcludeRegistryPrefixes property.

### 7.102.3.1 Example

```
{
  "@odata.id": "/redfish/v1/EventService",
  "@odata.type": "#EventService.v1_5_0.EventService",
  "Actions": {
    "#EventService.SubmitTestEvent": {
      "target": "/redfish/v1/EventService/Actions/EventService.SubmitTestEvent"
    }
  },
  "DeliveryRetryAttempts": 3,
  "DeliveryRetryIntervalSeconds": 30,
  "EventFormatTypes": [
    "Event",
    "MetricReport"
  ],
  "ExcludeMessageId": false,
  "ExcludeRegistryPrefix": false,
  "Id": "EventService",
  "Name": "Event Service",
  "RegistryPrefixes": [
    "OpenBMC",
    "TaskEvent"
  ],
  "ResourceTypes": [
    "Task"
  ],
  "SMTP": {
    "Authentication": "",
    "ConnectionProtocol": "",
    "FromAddress": "",
    "Password": null,
  }
}
```



```

    "Port": 0,
    "ServerAddress": "",
    "Username": ""
  }
  "SSEFilterPropertiesSupported": {
    "EventFormatType": true,
    "MessageId": true,
    "MetricReportDefinition": true,
    "OriginResource": false,
    "RegistryPrefix": true,
    "ResourceType": false
  },
  "ServerSentEventUri": "/redfish/v1/EventService/Subscriptions/SSE",
  "ServiceEnabled": true,
  "Status": {
    "State": "Enabled"
  },
  "Subscriptions": {
    "@odata.id": "/redfish/v1/EventService/Subscriptions"
  }
}

```

## 7.102.4 Updateable Properties

Property	Allowed Value	Description
DeliveryRetryAttempts	1-3	This is the number of attempts an event posting is retried before the subscription is terminated.
DeliveryRetryIntervalSeconds	30-180	The interval, in seconds, between retry attempts for sending any event.
ServiceEnabled	BOOLEAN	This indicates whether this service is enabled.
SMTP	OBJECT	
→ ServerAddress	VALID ADDRESS	
→ Port	[0-65535]	
→ FromAddress	VALID EMAIL ADDRESS	
→ Username	STRING	
→ Password	STRING	
→ Authentication	"AutoDetect"	Auto-detect.
	"CRAM_MD5"	CRAM-MD5 authentication.
	"Plain"	PLAIN authentication.
	"Login"	LOGIN authentication.

	"None"	No authentication.
	"External"	External authentication.
	"NTLM"	NTLM authentication.
→ ConnectionProtocol	"None"	Clear text.
	"TLS_SSL"	TLS/SSL.

#### Example payload

```
{
  "DeliveryRetryAttempts": 1,
  "DeliveryRetryIntervalSeconds": 50,
  "ServiceEnabled": false,
  "SMTP": {
    "ServerAddress": "smtp.office365.com",
    "Port": 587,
    "FromAddress": "user_address",
    "Username": "username",
    "Password": "password",
    "Authentication": "AutoDetect",
    "ConnectionProtocol": "None"
  }
}
```

## 7.102.5 Supported Actions

### 7.102.5.1 Send Test Event

Description: The action allows to send redfish test event Example URI to send redfish test event:  
<https://{ip}/redfish/v1/EventService/Actions/EventService.SubmitTestEvent>

## 7.103 EventDestinationCollection

### 7.103.1 Description

URI: <https://{ip}/redfish/v1/EventService/Subscriptions/>  
 A Collection of EventDestination resource instances.

### 7.103.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V	V		

### 7.103.3 Properties

For property table of Collection type Schema, please refer to Collection Resources Section.

#### Example payload

```
{
  "@odata.id": "/redfish/v1/EventService/Subscriptions",
  "@odata.type": "#EventDestinationCollection.EventDestinationCollection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/EventService/Subscriptions/264861917"
    },
    {
      "@odata.id": "/redfish/v1/EventService/Subscriptions/3964335655"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Event Destination Collections"
}
```

### 7.103.4 Establish Event Destination by POST

Description: To establish a new Event Destination, clients POST an EventDestination to the EventDestinationCollection.

URI: <https://{ip}/redfish/v1/EventService/Subscriptions>

Note: The RegistryPrefixes and MessageIds can't be set at the the same time.

Property	Required	Allowed Value
Protocol	Yes	"Redfish"
		"SNMPv1"
		"SNMPv2c"
		"SNMPv3"
		"SMTP"
Destination	Yes	Valid URI. <ul style="list-style-type: none"> <li>Redfish: "[http https]://&lt;IP&gt;:/"</li> <li>SMTP: "mailto:username@address"</li> <li>SNMP:                snmp://,                snmp://@,                snmp://@:,                snmp://:,                ipv6 address with port [:port]             </li> </ul>
Context	No	STRING
SubscriptionType	No	"RedfishEvent"

EventFormatType	No	"Event"
		"MetricReport"
RegistryPrefixes	No	"OpenBMC"
		"TaskEvent"
MessageIds	No	Base on "OpenBMC" and "TaskEvent" message registry ID
ResourceTypes	No	"Task"
HttpHeaders	No	key-value pair format
DeliveryRetryPolicy	No	"TerminateAfterRetries"
		"SuspendRetries"
		"RetryForever"
MetricReportDefinitions	No	
-> odata.id		String Allow strting accroding to /redfish/v1/TelemetryService/MetricReportDefinitions
SNMP	No	
→ AuthenticationKey	No	STRING
→ AuthenticationProtocol	No	"HMAC_MD5"
		"HMAC_SHA96"
		"HMAC128_SHA224"
		"HMAC192_SHA256"
		"HMAC256_SHA384"
		"HMAC384_SHA512"
→ EncryptionKey	No	STRING
→ EncryptionProtocol	No	"CBC_DES"
		"CFB128_AES128"
		"None"
→ TrapCommunity	No	STRING

### 7.103.4.1 Example Payload

Example of the Event Post.

```
{
  "Destination": "https://192.168.10.252:1968/test",
```

```

"Context": "Test",
"Protocol": "Redfish",
"EventFormatType": "Event",
"RegistryPrefixes": [
  "OpenBMC",
  "TaskEvent"
],
"DeliveryRetryPolicy": "TerminateAfterRetries",
"ResourceTypes": [
  "Task"
]
}

```

```

{
  "Destination": "https://192.168.10.252:1968/test",
  "Context": "Test",
  "Protocol": "Redfish",
  "EventFormatType": "Event",
  "MessageIds": [
    "InventoryAdded"
  ],
  "DeliveryRetryPolicy": "TerminateAfterRetries",
  "ResourceTypes": [
    "Task"
  ]
}

```

#### Example of the MetricReport Post.

```

{
  "Destination": "https://192.168.10.252:1968/test",
  "Context": "Test",
  "Protocol": "Redfish",
  "EventFormatType": "MetricReport",
  "MetricReportDefinitions": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/test"
    }
  ]
}

```

#### Example of the SNMP Post.

```

{
  "Destination": "snmp://test@192.168.1.1",
  "Protocol": "SNMPv3",
  "SNMP": {
    "TrapCommunity": "public",
    "AuthenticationKey": "123456789",
    "AuthenticationProtocol": "HMAC_SHA96",
    "EncryptionKey": "123456789",
    "EncryptionProtocol": "CFB128_AES128"
  }
}

```

```

{
  "Destination": "mailto:username@insyde.com",
  "Protocol": "SMTP"
}

```

## 7.103.5 Example of Creating EventDestination and Verify with Redfish Event Listener

### 7.103.5.1 Setup Redfish Event Listener

1. Download Redfish-Event-Listener from <https://github.com/DMTF/Redfish-Event-Listener>
2. Modify Redfish-Event-Listener/config.ini like the following

```
[Information]
Updated = April 24, 2017
Description = Redfish Event Listener Tool

[SystemInformation]
ListenerIP = 192.168.10.252 <---- Sample IP Address of machine which download Redfish-Event-Listener.
ListenerPort = 1968 <---- Sample Port of machine which download Redfish-Event-Listener, maybe no need to modify.
UseSSL = on

[CertificateDetails]
certfile = cert.pem
keyfile = server.key

[SubscriptionDetails]
Destination = https://192.168.10.252:1968/test <---- Combination of ListenerIP and ListenerPort
EventTypes = [
    "Alert",
    "ResourceRemoved",
    "ResourceAdded",
    "ResourceUpdated",
    "StatusChange"]
Context = Public
Format = MetricReport
Expand = false
ResourceTypes = []
Registries =

[ServerInformation]
ServerIPs = ["https://192.168.100.237"] <---- Sample IP of BMC
UserNames = ["root"] <---- UserName of BMC
Passwords = ["0penBmc"] <---- Password of BMC
LoginType = ["Basic"] <---- Authentication type, maybe no need to modify.
```

3. Execute with command "sudo python3 RedfishEventListener\_v1.py", at this time, Redfish Event Listener is waiting for Event Message.

### 7.103.5.2 Creating Event Destination Subscription on BMC with Redfish

1. We can use POST to create a new Subscription for Redfish Event Listener. If BMC IP is 192.168.100.237 and the machine which Redfish Event Listener running on is 192.168.10.252, the destination we set for Redfish Event Listener is "<https://192.168.10.252:1968/test>". We can use the following command to create a Subscription with curl command.

```
curl -k -X POST -u root:0penBmc https://192.168.100.237/redfish/v1/EventService/Subscriptions -d '{
  "Destination": "https://192.168.10.252:1968/test",
  "Context": "Test",
  "Protocol": "Redfish",
  "EventFormatType": "Event",
  "RegistryPrefixes": [ "OpenBMC", "TaskEvent"],
  "ResourceTypes": ["Task"]
}'
```



2. Once the curl command executed successfully, Redfish Event Listener will get the message like below.

```
Continuing with Listener.  
Listening on 192.168.10.252:1968 via HTTPS  
Press Ctrl-C to close program  
.....  
Socket connected::  
headers: IOrderedDict([('Host', '192.168.10.252'), ('Content-Type', 'application/json'), ('Content-Length', '442')])  
  
bodydata: {  
  "@odata.type": "#Event.v1_4_0.Event",  
  "Events": [  
    {  
      "Context": "Test",  
      "EventId": "3333",  
      "EventTimestamp": "1970-01-01T00:55:33+00:00",  
      "EventType": "Event",  
      "Message": "Event subscription with id 2445930942 was added.",  
      "MessageArgs": [  
        "2445930942"  
      ],  
      "MessageId": "OpenBMC.0.1.EventSubscriptionAdded",  
      "Severity": "OK"  
    }  
  ],  
  "Id": "5",  
  "Name": "Event Log"  
}
```

7.104 EventDestination

7.104.1 Description

URI: https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions\_ID>  
The EventDestination schema describes Event Destination info.

7.104.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH			V			
POST			V			
DELETE			V			

7.104.3 Properties

This is Redfish's Protocol EventDestination properties.

Property	Description
----------	-------------

Context	A client-supplied string that is stored with the event destination subscription.
DeliveryRetryAttempts	This is the number of attempts an event posting is retried before the subscription is terminated. Default value: 3  This retry is at the service level, meaning the HTTP POST to the Event Destination was returned by the HTTP operation as unsuccessful (4xx or 5xx return code) or an HTTP timeout occurred this many times before the Event Destination subscription is terminated.
DeliveryRetryPolicy	The subscription delivery retry policy for events, where the subscription type is RedfishEvent.
Destination	The URI of the destination event receiver.
EventFormatType	The content types of the message that are sent to the EventDestination.
ExcludeMessageIds	The list of MessageId values that are not sent to this event destination.
ExcludeRegistryPrefixes	The list of prefixes for the message registries that contain the MessageId values that are not sent to this event destination.
HttpHeaders	An array of settings for HTTP headers, such as authorization information. This array is null or an empty array in responses. An empty array is the preferred return value on read operations. Property names follow regular expression pattern " <code>^[^:\\s]+\$</code> "
MessageIds	The list of MessageIds that are sent to this event destination.
MetricReportDefinitions	A list of metric report definitions for which the service only sends related metric reports. If this property is absent or the array is empty, metric reports that originate from any metric report definition are sent to the subscriber
Protocol	The protocol type of the event connection.
RegistryPrefixes	The list of prefixes for the message registries that contain the MessageIds that are sent to this event destination.
ResourceTypes	This property shall indicate whether this service supports filtering by the ResourceTypes property.
SubscriptionType	The subscription type for events.

### 7.104.3.1 Example

This is Redfish's Protocol EventDestination Example Get.

```
{
  "@odata.id": "/redfish/v1/EventService/Subscriptions/3985813465",
  "@odata.type": "#EventDestination.v1_7_0.EventDestination",
  "Context": "",
  "DeliveryRetryPolicy": "TerminateAfterRetries",
  "Destination": "",
  "EventFormatType": "Event",
```



```

"HttpHeaders": [],
"Id": "3985813465",
"MessageIds": [],
"MetricReportDefinitions": [],
"Name": "Event Destination 3985813465",
"Protocol": "Redfish",
"RegistryPrefixes": [],
"ResourceTypes": [],
"SubscriptionType": "SSE"
}

```

This is SNMP's Protocol EventDestination properties.

Property	Description
Context	A client-supplied string that is stored with the event destination subscription.
Destination	The URI of the destination event receiver.
Protocol	The protocol type of the event connection.
SNMP	Settings for an SNMP event destination.
→ AuthenticationKey	The secret authentication key for SNMPv3.
→ AuthenticationProtocol	The authentication protocol for SNMPv3.
→ EncryptionKey	The secret authentication key for SNMPv3.
→ EncryptionProtocol	The encryption protocol for SNMPv3.
→ TrapCommunity	The SNMP trap community string. This property will show up when Protocol is SNMPv1 or SNMPv2c.
SubscriptionType	The subscription type for events.
Status	
→ Health	
→ State	

### 7.104.3.2 Example

This is SNMP's Protocol EventDestination Example Get.

```

{
  "@odata.id": "/redfish/v1/EventService/Subscriptions/SNMP1",
  "@odata.type": "#EventDestination.v1_12_0.EventDestination",
  "Context": "SNMPTrap",
  "Destination": "snmp://192.168.9.194:162",
  "Id": "SNMP1",
  "Name": "Event Destination SNMP1",
  "Protocol": "SNMPv1",
  "SNMP": {
    "TrapCommunity": "public"
  },
}

```

```
"SubscriptionType": "SNMPTrap"
}
```

## 7.104.4 Updateable Properties

This is Redfish's Protocol Updateable EventDestination properties.

Property	Allowed Value	Description
DeliveryRetryPolicy	TerminateAfterRetries SuspendRetries RetryForever	The subscription delivery retry policy for events, where the subscription type is RedfishEvent.
Context	STRING	A client-supplied string that is stored with the event destination subscription.
HttpHeaders	Key-Pair	An array of settings for HTTP headers, such as authorization information. This array is null or an empty array in responses. An empty array is the preferred return value on read operations.

### 7.104.4.1 Example payload

```
{
  "DeliveryRetryPolicy": "TerminateAfterRetries",
  "Context": "Test",
  "HttpHeaders": [
    {
      "X-Auth-Token": "XYZABCDEDF"
    }
  ]
}
```

This is SNMP's Protocol Updateable EventDestination properties.

Property	Allowed value	Description
Protocol	"SNMPv1"	Set Protocol version is SNMPv1.
	"SNMPv2c"	Set Protocol version is SNMPv2c.
	"SNMPv3"	Set Protocol version is SNMPv3.
Destination	Yes	Valid URI. <ul style="list-style-type: none"> <li>SNMP:               <ul style="list-style-type: none"> <li><a href="#">snmp://</a>,</li> <li><a href="#">snmp://@</a>,</li> <li><a href="#">snmp://@:</a>,</li> <li><a href="#">snmp://:</a>,</li> <li>ipv6 address with port []:port</li> </ul> </li> </ul>
SNMP	OBJECT	
→ AuthenticationKey	STRING	

→ AuthenticationProtocol	"HMAC_MD5"	HMAC-MD5-96 authentication.
	"HMAC_SHA96"	HMAC-SHA-96 authentication.
	"HMAC128_SHA224"	HMAC-124-SHA-224 authentication.
	"HMAC192_SHA256"	HMAC-192-SHA-256 authentication.
	"HMAC256_SHA384"	HMAC-256-SHA-384 authentication.
	"HMAC384_SHA512"	HMAC-384-SHA-512 authentication.
→ EncryptionKey	STRING	
→ EncryptionProtocol	"CBC_DES"	CBC-DES encryption.
	"CFB128_AES128"	CFB128-AES-128 encryption.
	"None"	No encryption.
→ TrapCommunity	STRING	

#### 7.104.4.2 Example payload

```
{
  "Destination": "snmp://test@192.168.1.1",
  "Protocol": "SNMPv3",
  "SNMP": {
    "TrapCommunity": "public",
    "AuthenticationKey": "123456789",
    "AuthenticationProtocol": "HMAC_SHA96",
    "EncryptionKey": "123456789",
    "EncryptionProtocol": "CFB128_AES128"
  }
}
```

### 7.104.5 Supported Actions

#### 7.104.5.1 SuspendSubscription

Description: This action suspends an event subscription.

URI: [https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions\\_ID>/Actions/EventDestination.SuspendSubscription](https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions_ID>/Actions/EventDestination.SuspendSubscription)

This action takes no parameters.

#### 7.104.5.2 ResumeSubscription

Description: This action resumes a suspended event subscription.

URI: [https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions\\_ID>/Actions/EventDestination.ResumeSubscription](https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions_ID>/Actions/EventDestination.ResumeSubscription)

Property	Allowed Value	Description
----------	---------------	-------------

DeliverBufferedEventDuration	String (duration)	The maximum age of buffered events that should be delivered when resuming the subscription.
------------------------------	-------------------	---------------------------------------------------------------------------------------------

#### 7.104.5.2.1 Example Payload of ResumeSubscription

```
{
  "DeliverBufferedEventDuration": "P5DT"
}
```

### 7.104.6 Remove EventDestination by DELETE

Description: EventDestination are removed with a Delete operation.

URI: [https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions\\_ID>](https://{ip}/redfish/v1/EventService/Subscriptions/<Subscriptions_ID>)

## 7.105 SyslogService

### 7.105.1 Description

An SyslogService describes the Rsyslog configuration.

URI: <https://{ip}/redfish/v1/Managers/<ManagerID>/SyslogService>

### 7.105.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
PATCH			V			

### 7.105.3 Properties

Property	Description
Status	See Common Properties <i>Status Object</i> .
ServiceEnabled	This property is Rsyslog service status.
SyslogServers	A client-supplied string that is stored with the event destination subscription.
→ Address	The property is destination's ip.
→ Port	The property is destination's port.
→ Protocol	The protocol use to remote log.
→ FilterSeverity	This property contains Rsyslog filter severity, Rsyslog filter log to remote side

	if the log's level is lower than this property.
→ FilterFacilities	This collection contains Rsyslog filter facility. If this collection is empty, that means Rsyslog has no filter facility condition.
→ Enabled	The property is Rsyslog remote log or not.

### 7.105.3.1 Example

This example is the result of SyslogService schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Managers/BMC_0/SyslogService",
  "@odata.type": "#SyslogService.v1_0_0.SyslogService",
  "Id": "Syslog Service",
  "Name": "Syslog Service",
  "ServiceEnabled": true,
  "Status": {
    "State": "Enabled"
  },
  "SyslogServers": [
    {
      "Address": "127.0.0.1",
      "Enabled": true,
      "FilterFacilities": [
        "User"
      ],
      "FilterSeverity": "Error",
      "Port": "514",
      "Protocol": "UDP"
    },
    {
      "Address": "127.0.0.1",
      "Enabled": true,
      "FilterFacilities": [
        "Local1"
      ],
      "FilterSeverity": "Debug",
      "Port": "618",
      "Protocol": "TCP"
    },
    {
      "Address": "127.0.0.1",
      "Enabled": true,
      "FilterFacilities": [
        "Local0",
        "User"
      ],
      "FilterSeverity": "Alert",
      "Port": "6514",
      "Protocol": "TLS"
    }
  ]
}
```

## 7.105.4 Updatable Properties

Note: If the ServiceEnabled is false, you can't update "SyslogServers" Object.

Property	Allowed value	Description
ServiceEnabled	Boolean	Turn on or turn off the Rsyslog service.
SyslogServers	OBJECT	
→ Address	STRING	Set the remote logger address.
→ Port	STRING	Set the remote logger port.
→ FilterFacilities	"UDP"	UDP protocol.
	"TCP"	TCP protocol.
	"TLS"	TLS protocol.
→ FilterSeverity	"Emergency"	Indicates the filter has the Emergency level.
	"Alert"	Indicates the filter has the Alert level.
	"Critical"	Indicates the filter has the Critical level.
	"Error"	Indicates the filter has the Error level.
	"Warning"	Indicates the filter has the Warning level.
	"Notice"	Indicates the filter has the Notice level.
	"Informational"	Indicates the filter has the Informational level.
	"Debug"	Indicates the filter has the Debug level.
→ Facilities	"User"	Indicates the filter has the User facility.
	"Kernel"	IIndicates the filter has the Kernel facility.
	"Daemon"	IIndicates the filter has the Daemon facility.
	"Local0"	IIndicates the filter has the Local0 facility.
	"Local1"	Indicates the filter has the Local1 facility.
	"Local2"	Indicates the filter has the Local2 facility.
	"Local3"	Indicates the filter has the Local3 facility.
	"Local4"	Indicates the filter has the Local4 facility.
	"Local5"	Indicates the filter has the Local5 facility.
	"Local6"	Indicates the filter has the Local6 facility.
	"Local7"	Indicates the filter has the Local7 facility.

→ Enabled	Boolean	Turn on or turn off forward log to remote side.
-----------	---------	-------------------------------------------------

### 7.105.4.1 Example Payload

```
{
  "ServiceEnabled": true,
  "SyslogServers": [
    {
      "Address": "192.168.10.123",
      "Enabled": true,
      "FilterFacilities": [
        "Local0"
      ],
      "FilterSeverity": "Informational",
      "Port": "2323",
      "Protocol": "UDP"
    },
    {
      "Address": "192.168.10.111",
      "Enabled": true,
      "FilterFacilities": [
        "User"
      ],
      "FilterSeverity": "Debug",
      "Port": "333",
      "Protocol": "TCP"
    },
    {
      "Address": "111.168.10.252",
      "Enabled": true,
      "FilterFacilities": [
        "User"
      ],
      "FilterSeverity": "Debug",
      "Port": "123",
      "Protocol": "TLS"
    }
  ]
}
```

## 7.106 NetworkAdapterCollection

### 7.106.1 Description

The NetworkAdapterCollection schema describes a collection of network adapter instances.  
URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters>

### 7.106.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

## 7.106.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

### 7.106.3.1 Example

This example is the result of NetworkAdapterCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapterCollection.NetworkAdapterCollection",
  "@odata.id": "/redfish/v1/Chassis/Baseboard_0/NetworkAdapters",
  "@odata.type": "#NetworkAdapterCollection.NetworkAdapterCollection",
  "Description": "The NetworkAdapterCollection schema describes a collection of network adapter instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/Baseboard_0/NetworkAdapters/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Network Adapter Collection"
}
```

## 7.107 NetworkAdapter

### 7.107.1 Description

A NetworkAdapter represents the physical network adapter capable of connecting to a computer network. Supported NC-SI over MCTP devices.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapter/<AdapterId>>

### 7.107.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.107.3 Properties

Property	Description
Manufacturer	The manufacturer or OEM of this network adapter.
Model	The model string for this network adapter.
Metrics	This property shall contain a link to a resource of type NetworkAdapterMetrics that contains the metrics associated with this adapter. See the NetworkAdapterMetrics schema for details on this property.
NetworkDeviceFunctions	This property shall contain a link to a resource collection of type NetworkDeviceFunctionCollection. Contains a link to a resource.



Status	See Common Properties Status Object.
--------	--------------------------------------

### 7.107.3.1 Example

This example is the result of NetworkAdapter schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapter.NetworkAdapter",
  "@odata.id": "/redfish/v1/Chassis/Baseboard_0/NetworkAdapters/1",
  "@odata.type": "#NetworkAdapter.v1_8_0.NetworkAdapter",
  "Description": "A NetworkAdapter represents the physical network adapter capable of connecting
to a computer network.",
  "Id": "1",
  "Metrics": {
    "@odata.id": "/redfish/v1/Chassis/Baseboard_0/NetworkAdapters/1/Metrics"
  },
  "Name": "1",
  "NetworkDeviceFunctions": {
    "@odata.id": "/redfish/v1/Chassis/Baseboard_0/NetworkAdapters/1/NetworkDeviceFunctions"
  },
  "Status": {
    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  }
}
```

## 7.108 NetworkAdapterMetrics

### 7.108.1 Description

The NetworkAdapterMetrics schema contains usage and health statistics for a network adapter.  
URI: https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapter/<AdapterId>/Metrics

### 7.108.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.108.3 Properties

Property	Description
Actions	The available actions for this Resource.
NCSIRXBytes	The total number of NC-SI bytes received since reset.
NCSIRXFrames	This property shall contain the total number of NC-SI frames received since reset, including both passthrough and non-passthrough traffic.

NCSITXBytes	The total number of NC-SI bytes sent since reset.
NCSITXFrames	This property shall contain the total number of NC-SI frames sent since reset, including both passthrough and non-passthrough traffic.
RXBytes	This property shall contain the total number of bytes received since reset, including host and remote management passthrough traffic, and inclusive of all protocol overhead.
RXMulticastFrames	This property shall contain the total number of good multicast frames received since reset.
RXUnicastFrames	This property shall contain the total number of good unicast frames received since reset.
TXBytes	This property shall contain the total number of bytes transmitted since reset, including host and remote management passthrough traffic, and inclusive of all protocol overhead.
TXMulticastFrames	This property shall contain the total number of good multicast frames transmitted since reset.
TXUnicastFrames	This property shall contain the total number of good unicast frames transmitted since reset.

### 7.108.3.1 Example

This example is the result of NetworkAdapterMetrics schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapterMetrics.NetworkAdapterMetrics",
  "@odata.id": "/redfish/v1/Chassis/Midplane/NetworkAdapters/1/Metrics",
  "@odata.type": "#NetworkAdapterMetrics.v1_0_0.NetworkAdapterMetrics",
  "Actions": {
    "#NetworkAdapterMetrics.ResetMetrics": {
      "target": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/1/Metrics/Actions/NetworkAdapterMetrics.ResetMetrics"
    }
  },
  "Description": "The NetworkAdapterMetrics schema contains usage and health statistics for a network adapter.",
  "Id": "NetworkAdapterMetrics",
  "NCSIRXBytes": null,
  "NCSIRXFrames": 188779,
  "NCSITXBytes": null,
  "NCSITXFrames": 13703,
  "Name": "Network Adapter Metrics",
  "RXBytes": null,
  "RXMulticastFrames": 165442,
  "RXUnicastFrames": 676,
  "TXBytes": null,
  "TXMulticastFrames": 0,
  "TXUnicastFrames": 6118
}
```

## 7.108.4 Supported Actions

### 7.108.4.1 ResetMetrics

This action resets the summary metrics related to this device.

Example URI to reset metrics:

`https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<AdapterId>/Metrics/Actions/NetworkDeviceFunctionMetrics.ResetMetrics"`

## 7.109 NetworkDeviceFunctionCollection

### 7.109.1 Description

The collection of NetworkDeviceFunction resource instances.

URI: `https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<AdapterId>/NetworkDeviceFunctions`

### 7.109.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.109.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.109.3.1 Example

This example is the result of NetworkDeviceFunctionCollection schema's GET response.

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection",
  "@odata.id": "/redfish/v1/Chassis/Midplane/NetworkAdapters/1/NetworkDeviceFunctions",
  "@odata.type": "#NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection",
  "Description": "The NetworkDeviceFunctionCollection schema describes a collection of network
device function instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/Midplane/NetworkAdapters/1/NetworkDeviceFunctions/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Network Device Function Collection"
}
```

## 7.110 NetworkDeviceFunction

### 7.110.1 Description

The NetworkDeviceFunction schema represents a logical interface that a network adapter exposes  
 URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<AdapterId>/NetworkDeviceFunctions/<NetworkDeviceFunctionId>>

### 7.110.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			

### 7.110.3 Properties

Property	Description
MACAddress	The currently configured MAC address.
PermanentMACAddress	The permanent MAC address assigned to this function.
Metrics	This property shall contain a link to a resource of type NetworkDeviceFunctionMetrics that contains the metrics associated with this network function. See the NetworkDeviceFunctionMetrics schema for details on this property.
Status	The status and health of the resource and its subordinate or dependent resources. See Common Properties Status Object.

#### 7.110.3.1 Example

This example is the result of NetworkDeviceFunction schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
  "@odata.id": "/redfish/v1/Chassis/Midplane/NetworkAdapters/1/NetworkDeviceFunctions/1",
  "@odata.type": "#NetworkDeviceFunction.v1_7_0.NetworkDeviceFunction",
  "Description": "The NetworkDeviceFunction schema represents a logical interface that a network
adapter exposes.",
  "Ethernet": {
    "MACAddress": "04:D9:C8:5D:4E:05",
    "PermanentMACAddress": "04:D9:C8:5D:4E:05"
  },
  "Id": "1",
  "Metrics": {
    "@odata.id": "/redfish/v1/Chassis/Midplane/NetworkAdapters/1/NetworkDeviceFunctions/1/
Metrics"
  },
  "Name": "1",
  "Status": {
```

```

    "Health": "OK",
    "HealthRollup": "OK",
    "State": "Enabled"
  }
}

```

## 7.111 NetworkDeviceFunctionMetrics

### 7.111.1 Description

The NetworkDeviceFunctionMetrics schema contains usage and health statistics for a network function of a network adapter.

URI: <https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<AdapterId>/NetworkDeviceFunctions/<NetworkDeviceFunctionId>/Metrics>

### 7.111.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				
POST			V			

### 7.111.3 Properties

Property	Description
Actions	The available actions for this Resource.
RXBytes	This property shall contain the total number of bytes received on a network function, inclusive of all protocol overhead.
RXFrames	This property shall contain the total number of frames received on a network function.
RXMulticastFrames	This property shall contain the total number of good multicast frames received on a network function since reset, including host and remote management passthrough traffic.
RXUnicastFrames	This property shall contain the total number of good unicast frames received on a network function since reset.
TXBytes	This property shall contain the total number of bytes transmitted since reset, including host and remote management passthrough traffic, and inclusive of all protocol overhead.
TXFrames	This property shall contain the total number of frames sent on a network function.
TXMulticastFrames	This property shall contain the total number of good multicast frames transmitted on a network function since reset, including host and remote management passthrough traffic.

TXUnicastFrames	This property shall contain the total number of good unicast frames transmitted on a network function since reset, including host and remote management passthrough traffic.
-----------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### 7.111.3.1 Example

This example is the result of NetworkDeviceFunctionMetrics schema's GET response.

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunctionMetrics.NetworkDeviceFunctionMetrics",
  "@odata.id": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/2/NetworkDeviceFunctions/1/
Metrics",
  "@odata.type": "#NetworkDeviceFunctionMetrics.v1_2_0.NetworkDeviceFunctionMetrics",
  "Actions": {
    "#NetworkDeviceFunctionMetrics.ResetMetrics": {
      "target": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/2/NetworkDeviceFunctions/
1/Metrics/Actions/NetworkDeviceFunctionMetrics.ResetMetrics"
    }
  },
  "Description": "The NetworkDeviceFunctionMetrics schema contains usage and health statistics
for a network function of a network adapter.",
  "Id": "Metrics",
  "Name": "Network Device Function Metrics",
  "RXBytes": 0,
  "RXFrames": 0,
  "RXMulticastFrames": 0,
  "RXUnicastFrames": 0,
  "TXBytes": 0,
  "TXFrames": 0,
  "TXMulticastFrames": 0,
  "TXUnicastFrames": 0
}
```

## 7.111.4 Supported Actions

### 7.111.4.1 ResetMetrics

This action resets the summary metrics related to this device.

Example URI to reset metrics:

<https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<AdapterId>/NetworkDeviceFunctions/<NetworkDeviceFunctionId>/Metrics/Actions/NetworkDeviceFunctionMetrics.ResetMetrics>

## 7.112 InsydeNcsiCollection

### 7.112.1 Description

A Collection of InsydeNcsi resource instances.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/Ncsi>

### 7.112.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.112.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.112.3.1 Example

This example is the result of InsydeNcsiCollection schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi",
  "@odata.type": "#InsydeNcsiCollection.InsydeNcsiCollection",
  "Description": "The NetworkAdapterCollection schema describes a collection of network adapter instances.",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi/1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi/2"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Insyde Ncsi Collection"
}
```

## 7.113 InsydeNcsi

### 7.113.1 Description

This schema defines supported NC-SI commands on NC-SI over MCTP and OCP card.

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/Ncsi/<NcsiId>>

### 7.113.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.113.3 Properties

Property	Description
DeviceType	This type contains device type.

Package	Contains the members of OemNcsiChannel.
VersionID	The Get Version ID command response.
→ FirmwareName	NC-SI firmware name.
→ FirmwareVersion	NC-SI firmware version.
→ ManufacturerID	The Manufacturer ID holds the IANA Enterprise Number for the manufacturer of the Network Controller.
→ NcsiVersion	The version number of the NC-SI.
→ PCIDID	PCI DID information for the Network Controller.
→ PCISSID	PCI SSID information for the Network Controller.
→ PCISVID	PCI SVID information for the Network Controller.
→ PCIVID	PCI VID information for the Network Controller.

### 7.113.3.1 Example

This example is the result of InsydeNcsi schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi/1",
  "@odata.type": "#InsydeNcsi.v1_0_0.InsydeNcsi",
  "Description": "The InsydeNcsi schema contains properties related to NCSI device.",
  "DeviceType": "SMBus",
  "Id": "1",
  "Name": "1",
  "Package": [
    {
      "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi/1/Package/0"
    }
  ],
  "VersionID": {
    "FirmwareName": "mlx0.1",
    "FirmwareVersion": "1c.24.03.f2",
    "ManufacturerID": "0x8119",
    "NcsiVersion": "1.1.0",
    "PCIDID": "0x1021",
    "PCISSID": "0x0023",
    "PCISVID": "0x15b3",
    "PCIVID": "0x15b3"
  }
}
```

## 7.114 InsydeNcsiPackage

### 7.114.1 Description

This schema defines supported NC-SI commands on NC-SI over MCTP.

URI: [https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/Ncsi/<INSTANCE\\_ID>/Package/<PackageId>](https://{ip}/redfish/v1/Systems/<SystemID>/Oem/Insyde/Ncsi/<INSTANCE_ID>/Package/<PackageId>)



### 7.114.2 Support Method and Privilege

	NoAuth	Login	Configure Manager	Configure Components	Configure Users	ConfigureSelf
GET		V				

### 7.114.3 Properties

Property	Description
PackageInfo	The man Manufacturer ufacturer of this USB controller.
→ ChannelIndex	The model of this USB controller.
→ MACAddress	The ports of the USB controller.
→ LinkStatus	See Common Properties Status Object
→→ Link	Link status.
→→SpeedAndDuplex	Speed and duplex.
→→AutoNegotiateFlag	Indicates if Auto Negotiate Flag is enabled.
→→ParallelDetectionFlag	Indicates if the Auto Negotiate Flag is supported.
→→ TXFlowControlFlag	Indicates if Transmission of Pause frames by the NC onto the external network interface is enabled.
→→ RXFlowControlFlag	Indicates if Reception of Pause frames by the NC from the external network interface is enabled.
→→ SerDesLink	SerDes status.
→→ AutoNegotiateComplete	This indicates if auto-negotiation was completed using Parallel Detection.
→→ OEMLinkSpeedValid	Indicates if OEM link settings is valid.
→→ LinkPartnerAdvertisedFlowControl	Filtering Any VLAN + non-VLAN traffic supported.
→→ LinkPartnerAdvertisedSpeedandDuplex1000TFD	Link Partner is 1000BASE-T full-duplex capable.
→→LinkPartnerAdvertisedSpeedandDuplex1000THD	Link Partner is 1000BASE-T half-duplex capable.
→→ LinkPartnerAdvertisedSpeed100T4	Link Partner is 100BASE-T4 capable.
→→ LinkPartnerAdvertisedSpeedandDuplex100TXFD	Link Partner is 100BASE-TX full-duplex capable.

→→ LinkPartnerAdvertisedSpeedandDuplex10 0TXHD	Link Partner is 100BASE-TX half-duplex capable.
→→ LinkPartnerAdvertisedSpeedandDuplex10 TFD	Link Partner is 10BASE-T full-duplex capable.
→→ LinkPartnerAdvertisedSpeedandDuplex10 THD	Link Partner is 10BASE-T half-duplex capable.
→→ HostNCDriverStatusIndication	Indicates the status of Network Controller driver for the host external network interface associated with this channel.
→ NcsiStatistics	The Get NC-SI Statistics command response.
→→ NCSICommandsReceived	For packets that are not dropped, this field returns the number of NC-SI Control packets received and identified as NC-SI commands.
→→ NCSIControlPacketsDropped	Counts the number of NC-SI Control packets that were received and dropped.
→→ NCSICommandTypeErrors	Counts the number of NC-SI command packets that were received, but are not supported.
→→ NCSICommandChecksumErrors	Counts the number of NC-SI Control Packets that were received but dropped because of an invalid checksum.
→→ NCSIReceivePackets	Counts the total number of NC-SI Control packets received. This count is the sum of NC-SI Commands Received and NC-SI Control Packets Dropped.
→→ NCSITransmitPackets	Counts the total number of NC-SI Control packets transmitted to the Management Controller. This count is the sum of NC-SI responses sent and AENs sent.
→→ AENsSent	Counts the total number of AEN packets transmitted to the Management Controller.
→ Capabilities	The Get Capabilities command response.
→→ HardwareArbitrationCapability	Hardware arbitration capability supported.
→→ HostNCDriverStatus	Host NC Driver Indication status supported.
→→NetworkControllertoManagementContr ollerFlowControlSupport	Network Controller to Management Controller flow control supported.
→→ManagementControllertoNetworkContr ollerFlowControlSupport	Management Controller to Network Controller flow control supported.
→→ Allmulticastaddressessupport	Indicates if the channel accept all multicast addresses.
→→ ARPPackets	Forward this packet type to the Management Controller

	supported.
→→ DHCPClientPackets	Forward this packet type to the Management Controller supported.
→→ DHCPServerPackets	Forward this packet type to the Management Controller supported.
→→ NetBIOSPackets	Forward this packet type to the Management Controller supported.
→→ IPv6NeighborAdvertisement	Forward this packet type to the Management Controller supported.
→→ IPv6RouterAdvertisement	Forward this packet type to the Management Controller supported.
→→ IPv6NeighborSolicitation	Forward this packet type to the Management Controller supported.
→→ IPv6MLD	Forward this packet type to the Management Controller supported.
→→ DHCPv6relayandservermulticast	Forward this packet type to the Management Controller supported.
→→DHCPv6multicastsfromservertoclients listeningonwellknownUDPports	Forward this packet type to the Management Controller supported.
→→ BufferingCapability	The Buffering Capability field defines the amount of buffering in bytes that the channel provides for inbound packets destined for the Management Controller.
→→ LinkStatusChangeAENSupport	Indicates if Link Status Change AEN is enabled.
→→ ConfigurationRequiredAENcontrol	Indicates if Configuration Required AEN is enabled.
→→ HostNCDriverStatusChangeAENcontrol	Indicates if Host NC Driver Status Change AEN is enabled.
→→ OEMSpecificAENControl	OEM-specific control, shows if device support.
→→ VLANFilterCount	The VLAN Filter Count field indicates the number of VLAN filters.
→→ MixedFilterCount	The Mixed Filter Count field indicates the number of mixed address filters that the channel supports.
→→ MulticastFilterCount	Indicates the number of unicast MAC address filters that the channel supports.
→→ UnicastFilterCount	Indicates the number of unicast MAC address filters that the channel supports.
→→ VLANOnly	VLAN shall be supported in the implementation.

→→ VLANAndNonVLAN	Filtering VLAN + non-VLAN traffic supported.
→→ AnyVLANandNonVLAN	Filtering Any VLAN + non-VLAN traffic supported
→NcsicontrollerPacketStatistics	The Get Controller Packet Statistics command response.
→→ CountersClearedFromLastRead	Whether the corresponding field has been cleared (possibly by the host) since it was last read by means of the NC-SI.
→→ TotalBytesReceived	Counts the number of bytes received.
→→ TotalBytesTransmitted	Counts the number of bytes transmitted.
→→ TotalUnicastPacketsReceived	Counts the number of good (FCS valid) packets received that passed L2 filtering by a specific MAC address.
→→ TotalMulticastPacketsReceived	Counts the number of good (FCS valid) multicast packets received.
→→ TotalBroadcastPacketsReceived	Counts the number of good (FCS valid) broadcast packets received.
→→ TotalUnicastPacketsTransmitted	Counts the number of good (FCS valid) packets transmitted that passed L2 filtering by a specific MAC address.
→→ TotalMulticastPacketsTransmitted	Counts the number of good (FCS valid) multicast packets transmitted.
→→ TotalBroadcastPacketsTransmitted	Counts the number of good (FCS valid) broadcast packets transmitted.
→→ FCSReceivedErrors	Counts the number of receive packets with FCS errors.
→→ AlignmentErrors	Counts the number of receive packets with alignment errors.
→→ FalseCarrierDetections	Counts the false carrier errors reported by the PHY.
→→ RuntPacketsReceived	Counts the number of received frames that passed address filtering, were less than minimum size, and had a valid FCS.
→→ JabberPacketsReceived	Counts the number of received frames that passed address filtering, were greater than the maximum size, and had a valid FCS.
→→ PauseXonFramesReceived	Counts the number of XON packets received from the network.
→→ PauseXoffFramesReceived	Counts the number of XOFF packets received from the network.
→→ PauseXonFramesTransmitted	Counts the number of XON packets transmitted to the

	network.
→→ PauseXoffFramesTransmitted	Counts the number of XOFF packets transmitted to the network.
→→ SingleCollisionTransmitFrames	Counts the number of times that a successfully transmitted packet encountered a single collision.
→→ MultipleCollisionTransmitFrames	Counts the number of times that a transmitted packet encountered more than one collision but fewer than 16.
→→ LateCollisionFrames	Counts the number of collisions that occurred after one slot time.
→→ ExcessiveCollisionFrames	Counts the number of times that 16 or more collisions occurred on a single transmit packet.
→→ ControlFramesReceived	Counts the number of MAC control frames received that are not XON or XOFF flow control frames.
→→ 64ByteFramesReceived	Counts the number of good packets received that are exactly 64 bytes in length.
→→ 65To127ByteFramesReceived	Counts the number of good packets received that are 65–127 bytes in length.
→→ 128To255ByteFramesReceived	Counts the number of good packets received that are 128–255 bytes in length.
→→ 256To511ByteFramesReceived	Counts the number of good packets received that are 256–511 bytes in length.
→→ 512To1023ByteFramesReceived	Counts the number of good packets received that are 512–1023 bytes in length.
→→ 1024To1522ByteFramesReceived	Counts the number of good packets received that are 1024–1522 bytes in length.
→→ 1523To9022ByteFramesReceived	Counts the number of received frames that passed address filtering and were greater than 1523 bytes in length.
→→ 64ByteFramesTransmitted	Counts the number of good packets transmitted that are exactly 64 bytes in length.
→→ 65To127ByteFramesTransmitted	Counts the number of good packets transmitted that are 65–127 bytes in length.
→→ 128To255ByteFramesTransmitted	Counts the number of good packets transmitted that are 128–255 bytes in length.
→→ 256To511ByteFramesTransmitted	Counts the number of good packets transmitted that are 256–511 bytes in length.
→→ 512To1023ByteFramesTransmitted	Counts the number of good packets transmitted that are 512–1023 bytes in length.

→→ 1024To1522ByteFramesTransmitted	Counts the number of good packets transmitted that are 1024–1522 bytes in length.
→→ 1523To9022ByteFramesTransmitted	Counts the number of transmitted frames that passed address filtering and were greater than 1523 in length.
→→ ValidBytesReceived	Counts the bytes received in all packets that did not manifest any type of error.
→→ ErrorRuntPacketsReceived	Counts the number of invalid frames that were less than the minimum size.
→→ ErrorJabberPacketsReceived	Counts Jabber packets, which are defined as packets that exceed the programmed MTU size and have a bad FCS value.

### 7.114.3.1 Example

This example is the result of InsydeNcsiPackage schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/Oem/Insyde/Ncsi/1/Package/0",
  "@odata.type": "#InsydeNcsiPackage.v1_0_0.InsydeNcsiPackage",
  "Description": "The InsydeNcsiPackage schema contains properties related to NcsiPackage.",
  "Id": "0",
  "Name": "0",
  "PackageInfo": [
    {
      "Capabilities": {
        "ARPPackets": "Forward To BMC",
        "Allmulticastaddressessupport": true,
        "AnyVLAN+non-VLAN": true,
        "BufferingCapability": 32768,
        "ConfigurationRequiredAENcontrol": true,
        "DHCPClientPackets": "Forward To BMC",
        "DHCPSPackets": "Forward To BMC",
        "DHCPv6multicastsfromservertoclientslisteningonwellknownUDPports": "Forward To BMC",
        "DHCPv6relayandservermulticast": "Forward To BMC",
        "HardwareArbitrationCapability": false,
        "HardwareArbitrationImplementationStatus": "Unknown",
        "HostNCDriverStatus": true,
        "IPv6MLD": "Forward To BMC",
        "IPv6NeighborAdvertisement": "Forward To BMC",
        "IPv6NeighborSolicitation": "Forward To BMC",
        "IPv6RouterAdvertisement": "Forward To BMC",
        "LinkStatusChangeAENcontrol": true,
        "ManagementControllertoNetworkControllerFlowControlSupport": false,
        "MixedFilterCount": 8,
        "MulticastFilterCount": 0,
        "NetBIOSPackets": "Forward To BMC",
        "NetworkControllertoManagementControllerFlowControlSupport": false,
        "UnicastFilterCount": 0,
        "VLAN+non-VLAN": true,
        "VLANFilterCount": 15,
        "VLANOnly": true
      }
    }
  ]
}
```

```

},
"ChannelIndex": 0,
"LinkStatus": {
  "AutoNegotiateComplete": false,
  "AutoNegotiateFlag": false,
  "HostNCDriverStatusIndication": false,
  "Link": "Down",
  "LinkPartnerAdvertisedFlowControl": "Not Pause Capable",
  "LinkPartnerAdvertisedSpeed100T4": false,
  "LinkPartnerAdvertisedSpeedandDuplex1000TFD": false,
  "LinkPartnerAdvertisedSpeedandDuplex1000THD": false,
  "LinkPartnerAdvertisedSpeedandDuplex100TXFD": false,
  "LinkPartnerAdvertisedSpeedandDuplex100TXHD": false,
  "LinkPartnerAdvertisedSpeedandDuplex10TFD": false,
  "LinkPartnerAdvertisedSpeedandDuplex10THD": false,
  "OEMLinkSpeedValid": false,
  "ParallelDetectionFlag": false,
  "RXFlowControlFlag": false,
  "SerDesLink": false,
  "SpeedAndDuplex": "Auto-negotiate Not Complete",
  "TXFlowControlFlag": false
},
"MACAddress": "00:00:00:00:00:00",
"NcsiStatistics": {
  "Reasoncode": 0,
  "Responsecode": 0,
  "Status": 0
},
"NcsicontrollerPacketStatistics": {
  "1024To1522ByteFramesReceived": null,
  "1024To1522ByteFramesTransmitted": null,
  "128To255ByteFramesReceived": null,
  "128To255ByteFramesTransmitted": null,
  "1523To9022ByteFramesReceived": null,
  "1523To9022ByteFramesTransmitted": null,
  "256To511ByteFramesReceived": null,
  "256To511ByteFramesTransmitted": null,
  "512To1023ByteFramesReceived": null,
  "512To1023ByteFramesTransmitted": null,
  "64ToByteFramesReceived": null,
  "64ToByteFramesTransmitted": null,
  "65To127ByteFramesReceived": null,
  "65To127ByteFramesTransmitted": null,
  "AlignmentErrors": null,
  "ControlFramesReceived": null,
  "CountersClearedFromLastRead": 549755813887,
  "ErrorJabberPacketsReceived": null,
  "ErrorRuntPacketsReceived": null,
  "ExcessiveCollisionFrames": null,
  "FCSReceiveErrors": null,
  "FalseCarrierDetections": null,
  "JabberPacketsReceived": null,
  "LateCollisionFrames": null,
  "MultipleCollisionTransmitFrames": null,
  "PauseXOFFFramesReceived": null,
  "PauseXOFFFramesTransmitted": null,
  "PauseXONFramesReceived": null,

```

```

    "PauseXONFramesTransmitted": null,
    "Reasoncode": 0,
    "Responsecode": 0,
    "RuntPacketsReceived": null,
    "SingleCollisionTransmitFrames": null,
    "Status": 0,
    "TotalBroadcastPacketsReceived": null,
    "TotalBroadcastPacketsTransmitted": null,
    "TotalBytesReceived": null,
    "TotalBytesTransmitted": null,
    "TotalMulticastPacketsReceived": null,
    "TotalMulticastPacketsTransmitted": null,
    "TotalUnicastPacketsReceived": null,
    "TotalUnicastPacketsTransmitted": null,
    "ValidBytesReceived": null
  }
}
]
}

```

## 7.115 USBController Collection

### 7.115.1 Description

The collection of USBController resource instances

**Only G4 Platform supports USBController**

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/USBControllers>

### 7.115.2 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				

### 7.115.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.115.3.1 Example

This example is the result of USBControllerCollection schema's GET response.

```

{
  "@odata.context": "/redfish/v1/$metadata#USBControllerCollection.USBControllerCollection",
  "@odata.id": "/redfish/v1/Systems/system/USBControllers",
  "@odata.type": "#USBControllerCollection.USBControllerCollection",
  "Description": "The collection of USBController resource instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0"
    }
  ]
}

```



```
],
  "Members@odata.count": 1,
  "Name": "USBControllers"
}
```

## 7.116 USBController

### 7.116.1 Description

The USBController schema defines a Universal Serial Bus controller.

**Notice this schema only existed if BIOS send related JSON file to BMC**

**Only G4 Platform supports USBController**

URI: <https://{ip}/redfish/v1/Systems/<SystemID>/USBControllers/<USBControllerID>>

### 7.116.2 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				

### 7.116.3 Properties

Property	Description
Manufacturer	The manufacturer of this USB controller.
Model	The model of this USB controller.
Ports	The ports of the USB controller.
Status	See Common Properties Status Object

#### 7.116.3.1 Example

This example is the result of USBController schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0",
  "@odata.type": "#USBController.v1_0_0.USBController",
  "Description": "The USBController schema defines a Universal Serial Bus controller.",
  "Id": "USB0",
  "Manufacturer": "8086",
  "Model": "1BCD",
  "Name": "USB0",
  "Ports": {
    "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports"
  },
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  }
}
```

```
}
```

## 7.117 Port Collection

### 7.117.1 Description

The collection of USBController resource instances

**Only G4 Platform supports USBController Port**

URI: `https://{ip}/redfish/v1/Systems/<SystemID>/USBControllers/<USBControllerID>/Ports`

URI: `https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<NetworkAdapterID>/Ports`

### 7.117.2 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				

### 7.117.3 Properties

For property table of Collection type Schema, please refer to [Resource Collection Section](#).

#### 7.117.3.1 Example

This example is the result of PortCollection schema's GET response.

```
{
  "@odata.context": "/redfish/v1/$metadata#PortCollection.PortCollection",
  "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports",
  "@odata.type": "#PortCollection.PortCollection",
  "Description": "The collection of Port resource instances",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/0"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/4"
    },
    {
      "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/5"
    }
  ],
}
```

```
{
  {
    "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/6"
  },
  {
    "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/7"
  }
],
"Members@odata.count": 8,
"Name": "Ports"
}
```

## 7.118 Port

### 7.118.1 Description

The Port schema contains properties that describe a port of a switch, controller, chassis, or any other device that could be connected to another entity.

USB Controller Port: <https://{ip}/redfish/v1/Systems/<SystemID>/USBControllers/<USBControllerID>/Ports/<PortID>>

Network Adapter Port: <https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<NetworkAdapterID>/Ports/<PortID>>

### 7.118.2 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				

### 7.118.3 Properties

#### 7.118.3.1 Port Type: USB controller

Property	Description
CapableProtocolVersions	The protocol versions capable of being sent over this port.
CurrentProtocolVersion	The protocol version being sent over this port.
MaxSpeedGbps	The maximum speed of this port as currently configured.
PortId	The label of this port on the physical package for this port.
PortProtocol	The protocol being sent over this port.

PortType	The type of this port. For the possible property values.
Status	

### 7.118.3.2 Port Type: Network Adapter

Property	Description
Ethernet	Ethernet properties for this port.
→ AssociatedMACAddresses	An array of configured MAC addresses that are associated with this network port.
→ FlowControlStatus	The 802.3x flow control behavior negotiated with the link partner for this port.
LinkStatus	The link status for this interface.
Metrics	The link to the metrics associated with this port.

### 7.118.3.3 Example

This example is the result of Port schema's GET response.

#### USB Controller Port

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Systems/system/USBControllers/USB0/Ports/0",
  "@odata.type": "#Port.v1_14_0.Port",
  "CapableProtocolVersions": [
    "1.0",
    "1.1",
    "2.0",
    "3.0"
  ],
  "CurrentProtocolVersion": "3.0",
  "Description": "The Port schema contains properties that describe a port of a switch, controller, chassis, or any other device that could be connected to another entity.",
  "Id": "0",
  "MaxSpeedGbps": 4.8,
  "Name": "0",
  "PortId": "0",
  "PortProtocol": "USB",
  "PortType": "BidirectionalPort",
  "Status": {
    "Health": "OK",
    "State": "Disabled"
  }
}
```

#### Network Adapter Port

```
{
```

```
"@odata.id": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/1/Ports/1",
"@odata.type": "#Port.v1_14_0.Port",
"Description": "The Port schema contains properties that describe a port of a switch,
controller, chassis, or any other device that could be connected to another entity.",
"Ethernet": {
  "AssociatedMACAddresses": [
    "68:05:CA:9C:25:B9"
  ],
  "FlowControlStatus": "None"
},
"Id": "1",
"LinkConfiguration": [
  {
    "AutoSpeedNegotiationEnabled": true
  }
],
"LinkStatus": "LinkDown",
"Metrics": {
  "@odata.id": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/1/Ports/1/Metrics"
},
"Name": "1"
}
```

7.119 PortMetrics

7.119.1 Description

The PortMetrics schema contains usage and health statistics for a switch device or component port summary.  
URI: https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<NetworkAdapterID>/Ports/<PortID>/Metrics

7.119.2 Support Method and Privilege

	NoAuth	Login	ConfigureManager	Configure Components	ConfigureUsers	ConfigureSelf
GET		V				
POST			V			

7.119.3 Properties

Property	Description
Actions	The available actions for this Resource.
Networking	The port metrics for network ports, including Ethernet, Fibre Channel, and InfiniBand, that are not specific to one of these protocols
→ RXFCSErrors	The total number of frames received with frame check sequence (FCS) errors on a port since reset.
→ RXFrames	The total number of frames received on a port since reset.

→ RXMulticastFrames	The total number of valid multicast frames received on a port since reset.
→ RXPFCFrames	The total number of priority flow control (PFC) frames received on a port since reset.
→ RXPauseXOFFFrames	The total number of flow control frames from the network to pause transmission.
→ RXPauseXONFrames	The total number of flow control frames from the network to resume transmission.
→ RXUnicastFrames	The total number of valid unicast frames received on a port since reset.
→ TXFrames	The total number of frames transmitted on a port since reset.
→ TXMulticastFrames	The total number of good multicast frames transmitted on a port since reset.
→ TXMultipleCollisions	The times that a transmitted frame encountered 2-15 collisions.
→ TXPauseXOFFFrames	The total number of XOFF frames transmitted to the network.
→ TXPauseXONFrames	The total number of XON frames transmitted to the network.
→ TXSingleCollisions	The times that a successfully transmitted frame encountered a single collision.
→ TXUnicastFrames	The total number of good unicast frames transmitted on a port since reset.
RXBytes	The total number of bytes received on a port since reset.
TXBytes	The total number of bytes transmitted on a port since reset.

### 7.119.3.1 Example

This example is the result of PortMetrics schema's GET response.

```
{
  "@odata.id": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/1/Ports/1/Metrics",
  "@odata.type": "#PortMetrics.v1_7_0.PortMetrics",
  "Actions": {
    "#PortMetrics.ResetMetrics": {
      "target": "/redfish/v1/Chassis/BNC_Baseboard/NetworkAdapters/1/Ports/1/Actions/PortMetrics.ResetMetrics"
    }
  },
  "Description": "The PortMetrics schema contains usage and health statistics for a switch device or component port summary.",
  "Id": "Metrics",
  "Name": "Network Port Metrics",
  "Networking": {
    "RXFCSErrors": 0,
    "RXFrames": null,
    "RXMulticastFrames": 0,
```

```
    "RXPFCDFrames": null,  
    "RXPauseXOFFFrames": 0,  
    "RXPauseXONFrames": 0,  
    "RXUnicastFrames": 0,  
    "TXFrames": null,  
    "TXMulticastFrames": 0,  
    "TXMultipleCollisions": null,  
    "TXPauseXOFFFrames": 0,  
    "TXPauseXONFrames": 0,  
    "TXSingleCollisions": null,  
    "TXUnicastFrames": 0  
  },  
  "RXBytes": null,  
  "TXBytes": null  
}
```

## 7.119.4 Supported Actions

### 7.119.4.1 ResetMetrics

This action resets the summary metrics related to this device.

Example URI to reset metrics:

<https://{ip}/redfish/v1/Chassis/<ChassisID>/NetworkAdapters/<NetworkAdapterID>/Ports/<PortID>/Metrics/Actions/PortMetrics.ResetMetrics>