ASMB9-iKVM

Server Management Board

User Guide

E16160
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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

• This device may not cause harmful interference, and

• This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Compliance Statement of Innovation, Science and Economic Development Canada (ISED)

This device complies with Innovation, Science and Economic Development Canada licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CAN ICES-3(B)/NMB-3(B)

Déclaration de conformité de Innovation, Sciences et Développement économique Canada (ISED)

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3(B)/NMB-3(B)

REACH

Complying with the REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS website at http://csr.asus.com/english/REACH.htm.

ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials. Please go to http://csr.asus.com/english/Takeback.htm for detailed recycling information in different regions.

DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the server.
- When adding or removing devices to or from the server, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing server before you add a device.
- Before connecting or removing signal cables from the server, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing any component to the server, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing and configuring the server management board.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product Introduction**

  This chapter describes the server management board features and the new technologies it supports.

- **Chapter 2: Hardware Information**

  This chapter provides instructions on how to install the board to the server system and install the utilities that the board supports.

- **Chapter 3: Web-based user interface (ASMB9-iKVM only)**

  This chapter tells you how to use the web-based user interface that the server management board supports.

- **Chapter 4: Redfish Technology Pack**

  This chapter provides you with information on the Redfish APIs supported.

- **Appendix**

  The Appendix shows the location of the LAN ports for server management and BMC connector on server motherboards. This section also presents common problems that you may encounter when installing or using the server management board.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1> + <Key2> + <Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <Ctrl> + <Alt> + <Del>
`Command`	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At DOS prompt, type the command line:
	`format A:/S`

ASMB9-iKVM specifications summary

Chipset	Aspeed 2500
Internal RAM	384 MB for system 64 MB for video
Internal ROM	32 MB
Timers	32-bit Watchdog Timer
Main features	IPMI 2.0-compliant and supports KVM over LAN Web-based user interface (remote management) Virtual media Network Bonding support
Form factor	22 mm x 17 mm

* Specifications are subject to change without notice.

Product Introduction

1

This chapter describes the server management board features and the new technologies it supports.

1.1 Welcome!

Thank you for buying an ASUS ASMB9-iKVM server management board!

The ASUS ASMB9-iKVM is an Intelligent Platform Management Interface (IPMI) 2.0-compliant board that allows you to monitor, control, and manage a remote server from the local or central server in your local area network (LAN). With ASMB9-iKVM in your server motherboard, you can completely and efficiently monitor your server in real-time. The solution allows you to reduce IT management costs and increase the productivity.

Before you start installing the server management board, check the items in your package with the list below.

1.2 Package contents

Check your server management board package for the following items.

- Support CD
- User guide

If any of the above items is damaged or missing, contact your retailer.

1.3 Features

1. **IPMI 2.0**
   • System interface (KCS)
   • LAN interface (supports RMCP+)
   • System Event Log (SEL)
   • Sensor Data Record (SDR)
   • Field Replaceable Unit (FRU)
   • Remote Power on/off, reboot
   • Serial Over LAN (SOL)
   • Authentication Type: RAKP-HMAC-SHA1
   • Encryption (AES)
   • Platform Event Filtering (PEF)
   • Platform Event Trap (PET)
   • Watchdog Timer

2. **Private I2C Bus**
   • Auto monitoring sensors (temperature, voltage, fan speed and logging events)

3. **PMBus***
   • Supports power supply for PMBus device

4. **PSMI***
   • Supports power supply for PSMI bus device

5. **Web-based GUI**
   • Monitor sensors; show SDR, SEL, FRU; configure BMC, LAN
   • Supports SSL (HTTPS)
   • Multiple user permission level
   • Upgrade BMC firmware
   • GUI remote management interface with web management capabilities (requires a system that can display the Web-based GUI, a keyboard, and a mouse)
   • SSH (Secure Shell)
   • Allows up to 20 administrators to simultaneously perform remote maintenance and recovery via the Web-based GUI during an operating system failure
   • Remotely control and monitor your system over the web
   • Supports Directory Integration – AD, LDAP
   • Supports up to 2 administrators to simultaneously operate the remote server via the Web-based GUI

6. **Update Firmware**
   • DOS Tool
   • Web GUI (Windows® XP/Vista/2003/2008, RHEL5.2, SLES10SP2)

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7. Notification

- PET
- SNMP Trap
- e-Mail
- Self diagnosing LED indicators to display hardware status
- Supports damage monitoring for CPU, RAM, storage device, etc.

8. KVM over Internet

- Web-based remote console

9. Remote Update BIOS

- Use Remote floppy to update BIOS

10. Remote Storage (Virtual Media)

- Support two remote storage for USB/CD-ROM/DVD and image

11. Remote Install OS

- Use remote storage to remote install OS
- Web-based GUI supports virtual drive, virtual directory, mounting ISO disc image and remote installation

12. Supports SNMB MIB file

- A management information base (MIB) is a database used for managing the entities in a communications network. Most often associated with the Simple Network Management Protocol (SNMP).

13. User interface

- CIM
- SMASH-CLP
- WSMAN

* A power supply supported PMBus and PSMI is necessary.

** Specifications are subject to change without notice.

1.4   System requirements

Before you install the ASMB9-iKVM board, check if the remote server system meets the following requirements:

- ASUS server motherboard with Baseboard Management Controller (BMC) connector*
- LAN (RJ-45) port for server management**
- Microsoft® Internet Explorer 5.5 or later; Firefox

*   Visit www.asus.com for an updated list of server motherboards that support the ASMB9-iKVM.

**   See the Appendix for details.

1.5 Network setup

The ASMB9-iKVM server management board installed on the remote server connects to a local/central server via direct LAN connection or through a network hub. Below are the supported server management configurations.

Direct LAN connection

RJ-45 cable

Remote server
with ASMB9-iKVM

Remote console with web-based browser
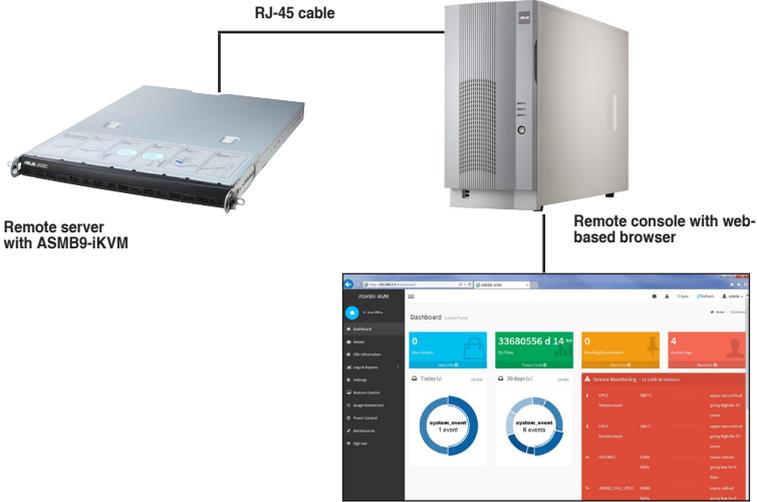
LAN connection through a network hub

Hub or router

Remote server
with ASMB9-iKVM

Remote console with web-based browser

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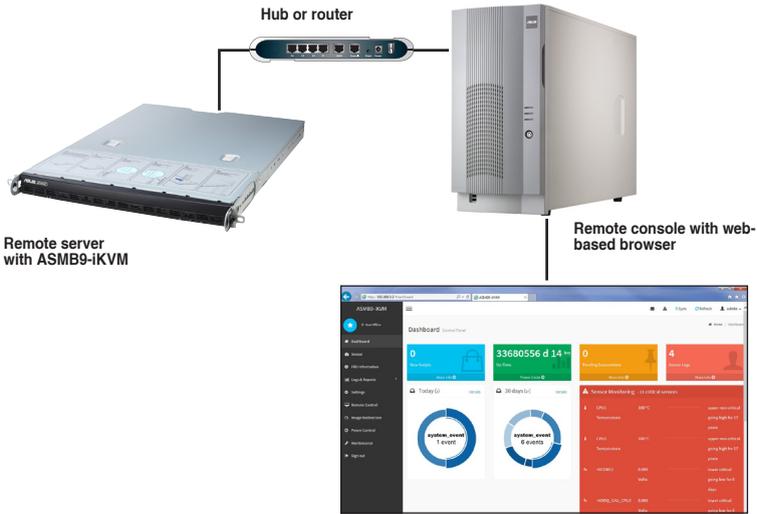
Hardware Information

2

This chapter provides instructions on how to install the board to the server system and install the utilities that the board supports.

2.1 Before you proceed

Take note of the following precautions before you install the server management board to the remote server system.

- • Unplug the server system power cord from the wall socket before touching any component.

- • Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.

- • Hold components by the edges to avoid touching the ICs on them.

- • Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- • Before you install or remove any component, ensure that the power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.2 Hardware installation

To set up the server system for server management:

1. Insert the LAN cable plug to the LAN port for server management.

Refer to the Appendix for the location of the LAN port for server management.

2. For direct LAN configuration, connect the other end of the LAN cable to the local/central server LAN port.

   For connection to a network hub or router, connect the other end of the LAN cable to the network hub or router.

3. Ensure the VGA, USB, PS/2 cables are connected, then connect the power plug to a grounded wall socket.

Every time after the AC power is re-plugged, you have to wait for about 70 seconds for the system power up.

2.3 Firmware update and IP configuration

You need to update the ASMB9-iKVM firmware and configure IP source before you start using the ASMB9-iKVM board.

2.3.1 Firmware update

To update the firmware:

1. Insert the support CD into the optical drive.

2. Restart the remote server then press <Del> during POST to enter the BIOS setup.

3. Go to the Boot menu and set the Boot Device Priority item to [CD-ROM].

4. When finished, press <F10> to save your changes and exit the BIOS setup.

5. On reboot, select **ASMB9-iKVM Firmware Update for Clear Configuration** from the main menu and press <Enter> to enter the sub-menu.

> **ASUS Server Z11PP-D24 Series System**
>
> FreeDOS command prompt
> Configure BMC IP Source Static IP for Shared LAN
> Configure BMC IP Source DHCP IP for Shared LAN
> Configure BMC IP Source Static IP for DM_LAN1
> Configure BMC IP Source DHCP IP for DM_LAN1
> ASMB9 Firnware Updated for Preserve Configuration (SDR, LAN, Username)
> ASMB9 Firnware Updated for Clear Configuration (SDR, LAN, Username)

6. From the confirmation message, select <Yes> to update the firmware.

> WARNING !!!
> UPDATE ASMB9 FIRMWARE NOW !
> DO YOU WANT TO CONTINUE ?
>
> No   Yes

7. Wait for the firmware updating process to finish.

> You may update the firmware from the web-based user interface. Refer to the **3.10 Maintenance** section for more information.

2.3.2 Configure BMC IP source static IP

1. Insert the support CD into the optical drive.

2. Restart the remote server then press <Del> during POST to enter the BIOS setup.

3. Go to Boot menu and set the Boot Device Priority item to [CD-ROM].

4. When finished, press <F10> to save your changes and exit the BIOS setup.

5. On reboot, select **Configure BMC IP Source Static IP for Shared LAN (or DM_LAN1) from the main menu** and press <Enter> to enter the sub-menu.

ASUS Server Z11PP-D24 Series System
FreeDOS command prompt
Configure BMC IP Source Static IP for Shared LAN
Configure BMC IP Source DHCP IP for Shared LAN
Configure BMC IP Source Static IP for DM_LAN1
Configure BMC IP Source DHCP IP for DM_LAN1
ASMB9 Firnware Update for Preserve Configuration (SDR, LAN, Username)
ASMB9 Firnware Update for Clear Configuration (SDR, LAN, Username)

6. Select <Yes> from the confirmation window.

```
WARNING !!!
CONFIGURE BMC IP Source STATIC IP NOW !
DO YOU WANT TO CONTINUE ?

                                        No    Yes
```

7. Wait for the configuration to finish. When done, press any key to continue.

```
Detect: MotherBoard        - > (Z11PP-D24 Series)
Detect: KCS Interface
New BMC IP Source : Static IP
Press any key to continue . . . _
```

8. Go to BIOS menu to set the IP. For more information, refer to the **2.5.2 BMC network configuration** menu section.

2.3.3 Configure BMC IP source DHCP

1. Insert the support CD into the optical drive.

2. Restart the remote server then press <Del> during POST to enter the BIOS setup.

3. Go to Boot menu and set the Boot Device Priority item to [CD-ROM].

4. When finished, press <F10> to save your changes and exit the BIOS setup.

5. On reboot, select **Configure BMC IP Source DHCP for Shared LAN (or DM_LAN1)** from the main menu and press <Enter> to enter the sub-menu.

```
          ASUS Server Z11PP-D24 Series System

   FreeDOS command prompt
   Configure BMC IP Source Static IP for Shared LAN
   Configure BMC IP Source DHCP IP for Shared LAN
   Configure BMC IP Source Static IP for DM_LAN1
   Configure BMC IP Source DHCP IP for DM_LAN1
   ASMB9 Firnware Update for Preserve Configuration (SDR, LAN, Username)
   ASMB9 Firnware Update for Clear Configuration (SDR, LAN, Username)

```

6. Select <Yes> from the confirmation window.

```
   WARNING !!!
   CONFIGURE BMC IP Source DHCP NOW !
   DO YOU WANT TO CONTINUE ?

                                        No     Yes
```

7. Wait for the configuration to finish. When done, press any key to continue.

```
Detect: MotherBoard        - > (Z11PP-D24 Series)
Detect: KCS Interface
New BMC IP Source : DHCP
Press any key to continue . . . _
```

8. The DHCP server will assign an IP for you.

2.4　BIOS configuration

You need to adjust the settings in the BIOS setup of the remote server for correct configuration and connection to the central server.

> • Update the remote server BIOS file following the instructions in the motherboard/system user guide. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard.
>
> • The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

2.4.1　Running the BIOS BMC configuration

To configure the BMC in the BIOS:

1. Restart the remote server, then press <Del> during POST to enter the BIOS setup.

2. Go to the **Server Mgmt** menu, then select the **BMC network configuration** sub-menu. Use this sub-menu to configure the BMC settings.

3. When finished, press <F10> to save your changes and exit the BIOS setup.

2.5 Server Mgmt menu

The Server Management menu displays the server management status and allows you to change the settings.

```
                Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
    Main  Advanced  Platform Configuration  Socket Configuration  Event Logs  Server Mgmt                    ▶

   BMC Self Test Status              PASSED            If enabled, starts a BIOS
   BMC Device ID                     32                timer which can only be shut
   BMC Device Revision               1                 off by Management Software
   BMC Firmware Revision             1.01              after the OS loads.  Helps
   IPMI Version                      2.0               determine that the OS
                                                       successfully loaded or follows
   OS Watchdog Timer                 [Disabled]        the OS Boot Watchdog Timer
   OS Wtd Timer Timeout              [10 minutes]      policy.
   OS Wtd Timer Policy               [Reset]
 ▶ System Event Log
 ▶ BMC network configuration
 ▶ View System Event Log
                                                       ➡◀: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F5: Optimized Defaults
                                                       F10: Save Changes & Reset
                                                       F12: Print Screen
                                                       ESC: Exit

                Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.
```

OS Watchdog Timer [Disabled]

This item allows you to start a BIOS timer which can only be shut off by Intel Management Software after the OS loads.
Configuration options: [Disabled] [Enabled]

The following items is configurable only when the **OS Watchdog Timer** is set to **[Enabled]**.

OS Wtd Timer Timeout [10 minutes]

Allows you to configure the length fo the OS Boot Watchdog Timer.
Configuration options: [5 minutes] [10 minutes] [15 minutes] [20 minutes]

OS Wtd Timer Policy [Reset]

This item allows you to configure the how the system should respond if the OS Boot Watch Timer expires.
Configuration options: [Do Nothing] [Reset] [Power Down]

2.5.1   System Event Log

Allows you to change the SEL event log configuration.

```
                Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                                                                   Server Mgmt

  Erase SEL                              [No]              Choose options for erasing SEL.
  When SEL is Full                       [Do Nothing]

  NOTE: All values changed here do not take effect
        until computer is restarted.




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F5: Optimized Defaults
                                                          F10: Save Changes & Reset
                                                          F12: Print Screen
                                                          ESC: Exit


                Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.
```

Erase SEL [No]

Allows you to choose options for erasing SEL.
Configuration options: [No] [Yes, On next reset] [Yes, On every reset]

When SEL is Full [Do Nothing]

Allows you to choose options for reactions to a full SEL.
Configuration options: [Do Nothing] [Erase Immediately]

2.5.2 BMC network configuration

Allows you to set the BMC LAN parameter settings.
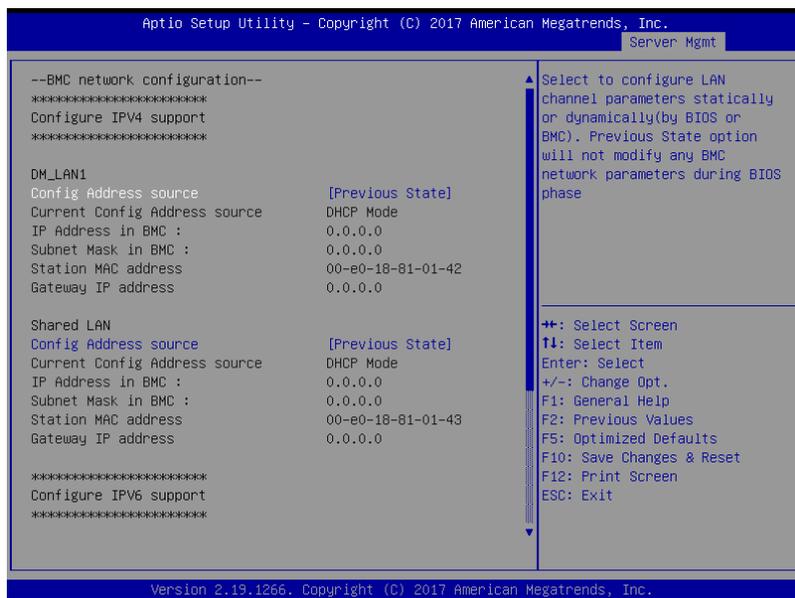
Configure IPV4 support

DM_LAN1 / Shared LAN

Config Address Source [Previous State]

Allows you to select the IP address source type. Set the LAN channel parameters statically or dynamically.

Configuration options: [Previous State] [Static] [DynamicBmcDhcp]

The following items are available when you set **Config Address Source** to **[Static]**.

IP Address in BMC
Allows you to set the station IP address.

Subnet Mask in BMC
Allows you to set the subnet mask. We recommend that you use the same Subnet Mask you have specified on the operating system network for the used network card.

Gateway IP Address
Allows you to set the Gateway IP address.

Configure IPV6 support

DM_LAN1 / Shared LAN

IPV6 support [Disabled]

Allows you to enable or disable IPV6 support.
Configuration options: [Enabled] [Disabled]

> The following items are available when you set **IPV6 support** to [Enabled].

Config Address Source [Previous State]
Allows you to select the IP address source type. Set the LAN channel parameters statically or dynamically.
Configuration options: [Previous State] [Static] [DynamicBmcDhcp]

> The following items are available when you set **Config Address Source** to **[Static]**.

Station IPV6 address
Allows you to set the station IPV6 address.

Prefix Length
Allows you to set the prefix length.

IPV6 Router1 IP Address
Allows you to set the IPV6 Router1 IP address.

2.5.3   View System Event Log

Allows you to view all the events in the BMC event logs. It will take a maximum of 15 seconds to read all the BMC SEL records.

```
               Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                                                                    Server Mgmt

    No. of log entries in SEL : 513                    ▲  HEX:
                                                       █  01  00  02  3D  FD  6C
    DATE      TIME      SENSOR TYPE                    █  38  20  00  04  01  31
                                                       █  01  57  64  59
    12/31/99  19:00:13   Temperature                      Generator ID: BMC - LUN #0
    12/31/99  19:00:13   Temperature                      (Channel #0)
    12/31/99  19:00:13   Temperature                      Sensor Number: 0x31
    12/31/99  19:00:13   Temperature                      CPU1 Temperature
    12/31/99  19:00:13   Voltage                           Event Description:
    12/31/99  19:00:13   Voltage                           Record Type-0x02.
    12/31/99  19:00:13   Voltage                           CPU1 Temperature.
    12/31/99  19:00:13   Voltage
    12/31/99  19:00:13   Voltage
    12/31/99  19:00:13   Voltage                        →←: Select Screen
    12/31/99  19:00:13   Voltage                        ↑↓: Select Item
    12/31/99  19:00:13   Voltage                        Enter: Select
    12/31/99  19:00:13   Power Supply                   +/-: Change Opt.
    12/31/99  19:00:13   Power Supply                   F1: General Help
    12/31/99  19:00:13   Fan                            F2: Previous Values
    12/31/99  19:00:13   Fan                            F5: Optimized Defaults
    12/31/99  19:00:13   Fan                            F10: Save Changes & Reset
    12/31/99  19:00:13   Fan                            F12: Print Screen
    12/31/99  19:00:13   Fan                            ESC: Exit
    12/31/99  19:00:13   Fan                         ▼

               Version 2.19.1266. Copyright (C) 2017 American Megatrends, Inc.
```

2.6   Running the ASMC8 utility

The ASMC8 utility allows you to update the ASMB9-iKVM firmware, configure the LAN settings for the remote server, and change the user name/password in DOS environment. This utility is available from the support CD that came with the package.

To run the ASMC8 utility:

1.   Insert the support CD into the optical drive.

2.   Restart the remote server then press <Del> during POST to enter the BIOS setup.

3.   Go to Boot menu and set the Boot Device Priority item to [CD-ROM].

4.   When finished, press <F10> to save your changes and exit the BIOS setup.

5.   On reboot, select **FreeDOS command prompt** from the main menu then press <Enter>.

```
                       ASUS Server Z11PP-D24 Series System

   FreeDOS command prompt
   Configure BMC IP Source Static IP for Shared LAN
   Configure BMC IP Source DHCP IP for Shared LAN
   Configure BMC IP Source Static IP for DM_LAN1
   Configure BMC IP Source DHCP IP for DM_LAN1
   ASMB9 Firnware Update for Preserve Configuration (SDR, LAN, Username)
   ASMB9 Firnware Update for Clear Configuration (SDR, LAN, Username)

```
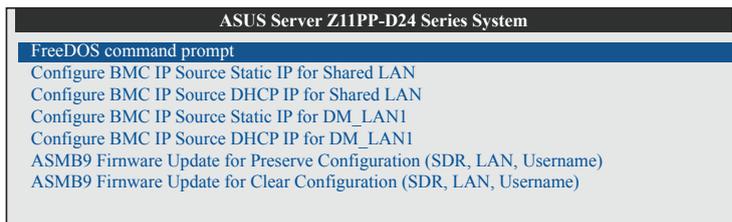
6.   From the `C:>` prompt, type `ASMC8 -?` then press <Enter> to display the ASMC8 Utility Help Menu (as shown below).

```
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
|    ASUS Server Management card Utility 8.03 Help Menu            |
+ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - +
Usage:
ASMC8  -kcs[smic/bt/pci_smic] NetFn command data . . . .
ASMC8  -bmc_ip_source source[1:Static, 2:DHCP]
ASMC8  -bmc_ip ip_addr[10.10.10.20]
ASMC8  -bmc_mask ip_mask[255.255.255.0]
ASMC8  -bmc_gateway ip_addr[10.10.10.254]
ASMC8  -ipv6_source source[1:Static, 2:DHCP]
ASMC8  -ipv6 ipv6_addr[2001: 0db8 : 1234 : 5678 : 8769 : e1cb : aabb : ccdd]
ASMC8  -ipv6_prefix prefix_length[64]
ASMC8  -pet_ip_mac ip_addr[10.10.10.20] mac_addr[010203040506]
ASMC8  -bmc_ip_s_lan1 source[1:Static, 2:DHCP]
ASMC8  -bmc_ip_lan1 ip_addr[10.10.10.20]
ASMC8  -bmc_mask_lan1 ip_mask[255.255.255.0]
ASMC8  -bmc_g_lan1 ip_addr[10.10.10.254]
ASMC8  -ipv6_s_lan1 source[1:Static, 2:DHCP]
ASMC8  -ipv6_lan1 ip_addr[2001: 0db8 : 1234 : 5678 : 8769 : e1cb : aabb : ccdd]
ASMC8  -ipv6_prefix_lan1 prefix_length[64]
ASMC8  -pet_ip_m_lan1 ip_addr[10.10.10.20] mac_addr[010203040506]

<Press any key to see the next page> <ESC key to break>
```

Press any key to see next page.

ASMC8 Help Menu options

Options	Description
-kcs[smic/bt/pci_smic] NetFn command data....	Send IPMI command
-bmc_ip_source source[1: Static, 2: DHCP]	Set the IP source
-bmc_ip [ip_addr] (e.g., bmc_ip 10.10.10.20)	Write the BMC IP address for dedicated LAN
-bmc_mask [ip_mask] (e.g., bmc_mask 255.255.255.0)	Write the subnet mask for dedicated LAN
-bmc_gateway [ip_addr] (e.g., bmc_gateway 10.10.10.254)	Write the gateway address for dedicated LAN
-pet_ip_mac [ip_addr] [mac_addr] (e.g., pet_ip_mac 10.10.10.20 010203040506)	Write the PET destination IP and MAC addresses for dedicated LAN
-bmc_ip_s_lan1 source[1: Static, 2: DHCP]	Set the IP source for shared LAN
-bmc_ip_lan1 [ip_addr] (e.g., bmc_ip 10.10.10.20)	Write the BMC IP address for shared LAN
-bmc_mask_lan1 [ip_mask] (e.g., bmc_mask 255.255.255.0)	Write the subnet mask for shared LAN
-bmc_g_lan1 [ip_addr] (e.g., bmc_gateway 10.10.10.254)	Write the gateway address for shared LAN
-pet_ip_m_lan1 [ip_addr] [mac_addr] (e.g., pet_ip_mac 10.10.10.20 010203040506)	Write the PET destination IP and MAC addresses for shared LAN
-adm_name new_name_string	Change the administration name
-user_name new_name_string	Change the user name
-adm_password new_adm_password	Change the administration password
-user_password new_user_password	Change the user password
-sol_baud [baud rate] (e.g., sol_baud 57600)	Set the communication Baud rate
-bmc_info	Displays the BMC and PET IP and MAC addresses
-fru -view fru_id	Displays the system FRU information
-fru -load fru_file	Update system FRU data from file
-fru -save fru_id fru_file	Save system FRU data to file
-sel -clear	Clear system event log

2.6.1 Configuring the LAN controller

Before you can establish a connection to the ASMB9-iKVM board, you must configure the LAN port for server management used by the remote server to connect to the local/central server.

To configure the LAN port of the remote server:

1. Run the ASMC8 utility from the support CD following the instructions in the previous section.

2. Set IP source:

    a. Type `ASMC8 -bmc_ip_source 1` if you want to set a static IP address.

    b. Type `ASMC8 -bmc_ip_source 2` if you want to get IP from DHCP server.

3. Type `ASMC8 -bmc_ip xxx.xxx.xxx.xxx` then press <Enter> to assign any IP address to the remote server LAN port (if necessary). The screen displays the request and response buffer.

> Write the remote server IP address on a piece of paper for future reference.

```
c:\>ASMC8 -bmc_ip  10.10.10.243
Detect MotherBoard     -> (Z11PP-D24 Series)
Detect KCS Interface
New BMC IP : 10.10.10.243
c:\>
```

When finished, the utility returns to the DOS prompt.

> Make sure that the assigned IP address for both remote and local/central servers are in the same subnet. You can use the network settings utility in your OS to check.

4. Configure your subnet mask and gateway address if necessary.

    a. Type `ASMC8 -bmc_mask xxx.xxx.xxx.xxx` (your subnet mask encoded in hexadecimal system)

    b. Type `ASMC8 -bmc_gateway xxx.xxx.xxx.xxx` (your gateway address encoded in hexadecimal system)

5. Restart the remote server, enter the BIOS setup, then boot from the hard disk drive.

6. Adjust the local/central server network settings, if necessary.

2.6.2 Configuring the user name and password

You may change your user name and password from the ASMC8 utility.

To change the user name and password:

1. Insert the support CD into the optical drive.

2. Restart the remote server then press <Del> during POST to enter the BIOS setup.

3. Go to Boot menu and set the Boot Device Priority item to [CD-ROM].

4. When finished, press <F10> to save your changes and exit the BIOS setup.

5. On reboot, select **FreeDOS command prompt** from the main menu then press <Enter>.

6. From the `C:>` prompt, type `ASMC8 -user_name xxxxx` then press <Enter> to change the user name.

```
c:\>ASMC8 -user_name super
Detect MotherBoard    -> (Z11PP-D24 Series)
Detect KCS Interface

Change User Name to super
c:\>
```

7. Type `ASMC8 -user_password xxxxxxxx`, then press <Enter> to change the password.

8. Restart the remote server, enter the BIOS setup, then boot from the hard disk drive.

3

Web-based User Interface

This chapter tells you how to use the web-based user interface that the server management board supports.

3.1　Web-based user interface

The web-based user interface allows you to easily monitor the remote server's hardware information including temperatures, fan rotations, voltages, and power. This application also lets you instantly power on/off or reset the remote server.

To enter the Web-based user interface:

1. Enter the BIOS Setup during POST.

2. Go to the **Advanced Menu > Runtime Error Logging > CPU II0 Bridge Configuration > Launch Storage OpROM**, then press <Enter>.

3. Set **Launch Storage OpROM** to [Enabled].

4. Go to the Server **Mgmt Menu > BMC network configuration > Configuration Address source**, then press <Enter>.

5. Enter the **IP Address in BMC, Subnet Mask in BMC and Gateway Address in BMC**.

6. Press <F10> to save your changes and exit the BIOS Setup.

> You should install JRE on remote console first before using web-based management. You can find **JRE** from the folder **JAVA** of the ASMB9-iKVM support CD. You can also download JRE from **http://www.oracle.com/technetwork/java/javase/downloads/index.html**

3.1.1 Logging in the utility

1. Ensure that the LAN cable of the computer is connected to the LAN port of the remote server.

2. Open the web browser and type in the same IP address as the one in the remote server.

3. The below screen appears. Enter the default user name (admin) and password (admin). Then click Login.
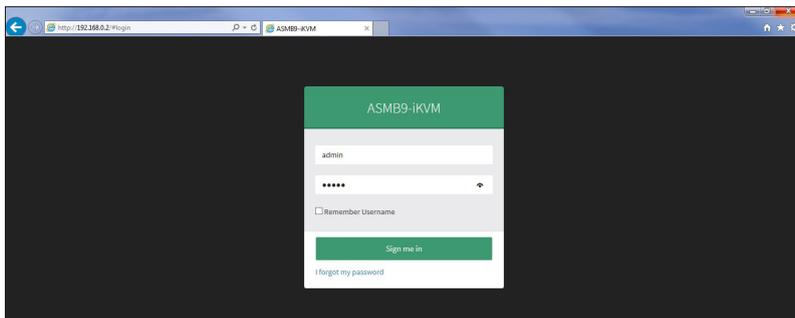

3.1.2 Using the utility

The web-based graphics user interface displays when you login in the utility successfully. Click on a function from the list on the left hand side to start using its specific functions.

Toggle sync On/Off
Notifications received
Messages received
Reload current page
Account information
Function list
Content window
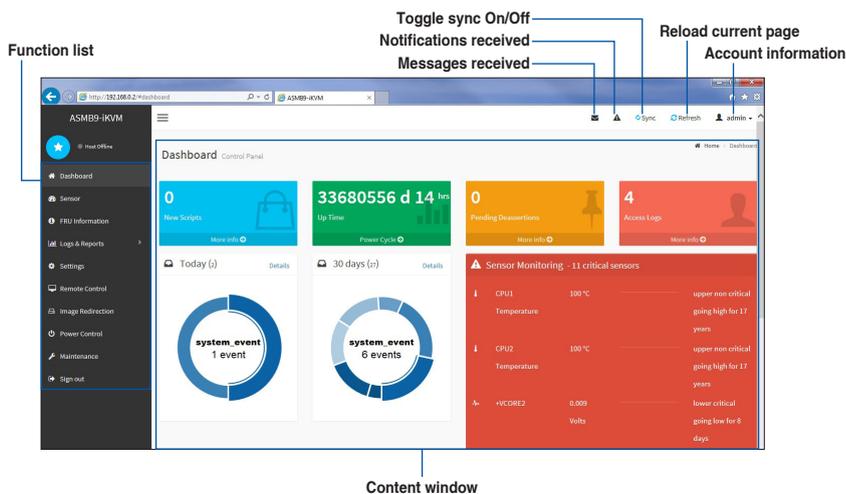
3.2 Dashboard

The dashboard gives you a quick overview for all the system status, sensors, messages, and logs. Click or hover your mouse over an item to see more details.
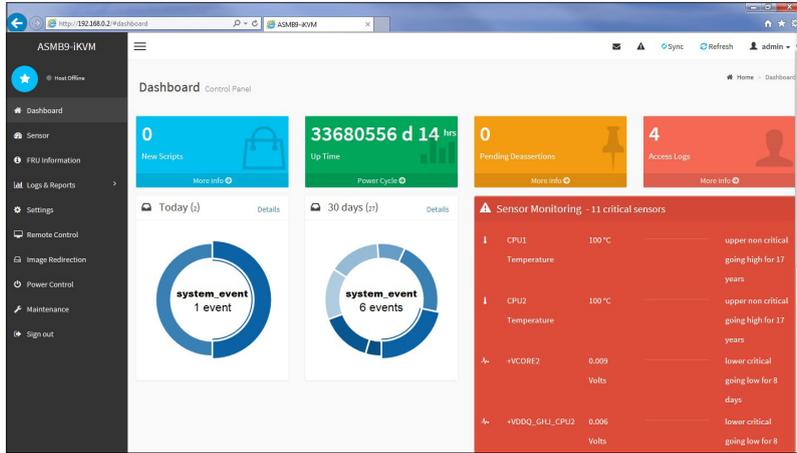
3.3 Sensor

The Sensor Readings page displays live readings for all the available sensors with details like Sensor Name, Status, Current Reading and Behavior will be displayed. This page will automatically refresh itself with data from the database. Please note that there may be some delay when retrieving live data.
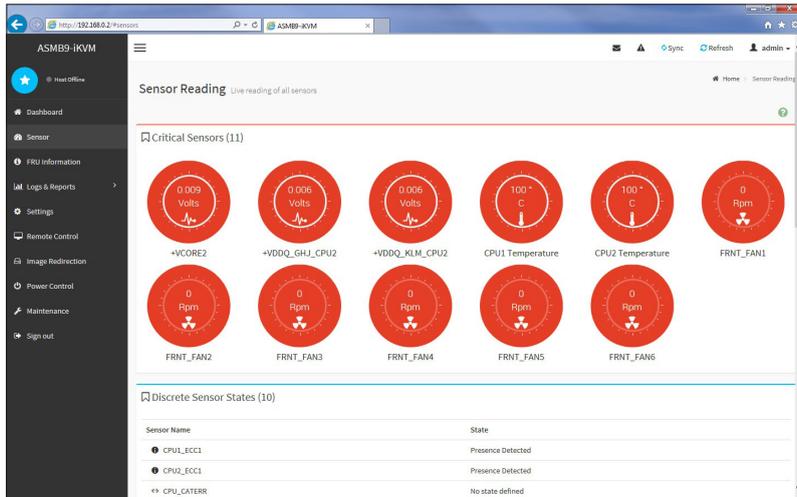
3.4 FRU Information

This Page displays the BMC's FRU device information. The FRU page shows Basic Information, Chassis Information, Board Information and Product Information of the FRU device.
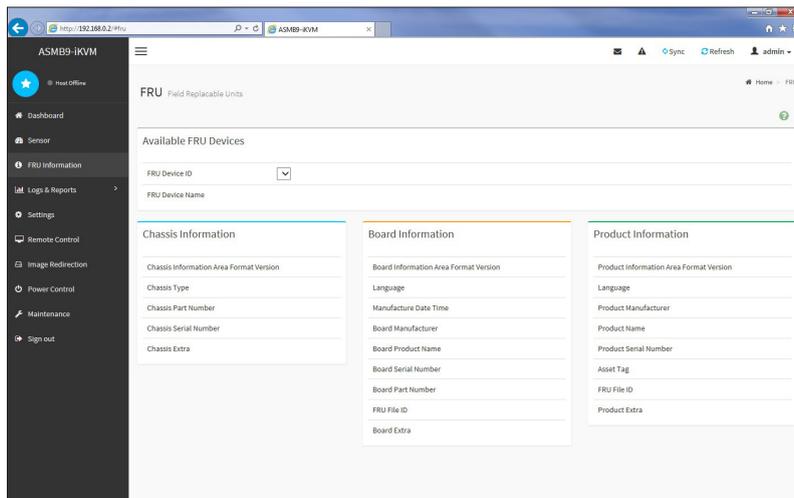
3.5 Logs & Reports

This menu contains the IPMI Event Log, System Log, Audit Log, and Video Log.
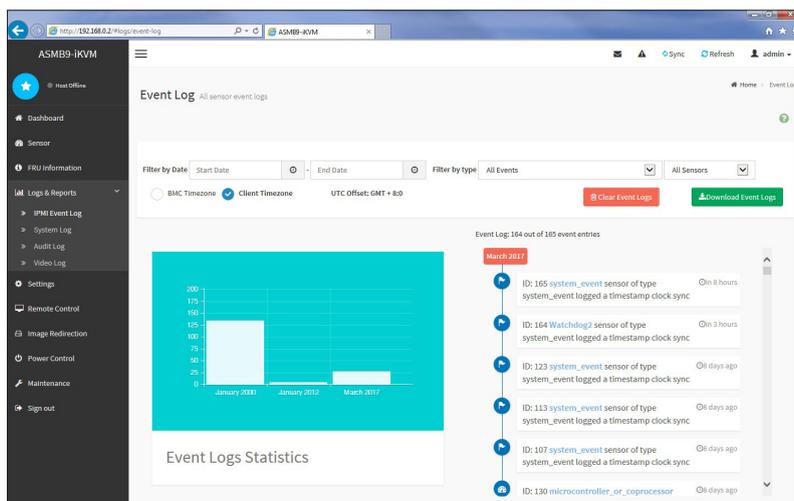
3.5.1   IPMI Event Log

This page displays the list of events incurred by different sensors on this device. Click on a record to see the details of that entry. You can click the **Download Event Logs** button to download the logs.
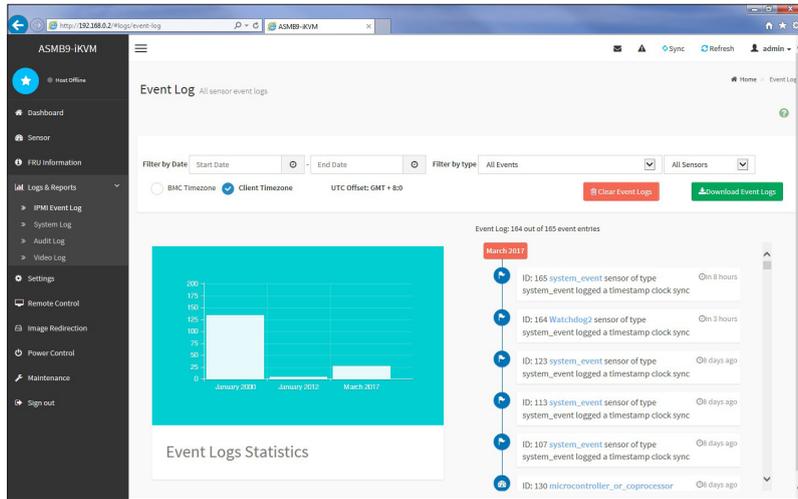
To view the Event Log on a selected time period

1.   From the **Filter By Date** field, select the time period by selecting the **Start Date** and the **End Date** from the calender.

2.   From the **Filter By Type** field, select the type of event and sensor name to view the events of the selected event type for that sensor.

> To clear all events from the list, click the **Clear Event Logs** button.

3.5.2   System Log

This page displays logs of system events for this device (if the options have been configured).

Logs have to be configured under **Settings** > **Log Settings** > **Advanced Log Settings** in order to display any entries.
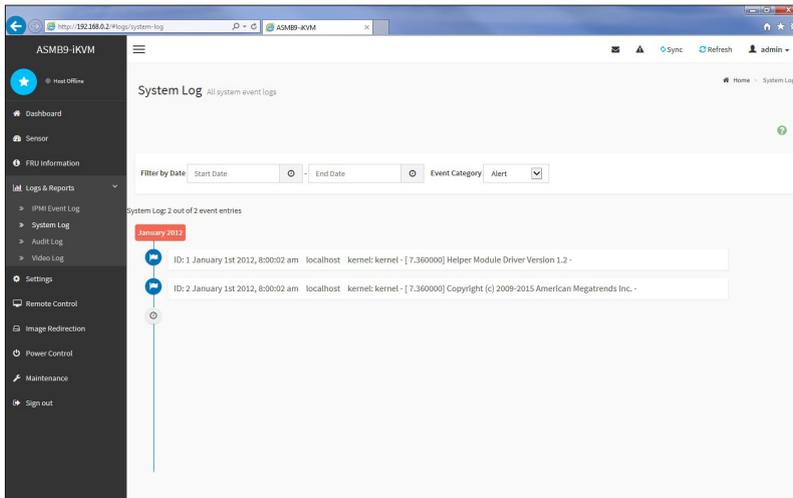
To view the System Log on a selected time period

1.   From the **Filter By Date** field, select the time period by selecting the **Start Date** and the **End Date** from the calender.

2.   From the **Event Category** field, select the type of event to view the events of the selected event type.

3.5.3 Audit Log

This page displays logs of audit events for this device (if the options have been configured).

Logs have to be configured under **Settings** > **Log Settings** > **Advanced Log Settings** in order to display any entries.
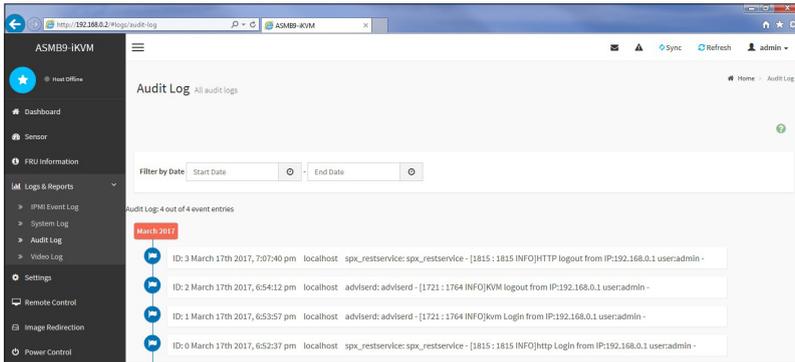
To view the Audit Log on a selected time period, from the **Filter By Date** field, select the time period by selecting the **Start Date** and the **End Date** from the calender.

3.5.4 Video Log

This page displays logs of available recorded video files (if the options have been configured).

Logs have to be configured under **Settings** > **Log Settings** > **Advanced Log Settings** in order to display any entries.
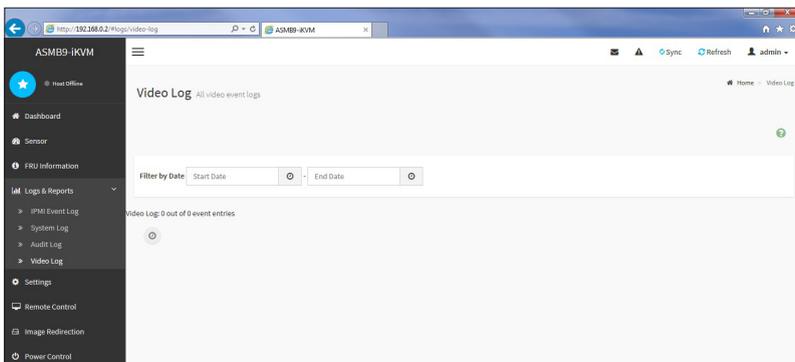
To view the Video Log on a selected time period, from the **Filter By Date** field, select the time period by selecting the **Start Date** and the **End Date** from the calender.

3.6 Settings

This page allows you to configure the BMC settings. Click on an item for more options.
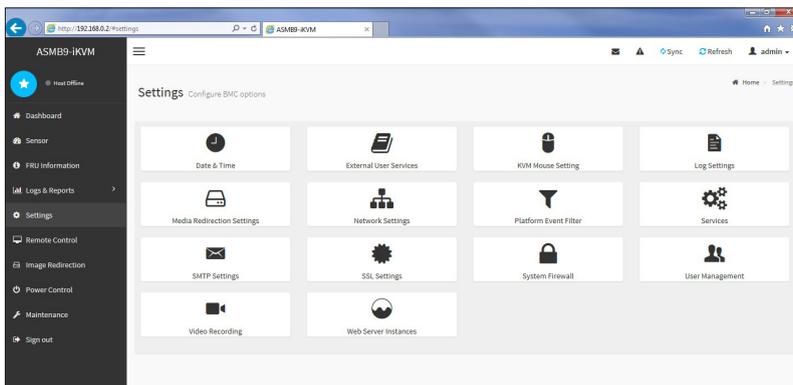
3.6.1 Date & Time

This page allows you to set the date and time on the BMC.
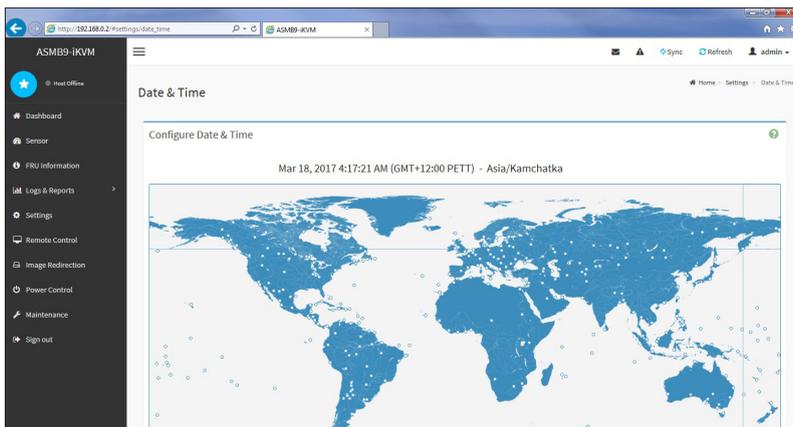
3.6.2 External User Services

This page allows you to set the LDAP/E-directory Settings, Active directory Settings, and RADIUS Settings.
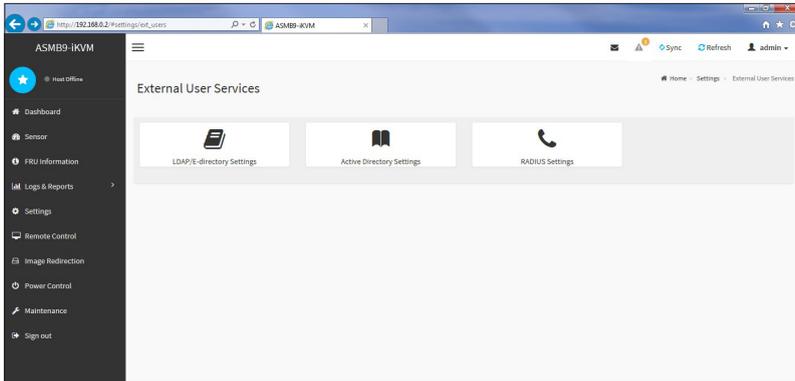
LDAP/E-directory Settings

This page allows you to set the LDAP/E-directory Settings. The **Lightweight Directory Access Protocol (LDAP)** is an application protocol for querying and modifying data of directory services implemented in Internet Protocol (IP) networks. If you have an LDAP server configured on your network, you can use it as an easy way to add, manage and authenticate MegaRAC® card users. This is done by passing login requests to your LDAP Server. This means that there is no need to define an additional authentication mechanism, when using the MegaRAC® card. Since your existing LDAP Server keeps an authentication centralized, you will always know who is accessing the network resources and can easily define the user or group-based policies to control access.

Active directory Settings

This page allows you to set the Active directory Settings. An active directory does a variety of function including the ability to provide the information on objects, helps organize these objects for easy retrieval and access, allows access by users and administrators, and allows the administrators to set security up for the directory.

RADIUS Settings

This page is used to enable or disable RADIUS authentication and enter the required information to access the RADIUS server.

3.6.3 KVM Mouse Setting

This page allows you to set the mouse mode. The Redirection Console handles mouse emulation from local window to remote screen using either of the three methods. Only the Administrator has the right to configure this option.
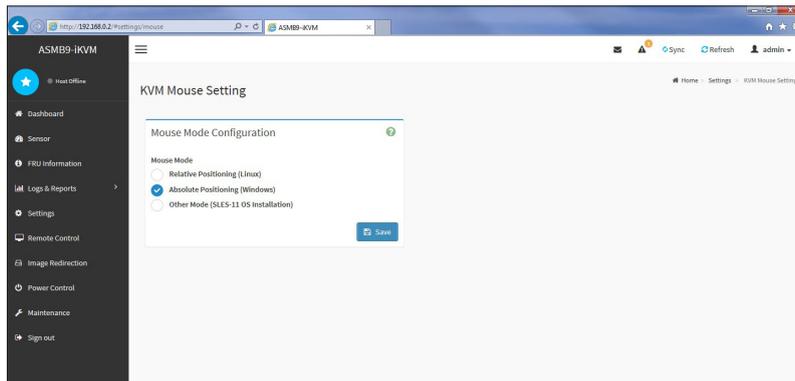
3.6.4 Log Settings

This page allows you to set the log policy for the event log.
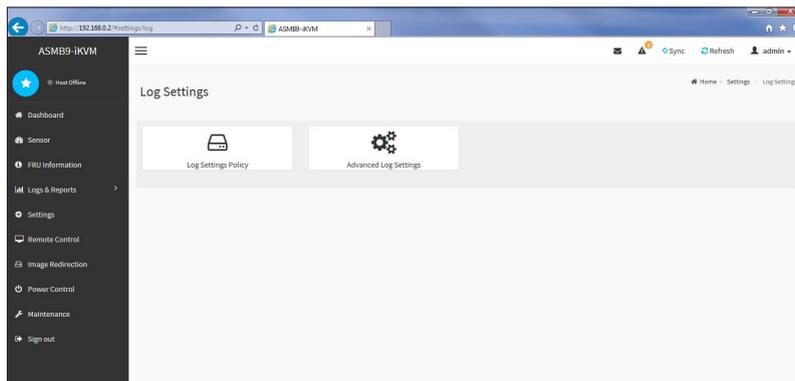
Log Settings Policy

This page is used to configure the log policy for the event log

Advanced Log Settings

This page allows you to set advanced settings for the event logs.

3.6.5 Media Redirection Settings

This page allows you to set the media redirection settings.
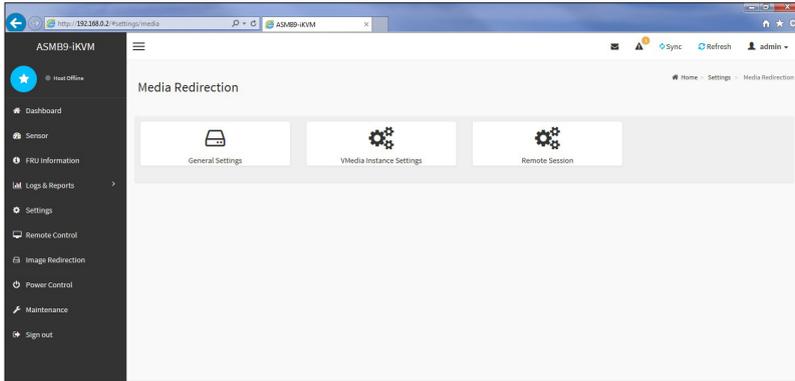
General Settings

This page allows you to enable or disable Local Media support, check or uncheck the checkbox respectively.

VMedia Instance Settings

This page allows you to configure settings for media devices.

Remote Session

This page allows you to change the settings for the remote session.

3.6.6 Network Settings

The Network Settings page allows you to configure the network settings.
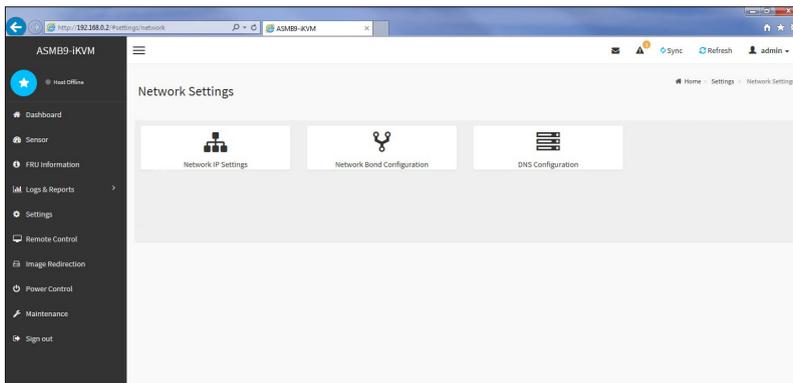
Network IP Settings

This page allows you to manage LAN support for the interface.

Network Bond Configuration

This page allows you to enable network bonding for network interfaces.

DNS Configuration

This page allows you to manage DNS settings of the device.

3.6.7 Platform Event Filters

Platform Event Filtering (PEF) provides a mechanism for configuring the BMC to take selected actions on event messages that it receives or has internally generated. These actions include operations such as system power-off, system reset, as well as triggering the generation of an alert. A PEF implementation is recommended to provide at least 16 entries in the event filter table. A subset of these entries should be pre-configured for common system failure events, such as over-temperature, power system failure, fan failure events, etc.
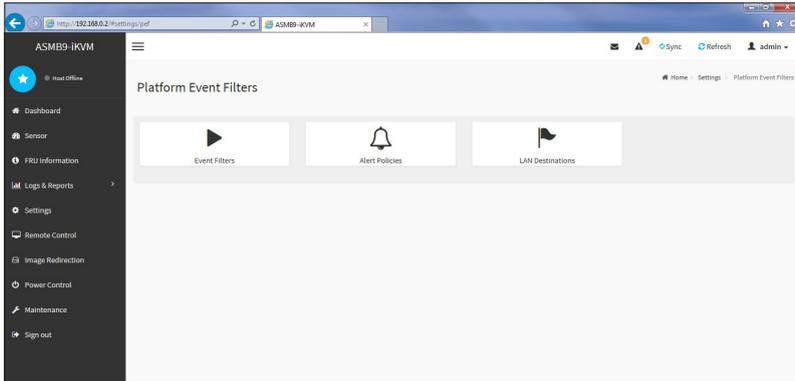
Event Filters

This page shows all configured Event filters and available slots. You can modify or add new event filter entry on this page. By default,15 event filter entries are configured among the 40 available slots.

Alert Policies

This page shows all configured Alert policies and available slots. You can modify or add new alert policy entry from on this page. A maximum of 60 slots are available.

LAN Destinations

This page shows all configured LAN destinations and available slots. You can modify or add new LAN destination entry from on this page. A maximum of 15 slots are available.

3.6.8 Services

This page lists services running on the BMC. It shows current status and other basic information about the services.
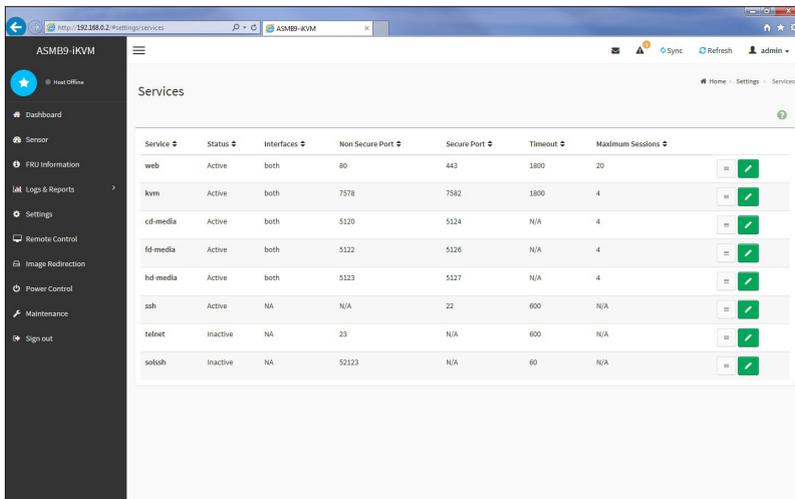
3.6.9 SMTP

The SMTP page allows you to configure SMTP mail server.
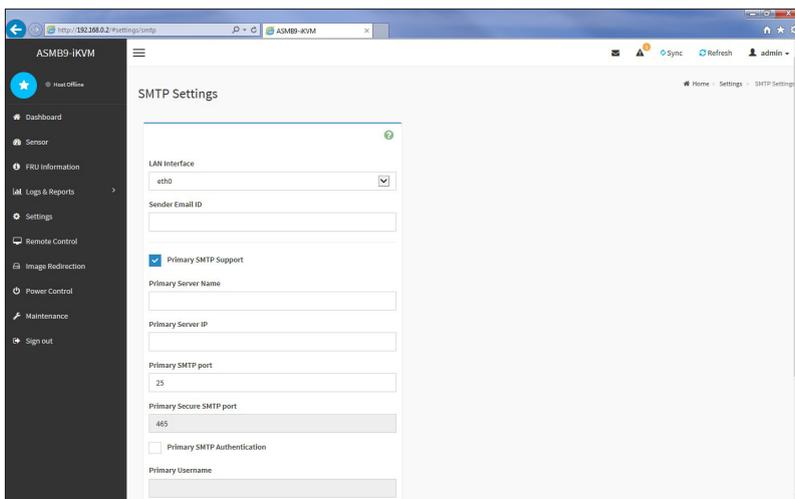
3.6.10 SSL Settings

The **Secure Socket Layer** protocol was created by Netscape to ensure secure transactions between web servers and browsers. The protocol uses a third party, a **Certificate Authority (CA)**, to identify one end or both end of the transactions.
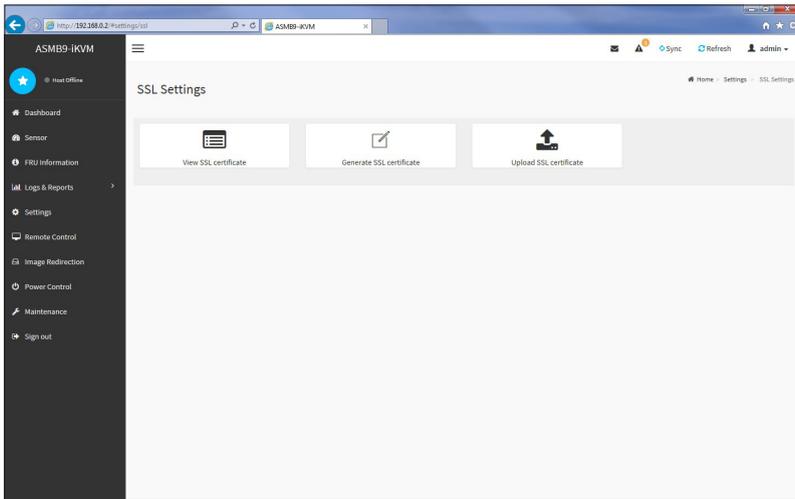
View SSL Certificate

This page displays the basic information about the uploaded SSL certificate.

Generate SSL Certificate

This page allows you to create an SSL certificate.

Upload SSL Certificate

This page allows you to upload a certificates and private keys.

3.6.11 System Firewall

This page allows you to create and manage firewalls on the BMC.
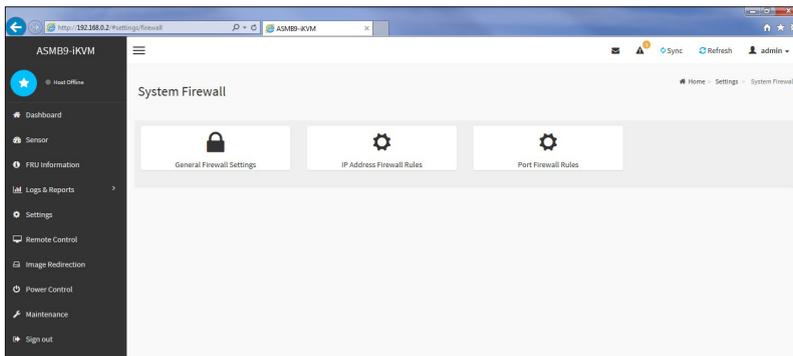
General Firewall Settings

This page allows you to create and manage existing general firewall settings.

IP Firewall Rules

This page allows you to create and manage existing firewall settings based on IP.

Port Firewall Rules

This page allows you to create and manage existing firewall settings based on ports.

3.6.12 User Management

The User Management page allows you to view the current list of user slots for the server. You can add a new user and modify or delete the existing users.
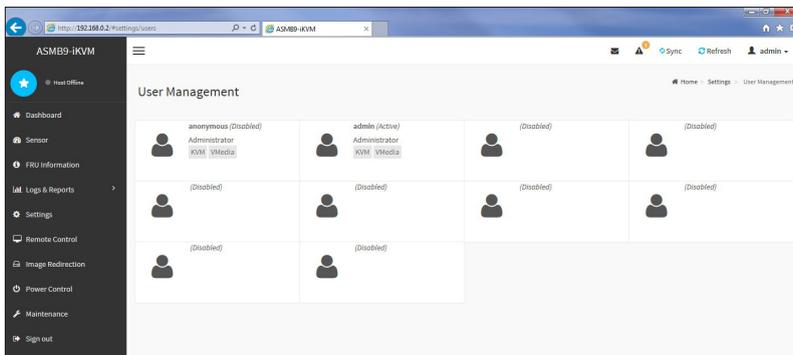
3.6.13 Video Recording

This page allows you to customize the video recording settings.
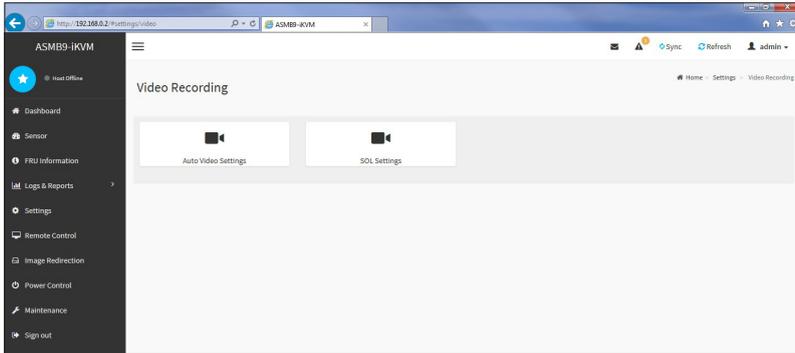
Auto Video Settings

This page allows you to configure the events that will trigger the auto video recording function of the KVM server and display the list of available recorded video files on the BMC.

Sol Settings

The Java SOL page allows you to launch the Java SOL application.

3.6.14 Web Server Instances

This page allows you to set the number of backend web server instances that will be launched to provide load balancing.
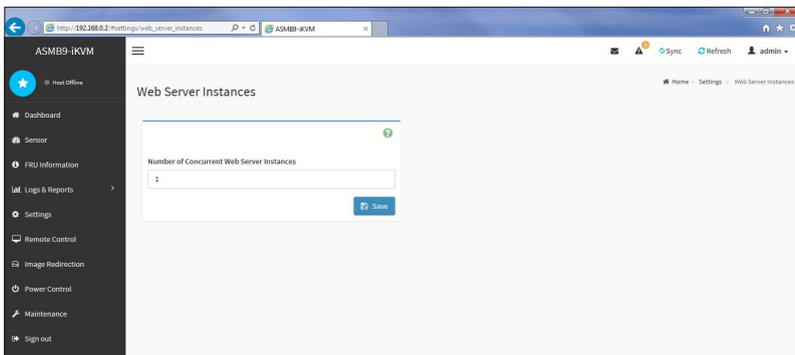
3.7 Remote Control

This menu allows you to perform remote operations on the server. Click **Launch KVM** to start the remote KVM.
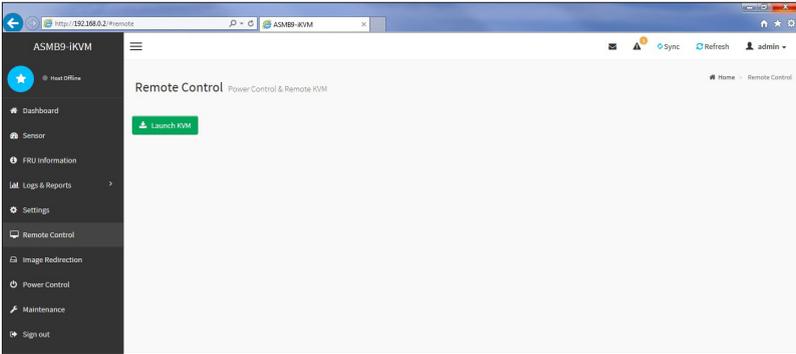
3.7.1 Console Redirection

The remote console application, which is started using the WebGUI, allows you to control your server's operating system remotely, using the screen, mouse, and keyboard, and to redirect local CD/DVD, Floppy diskette and Hard disk/USB thumb drives as if they were connected directly to the server. Click **Start KVM** to start the redirection session.

When launching the KVM, pop-up block should be disabled. For Internet explorer, enable the download file options from the settings.

Remote KVM interface
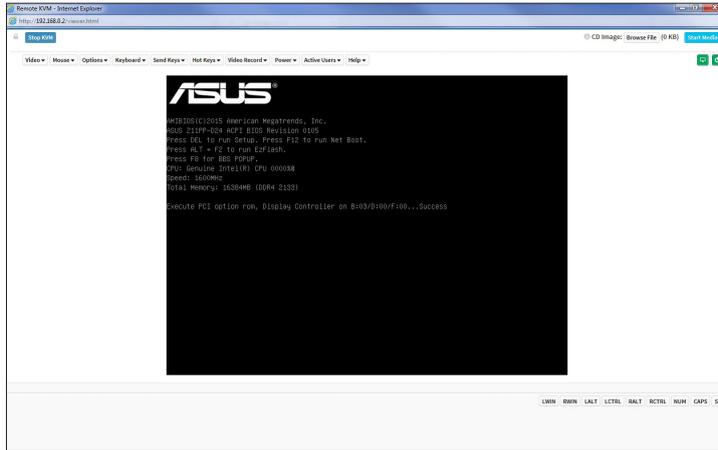
Video

1.   **Pause Video:** This option is used for pausing Console Redirection.

2.   **Resume Video:** This option is used to resume the Console Redirection when the session is paused.

3.   **Refresh Video:** This option can be used to update the display shown in the Console Redirection window.

4.   **Host display:** If you turn this option ON, the display will be back in the server screen.

5.   **Capture Screen:** This option allows you to screen capture the console redirection screen.

Mouse

1.   **Show Client Cursor:** This menu item can be used to show or hide the local mouse cursor on the remote client system.

2.   **Mouse Mode:** This menu item allows you to select the mode or type of mouse support.

Options

1.   **Block Privilege Request:** Allows you to block privilege requests.

2.   **YUV:** Allows you to select the YUV.

3.   **Quality:** Allows you to set the quality that ranges from 0 (Best Quality) to 7 (Worst Quality).

Keyboard

Keyboard Layout: This menu item allows you to select the keyboard layout.

Send Keys

1. **Hold Down**: These menu items can be used to act as holding down the corresponding key when in Console Redirection.

2. **Press and Release:** These menu items can be used to act as a press and release on the corresponding key when in Console Redirection.

Hot Keys

These menu items allow you to make use of hot keys.

Video Record

1. **Record Video**: This option allows you to start recording the console redirection screen.

2. **Stop Recording:** This option allows you to stop recording the console redirection screen.

3. **Record Settings:** This menu item allows you to configure the video recording settings.

Power

These menu items allow you to change the power settings. Click the desired option to execute the selected action.

Active Users

This menu will display the currently active users on the server.

Help

This menu will display the help menu.

Browse File

Click this button to add or modify a CD media, then click **Start Media** to start or stop the redirection of a physical DVD/CD-ROM drive and CD image types such as iso.

3.8 Image Redirection

This menu allows you to emulate CD/DVD/Floppy/HDD Images as media drives to host.
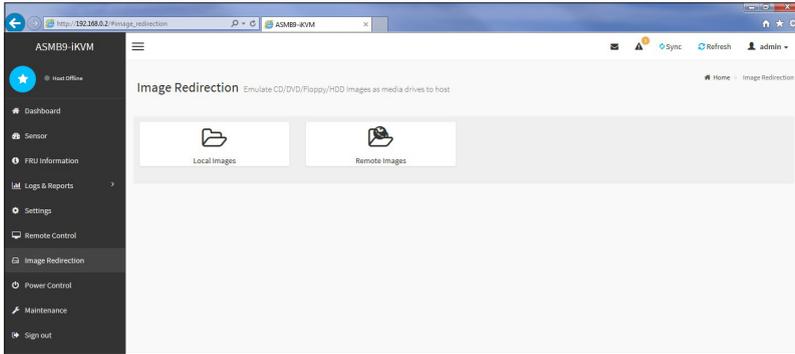
Local Media

This page allows you to select a local media to emulate to host as media through BMC.

Remote Media

This page allows you to select a remote media to emulate to host as media through BMC.

3.9 Power Control

The Power Control displays the current server power status and allows you to change the current settings. Select the desired option, and then click **Perform Action** to execute the selected action.
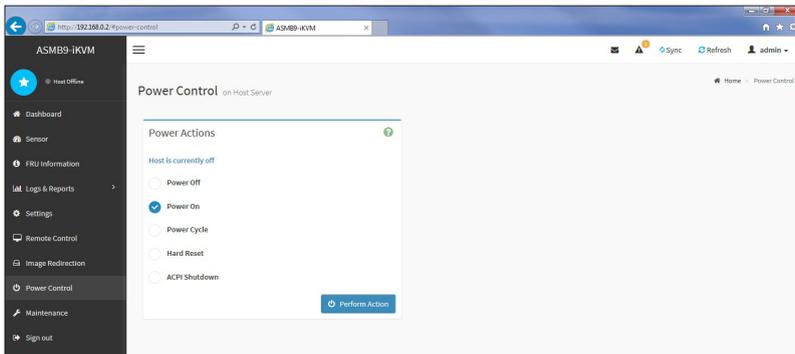
3.10 Maintenance

The Maintenance menu allows you to select specific configuration items to be preserved or to restore the default configuration for your device.
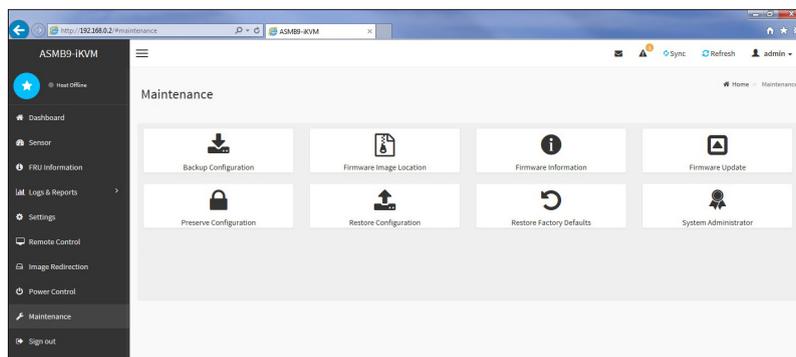
Backup Configuration

This page allows you to select specific configuration items to backup. Check the desired items and click **Download Config** to download the .bak file.

Firmware Image Location

This page allows you to select the image location type.

Firmware Information

This page displays the Build Date, Build Time, and Firmware Version of the active BMC image.

Firmware Update

This page allows you to update the firmware of the device remotely.

Preserve Configuration

This page allows you to select specific configuration items to be preserved in while performing the Restore Configuration.

Restore Configuration

This page allows you to select and upload a .bak file to restore the configuration settings.

Restore Factory Defaults

This page allows you to select configuration items that will be preserved while all the other configuration items will be restored to their default values. If none are selected, all the configuration items will be restored to their default values, essentially restoring the device configuration to its factory defaults.

System Administrator

This page allows you to change the System Administrator settings.

Redfish Technology Pack 4

This chapter provides you with information on the Redfish APIs supported.

4.1 Redfish introduction

Redfish is a web based management protocol software solution developed to be fully compliant with DMTF Redfish specification, and allows users to browse physical resources at the chassis and system level through an intuitive web-based user interface. It is built upon Representational State Transfer (REST) which is itself based on HTTP 1.1 protocol. Redfish improves the scalability and help customers to integrate with existing tools.

Redfish is a hypermedia API with a small set of defined URI's. This chapter provides the API list supported by the Redfish Server and the HTTP methods for each URL in addition to a detailed explanation of the request and JSON response properties. As Redfish is built on OData specification, it discusses the OData properties and the OData identifier for the resources.

Redfish provides information categorized under specific resource end point. The redfish clients allows to utilize the end points using following HTTP methods:

* GET
* POST
* PATCH
* PUT
* DELETE

Not all end-points support all these operations. When not supported it must send back 405 HTTP Status. Such details on the operations are provided by the Redfish JSON Schema.

Redfish Server follows **DSP0266 1.1.0 Specification** and **Redfish Schema 2016.3**.

4.2 Redfish API

4.2.1 Redfish API List

The following Redfish defined URI's listed in the table below are supported by the Redfish Service:

Table 1   Redfish API List

Resource	Resource URI	Redfish Schema
Service Root	`/redfish/v1`	ServiceRoot.v1_1_1.ServiceRoot
Computer System Collection	`/redfish/v1/Systems`	ComputerSystemCollection.ComputerSystemCollection
Computer System	`/redfish/v1/Systems/{{system_instance}}`	ComputerSystem.v1_3_0.ComputerSystem
Memory Collection	`/redfish/v1/Systems/Self/Memory`	MemoryCollection.MemoryCollection
Memory	`/redfish/v1/Memory/{{Memory_instance}}`	Memory.v1_1_0.Memory
Processor Collection	`/redfish/v1/Systems/{{system_instance}}/Processors`	ProcessorCollection.ProcessorCollection
Processor	`/redfish/v1/Systems/{{system_instance}}/Processors/{{system_processor_instance}}`	Processor.v1_0_3.Processor
Ethernet Interface Collection	`/redfish/v1/Managers/{{manager_instance}}/EthernetInterfaces`	EthernetInterfaceCollection.EthernetInterfaceCollection
Ethernet interface	`/redfish/v1/Managers/{{manager_instance}}/EthernetInterfaces/{{manager_ethifc_instance}}`	EthernetInterface.v1_2_0.EthernetInterface
Simple Storage Collection	`/redfish/v1/Systems/{{system_instance}}/SimpleStorage`	SimpleStorageCollection.SimpleStorageCollection
Simple Storage	`/redfish/v1/Systems/{{system_instance}}/SimpleStorage/{{system_simplestorage_instance}}`	SimpleStorage.v1_1_1.SimpleStorage

LogServiceCollection	`/redfish/v1/Systems/{{system_instance}}/LogServices`
	`/redfish/v1/Managers/{{manager_instance}}/LogServices`
	`/redfish/v1/Chassis{{chassis_instance}}/LogServices`
		LogServiceCollection.LogServiceCollection

Log Service	`/redfish/v1/Systems/{{system_instance}}/LogServices/{{system_log_instance}}` `/redfish/v1/Managers/{{manager_instance}}/LogServices/{{manager_log_instance}}`	LogService.v1_0_3.LogService

Resource	Resource URI	Redfish Schema

LogEntry Collection	`/redfish/v1/Systems/{{system_`
	`instance}}/LogServices/{{system_`
	`log_instance}}/Entries`
	`/redfish/v1/Managers/{{manager_`
	`instance}}/LogServices/{{manager_`
	`log_instance}}/Entries`
	`/redfish/v1/Chassis{{chassis_`
	`instance}}/LogServices/{{chassis_`
	`log_instance}}/Entries`
		LogEntryCollection.
		LogEntryCollection

Log Entry	`/redfish/v1/Systems/{{system_`
	`instance}}/LogServices/{{system_`
	`log_instance}}/Entries/{{system_`
	`logentry_instance}}`
	`/redfish/v1/Managers/{{manager_`
	`instance}}/LogServices/{{manager_`
	`log_instance}}/Entries/{{manager_`
	`logentry_instance}}`
	`/redfish/v1/Chassis{{chassis_`
	`instance}}/LogServices/{{chassis_`
	`log_instance}}/Entries/{{chassis_`
	`logentry_instance}}`
		LogEntry.v1_1_1.LogEntry

VLANNetwork
InterfaceCollection
	`/redfish/v1/Systems/{{system_`
	`instance}}/EthernetInterfaces/`
	`{{system_ethifc_instance}}/VLANs`
		VLanNetworkInterfaceCollection.
		VLanNetworkInterfaceCollection

VLAN Network Interface	`/redfish/v1/Systems/{{system_`
	`instance}}/EthernetInterfaces/`
	`{{system_ethifc_instance}}/VLANs/`
	`{{system_vlan_instance}}`
		VLanNetworkInterface.v1_0_3.
		VLanNetworkInterface

ChassisCollection	`/redfish/v1/Chassis`	ChassisCollection.ChassisCollection
Chassis	`/redfish/v1/Chassis/{{chassis_` `instance}}`	Chassis.v1_4_0.Chassis
Power	`/redfish/v1/Chassis/{{chassis_` `instance}}/Power`	Power.v1_2_1.Power
Thermal	`/redfish/v1/Chassis/{{chassis_` `instance}}/Thermal`	Thermal.v1_2_0.Thermal
ManagerCollection	`/redfish/v1/Managers`	ManagerCollection. ManagerCollection"
Manager	`/redfish/v1/Managers/Self/` `NetworkProtocol`	Manager.v1_3_0.Manager
ManagersNetworkProtocol	`/redfish/v1/Managers/Self/` `NetworkProtocol`	ManagerNetworkProtocol.v1_1_0. ManagerNetworkProtocol
SerialInterfaces Collection	`/redfish/v1/Managers/{{manager_` `instance}}/SerialInterfaces`	SerialInterfaceCollection. SerialInterfaceCollection

SerialInterfaces	`/redfish/v1/Managers/{{manager_`
	`instance}}/SerialInterfaces/`
	`{{manager_serialifc_instance}}`
		SerialInterface.v1_0_3.SerialInterface

VirtualMedia Collection	`/redfish/v1/Managers/{{manager_` `instance}}/VirtualMedia`	VirtualMediaCollection. VirtualMediaCollection

(continued on the next page)

Resource	Resource URI	Redfish Schema
AccountService	`/redfish/v1/AccountService`	AccountService.v1_1_0. AccountService
Manager Account Collection	`/redfish/v1/AccountService/ Accounts`	ManagerAccountCollection. ManagerAccountCollection
Manager Account	`/redfish/v1/AccountService/ Accounts/{{account_instance}}`	ManagerAccount.v1_0_3. ManagerAccount
Role Collection	`/redfish/v1/AccountService/Roles`	RoleCollection.RoleCollection
Role	`/redfish/v1/AccountService/Roles/ {{role_instance}}`	Role.v1_0_2.Role
EventService	`redfish/v1/EventService`	EventService.v1_0_3.EventService
TaskService	`/redfish/v1/TasksService`	TaskService.v1_0_3.TaskService
NetworkAdapter Collection	`/redfish/v1/Chassis/Self/ NetworkAdapters`	NetworkAdapterCollection. NetworkAdapterCollection
NetworkAdapter	`/redfish/v1/Chassis/Self/ NetworkAdapters/{{NetwrokAdapter_ instance}}`	NetworkAdapter.v1_0_0. NetworkAdapter
Storage Collection	`/redfish/v1/Systems/Self/Storage`	StorageCollection.StorageCollection
SecureBoot	`/redfish/v1/Systems/Self/ SecureBoot`	SecureBoot.v1_0_1.SecureBoot

AMI OEM Extensions		
Resource	**Resource URI**	**Redfish Schema**
Configurations	`/redfish/v1/configurations`	Configurations.v1_0_0.Configurations
AccountService Configurations	`/redfish/v1/AccountService/ Configurations`	AccountServiceConfigurations. v1_0_0. AccountServiceConfigurations

4.2.2   Redfish API defnition

A.   OData Support

```
https://{{ip}}/redfish/v1/Managers/Self/HostInterfaces/
{{hostinterface_instance}}
```

Redfish API supports Odata v4.0 as it is defined in Redfish specification. All resources within this REST API are identified by a unique identifier property named @odata.id. Resource Identifiers shall be represented in JSON payloads as URI paths relative to the Redfish Schema portion of the URI. That is, they shall always start with `/redfish/`. The resource identifier is the canonical URL for the resource and can be used to retrieve or edit the resource, as appropriate. OData Properties that are part of the JSON response for every Redfish Resource is defined under **4.3.1 ODATA properties**.

B.   Protocol version

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

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

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

Major Version, Minor Version, Errata

Major Version: integer: something in the class changed in a backward incompatible way.

Minor Version: integer: a minor update. New functionality may have been added but nothing removed. Compatibility will be preserved with previous minor versions.

Errata: integer: something in the prior version was broken and needed to be fixed.

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

C.   URI Rules

Redfish Service supports a small set of defined default URIs without authentication. They are:

Table 2   URIs without authentication

URI	Description
/redfish	URI used to return the version
/redfish/v1/	URI for the Redfish Service Root
/redfish/v1/odata	URI for OData Service Document
/redfish/v1/$metadata	URI for metadata document

The following Redfish URI is redirected to the Associated URI as given below:

Table 3　Associated URI

URI	Associated Redfish-Defined URI
`/redfish/v1/`	`/redfish/v1/`

The other defined and relative Redfish URIs are accessed using basic Authentication. Those URIs are explained in **4.3 Redfish Resources**.

- **Redfish URI Rules for Redirection**

  All URI's given in Redfish API List in **Table 1** with a trailing slash will be redirected to the same URI without a trailing slash and will send the response status and body as the original URI's in **Table 1**.

  For example: "`/redfish/v1/Systems/{{system_instance}}/`" with a trailing slash will be redirected to "`/redfish/v1/Systems/{{system_instance}}`" and both will display the same response.

4.2.3　Requests

This section describes the requests that can be sent to Redfish services

A.　Read Requests (GET)

The GET method is used to retrieve a representation of a resource. That representation can either be a single resource or a collection.

- **Service Root Request**

  The root URL for Redfish version 1 services shall be "`/redfish/v1/`". The root URL for the service returns a Service Root resource as defined by this specification.

- **Metadata Document Request**

  Redfish services shall expose a metadata document describing the service at the "`/redfish/v1/$metadata`" resource. The Services shall not require authentication in order to retrieve the metadata document.

- **OData Service Document Request**

  Redfish services shall expose an OData Service Document, at the `/redfish/v1/odata` resource. This service document provides a standard format for enumerating the resources. Services shall not require authentication in order to retrieve the service document.

- **Resource Retrieval Requests**

  Clients request resources by issuing GET requests to the URI for the individual resource or resource collection. The URI for a resource or resource collection may be obtained from a resource identifier property returned in a previous request

- **HEAD**

  The HEAD method differs from the GET method in that it MUST NOT return message body information. However, all of the same meta information and status codes in the HTTP headers will be returned as though a GET method were processed, including authorization checks. Services may support the HEAD method in order to return meta information in the form of HTTP response headers. Services may support the HEAD method in order to verify link validity. Services may support the HEAD method in order to verify resource accessibility. Services shall not support any other use of the HEAD method. The HEAD method shall be idempotent in the absence of outside changes to the resource.

B.   Data Modification Requests

Clients create, modify, and delete resources by issuing the appropriate Create, Update, Replace or Delete operation, or by invoking an Action on the resource.

> The maximum request size set for request body in Redfish is 256KB.

- **Update (PATCH)**

  The PATCH method is the preferred method used to perform updates on pre-existing resources. Changes to the resource are sent in the request body. Properties not specified in the request body are not directly changed by the PATCH request. The response is either empty or a representation of the resource after the update was done. The implementation may reject the update operation on certain fields based on its own policies and, if so, shall not apply any of the update requested.

- **Replace (PUT)**

  The PUT method is used to completely replace a resource. Properties omitted from the request body are reset to their default value.

- **Create (POST)**

  The POST method is used to create a new resource. The POST request is submitted to the resource collection in which the new resource is to belong. Submitting a POST request to a resource representing a collection is equivalent to submitting the same request to the Members property of that resource.

- **Delete (DELETE)**

  The DELETE method is used to remove a resource. Services shall support the DELETE method for resources that can be deleted.

- **Actions (POST)**

  The POST method is used to initiate operations on the object (such as Actions). Services shall support the POST method for sending actions. The POST operation may not be idempotent.

4.2.4 Responses

This section describes about the response headers, Error codes, and response format used in Redfish v0.3 update.

A. Response Headers

The response messages specified in this document refers to **Redfish 1.0.4 Specification**.

B. Redfish error response

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

HTTP Response: status codes alone often do not provide enough information to determine the error cause. The Redfish REST API returns extended error information as a JSON object with a single property named error.

Table 4   Error Code Response

Attribute	Description
Message ID	String indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.
Message	This is the human readable message, if provided. This property shall contain an optional human readable message.
Message Args	An optional array of strings representing the substitution parameter values for the message. This shall be included in the Response: if a Message ID is specified for a parameterized message.
Severity	An optional string representing the severity of the error.
Resolution	An optional string describing recommended action(s) to take to resolve the error.
Related Properties	An optional array of JSON Pointers defining the specific properties within a JSON payload described by the message.

- **Common Error Status Codes**

  The following are the common error codes that are handled in Redfish:

  - **404 Not Found**
    The request specified a URI of a resource that does not exist. This status code is returned for any of the HTTP Methods namely GET, POST, PATCH, DELETE, PUT.

  - **400 Bad Request**
    The request could not be processed because it contains missing or invalid information (such as validation error on an input field, a missing required value, and so on). An extended error shall be returned in the response body, as defined in the above mentioned table.

    This is typically returned with PATCH or POST response involving request parameters.

- 405 Method Not Found

The HTTP verb specified in the request (e.g., DELETE, GET, HEAD, POST, PUT, PATCH) is not supported for this request URI. The response shall include an Allow header which provides a list of methods that are supported by the resource identified by the Request-URI.

This is typically returned with POST, PATCH, DELETE, PUT on the URL for which it's not supported.

C. Status Codes

The status codes of each and every response in tabulated in the chapter 6.5.2 in **Redfish 1.0.4 Specification**.

4.3 Redfish Resources

This section explains the **Request URI's and JSON Responses** for the **allowable HTTP methods** for each of the **Redfish Resources** as explained below from section **4.3.4 Service Root**. Section **4.3.1 ODATA properties** explains the OData properties that are common to all the Redfish Entities. Section **4.3.2 User Configurable Properties** explains the user configurable properties and its reference document for the list. Section **4.3.3 Resource**, Resource Entity give a brief list of properties which are inherited by all Entities in the sections given below from **4.3.4 Service Root**.

The following Note is applicable for all API'S.

(M) – DeNotes the mandatory attributes.

(N) - DeNotes Navigation Property. (The properties in Resource Type is inherited by all properties)

(C) – DeNotes Configurable Property

Please refer to the section **Configurable Keys** in "**How to Add OEM extensions (v1.1)**" document which needs to be populated at build time to get this property in the JSON response.

4.3.1 ODATA properties

OData Properties are used to provide information on the resource like its Id, type, context,etc accessed by an URI. The following are the properties used in Redfish:

For Example:

```
{
     "@odata.context": "/redfish/v1/$metadata#ServiceRoot",
     "@odata.etag": "W/\"1488550735\"",
     "@odata.id": "/redfish/v1/",
     "@odata.type": "#ServiceRoot.v1_0_2.ServiceRoot"
}
```

Table 5   OData Attributes

Name	Type	ReadOnly	Description
@odata.context	String	True	The value of this property shall be the context URL that describes the resource according to OData-Protocol and shall be of the form defined in the Redfish specification.
@odata.id	String	True	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
@odata.type	String	True	The value of this property shall be an absolute URL that specifies the type of the resource and it shall be of the form defined in the Redfish specification. The type values for each Redfish Entity gives the schema it follows and is mentioned in Redfish API List under Schema column.

(continued on the next page)

Name	Type	ReadOnly	Desceiption
@odata.etag	-	-	ETags provide the ability to conditionally retrieve or update a resource. This value gives the timestamp at which the resource properties have been initialized or modified.

According to **Redfish Specification 1.1.0** under section **6.1.5 Etags**, we have "An ETag is a time stamp value that changes when the underlying object changes." So the etag for all Collection resources in Redfish will change if the etag of the underlying instances change.

These ODATA properties should be present in each JSON response for all Redfish URI's mentioned in the document.

4.3.2 User Configurable Properties

Redfish allows the user to specify default values for some properties in the existing Redfish Entities like the maximum number of records, overwrite policy in Log Services, sensor related properties in Chassis Thermal, Voltage, Temperature, Power etc. and some properties in all the services namely Event, Task, Session and Account Service. These properties can be configured through redis commands as specified in the Configurable Properties section in "**MegaRAC Redfish - How to Add OEM extensions (v1.1)**" document. User can also configure the same through System Builder. Please refer MegaRAC Redfish - System Builder User Guide (v1.1) to add these properties.

For a detailed list of properties, refer to the "**MegaRAC Redfish - How to Add OEM extensions (v1.1)**" document.

4.3.3 Resource

The resource properties specified in this section are inherited by all API'S mentioned in this document. The following are the different Resource schema properties.

Id and Name property of Resource Schema is mandated by all the URI's.

Table 6   Resource Type Definitions

Name	Type	ReadOnly	Description			
Id	String	True	Uniquely identifies the resource within the collection of like resources.			
Description	Null,String	True	Provides a description of this resource and is used for commonality in the schema definitions.			
Name	String	True	This object represents the Name property.			
UUID	String	True	pattern: ([0-9a-f]{8}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{4}-[0-9a-f]{12})			
Identifier	**Object**	**True**	**Name**	**Type**	**ReadOnly**	**Description**
			DurableName	String	True	This indicates the world wide, persistent name of the resource.
			DurableNameFormat	-	True	This represents the format of the DurableName property.
Location	**Object**	**True**	**Name**	**Type**	**ReadOnly**	**Description**
			Info	String	True	This indicates the location of the resource.
			InfoFormat	String	True	This represents the format of the Info property.

All EnumTypes mentioned in this table are of "String" Type.

Table 7   Resource - Enum Types

State	
Enum	**Description**
Enabled	This function or resource has been enabled.
Disabled	This function or resource has been disabled.
StandbyOffline	This function or resource is enabled, but awaiting an external action to activate it.
StandbySpare	This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it.
InTest	This function or resource is undergoing testing.
Starting	This function or resource is starting.
Absent	This function or resource is not present or not detected.
UnavailableOffline	This function or resource is present but cannot be used.
Deferring	The element will not process any commands but will queue new requests.
Quiesced	The element is enabled but only processes a restricted set of commands.
Updating	The element is updating and may be unavailable or degraded.

(continued on the next page)

Reset	
Enum	**Description**
On	Turn the system on.
ForceOff	Turn the system off immediately (non-graceful) shutdown.
GracefulShutdown	Perform a graceful system shutdown and power off.
GracefulRestart	Perform a graceful system shutdown followed by a restart of the system. Not Supported in Redfish v1.1.
ForceRestart	Perform an immediate (non-graceful) shutdown, followed by a restart of the system
Nmi	Generate a Diagnostic Interrupt (usually an NMI on x86 systems) to cease normal operations, perform diagnostic actions and typically halt the system. Not Supported in Redfish v1.1.
ForceOn	Turn the system on immediately. Not Supported in Redfish v1.1.
PushPowerButton	Simulate the pressing of the physical power button on this system. Not Supported in Redfish v1.1.
Health / HealthRollup	
OK	Normal
Warning	A condition exists that requires attention.
Critical	A critical condition exists that requires immediate attention.
IndicatorLED	
Lit	The Indicator LED is lit.
Blinking	The Indicator LED is blinking.
Off	The Indicator LED is off.

Table 8   Resource Complex Types

Links		
Property Name	**Type**	**Description**
Oem	Object	This object represents the Oem property. It can also contain an object of type OemObject.

Status			
Property Name	**Type**	**ReadOnly**	**Description**
State	String	True	This property shall represent if this component is available or not and why. Refer to **Table 7 Resource - Enum Types** for Resource. State for the possible Enum values. Enabled indicates the resource is available. Disabled indicates the resource has been intentionally made unavailable but it can be enabled. Offline indicates the resource is unavailable intentionally and requires action to be made available. InTest indicates that the component is undergoing testing. Starting indicates that the resource is on its way to becoming available. Absent indicates the resources is physically unavailable
HealthRollup	String	True	This property shall represent the HealthState of the resource and its dependent resources.
Health	String	True	This property shall represent the HealthState of the resource without considering its dependent resources.
Oem	Object	False	Oem extension object. This object represents the Oem properties.

Table 9   Resource.v1_1_0 schema properties

Identifier			
Property Name	**Type**	**ReadOnly**	**Description**
DurableName	String	True	This property shall contain the world wide unique identifier for the resource.
DurableNameFormat	String	True	This property shall represent the format of the DurableName property.
			Enum — **Description**
			NAA — This durable name shall be a hexadecimal representation of the Name Address Authority structure as defined in the T11 Fibre Channel - Framing and Signaling - 3 (FC-FS-3) specification
			FC_WWN — This durable name shall be a hexadecimal representation of the World Wide Name format as defined in the T11 Fibre Channel Physical and Signaling Interface Specification.
			UUID — This durable name shall be the hexadecimal representation of the Universal Unique Identifier as defined in the Internation Telecom Union's OSI networking and system aspects - Naming, Addressing and Registration Specification.

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Identifier			
Property Name	**Type**	**ReadOnly**	**Description**
DurableNameFormat	String	True	**Enum**	**Description**

Enum	Description
EUI	This durable name shall be the hexadecimal representation of the IEEE-defined 64-bit Extended Unique Identifier as defined in the IEEE's Guidelines for 64-bit Global Identifier (EUI-64) Specification.
iQN	This durable name shall be in the iSCSI Qualified Name format as defined in RFC 3720 and RFC 3721.

Location			
Property Name	**Type**	**ReadOnly**	**Description**
Info	String	True	This property shall represent the location of the resource.
InfoFormat	String	True	This property shall represent the format of the Info property.

Table 10   Enum Types – Indicator LED

Member Name	Description
Lit	The Indicator LED is lit.
Blinking	The Indicator LED is blinking
Off	The Indicator LED is off.

The properties in Resource Type is inherited by all properties

4.3.4   Service Root

This resource represents the root of the Redfish service, located at the "`/redfish/v1/`" URI. As a hypermedia API, all other resources accessible through the Redfish interface on this device are linked directly or indirectly from the Service Root.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 11   Service Root Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Refer to section **4.3.3 Resource**.
Name(M)	String	True	Refer to section **4.3.3 Resource**.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
UUID	String	True	Refer to section **4.3.3 Resource**.
RedfishVersion	String	True	The value of this string shall represent the version of the Redfish service. The format of this string shall be of the format majorversion.minorversion.errata in compliance with Protocol Version Section of the Redfish specification.
Systems(N)	Object	True	Link to a collection of Systems.
Chassis(N)	Object	True	Link to a collection of Chassis.
Managers(N)	Object	True	Link to a collection of Managers.
Tasks(N)	Object	True	Link to Task Service.
AccountService(N)	Object	True	Link to the Account Service.
EventService(N)	Object	True	Link to the Event Service.
SessionService(N)	Object	True	Link to the Session Service.
Registries(N)	Object	True	Link to a collection of Registries.
JsonSchemas(N)	Object	True	Link to a collection of Json-Schema files.
UpdateService(N)	Object	True	Link to the UpdateService.

(continued on the next page)

Name	Type	ReadOnly	Description
Links(M)	Object	True	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

PropertyName	Type	ReadOnly	Description
Oem	Object	-	OEM extension object Refer to Resource Complex Types under section **4.3.3 Resource**. It will be present in response if there is an OEM property implemented according to "**How to Add OEM extensions (v1.1)**" document.
Sessions	Array	True	Link to a collection of Sessions

4.3.5 Computer System Collection

This resource references a collection of links, each pointing to a Computer System resource instance.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in **Table 12 ComputerSystem Properties**.

4.3.6 Computer System

A computer system represents a machine (physical or virtual) and the local resources such as memory, CPU and other devices that can be accessed from that machine. Information on these resources or sub systems are also linked to this resource. This resource shall be used to represent resources that represent a computing system in the Redfish specification.

The following BIOS module labels should be present for populating smbios information in BMC and thereby to view Memory and Processor instance information:

OemPublishTables

SS: AptioV;$/AptioV/Source/Modules/OemPublishTables;OemPublishTables_02

REST

SS: AptioV;$/AptioV/Source/Modules/RestSmBios;RestSmBios_01

SS: AptioV;$/AptioV/Source/Modules/RestIpmi;RestIpmi_04

SS:AptioV;$/AptioV/Source/Interfaces/AmiDataProcessingPkg;AmiDataProcessingPkg_03

> Please contact with your sales representative for further information on this AMI BIOS Package distribution.

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}
Content-Type: application/json
```

> Systems instance in BMC represents a single System and it's id represented as Self.
> **For Example:** https://{{ip}}/redfish/v1/Systems/Self

• **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 12   ComputerSystem Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.

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Name	Type	ReadOnly	Description
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
SystemType	String	True	An enumeration that indicates the kind of system that this resource represents.

Enum	Description
Physical	A computer system.
Virtual	A virtual machine instance running on this system.
OS	A computer system.
PhysicallyPartitioned	A hardware-based partition of a computer system.
VirtuallyPartitioned	A virtual or software-based partition of a computer system.

Name	Type	ReadOnly	Description
Links	Object	True	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

Name	Type	ReadOnly	Description
Oem	Object	-	OEM extension object. Refer to Resource Complex Types under section **4.3.3 Resource**. It will be present in response if there is an OEM property implemented according to "**How to Add OEM extensions (v1.1)**" document.
Chassis(N)	Array	True	An array of references to the chassis in which this system is contained
ManagedBy(N)	Array	True	An array of references to the Managers responsible for this system.

(continued on the next page)

Name	Type	ReadOnly	Description			
			Name	**Type**	**ReadOnly**	**Description**
			PoweredBy(N)	Array	True	An array of ID[s] of resources that power this computer system. Normally the ID will be a chassis or a specific set of power Supplies.
						Platform specific porting needed. Refer to Platform Specific Properties section in OEM Extension doc.
			CooledBy(N)	Array	True	An array of ID[s] of resources that cool this computer system. Normally the ID will be a chassis or a specific set of fans.
						Platform specific porting needed. Refer to Platform Specific Properties section in OEM Extension doc.
			Endpoints(N)	Array	True	An array of references to the endpoints that connect to this system.
						These will be available only as a part of FPX Product.
AssetTag	String	False	The user definable tag that can be used to track this computer system for inventory or other client purposes.			
			This can be populated by Host Interface, (Extra Bios Support is needed, now is).			
Manufacturer	String	True	Manufacturer or OEM of this system.			
			• This property will be populated if SMBIOS dump is present in BMC. • This can be populated by Host Interface, (Extra Bios Support is needed, now is).			

(continued on the next page)

Name	Type	ReadOnly	Description
Model	String	True	Model number of this system. • Platform specific porting needed. Refer to Platform Specific Properties section in "**How to Add OEM extensions (v1.1)**" document. • This can be populated by Host Interface, (Extra Bios Support is needed, now is).
SKU	String	True	The value of this property shall contain the manufacturer Stock Keeping Unit (SKU) for the system. This property will be populated if SMBIOS dump is present in BMC. This can be populated by Host Interface, (Extra Bios Support is needed, now is).
SerialNumber	String	True	The value of this property shall contain the serial number for this system. • This property will be populated if SMBIOS dump is present in BMC. • This can be populated by Host Interface, (Extra Bios Support is needed, now is).
PartNumber	String	True	Part number for this system as defined by the manufacturer. Platform specific porting needed. Refer to Platform Specific Properties section in "**How to Add OEM extensions (v1.1)**" document. This can be populated by Host Interface, (Extra Bios Support is needed, now is).
UUID	String	True	The value of this property shall be used to contain a universal unique identifier number for the system. RFC4122 describes methods that can be used to create the value. The value should be considered to be opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID. If the system supports SMBIOS, the value and byte order of the property should match byte-for-byte with the memory byte order (from lowest address to highest) of the SMBIOS UUID. Following this order will make it simpler to correlate the UUID with the SMBIOS UUID. This can be populated by Host Interface, (Extra Bios Support is needed, now is).

(continued on the next page)

Name	Type	ReadOnly	Description
HostName	String	False	The value of this property shall be the host name for this system, as reported by the operating system or hypervisor. This value is typically provided to the Manager by a service running in the host operating system. Northbound API is supported but still requires host interface and host agent support from host agent and in-band communication channel and platform specific porting needed.
IndicatorLED	String	False	The value of this property shall contain the indicator light state for the indicator light associated with this system. This can be populated by Host Interface, (Extra Bios Support is needed, now is). <table><tr><th>Enum</th><th>Description</th></tr><tr><td>Unknown</td><td>The state of the Indicator LED cannot be determined.</td></tr><tr><td>Lit</td><td>The Indicator LED is Lit.</td></tr><tr><td>Blinking</td><td>The Indicator LED is Blinking.</td></tr><tr><td>Off</td><td>The Indicator LED is Off.</td></tr></table>
PowerState	String	True	The current power state of the system. This can be populated by Host Interface, (Extra Bios Support is needed, now is). <table><tr><th>Enum</th><th>Description</th></tr><tr><td>On</td><td>The system is powered on.</td></tr><tr><td>Off</td><td>The system is powered off, although some components may continue to have AUX power such as management controller.</td></tr><tr><td>PoweringOn</td><td>A temporary state between Off and On. This temporary state can be very short.</td></tr><tr><td>PoweringOff</td><td>A temporary state between On and Off. The power off action can take time while the OS is in the shutdown process.</td></tr></table>
Boot	Object	False	This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration. Refer to **Table 13 ComputerSystem – Boot Properties**. This can be populated by Host Interface, (Extra Bios Support is needed, now is)

(continued on the next page)

Name	Type	ReadOnly	Description
BiosVersion	String	True	The version of the system BIOS or primary system firmware. This property will be populated if SMBIOS dump is present in BMC.
ProcessorSummary	-	-	This object describes the central processors of the system in general detail. This can be populated by Host Interface, (Extra Bios Support is needed, now is).

Name	Type	ReadOnly	Description
Count	Number	True	The number of processors in the system.
Model	String	True	The processor model for the primary or majority of processors in this system.
Status	Object	True	Refer to Resource Complex Types under section **4.3.3 Resource**. Northbound only support

Name	Type	ReadOnly	Description
MemorySummary	-	-	This object describes the central memory of the system in general detail. This can be populated by Host Interface, (Extra Bios Support is needed, now is).

Name	Type	ReadOnly	Description
TotalSystem MemoryGiB	Number	True	The total installed, operating system-accessible memory (RAM), measured in GiB.
Status	Object	True	Refer to Resource Complex Types under section **4.3.3 Resource**. Northbound only support
Memory Mirroring	String	True	The ability and type of memory mirroring supported by this system. It can take any of the following values:- System, DIMM, Hybrid, None. Northbound only support

(continued on the next page)

Name	Type	ReadOnly	Description
Actions	Object	True	Computer System allows the user to perform Reset Action and it's allowable values are as given in section **4.3.3 Resource**. Please refer to Reset enum type under Resource. It can also contains an OEM Object under OEM attribute within this Action.
EthernetInterfaces(N)	Object	True	A reference to the collection of Ethernet interfaces associated with this system.
SimpleStorage(N)	Object	True	A reference to the collection of storage devices associated with this system.
LogServices(N)	Object	True	A reference to the collection of Log Services associated with this system.
Status	Object	True	Please refer to section **4.3.3 Resource** for Resource.Status. This can be populated by Host Interface, (Extra Bios Support is needed, now is)
TrustedModules	Array	True	This object describes the array of Trusted Modules in the system. This can be populated by Host Interface, (Extra Bios Support is needed, now is)
SecureBoot(N)	Object	True	A reference to the UEFI SecureBoot resource associated with this system. This can be populated by Host Interface, (Extra Bios Support is needed, now is)
Bios(N)	Object	True	A reference to the BIOS settings associated with this system. This link will be populated only if corresponding BIOS module is present.
Memory(N)	Object	True	A reference to the collection of Memory associated with this system. This link will be populated if memory information is populated from SMBIOS dump.
Storage(N)	Object	True	A reference to the collection of storage devices associated with this system. Northbound API is supported but still requires host interface and host agent support from host agent and in-band communication channel and platform specific porting needed.

Name	Type	ReadOnly	Description
NetworkInterfaces(N)	Object	True	A reference to the collection of Network Interfaces associated with this system. *This link will be populated only if corresponding BIOS module is present.*
HostingRoles	Array	True	The hosting roles that this computer system supports.

Enum	Description
ApplicationServer	The system hosts functionality that supports general purpose applications.
StorageServer	The system hosts functionality that supports the system acting as a storage server.
Switch	The system hosts functionality that supports the system acting as a switch.

Name	Type	ReadOnly	Description
HostedServices	Object	True	The services that this computer system supports. • At present only OEM property is supported under it. Refer to Resource Complex Types under **4.3.3 Resource**. • It will be present in response if there is an OEM property implemented according to "**How to Add OEM extensions (v1.1)**" document.
PCIeDevices(N)	Object	True	A reference to a collection of PCIe Devices used by this computer system. *Links will be available only when Host Interface feature is enabled and the corresponding AMI BIOS Image is used.*
PCIeFunctions(N)	Object	True	A reference to a collection of PCIe Functions used by this computer system. *Links will be available only when Host Interface feature is enabled and the corresponding AMI BIOS Image is used.*

Table 13   ComputerSystem – Boot Properties
This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.

- • BootSourceOverrideTarget is set to a default value of "None" and can be changed only when the data is sent from BIOS (BIOS should support Redfish) or set by end-user using PATCH request (Enum values are selectively patchable with respect to Redfish support in BIOS).

  This can also be populated by Host Interface, (Extra Bios Support is needed, now is)
  - - The Allowable values only shows the values that are supported by IPMI by default so that syncing with IPMI will work. If it is detected that BIOS sent the AttributeRegistry file, then it is assumed that BIOS has support for using the Redfish boot options and the syncing with IPMI is disabled
  - - IPMI default support - None, Pxe, Floppy, Cd, Usb, Hdd, BiosSetup and Diags

- • UefiTargetBootSourceOverride will not be displayed by default and can be changed only when the data is sent from BIOS (BIOS should support Redfish) or set by end-user using PATCH request. Until then it is acceptable to have it not displayed and the "SelectList" part of odata.context can be omitting it in order to be a valid response.

  This can also be populated by Host Interface, (Extra Bios Support is needed, now is)

Name	Type	ReadOnly	Description
BootSourceOverrideTarget	String	False	The current boot source to be used at next boot instead of the normal boot device, if BootSourceOverrideEnabled is true. The allowable values for this property are specified in the following table:

Enum	Description
None	Boot from the normal boot device.
Pxe	Boot from the Pre-Boot Execution (PXE) environment.
Floppy	Boot from the floppy disk drive.
CD	Boot from the CD/DVD disc.
USB	Boot from a USB device as specified by the system BIOS.
Hdd	Boot from a hard drive.
BiosSetup	Boot to the BIOS Setup Utility.
Utilities	Boot the manufacturer's Utilities program(s). This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
Diags	Boot the manufacturer's Diagnostics program.

(continued on the next page)

Name	Type	ReadOnly	Description
			Enum **Description**
			UefiShell Boot to the UEFI Shell. This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
			UefiTarget Boot to the UEFI Device specified in the UefiTargetBootSourceOverride property. This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
			SDCard Boot from an SD Card. This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
			UefiHttp Boot from a UEFI HTTP network location. This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
			RemoteDrive Boot from a remote drive (e.g. iSCSI). This property is patchable only when BIOS supports Redfish and BIOS should send this property to BMC at BIOS Boot.
BootSourceOverrideEnabled	String	False	The value of this property shall be **Once** if this is a one time boot override and **Continuous** if this selection should remain active until cancelled. If the property value is set to Once, the value will be reset back to Disabled after the BootSourceOverrideTarget actions have been completed.
			Enum **Description**
			Disabled The system will boot normally.
			Once On its next boot cycle, the system will boot (one time) to the Boot Source Override Target. The value of BootSourceOverrideEnabled is then reset back to Disabled.
			Continuous The system will boot to the target specified in the BootSourceOverrideTarget until this property is set to Disabled

(continued on the next page)

Name	Type	ReadOnly	Description
UefiTargetBootSourceOverride	String	False	The value of this property shall be the UEFI device path of the override boot target. The valid values for this property are specified through the Redfish.AllowableValues annotation. BootSourceOverrideEnabled = Continuous is not supported for UEFI Boot Source Override as this setting is defined in UEFI as a one time boot only.
BootSourceOverrideMode	String	False	The value of this property shall be Legacy for non-UEFI BIOS boot or UEFI for UEFI boot from boot source specified in BootSourceOverrideTarget property.

Enum	Description
Legacy	The system will boot in non-UEFI boot mode to the Boot Source Override Target.
UEFI	The system will boot in UEFI boot mode to the Boot Source Override Target.

Table 14   Computer system – MemorySummary – MemoryMirroringEnum Properties

Enum	Description
System	The system supports DIMM mirroring at the System level. Individual DIMMs are not paired for mirroring in this mode.
DIMM	The system supports DIMM mirroring at the DIMM level. Individual DIMMs can be mirrored.
Hybrid	The system supports a hybrid mirroring at the system and DIMM levels. Individual DIMMs can be mirrored.
None	The system does not support DIMM mirroring.

Table 15   TrustedModules Properties
This object describes the inventory of a Trusted Modules installed in the system.

Name	Type	ReadOnly	Description
FirmwareVersion	String	True	The firmware version of this Trusted Module.
InterfaceType	String	True	This property indicates the interface type of the Trusted Module.
Status	String	True	Please refer to section **4.3.3 Resource** for Resource.Status.

Enum	Description
TPM1_2	Trusted Platform Module (TPM) 1.2.
TPM2_0	Trusted Platform Module (TPM) 2.0.
TCM1_0	Trusted Cryptography Module (TCM) 1.0.

This can be populated by Host Interface, (Extra Bios Support is needed, now is).

Name	Type	ReadOnly	Description
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. It will be present in response if there is an OEM property implemented according to "**How to Add OEM extensions (v1.1)**" document.
FirmwareVersion2	String	True	The 2nd firmware version of this Trusted Module, if applicable.
InterfaceTypeSelection	String	True	The Interface Type selection supported by this Trusted Module.

Enum	Description
None	The TrustedModule does not support switching the InterfaceType.
FirmwareUpdate	The TrustedModule supports switching InterfaceType via a firmware update.
BiosSetting	The TrustedModule supports switching InterfaceType via platform software, such as a BIOS configuration Attribute.
OemMethod	The TrustedModule supports switching InterfaceType via an OEM proprietary mechanism.

B.   PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/Systems/{{system_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 12 ComputerSystem Properties** for which ReadOnly is False that can be sent as Request body in json format.

Example PATCH Request Body:

```
{
     "Boot": {
          "BootSourceOverrideEnabled": "Continuous",
          "BootSourceOverrideTarget": "Usb",
          "UefiTargetBootSourceOverride": "UEFI device path 2"
          }
}
```

Null value is not supported for PATCH requests and a 400 bad request with PropertyValueTypeError is returned.

- **Response**

The response status is 204 with no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

C.   POST

• **Request**

The ResetType can be one of the following values: "**On**", "**ForceOff**", "**GracefulShutdown**", "**ForceRestart**".

```
POST  https://{{ip}}/redfish/v1/Systems/Self/Actions/
ComputerSystem.Reset
Content-Type: application/json
```

Example POST Request Body:

```
{"ResetType" : "On"}
```

• **Response**

The response status is 204 with no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.7   Memory Collection

It displays a list of Memory instances. This represents the collection of Memory resources.

> In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":
> • HostInterface
> • SMBIOS

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/Systems/Self/Memory
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.8   Memory

Displays the information about the Memory devices like DIMM supported by the host connected to the BMC.

In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":

- HostInterface
- SMBIOS

For SMBIOS, BIOS support with SMBIOS transfer capability through in-band is needed. Please refer to section **4.3.7 Memory Collection** for AMI BIOS Modules for this feature.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/Self/Memory/{{Memory_
instance}}
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 16   Memory Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.

Name	Type	ReadOnly	Description
MemoryType	String	True	The Type of Memory.

Enum	Description
DRAM	DRAM
NVDIMM_N	NVDIMM_N as defined by JEDEC.
NVDIMM_F	NVDIMM_F as defined by JEDEC.
NVDIMM_P	NVDIMM_P as defined by JEDEC.

Name	Type	ReadOnly	Description
MemoryDeviceType	String	True	The value of this property shall be the Memory Device Type as defined by SMBIOS. Allowable values are : ["DDR", "DDR2", "DDR3", "DDR4", "DDR4_SDRAM", "DDR4E_SDRAM", "LPDDR4_SDRAM", "DDR3_SDRAM", "LPDDR3_SDRAM", "DDR2_SDRAM", "DDR2_SDRAM_FB_DIMM", "DDR2_SDRAM_FB_DIMM_PROBE", "DDR_SGRAM", "DDR_SDRAM", "ROM", "SDRAM", "EDO", "FastPageMode", "PipelinedNibble"]
BaseModuleType	String	True	The base module type of Memory. Northbound only properties.

Enum	Description
RDIMM	Registered DIMM.
UDIMM	UDIMM
SO_DIMM	SO_DIMM
LRDIMM Mini_RDIMM	Load Reduced Mini_RDIMM
Mini_UDIMM	Mini_UDIMM
SO_RDIMM_72b	SO_RDIMM_72b
SO_UDIMM_72b	SO_UDIMM_72b
SO_DIMM_16b	SO_DIMM_16b
SO_DIMM_32b	SO_DIMM_32b

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Name	Type	ReadOnly	Description
MemoryMedia	Array	True	Media of this memory.

Northbound only properties.

Enum	Description
DRAM	DRAM
NVDIMM_N	NVDIMM_N as defined by JEDEC.
NVDIMM_F	NVDIMM_F as defined by JEDEC.
NVDIMM_P	NVDIMM_P as defined by JEDEC.

Name	Type	ReadOnly	Description
CapacityMiB	Number	True	The value of this property shall be the Memory capacity in MiB.
DataWidthBits	Number	True	The value of this property shall be the bus width in bits.
BusWidthBits	Number	True	The value of this property shall be the bus width in bits.
Manufacturer	String	True	The manufacturer of the Memory.
SerialNumber	String	True	The serial number as provided by the manufacturer of this Memory.
PartNumber	String	True	The part number as provided by the manufacturer of this Memory.
AllowedSpeedsMHz	Array	True	Speed bins supported by this Memory.
FirmwareRevision	String	True	Revision of firmware on the Memory controller. Northbound only properties. Platform specific porting required.
FirmwareApiVersion	String	True	Version of API supported by the firmware. Northbound only properties. Platform specific porting required.
FunctionClasses	Array of Items of type String	True	Function Classes by the Memory. Northbound only properties. Platform specific porting required.
VendorID	String	True	Vendor ID of the Memory. Northbound only properties. Platform specific porting required.
DeviceID	String	True	Device ID of the Memory. Northbound only properties. Platform specific porting required.

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Name	Type	ReadOnly	Description
SubsystemVendorID	String	True	The value of this property shall be the subsystem Vendor ID of the Memory. Northbound only properties. Platform specific porting required.
SubsystemDeviceID	String	True	The value of this property shall be the subsystem Device ID of the Memory. Northbound only properties. Platform specific porting required.
MaxTDPMilliWatts	Array of type number	True	The value of this property shall be the maximum power budgets supported by the Memory in milli Watts. Northbound only properties. Platform specific porting required.
SecurityCapabilities	Object	True	This object shall contain properties which describe the security capabilities of the Memory.

Name	Type	ReadOnly	Description
PassphraseCapable	Boolean	True	Memory passphrase set capability.
MaxPassphraseCount	Number	True	Maximum number of passphrases supported for this Memory.
SecurityStates	Array	True	Security states supported by the Memory. Refer to **Table 17 SecurityStates** below.

Name	Type	ReadOnly	Description
SpareDeviceCount	Number	True	The value of this property shall be the number of unused spare devices available in the Memory. If memory devices fails, the spare device could be used.
RankCount	Number	True	The value of this property shall be number of ranks available in the Memory. The ranks could be used for spare or interleave. Northbound only properties. Platform specific porting required.
DeviceLocator	String	True	Location of the Memory in the platform, typically marked in the silk screen.

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Name	Type	ReadOnly	Description
MemoryLocation	-	-	Memory connection information to sockets and memory controllers. Northbound only properties. Platform specific porting required. {subtable below}

Name	Type	ReadOnly	Description
Socket	Number	True	Socket number in which Memory is connected.
MemoryController	Number	True	Memory controller number in which Memory is connected.
Channel	Number	True	Channel number in which Memory is connected.
Slot	Number	True	Slot number in which Memory is connected.

Name	Type	ReadOnly	Description
ErrorCorrection	String	True	The value of this property shall be the error correction scheme supported for this memory.

Enum	Description
NoECC	No ECC available.
SingleBitECC	Single bit Data error can be corrected by ECC.
MultiBitECC	Multi-bit Data errors can be corrected by ECC.
AddressParity	Address Parity errors can be corrected.

Name	Type	ReadOnly	Description
OperatingSpeedMhz	Number	True	Operating speed of Memory in MHz
VolatileRegion SizeLimitMiB	Number	True	The value of this property shall be the total size of volatile regions in MiB. Northbound only properties. Platform specific porting required.
PersistentRegion SizeLimitMiB	Number	True	The value of this property shall be the total size of persistent regions in MiB. Northbound only properties. Platform specific porting required.

(continued on the next page)

Name	Type	ReadOnly	Description
Regions	Array	-	The value of this property shall be the memory region information within the Memory.

Name	Type	ReadOnly	Description
RegionId	String	True	Unique region ID representing a specific region within the Memory
OffsetMiB	Number	True	Offset with in the Memory that corresponds to the starting of this memory region in MiB
SizeMiB	Number	True	Size of this memory region in MiB.

Name	Type	ReadOnly	Description
OperatingMemory Modes	Array	True	The value of this property shall be the memory modes supported by the Memory.

Northbound only properties. Platform specific porting required.

Enum	Description
Volatile	Volatile memory.
PMEM	Persistent memory, byte accesible through system address space.
Block	Block accessible system memory.

Name	Type	ReadOnly	Description
PowerManagement Policy	Object	True	This object shall contain properties which describe the power management policy for the current resource.

Name	Type	ReadOnly	Description
PolicyEnabled	Boolean	True	Power management policy enabled status.
MaxTDPMilliWatts	Number	True	Maximum TDP in milli watts.
PeakPowerBudget MilliWatts	Number	True	Peak power budget in milli watts.Unit is mW.
AveragePowerBudget MilliWatts	Number	True	Average power budget in milli watts. Unit is mW.

Name	Type	ReadOnly	Description
IsSpareDeviceEnabled	Boolean	True	Spare device enabled status.
IsRankSpareEnabled	Boolean	True	Rank spare enabled status.

Name	Type	ReadOnly	Description				
Status	Object	-	**Name**	**Type**	**ReadOnly**	**Description**	
			State	String	True	Refer to section **4.3.3 Resource**, Resource – Enum Types.	
			Health	Number	True	Refer to section **4.3.3 Resource**, Resource – Enum Types. • Health Status is initially "OK" if memory is populated. • Health value can be affected/changed in 2 ways: - SMI interrupt in SEL Logs. It needs AMI BIOS modules as mentioned in section **4.3.7 Memory Collection**. - Sensor related logs as explained in detail in "**How to Add OEM extensions (v1.1)**" document.	

Table 17   SecurityStates

Enum	Description
Enabled	Secure mode is enabled.
Disabled	Secure mode is disabled.
Unlocked	Secure mode is enabled and access to the data is unlocked.
Locked	Secure mode is enabled and access to the data is locked.
Frozen	Secure state is frozen and cannot be modified until reset.
Passphraselimit	Number of attempts to unlock the Memory exceeded limit.

B.   POST

• **Request**

```
POST  https://{{ip}}/redfish/v1/Systems/{{Systems_instance}}/
Memory/{{manager_log_instance}}/Actions/AmiBios.ChangeState
Content-Type: application/json
```

Example POST Request URL

```
https://{{ip}}/redfish/v1/Systems/Self/Memory/1/Actions/
AmiBios.ChangeState
```

Example POST Request Body:

```
{
      "State": "Disabled"
}
```

If all the memory instances are disabled, the Host System will not bootup in the next boot. Please refer to "**MegaRAC Redfish - BMC Hardware Health Management Getting Started Guide (v1.1)**" for more detailed test cases.

• **Response**

The response status is 204 with no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.9   ProcessorCollection

It displays a list of Processor instances in the ComputerSystem(Host).

In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":

• HostInterface

• SMBIOS

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/Processors
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.10 Processor

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

> In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":
> • HostInterface
> • SMBIOS
>
> For SMBIOS, BIOS support with SMBIOS transfer capability through in-band is needed. Please refer to section **4.3.7 Memory Collection** for AMI BIOS Modules for this feature.

A. GET

• **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
Processors/{{system_processor_instance}}
Content-Type: application/json
```

• **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 18   Processor Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.

(continued on the next page)

Name	Type	ReadOnly	Description
Socket	String	True	Identifies the physical location or socket of the processor.
Status	Object	True	Name Type ReadOnly Description

			Name	Type	ReadOnly	Description
			State	String	True	Refer to section **4.3.3 Resource**, Resource – Enum Types.
			Health	Number	True	Refer to section **4.3.3 Resource**, Resource – Enum Types. • Health Status is initially "OK" if memory is populated. • Health value will be affected/changed through Sensor related logs as explained in detail in "**How to Add OEM extensions (v1.1)**" document.

Name	Type	ReadOnly	Description
ProcessorType	String	True	Identifies the type of processor contained in this Socket.

Enum	Description
CPU	A Central Processing Unit.
GPU	A Graphics Processing Unit.
FPGA	A Field Programmable Gate Array.
DSP	A Digital Signal Processor.
Accelerator	An Accelerator
OEM	An OEM-defined Processing Unit.

Name	Type	ReadOnly	Description
ProcessorArchitecture	String	True	Identifies the architecture of the processor contained in this Socket

Enum	Description
x86	x86 or x86-64
IA-64	Intel Itanium.
ARM	ARM
MIPS	MIPS
OEM	OEM-defined

(continued on the next page)

Name	Type	ReadOnly	Description
InstructionSet	String	True	This property shall contain the string which identifies the instruction set of the processor contained in this socket.

Northbound only supported.

Enum	Description
x86	x86 32-bit
x86-64	x86 64-bit
IA-64	Intel IA-64
ARM-A32	ARM 32-bit
ARM-A64	ARM 64-bit
MIPS32	MIPS 32-bit
MIPS64	MIPS 64-bit
OEM	OEM-defined

Name	Type	ReadOnly	Description
ProcessorId	Object	-	This object shall contain identification information for this processor.

Name	Type	ReadOnly	Description
VendorId	String	True	This property shall indicate the Vendor Identification string information as provided by the manufacturer of this processor.
Identification Registers	String	True	The contents of the Identification Registers (CPUID) for this processor.
EffectiveFamily	String	True	The effective Family for this processor
EffectiveModel	String	True	This property shall indicate the effective Model information as provided by the manufacturer of this processor.
Step	String	True	This property shall indicate the Step or revision string information as provided by the manufacturer of this processor.
MicrocodeInfo	String	True	This property shall indicate the Microcode Information as provided by the manufacturer of this processor.

Name	Type	ReadOnly	Description
Manufacturer	String	True	The manufacturer of the processor
Model	String	True	This property shall indicate the model information as provided by the manufacturer of this processor.
MaxSpeedMHz	Number	True	The maximum clock speed of the processor.
TotalCores	Number	True	The total count of independent processor cores contained within this processor.
TotalThreads	Number	True	The total count of independent execution threads supported by this processor.

4.3.11   Ethernet Interface Collection

A.   Systems

This resource shall be used to represent the collection of host side NIC resources. This requires host agent support from OS and in-band communication channel.

> In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":
>
> • HostInterface
>
> • SMBIOS
>
> OR
>
> Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

B.   Managers

This resource shall be used to represent the collection of NIC resources in the manager.

C.   GET

• **Request**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
EthernetInterfaces
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Resource** for the JSON response properties.

> • If `{{manager_ethifc_instance}}` is usb0, then only the following properties will be available in the response: Id, Name, MACAddress&Ipv4Addresses.
>
> • Manager Ethernet Interface typically supports at max one VLAN per interface for a single BMC.

4.3.12   EthernetInterface

A.   Systems

This resource shall be used to represent host side NIC resources. This requires host agent support from OS and in-band communication channel.

• In BMC, Redfish Inventory population for this API can be achieved by one of the 2 methods and is available as part of Build Time PRJ Selection "Inventory Configuration":

  - HostInterface

  - SMBIOS

OR

Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

• Host Agent should be running in Host and should be capable to send this information through a channel created between Host & BMC like IPMI/KCS/USB interface etc or by some other proprietary protocol.

• Sync agent OEM extension should be written in which this data should be written onto redis db. Customer can refer to section 1.3 in "How to add OEM Extensions" for it.

• Key to populate on redisdb:

`SET Redfish:Systems:Self:EthernetInterfaces:{{Interface1}}: {{Interface1_property}} {{Interface1_value}}`

Example: `SET Redfish:Systems:Self:EthernetInterfaces: eth0:ResourceExists:Name  eth0`

B.   Managers

This resource shall be used to represent the NIC resources in the manager.

• **GET - EthernetInterface Instance**

  - **Request for EthernetInterface Instance**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
EthernetInterfaces/{{manager_ethifc_instance}}
Content-Type: application/json
```

  - **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table.

Manager Ethernet Interface typically supports at max one VLAN per interface for a single BMC.

Table 19   Ethernet Interface Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
UefiDevicePath	String	True	The UEFI device path for this interface (port). Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
Status	Object	True	Refer to section **4.3.3 Resource** for Status under Resource Complex Types.
InterfaceEnabled	Boolean	False	This indicates whether this interface is enabled.
Permanent MACAddress	String	True	The value of this property shall be the Permanent MAC Address of this interface (port). This value is typically programmed during the manufacturing time. This address is not assignable.
MACAddress	String	True	The value of this property shall be the effective current MAC Address of this interface. If an assignable MAC address is not supported, this is a read only alias of the PermanentMACAddress. Even though the ReadOnly attribute in Redfish schema for managers is specified as "False", In Redfish API, patching MACAddress is not allowed. Changing MACAddress will change the IP address and if user is using redfish in remote with no access to host/BMC, it will be an issue in obtaining new IP address and also change in MACAddress could result in mac address collision if there is a device on the local network with the same mac address.
SpeedMbps	Number	False	The current link speed of the interface in Mbps. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.

(continued on the next page)

Name	Type	ReadOnly	Description
AutoNeg	Boolean	False	The value of this property shall be true if auto negotiation of speed and duplex is enabled on this interface and false if it is disabled.
FullDuplex	Boolean	False	The value of this property shall represent the duplex status of the Ethernet connection on this interface. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
MTUSize	Number	False	The value of this property shall be the size in bytes of largest Protocol Data Unit (PDU) that can be passed in an Ethernet (MAC) frame on this interface. • Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document. • MTU (Maximum Transmission Unit)
HostName	String	False	DNS Hostname without any domain information.
FQDN	String	False	This is the complete, fully qualified domain name obtained by DNS for this interface.
MaxIPv6Static Addresses	Number	True	This indicates the number of array items supported by Ipv6StaticAddresses.
VLAN	Object	False	If this Network Interface supports more than one VLAN, this property will not be present and the client should look for VLANs collection in the link section of this resource. | Name	Type	ReadOnly	Description
VLANEnable	Boolean	False	This indicates if this VLAN is enabled.
VLANId	Number	False	This indicates the VLAN identifier for this VLAN. Num value : 0 and Maximum value: 4095.	
Ipv4Addresses	Array of Objects	False	This array of objects represents all of the Ipv4 static addresses to be assigned on this interface. Refer to **Table 20 Ipv4AddressesProperties**.
Ipv6Addresses	Array of Objects	False	This array of objects enumerates all of the currently assigned Ipv6 addresses on this interface. Refer to **Table 21 Ipv6AddressesProperties**.

(continued on the next page)

Name	Type	ReadOnly	Description
Ipv6StaticAddresses	Array of Objects	False	This array of objects represents all of the Ipv6 static addresses to be assigned on this interface. ✐ Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.

Name	Type	ReadOnly	Description
Oem	Object	False	Refer to section **4.3.3 Resource** for Resource.Oem.
Address	String	False	A static Ipv6 address that is currently assigned on a network interface.
PrefixLength	Number	True	Provides the Ipv6 network prefix length in bits for this address. Min:1,Max:128. ✐ Due to constraint of schema IPAddresses.v1_0_0.json, PrefixLength = 0 will be reported as ValidationError.

Name	Type	ReadOnly	Description
Ipv6DefaultGateway	String	True	This is the Ipv6 default gateway address that is currently in use on this interface.
NameServers	Array [Items of type String]	True	This represents DNS name servers that are currently in use on this interface.
VLANs(N)	Object	True	This is a reference to a collection of VLANs and is only used if the interface supports more than one VLANs.VlanInterfaceCollection. ✐ Platform specific porting needed.

Table 20   Ipv4AddressesProperties

Name	Type	ReadOnly	Description
Address	String	False	This is the Ipv4 address. If DHCPv4 is enabled on the interface, this property becomes read-only.
SubnetMask	Object	False	This is the Ipv4 address. If DHCPv4 is enabled on the interface, this property becomes read-only. String with pattern "`^(?:[0-9]{1,3}\\.){3}[0-9]{1,3}$`"

(continued on the next page)

Name	Type	ReadOnly	Description
AddressOrigin	String	True	This is the Ipv4 gateway for this address.
			Enum — **Description**
			Static — A static address as configured by the user.
			DHCP — Address is provided by a DHCPv4 service
			BOOTP — Address is provided by a BOOTP service.
			Ipv4LinkLocal — Address is valid only for this network segment (link).
Gateway	String	False	This is the Ipv4 default gateway address for this interface. If DHCPv4 is enabled on the interface and is configured to set the Ipv4 default gateway address, this property becomes read-only.

Table 21   Ipv6AddressesProperties

Name	Type	ReadOnly	Description
Address	String	False	A static Ipv6 address that is currently assigned on a network interface.
PrefixLength	Number	True	Provides the Ipv6 network prefix length in bits for this address. Min:1,Max:128.
			Due to constraint of schema IPAddresses.v1_0_0.json, PrefixLength = 0 will be reported as ValidationError.
AddressOrigin	String	True	This is the Ipv6 address origin for this interface.
			Enum — **Description**
			Static — A static address as configured by the user.
			DHCPv6 — Address is provided by a DHCPv6 service.
			LinkLocal — Address is valid only for this network segment (link).
			SLAAC — Address is provided by a Stateless Address AutoConfiguration (SLAAC) service.
AddressState	String	True	The current state of this address as defined in RFC 4862.
			Enum — **Description**
			Preferred — This address is currently within both it's valid and preferred lifetimes as defined in RFC 4862.
			Deprecated — This address is currently within it's valid lifetime, but is now outside of it's preferred lifetime as defined in RFC 4862.
			LinkLocal — Address is valid only for this network segment (link).
			SLAAC — Address is provided by a Stateless Address AutoConfiguration (SLAAC) service.

- **PATCH**

  - **Request**

  ```
  PATCH https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
  EthernetInterfaces/{{manager_ethifc_instance}}
  Content-Type: application/json
  ```

  Request Body

  Please refer to the properties that are patchable in **Table 19 Ethernet Interface Properties** for which ReadOnly is False that can be sent as Request body in json format.

  - `{{manager_ethifc_instance}}` – If this instance is usb0, PATCH is not supported.

  - PATCH on the instance for changing network settings will cause the current connection to be terminated.

  - Patch is not allowed for Ipv6/Ipv4 properties in DHCP mode. Patch of IPV6/IPV4 properties is allowed only in Static mode.

  - MACaddress/PermanentMACaddress is not allowed to patch and considered as read-only property.

  Sample PATCH Request:

  Sample patch request body for ethernet-interface properties for interface instance uri,

  Example: `PATCH https://{{ip}}/redfish/v1/Managers/Self/EthernetInterfaces/eth0`

  To change hostname and fqdn
  ```
  {
        "FQDN": "NEWHOST.us.megatrends.com",
        "HostName": "NEWHOST"
  }
  ```

  To disable autoneg or to change FullDuplex/SpeedMbps we need to provide three properties
  ```
  {
        "AutoNeg": false,
        "FullDuplex": true,
        "SpeedMbps": 10
  }
  ```

To enable autoneg values
```
{
      "AutoNeg": true
}
```

To patch MTUSize
```
{
      "MTUSize": 1450
}
To change IPv4Address details
{
      "IPv4Addresses": [
              {
              "Address": "172.16.97.178",
              "Gateway": "172.16.96.1",
              "SubnetMask": "255.255.248.0"
              }
      ]
}
```

To change IPv6Address details
```
{
      "IPv6Addresses": [
              {
              "Address": "2001:db8:1:0:21a:2bff:fe11:1111"
              }
      ]
}
```

To enable/disable interface
```
{
      "InterfaceEnabled": true
}
```

```
{
      "FQDN": "NEWHOST.us.megatrends.com", "FullDuplex": true,
      "AutoNeg": false, "MTUSize": 1450, "SpeedMbps": 10,
      "HostName": "NEWHOST", "MACAddress": "00:1a:2b:11:11:11",
      "IPv4Addresses": [ { "Address": "172.16.97.178",
      "Gateway": "172.16.96.1", "SubnetMask": "255.255.248.0"
      } ], "IPv6Addresses": [{ "Address": "2001:db8:1:0:21a:2b
      ff:fe11:1111"} ], "InterfaceEnabled": true
}
```

- Response

The response status is 204 with no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.13 SimpleStorageCollection

This represents the collection of Simple Storage resources.

Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

A. GET

• Request

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
SimpleStorage
Content-Type: application/json
```

• Response

Please refer to section **Computer System Collection** for the JSON response properties.

4.3.14   SimpleStorage

This is the schema definition for the Simple Storage resource. It represents the properties of a storage controller and its directly-attached devices

> Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

A.   GET

*   **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
SimpleStorage/{{system_simplestorage_instance}}

Content-Type: application/json
```

*   **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 22   Simple StorageProperty

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
UefiDevicePath	String	True	The UEFI device path used to access this storage controller. This path is used to identify and locate the specific storage controller.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Status.

(continued on the next page)

Name	Type	ReadOnly	Description			
Devices	Array	True	This object shall contain identification information for this processor.			
			Name	**Type**	**ReadOnly**	**Description**
			Oem	Object	False	Refer to section **4.3.3 Resource** for Resource.Oem.
			Name (M)	String	True	Name of the resource or array element.
			Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Status.
			Manufacturer	String	True	Name of the manufacturer of this storage device.
			Model	String	True	Model number of this device.

4.3.15 LogServiceCollection

This represents the collection of Log Service resources.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
LogServices
Content-Type: application/json
OR
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices
Content-Type: application/json
OR
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}/
LogServices
Content-Type: application/json
system_instance – BIOS
manager_instance – AuditLog& SEL
chassis_instance - Logs
```

- **Response**

Please refer to section **4.3.5 Resource** for the JSON response properties.

4.3.16   Log Service

This resource represents the log service for the resource or service to which it is associated. This resource shall be used to represent a log service for a Redfish implementation.

BIOS logs are supported under Systems LogServices.

```
/redfish/v1/Ssytems/Self/LogServices/BIOS
```

AuditLog, EventLog& SEL are supported under Manager LogServices.

```
/redfish/v1/Managers/Self/LogServices/AuditLog
/redfish/v1/Managers/Self/LogServices/SEL
/redfish/v1/Managers/Self/LogServices/EventLog
```

Logs are supported under Chassis LogServices.

```
/redfish/v1/Chassis/Self/LogServices/Logs
```

> IPMI SEL Logs
>
> IPMI SEL Logs include System BIOS Logs and Managers SEL Logs and Chassis Logs. These Logs will be reflected in Redfish only when "ServiceEnabled" property is true.
>
> IPMI Oem SEL logs would be displayed only when platform/oem specific porting support is added.

A.   System BIOS Logs

Clearing BIOS related SEL entries through IPMITool will reflect in Redfish in `/Systems/Self/LogServices/BIOS/Entries`.

On delete cascade:

User can configure this option through System Builder. It can take any of the following boolean values: Please refer to System Builder User Guide(v1.1) for further reference.

False - Clearing BIOS related SEL entries from Redfishwill clear only in Redfish and will not clear the actual logs from IPMI and hence will not be in sync.

True - Clearing BIOS related SEL entries from Redfishwill clear in both Redfish and IPMI and the logs in IPMI and Redfish will be in sync.

Please refer to section 1.4.9 in System Log Service under Configurable properties in "**How to Add OEM extensions (v1.1)**" document for redis Keys.

Example: `SET Redfish:Systems:Self:LogServices:BIOS:onDeleteCascade` true/false in systems.rcmd under db_init in redfish_core package should be modified at buildtime

B.   Chassis Logs

The following SEL Logs will be displayed under Chassis:

Temperature, Fan, Voltage, Current, Physical Intrusion, Power Supply and Power Unit.

- **Clearing Chassis Logs**

    Clearing SEL entries through IPMITool will reflect in Redfish in `/Chassis/Self/LogServices/Logs/Entries`.

On delete cascade

User can configure this option through System Builder. It can take any of the following boolean values: Please refer to System Builder User Guide (v1.0) for further reference.

False - Clearing SEL entries from Redfish will clear only in Redfish and will not clear the actual logs from IPMI and hence will not be in sync.

True - Clearing SEL entries from Redfish will clear in both Redfish and IPMI and the logs in IPMI and Redfish will be in sync.

Please refer to section 1.4.9 in System Log Service under Configurable properties in "**How to Add OEM extensions (v1.1)**" document for redis Keys.

Example: `SET Redfish:Chassis:Self:LogServices:Logs:onDeleteCascade` true/falsein managers.rcmd under db_init in redfish_core package should be modified at buildtime.

C.   Manager Event Logs

The following entries will be added in Manager EventLogs:

- ResourceAdded event will be added when new Account or Role is created.
- ResourceRemoved event will be added when Account or Role is deleted.
- StatusChange event will be added when System or Chassis Status changed.
- Alert event will be added when System or Chassis Reset Action is called.

- **Manager SEL Logs**

  Clearing SEL entries through IPMITool will reflect in Redfish in `/Chassis/Self/LogServices/Logs/Entries` only.

  On delete cascade

  User can configure this option through System Builder. It can take any of the following boolean values: Please refer to System Builder User Guide (v1.0) for further reference.

  False - Clearing SEL entries from Redfish will clear only in Redfish and will not clear the actual logs from IPMI and hence will not be in sync.

  True - Clearing SEL entries from Redfish will clear in both Redfish and IPMI and the logs in IPMI and Redfish will be in sync.

  Please refer to section 1.4.9 in System Log Service under Configurable properties in "**How to Add OEM extensions (v1.1)**" document for redis Keys.

  Example: `SET Redfish:Managers:Self:LogServices:SEL:onDeleteCascade` true/falsein managers.rcmd under db_init in redfish_core package should be modified at buildtime.

D.   Max Log Entries –SPI Image

1MB conf writable area should be available for the following logs with 300 max logs each: AuditLog,SEL,BIOS & Logs.

If the count of max logs is to be increased, conf writable area should be proportionately increased.

E. GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
LogServices/{{system_log_instance}}

Content-Type: application/json

OR

https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices/{{manager_log_instance}}

Content-Type: application/json

OR

https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}/
LogServices/{{chassis_log_instance}}

Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 23   Log ServiceProperties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
ServiceEnabled	Boolean	False	Indicates whether this service is enabled.
MaxNumberOf Records(C)	Number	True	The maximum numbers of LogEntries this service can have. Min value:0

(continued on the next page)

Name	Type	ReadOnly	Description
OverWritePolicy(C)	String	True	Indicates the policy of the log service when the MaxNumberOfRecords has been reached or when the log is full.

Enum	Description
Unknown	The overwrite policy is not known or is undefined.
WrapsWhenFull	When full, new entries to the Log will overwrite previous entries.
NeverOverWrites	When full, new entries to the Log will be discarded

Name	Type	ReadOnly	Description
DateTime	String	False	The current DateTime (with offset from UTC) for the log service in Redfish Timestamp format.
DateTimeLocalOffset	String	False	The time offset from UTC that the DateTime property is set to in format: +06:00.
Actions	Object	True	The Actions property shall contain the available actions for this resource like section **4.3.3 Resouce** LogService.ClearLog or any other OEMActions.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Status.
Entries(N)	Object	True	The value of this property shall reference a collection of resources of type LogEntry.

F.   PATCH

•   **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
LogServices/{{system_log_instance}}
Content-Type: application/json
OR
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices/{{manager_log_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 23 Log ServiceProperties** for which ReadOnly is False that can be sent as Request body in json format.

•   **Response**

The response status is success by either one of the following two scenarios:

- The response status **204**, means success and the response body should not be return.
- The response status **200** means success and the response body is a GET Response with the changed values specified in the Patchable properties in Request body.

G. POST

* **Request**

```
POST  https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices/{{manager_log_instance}}/Actions/LogService.ClearLog
Content-Type: application/json
```

Example POST Request URL:

```
https://{{ip}}/redfish/v1/Managers/Self/LogServices/BIOS/
Actions/LogService.ClearLog
https://{{ip}}/redfish/v1/Managers/Self/LogServices/AuditLog/
Actions/LogService.ClearLog
```

Example POST Request Body:

```
{
      "ClearType": "ClearAll"
}
```

* **Response**

    The response status is 204 with no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.17   LogEntryCollection

This represents the collection of Log Entry resources.

A. GET

* **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
LogServices/{{system_log_instance}}/Entries
Content-Type: application/json
OR
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices/{{manager_log_instance}}/Entries
Content-Type: application/json
```

* **Response**

    Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.18   Log Entry

This resource represents the log record format for logs. It is designed to be used for SEL logs from IPMI as well as Event Logs and OEM specific logs. The EntryTypeNAME indicates the type of log and there are other properties dependent on its value.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
LogServices/{{system_log_instance}}/Entries/{{system_logentry_
instance}}
Content-Type: application/json
OR
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
LogServices/{{manager_log_instance}}/Entries/{{manager_logentry_
instance}}
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 24   Log Entry Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Severity	String	True	This is the severity of the log entry. It can take any one of the Enum values – OK, Warning or Critical.
Created	String	True	The time the log entry was created.
EntryType(M)	String	True	This property shall represent the type of LogEntry. If the resource represents an IPMI SEL log entry, the value shall be SEL. If the resource represents an Event log, the value shall be Event. If the resource represents an OEM log format, the value shall be Oem. Enum can be Event,SELor Oem.

(continued on the next page)

Name	Type	ReadOnly	Description
EntryCode	String	True	This property shall be present if the EntryType value is SEL. These enumerations are the values from table 42-1 and 42-2 of the IPMI specification.

Type	String
String	Assert
	Deassert
	Lower Non-critical - going low
	Lower Non-critical - going high
	Lower Critical - going low
	Lower Critical - going high
	Lower Non-recoverable - going low
	Lower Non-recoverable - going high
	Upper Non-critical - going low
	Upper Non-critical - going high
	Upper Critical - going low
	Upper Critical - going high
	Upper Non-recoverable - going low
	Upper Non-recoverable - going high
	Transition to Idle
	Transition to Active
	Transition to Busy
	State Deasserted
	State Asserted
	Predictive Failure deasserted
	Predictive Failure asserted
	Limit Not Exceeded
	Limit Exceeded
	Performance Met
	Performance Lags
	Transition to OK
	Transition to Non-Critical from OK
	Transition to Critical from less severe
	Transition to Non-recoverable from less severe
	Transition to Critical from Non-recoverable
	Transition to Non-recoverable
	Monitor
	Informational
	Device Removed / Device Absent
	Device Inserted / Device Present
	Device Disabled
	Device Enabled
	Transition to Running
	Transition to In Test
	Transition to Power Off
	Transition to On Line
	Transition to Off Line
	Transition to Off Duty
	Transition to Degraded
	Transition to Power Save
	Install Error

(continued on the next page)

Name	Type	ReadOnly	Description	
			Type	**String**
			String	Fully Redundant
				Redundancy Lost
				Redundancy Degraded
				Non-redundant:Sufficient Resources from Redundant
				Non-redundant:Sufficient Resources from Insufficient Resources
				Non-redundant:Insufficient Resources
				Redundancy Degraded from Fully Redundant
				Redundancy Degraded from Non-redundant
				D0 Power State
				D1 Power State
				D2 Power State
				D3 Power State
SensorType	String	True	This property shall be present if the EntryType value is SEL.	
			Type	**String**
			String	Platform Security Violation Attempt
				Temperature
				Voltage
				Current
				Fan
				Physical Chassis Security
				Processor
				Power Supply / Converter
				PowerUnit
				CoolingDevice
				Other Units-based Sensor
				Memory
				Drive Slot/Bay
				POST Memory Resize
				System Firmware Progress
				Event Logging Disabled
				System Event
				Critical Interrupt
				Button/Switch
				Module/Board
				Microcontroller/Coprocessor
				Add-in Card
				Chassis
				ChipSet
				Other FRU
				Management Subsystem Health
				Battery
				Session Audit
				Version Change
				FRUState

(continued on the next page)

Name	Type	ReadOnly	Description
SensorNumber	Number	True	This property decodes from EntryType: If it is SEL, it is the sensor number; if Event it is not applicable. Otherwise, it is OEM specific.
Message	String	True	This property shall be the Message property of the event and decodes from EntryType: If it is Event then it is a message Description. Otherwise, it is SEL or OEM specific. In most cases, this will be the actual Log Entry. Populated only for AuditLogs.
MessageId	String	True	This property shall the MessageId property of the event and decodes from EntryType: If it is Event then it is a message id. Otherwise, it is SEL or OEM specific. This value is only used for registries - for more information, see the specification. The value will be "Ipmi.2.0.GeneralEventData" for managers SEL and Systems BIOS and "unspecified" for chassis logs.
MessageArgs	Array	True	This contains message arguments to be substituted into the message included or in the message looked up via a registry. Populated only for AuditLogs.
Links	Object	-	Contains references to other resources that are related to this resource.

			Name	Type	ReadOnly	Description
			Oem	Object	-	Refer to section **4.3.3 Resource** for Links under Resource Complex Types.
			OriginOf Condition	Object	True	This is the URI of the resource that caused the log entry. Refer idRef in odata4.0.0.json.

4.3.19   VLAN Network Interface Collection

This represents the collection of VLAN Interface Collection resources.

> Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
EthernetInterfaces/{{system_ethifc_instance}}/VLANs
Content-Type: application/json
```

- **Response**

   Please refer to section **4.3.5 Resource** for the JSON response properties.

4.3.20　VLANNetworkInterface

This resource represents the VLAN Network Interface for the resource or service to which it is associated. This resource shall be used to represent a Network Interface for a Redfish implementation.

> Northbound API is supported but still requires host agent support from host agent and in-band communication channel and platform specific porting needed.

A.　GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
EthernetInterfaces/{{system_ethifc_instance}}/VLANs/{{system_
vlan_instance}}
Content-Type: application/json
```

Example:

```
https://{{ip}}/redfish/v1/Systems/Self/EthernetInterfaces/bond0/
VLANs/{{system_vlan_instance}}
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 25　VLAN Network Interface

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
VLANEnable	Boolean	False	This property shall be used to indicate if this VLAN is enabled for this interface.
VLANId	Number	False	This property shall be used to indicate the VLAN identifier for this VLAN. Minimum:0 & Maximum:4094.

A. PATCH

• **Request**

```
https://{{ip}}/redfish/v1/Systems/{{system_instance}}/
EthernetInterfaces/{{system_ethifc_instance}}/VLANs/{{system_
vlan_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 25 VLAN Network Interface** for which ReadOnly is False that can be sent as Request body in json format.

• **Response**

The response status is success by either one of the following two scenarios:

- The response status **204**, means success and the response body should not be return.

- The response status **200** means success and the response body is a GET Response with the changed values specified in the Patchable properties in Request body.

4.3.21   Chassis Collection

This resource shall be used to represent a collection of chassis.

A. GET

• **Request**

```
https://{{ip}}/redfish/v1/Chassis
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Resource** for the JSON response properties.

4.3.22   Chassis

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

A. GET

• **Request**

```
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 26   Chassis Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
ChassisType(M)	String	True	ChassisType shall indicate the physical form factor for the type of chassis. Refer to **Table 27 Chassis Type Enum Properties** below for allowable Enum attributes.
Manufacturer(C)	String	True	The manufacturer of this chassis. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
Model(C)	String	True	The model number for this chassis. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
SKU(C)	String	True	This is the SKU for this chassis. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
SerialNumber(C)	String	True	The serial number for this chassis. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.

(continued on the next page)

Name	Type	ReadOnly	Description
PartNumber(C)	String	True	The part number for this chassis. 📝 Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
AssetTag	String	False	The user assigned asset tag for this chassis.
IndicatorLED	String	False	The state of the indicator LED, used to identify the chassis. **Enum** — **Description** Unknown — The state of the Indicator LED cannot be determined. Lit — The Indicator LED is lit. Blinking — The Indicator LED is blinking. Off — The Indicator LED is off.
Links	Object	True	The links object contains the links to other resources that are related to this resource. Refer to **Table 28 Chassis Links Properties**.
Actions	Object	True	The Actions object contains the available custom actions on this resource like Chassis.Reset and OemActions if any.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Status.
LogServices(N)	Object	True	The value of this property shall be a link to a collection of type LogServiceCollection.
Thermal(N)	Object	True	A reference to the thermal properties (fans, cooling, sensors) for this chassis.
Power(N)	Object	True	A reference to the power properties (power supplies, power policies, sensors) for this chassis.
PowerState	String	True	This is the current power state of the chassis. **Enum** — **Description** On — The components within the chassis has power on. Off — The components within the chassis has no power, except some components may continue to have AUX power such as management controller. PoweringOn — A temporary state between Off and On. The components within the chassis can take time to process the power on action. PoweringOff — A temporary state between On and Off. The components within the chassis can take time to process the power off action.

Table 27   Chassis Type Enum Properties

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

Table 28   Chassis Links Properties

Name	Type	ReadOnly	Description
ComputerSystems(N)	Array	True	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.
ManagedBy(N)	Array	True	An array of references to the Managers responsible for managing this chassis.
ContainedBy(N)	Array	True	A reference to the chassis that this chassis is contained by. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
Contains(N)	Array	True	An array of references to any other chassis that this chassis has in it. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
PoweredBy(N)	Array	True	An array of ID[s] of resources that power this chassis. Normally the ID will be a chassis or a specific set of power Supplies. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
CooledBy(N)	Array	True	An array of ID[s] of resources that cool this chassis. Normally the ID will be a chassis or a specific set of fans. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
ManagersInChassis(N)	Array	True	An array of references to the managers located in this Chassis. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.

B. PATCH

• **Request**

```
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}
Content-Type: application/json
```

Example PATCH Request Body:

```
{
    "AssetTag":"abcd",
    "IndicatorLED":"Off"
}
```

> Null value is not supported for PATCH requests and a 400 bad request with PropertyValueTypeError is returned.

Request Body

Please refer to the properties that are patchable in **Table 26 Chassis Properties** for which ReadOnly is False that can be sent as Request body in json format.

• **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

C. POST

• **Request**

```
POST  https://{{ip}}/redfish/v1/ Chassis/Self/Actions/Chassis.
Reset
Content-Type: application/json
```

Request Body

The ResetType can be one of the following values: "**On**", "**ForceOff**", "**GracefulShutdown**", "**ForceRestart**".

Example POST Request Body:

```
{
    "ResetType": "On"
}
```

• **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.23 Power

This resource shall be used to represent a power metrics resource for a Redfish implementation.

A. GET

• **Request**

```
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}/Power
Content-Type: application/json
```

• **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 29   Power Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
PowerControl(N)	Array	False	This is the definition for power control function (power reading/limiting). Refer to **Table 30 PowerControl Properties** below.
Voltages(N)	Array	True	This is the definition for voltage sensors. Refer to **Table 32 Voltages Properties** below.
PowerSupplies(N)	Array	False	Details of a power supplies associated with this system or device. Refer to **Table 33 PowerSupply Properties** below. Northbound is supported and platform specific porting needed.
Redundancy(N)(C)	Array	True	Redundancy information for the power subsystem of this system or device. Please refer to section **4.4 Redfish AMI OEM Entities** for Redundancy information that can be configured through System Builder.

Table 30   PowerControl Properties

Name	Type	ReadOnly	Description
Name(C)	String	True	Power Control Function name.
PowerConsumedWatts	Number	True	The actual power being consumed (in Watts) by the chassis. Minimum Value: 0. Northbound only properties. Platform specific porting required.
PowerRequestedWatts	Number	True	The amount of power (in Watts) that the chassis resource is currently requesting be budgeted to it for future use. Minimum Value: 0. Northbound only properties. Platform specific porting required.
PowerAvailableWatts	Number	True	The amount of power capacity (in Watts) not already allocated and shall equal PowerCapacityWatts - PowerAllocatedWatts. Minimum Value : 0. Northbound only properties. Platform specific porting required.
PowerCapacityWatts	Number	True	The total power capacity that is available for allocation to the chassis resources. Minimum Value: 0. Northbound only properties. Platform specific porting required.
PowerAllocatedWatts	Number	True	The total power currently allocated to chassis resources. Minimum Value: 0. Northbound only properties. Platform specific porting required.
PowerMetrics	Object	True	Power readings for this chassis. DCMI should be supported in the platform and BMC.

Attribute	Type	Description
IntervalInMin	Number	The time interval (or window) in which the PowerMetrics are measured over. Minimum Value: 0. The unit of IntervalInMin is Minute.
MinConsumedWatts	Number	The lowest power consumption level over the measurement window (the last IntervalInMin minutes). Minimum Value: 0.

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Name	Type	ReadOnly	Description		
			Attribute	Type	Description
			MaxConsumed Watts	Number	The highest power consumption level that has occured over the measurement window (the last IntervalInMin minutes). Minimum Value: 0.
			Average Consumed Watts	Number	The average power level over the measurement window (the last IntervalInMin minutes). Minimum Value: 0.
PowerLimit	Object	False	Power limit status and configuration information for this chassis.		
			Attribute	Type	Description
			LimitIn Watts	Number	The Power limit in watts. Minimum Value: 0.
			Limit Exception	String	The action that is taken if the power cannot be maintained below the LimitInWatts. Refer to **Table 31 Chassis PowerLimitException Enum Properties**.
			Correction InMs	Number	The time required for the limiting process to reduce power consumption to below the limit.
RelatedItem(C)	Array	True	The ID(s) of the resources associated with this Power Limit.		

Table 31   Chassis PowerLimitException Enum Properties

Chassis PowerLimitException	
Enum	Description
NoAction	Take no action when the limit is exceeded.
HardPowerOff	Turn the power off immediately when the limit is exceeded.
LogEventOnly	Log an event when the limit is exceeded, but take no further action.
Oem	Take an OEM-defined action.

Table 32   Voltages Properties

Name	Type	ReadOnly	Description
Name(C)	String	True	The name of the Voltage sensor.
SensorNumber(C)	Number	True	A numerical identifier for this voltage sensor that is unique within this resource.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource. OEM.
ReadingVolts	Number	True	The current value of the voltage sensor.
UpperThreshold NonCritical(C)	Number	True	The current reading is above the normal range but is not critical. Units shall use the same units as the related ReadingVolts property
UpperThreshold Critical(C)	Array	True	The current reading is above the normal range but is not yet Fatal. Units shall use the same units as the related ReadingVolts property

(continued on the next page)

Name	Type	ReadOnly	Description
UpperThreshold Fatal(C)	Number	True	The value of this property shall indicate the CurrentReading is above the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.
LowerThreshold NonCritical(C)	Number	True	The current reading is below the normal range but is not critical. Units shall use the same units as the related ReadingVolts property.
LowerThreshold Critical(C)	Number	True	The current reading is below the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts property.
LowerThreshold Fatal(C)	Number	True	The value of this property shall indicate the CurrentReading is below the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.
MinReadingRange	Number	True	The lowest possible value for CurrentReading. Units shall use the same units as the related ReadingVolts property. Northbound is supported but Southbound needs platform specific porting.
MaxReadingRange	Number	True	The highest possible value for CurrentReading. Units shall use the same units as the related ReadingVolts property. Northbound is supported but Southbound needs platform specific porting.
PhysicalContext(C)	Object	True	The affected device or region within the chassis to which this voltage measurement applies.(Refer to **Table 36 ThermalPhysicalContextEnum Properties**) This property can be configured through system builder. If it is not configured then the default value will be set to this property. i.e., VoltageRegulator
RelatedItem(C)	Array	True	The ID(s) of the resources associated with this Power Limit.

Table 33   PowerSupply Properties

Name	Type	ReadOnly	Description	
Name(C)	String	True	The name of the PowerSupply.	
PowerSupplyType(C)	String	True	The Power Supply type (AC or DC).	
			Enum	**Description**
			Unknown	The power supply type cannot be determined.
			AC	Alternating Current (AC) power supply.
			DC	Direct Current (DC) power supply.
			ACorDC	Power Supply supports both DC or AC.

Name	Type	ReadOnly	Description
LineInputVoltage Type(C)	String	True	The LineInputVoltage at which the power supply is operating this resource.

Enum	Description
Unknown	The power supply line input voltage type cannot be determined.
ACLowLine	100-127V AC input. Deprecated: Use AC120V.
ACMidLine	200-240V AC input. Deprecated: Use AC240V
ACHighLine	277V AC input. Deprecated: Use AC277V.
DCNeg48V	-48V DC input.
DC380V	High Voltage DC input (380V)
AC120V	AC 120V nominal input.
AC240V	AC 240V nominal input.
AC277V	AC 277V nominal input
ACandDCWide Range	Wide range AC or DC input.
ACWideRange	Wide range AC input.
DC240V	DC 240V nominal input.

Name	Type	ReadOnly	Description
LineInputVoltage(C)	Number	True	The line input voltage at which the Power Supply is operating.
PowerCapacityWatts	Number	True	The maximum capacity of this Power Supply. Minimum Value: 0.
LastPowerOutputWatts	Number	True	The average power output of this Power Supply (in Watts). Minimum Value: 0.
Model(C)	String	True	The model number for this Power Supply.
FirmwareVersion	String	True	The firmware version for this Power Supply.
SerialNumber	String	True	The serial number for this Power Supply.
PartNumber(C)	String	True	The part number for this Power Supply.
SparePartNumber(C)	String	True	The spare part number for this Power Supply.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource. OEM.
RelatedItem(C)	Array	True	The ID(s) of the resources associated with this Power Limit.
Redundancy(C)	Array	False	This structure is used to show redundancy for power supplies. The Component ids will reference the members of the redundancy groups.

Please refer to section **4.4 Redfish AMI OEM Entities** for Redundancy information that can be configured through System Builder.

B. PATCH

- **Request**

```
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}/Power
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 29 Power Properties** for which ReadOnly is False that can be sent as Request body in json format.

- **Response**

The response status is success with status code as 200 with GET response body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.24 Thermal

This resource shall be used to represent a thermal metrics resource for a Redfish implementation.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Chassis/{{chassis_instance}}/Thermal
Content-Type: application/json
```

- **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table

> The Unit for threshold values for Fan is RPM.

Table 34   Thermal Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.

(continued on the next page)

Name	Type	ReadOnly	Description
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Temperatures	Array of Objects	False	This is the definition for temperature sensors. Refer to **Table 35 Temperature Properties**.
Fans	Array of Objects	False	This is the definition for fans. Refer to **Table 37 Fan Properties**.
Redundancy(N)(C)	Array	True	This structure is used to show redundancy for fans. The Component ids will reference the members of the redundancy groups. Please refer to section **4.4 Redfish AMI OEM Entities** for Redundancy information that can be configured through System Builder.w

Table 35   Temperature Properties

Name	Type	ReadOnly	Description
Name(C)	String	True	The name of the Temperature sensor.
SensorNumber(C)	Number	True	A numerical identifier for this temperature sensor that is unique within this resource.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
ReadingCelsius	Number	True	The current value of the temperature sensor's reading.
UpperThreshold NonCritical(C)	Number	True	The current reading is above the normal range but is not critical. Units shall use the same units as the related ReadingCelsius property.
UpperThreshold Critical(C)	Number	True	The current reading is above the normal range but is not yet Fatal. Units shall use the same units as the related ReadingCelsius property.
UpperThreshold Fatal(C)	Number	True	The current reading is above the normal range and is fatal. Units shall use the same units as the related ReadingCelsius property.
LowerThreshold NonCritical(C)	Number	True	The current reading is below the normal range but is not critical. Units shall use the same units as the related ReadingCelsius property.
LowerThreshold Critical(C)	Number	True	The current reading is below the normal range but is not yet fatal. Units shall use the same units as the related ReadingCelsius property.
LowerThreshold Fatal(C)	Number	True	The value of this property shall indicate the present reading is below the normal range and is fatal. Units shall use the same units as the related ReadingCelsius property.
MinReadingRange Temp	Number	True	The lowest possible value for CurrentReading. Units shall use the same units as the related ReadingCelsius property.
MaxReadingRange Temp	Number	True	The highest possible value for CurrentReading. Units shall use the same units as the related ReadingCelsius property.
PhysicalContext(C)	Object	True	The affected device or region within the chassis to which this Temperature measurement applies. Refer to **Table 36 ThermalPhysicalContextEnum Properties**. This property can be configured through system builder. If it is not configured then the default value will be set to this property. i.e., Room
RelatedItem(C)	Array	True	The ID(s) of the resources associated with this Power Limit.

Table 36   ThermalPhysicalContextEnum Properties

PhysicalContext	
Enum	**Description**
Room	The room.
Intake	The intake point of the chassis.
Exhaust	The exhaust point of the chassis.
Front	The front of the chassis.
Back	The back of the chassis.
Upper	The upper portion of the chassis.
Lower	The lower portion of the chassis.
CPU	A Processor (CPU).
GPU	A Graphics Processor (GPU).
Backplane	A backplane within the chassis.
SystemBoard	The system board (PCB).
PowerSupply	A power supply.
VoltageRegulator	A voltage regulator device.
StorageDevice	A storage device.
NetworkingDevice	A networking device.
ComputeBay	Within a compute bay.
StorageBay	Within a storage bay.
NetworkBay	Within a networking bay.
ExpansionBay	Within an expansion bay.
PowerSupplyBay	Within a power supply bay.

Table 37   Fan Properties

Name	Type	ReadOnly	Description
MemberId	String	False	This is the identifier for the member within the collection.
FanName(C)	String	True	The name of the Fan.
PhysicalContext(C)	Object	True	The affected device or region within the chassis to which this Temperature measurement applies. Refer to **Table 36 ThermalPhysicalContextEnum Properties**.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
Reading	Number	True	The current value of the fan sensor's reading.
UpperThreshold NonCritical(C)	Number	True	The current reading is above the normal range but is not critical. Units shall use the same units as the related Reading property.
UpperThreshold Critical(C)	Number	True	The current reading is above the normal range but is not yet Fatal. Units shall use the same units as the related Reading property

(continued on the next page)

Name	Type	ReadOnly	Description
UpperThreshold Fatal(C)	Number	True	The current reading is above the normal range and is fatal. Units shall use the same units as the related Reading property.
LowerThreshold NonCritical(C)	Number	True	The current reading is below the normal range but is not critical. Units shall use the same units as the related Reading property.
LowerThreshold Critical(C)	Number	True	The current reading is below the normal range but is not yet fatal. Units shall use the same units as the related Reading property.
LowerThreshold Fatal(C)	Number	True	The value of this property shall indicate the present reading is below the normal range and is fatal. Units shall use the same units as the related Reading property.
MinReadingRange	Number	True	The lowest possible value for Reading. Units shall use the same units as the related Reading property. Northbound is supported but Southbound needs platform specific porting.
MaxReadingRange	Number	True	The highest possible value for Reading. Units shall use the same units as the related Reading property. Northbound is supported but Southbound needs platform specific porting.
RelatedItem(C)	Array	True	The ID(s) of the resources serviced with this fan.
Redundancy(C)	Array	True	Redundancy information for the power subsystem of this system or device. Please refer to section **4.4 Redfish AMI OEM Entities** for Redundancy information that can be configured through System Builder.

4.3.25   Manager Collection

This resource shall be used to represent a collection of managers.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Managers
Content-Type: application/json
```

- **Response**
  Please refer to section **4.3.5 Resource** for the JSON response properties.

4.3.26 Manager

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

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 38 Manager Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
ManagerType	String	True	An enumeration property that represents the type of manager that this resource represents.

			Enum	Description
			Management Controller	A controller used primarily to monitor or manage the operation of a device or system.
			EnclosureManager	A controller which provides management functions for a chassis or group of devices or systems.
			BMC	A controller which provides management functions for a single computer system.
			RackManager	A controller which provides management functions for a whole or part of a rack.
			AuxiliaryController	A controller which provides management functions for a particular subsystem or group of devices.

Name	Type	ReadOnly	Description
SensorNumber	Number	True	This property decodes from EntryType: If it is SEL, it is the sensor number; if Event it is not applicable. Otherwise, it is OEM specific.
Links	Object	True	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

Name	Type	ReadOnly	Description
ManagerFor Servers(N)	Array	True	An array of references to the systems that this manager has control over. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.
ManagerFor Chassis(N)	Array	True	An array of references to the chassis that this manager has control over. Platform specific porting needed. Please refer to Manager EthernetInterface under Platform specific Properties in "**How to Add OEM extensions (v1.1)**" document.

Name	Type	ReadOnly	Description
ServiceEntryPointUUID	String	True	The UUID of the Redfish Service provided by this manager. Refer to **Table 6 Resource Type Definitions**.
UUID	String	True	The Universal Unique Identifier (UUID) for this Manager. Refer to **Table 6 Resource Type Definitions**.
Model	String	True	Model number of this manager as defined by the manufacturer.
DateTime	String	False	The current DateTime (with offset) for the manager, used to set or read time.
DateTimeLocalOffset	String	False	The time offset from UTC that the DateTime property is set to in format: +06:00.
FirmwareVersion	String	True	The firmware version of this Manager.
SerialConsole	Object	-	Information about the Serial Console service provided by this manager. Refer to **Table 39 SerialConsole Properties**.
CommandShell	Object	-	Information about the Command Shell service provided by this manager. Refer to **Table 40 CommandShell Properties**.
GraphicalConsole	Object	-	The information about the Graphical Console (KVM-IP) service of this manager. Refer to **Table 41 GraphicalConsole Properties**.

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Name	Type	ReadOnly	Description
Actions	Object	True	Managers allows the user to perform Actions like Reset. It can also contain an Oem Object under Oem attribute under this Actions.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
EthernetInterfaces(N)	Object	True	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.
SerialInterfaces(N)	Object	True	A reference to a collection of serial interfaces that this manager uses for serial and console communication. It is here that clients will find serial configuration options and settings.
NetworkProtocol(N)	Object	True	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.
LogServices(N)	Object	True	A reference to a collection of Logs used by the manager.
VirtualMedia(N)	Object	True	A reference to the Virtual Media services for this particular manager. Link will be present only when Virtual Media is enabled in the Manager, BMC in this case.
Redundancy(N)(C)	Array	True	Redundancy information for the managers of this system. Please refer to section **4.4 Redfish AMI OEM Entities** for Redundancy information that can be configured. Northbound only available and platform specific porting needed.
HostInterfaces(N)	-	-	This is a reference to a collection of Host Interfaces that this manager uses for local host communication. It is here that clients will find Host Interface configuration options and settings.

Table 39   SerialConsole Properties

Name	Type	ReadOnly	Description
ServiceEnabled	Boolean	False	Indicates if the service is enabled for this manager. • This property will be true if any one of the protocol is enabled in the ConnectTypesSupported. • IPMI-SOL - If it is enabled in BMC, then it's value is always true and the behaviour is same like CommandShell. i.e. ServiceEnabled cannot be disabled. • If IPMI-SOL is disabled in BMC, then ServiceEnabled can be allowed to PATCH for the other protocols namely SSH, Telnet to be enabled/disabled.
MaxConcurrent Sessions	String	True	Indicates the maximum number of concurrent service sessions supported by the implementation.Minimum Value: 0. Platform specific porting needed.

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Name	Type	ReadOnly	Description
ConnectTypes Supported	Array	True	The value of ConnectTypesSupported shall be an array of the enumerations provided here.

Enum	Description
SSH	The controller supports a Serial Console connection using the SSH protocol.
Telnet	The controller supports a Serial Console connection using the Telnet protocol. Telnet support is based on the AMI SPX based Firmware support.
IPMI	The controller supports a Serial Console connection using the IPMI Serial-over-LAN (SOL) protocol.
Oem	The controller supports a Serial Console connection using an OEM-specific protocol.

Table 40   CommandShell Properties

Name	Type	ReadOnly	Description
ServiceEnabled	Boolean	False	Indicates if the service is enabled for this manager. • This property will be true if any one of the protocol is enabled in the ConnectTypesSupported. • If IPMI is present in ConnectTypesSupported then CommandShell cannot be disabled. • If IPMI is not present, then this property will be true if any one of the services in the ConnectTypesSupported is Enabled.
MaxConcurrent Sessions	String	True	Indicates the maximum number of concurrent service sessions supported by the implementation. Minimum Value: 0. Platform specific porting needed.
ConnectTypes Supported	Array	True	The value of ConnectTypesSupported shall be an array of the enumerations provided here.

Enum	Description
SSH	The controller supports a CommandShell connection using the SSH protocol.
Telnet	The controller supports a CommandShell connection using the Telnet protocol. Telnet support is based on the AMI SPX based Firmware support.

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E16160_ASMB9-iKVM_UM_V3.indb   82   1/17/2020   2:29:30 PM

Name	Type	ReadOnly	Description	
			Enum	**Description**
			IPMI	The controller supports a CommandShell connection using the IPMI protocol.
			Oem	The controller supports a CommandShell connection using an OEM-specific protocol.

Table 41   GraphicalConsole Properties

Name	Type	ReadOnly	Description	
ServiceEnabled	Boolean	False	Indicates if the service is enabled for this manager.	
MaxConcurrent Sessions	String	True	Indicates the maximum number of concurrent service sessions supported by the implementation. Minimum Value: 0.	
ConnectTypes Supported	Array	True	This object is used to enumerate the Graphical Console connection types allowed by the implementation.	
			Enum	**Description**
			KVMIP	The controller supports a Graphical Console connection using a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol.
			Oem	The controller supports a Graphical Console connection using an OEM-specific protocol.

B.   PATCH

•   Request

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 38 Manager Properties** for which ReadOnly is False that can be sent as Request body in json format.

•   Response

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

C. POST

- **Request**

```
POST  https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
Actions/Manager.Reset
Content-Type: application/json
```

Request Body

The only valid value for ResetType is ForceRestart, which will do a cold reset of the BMC.

Example POST Request Body:

```
{
     "ResetType" : "ForceRestart"
}
```

- **Response**

The response status is 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.27   ManagerNetworkProtocol

This resource is used to obtain or modify the network services managed by a given manager.

To get VMedia & KVM Ports when encryption is disabled, make sure "**Allow Non-secure communication**" option under KVM in PRJ is enabled to allow the user to disable encryption.

A. GET

- **Request**

```
https://ip/redfish/v1/Managers/Self/NetworkProtocol
Content-Type: application/json
```

- **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table

Table 42   ManagerNetworkProtocolProperties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.

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Name	Type	ReadOnly	Description
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
HostName	String	True	The DNS Host Name of this manager, without any domain information.
FQDN	String	True	This is the fully qualified domain name for the manager obtained by DNS including the host name and top-level domain name.
HTTPS	Object	False	This object shall contain information for the HTTPS/SSL protocol settings for this manager. The default value of the Port property should be 443 for compatibility with established client implementations. Refer to **Table 43 Protocol Properties** below**.**
SNMP	Object	True	This object shall contain information for the SNMP protocol settings for this manager. The default value of the Port property should be 161 for compatibility with established client implementations. Refer to **Table 43 Protocol Properties** below. • ProtocolEnabled and Port fields for this cannot be modified because of limitations in the BMC. • SNMP Port will not be displayed by default.
VirtualMedia	Object	False	This object shall contain information for the Virtual Media protocol settings for this manager. The value of the Port property shall contain the TCP port assigned for Virtual Media usage. Refer to **Table 43 Protocol Properties** below. • This property is not patchable when Single Port App feature is enabled in AMI BMC. • VirtualMedia maps to cd-media in AMI BMC.
Telnet	Object	False	This object shall contain information for the Telnet protocol settings for this manager. The default value of the Port property should be 23 for compatibility with established client implementations. Refer to **Table 43 Protocol Properties** below. Telnet support is based on the AMI SPX based Firmware support. Please check SPX Firmware Release Document for Telnet feature support.

Name	Type	ReadOnly	Description
SSDP	Object	False	This object shall contain information for the SSDP protocol settings for this manager. Simple Service Discovery Protocol (SSDP) is for network discovery of devices supporting the Redfish service. The default value of the Port property should be 1900 for compatibility with established client implementations. Refer to **Table 44 SSDP Protocol Properties** below. Northbound only supported. Platform Specific Porting needed.
IPMI	Object	True	This object shall contain information for the IPMI over LAN protocol settings for the manager. The default value of the Port property should be 623 for compatibility with established client implementations. Refer to **Table 43 Protocol Properties** below. • ProtocolEnabled and Port fields for this property cannot be modified because of limitations in the BMC. • ProtocolEnabled will not be available in GET Response.
SSH	Object	False	This object shall contain information for the SSH protocol settings for the manager. The default value of the Port property should be 22 for compatibility with established client implementations. Refer to **Table 43 Protocol Properties**.
KVMIP	Object	False	This object shall contain information for the KVM-IP (Keyboard, Video, Mouse) protocol settings for the manager. Refer to **Table 43 Protocol Properties** below. The Port field for this protocol is read only when single port app is enabled.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.

Table 43   Protocol Properties

Name	Type	ReadOnly	Description
ProtocolEnabled	Boolean	False	Indicates if the protocol is enabled or disabled
Port	Number	False	Indicates the port assigned for the protocol. Value of the Port can take any value between 1 and 65535.

Table 44   SSDP Protocol Properties

Name	Type	ReadOnly	Description
ProtocolEnabled	Boolean	False	Indicates if the protocol is enabled or disabled
Port	Number	False	Indicates the port assigned for the protocol. Minimum Value:0.
NotifyMulticastInterval Seconds	Number	False	The value of this property shall contain the time interval, in seconds, between transmissions of the multicast NOTIFY ALIVE message. A setting of 0 seconds shall disable this functionality. The recommended value is 600 seconds. Minimum Value : 0.

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Name	Type	ReadOnly	Description	
NotifyTTL	Number	False	The value of this property shall contain the Time-To-Live hop count used for multicast NOTIFY messages. The recommended value is 2.	
NotifyIPv6Scope	String	False	The value of this property shall contain the IPv6 scope used for multicast NOTIFY messages. The valid enumerations are a subset of the available IPv6 Scope types.	
			Enum	**Description**
			Link	SSDP Notify messages are sent to addresses in the IPv6 Local Link scope.
			Site	SSDP Notify messages are sent to addresses in the IPv6 Local Site scope.
			Organization	SSDP Notify messages are sent to addresses in the IPv6 Local Organization scope

B.   PATCH

- **Request**

```
https://ip/redfish/v1/Managers/Self/NetworkProtocol
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 42 ManagerNetworkProtocolProperties** for which ReadOnly is False that can be sent as Request body in json format.

Example POST Request Body:

```
{
     "ResetType" : "ForceRestart"
}
```

- **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.28   SerialInterfaceCollection

This schema defines an asynchronous collection of serial interface resource. This resource shall be used to represent serial resources as part of the Redfish specification.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
SerialInterfaces
Content-Type: application/json
```

- **Response**

  Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.29   SerialInterface

This schema defines an asynchronous serial interface resource. This resource shall be used to represent serial resources as part of the Redfish specification.

> IPMI-SOL is the only supported manager_serialifc_instance in this version. This link will be shown only when IPMISOL is enabled and the baud rate can be retrieved from IPMI.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
SerialInterfaces/IPMI-SOL
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 45   Serial Interface Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.

(continued on the next page)

Name	Type	ReadOnly	Description
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Interface Enabled	Boolean	False	This indicates whether this interface is enabled.
BitRate	String	False	The receive and transmit rate of data flow, typically in bits-per-second (bps), over the serial connection and can take any one of the following enum values. "enum": ["1200", "2400", "4800", "9600", "19200", "38400", "57600", "115200", "230400"] BitRate property for Serial Interface in Redfish maps to the non-volatile bit rate setting of IPMI SOL.
Parity	String	False/True True if Serial Interface is IPMI-SOL.	The type of parity used by the sender and receiver in order to detect errors over the serial connection. It can take any one of the following enum values: "enum": ["None", "Even", "Odd", "Mark", "Space"]
DataBits	String	False/True True if Serial Interface is IPMI-SOL.	The number of data bits that will follow the start bit over the serial connection. "enum": ["5","6", "7", "8"]
StopBits	String	False/True True if Serial Interface is IPMI-SOL.	The period of time before the next start bit is transmitted. "enum": ["1", "2"]
FlowControl	String	False/True True if Serial Interface is IPMI-SOL.	The type of flow control, if any, that will be imposed on the serial connection.<table><tr><th>Enum</th><th>Description</th></tr><tr><td>None</td><td>No flow control imposed</td></tr><tr><td>Software</td><td>XON/XOFF in-band flow control imposed</td></tr><tr><td>Hardware</td><td>Out of band flow control imposed</td></tr></table>

B.   PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
SerialInterfaces/{{manager_serialifc_instance}}

Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 45 Serial Interface Property** for which ReadOnly is False that can be sent as Request body in json format.

> According to IPMI SPEC, Serial communication with the BMC when SOL is activated always occurs using 8bits/character, no parity, 1 stop bit, and RTS/CTS (hardware) flow control. Hence the properties Parity, DataBits, StopBits and FlowControl are not patchable when the manager_serialifc_instance is IPMI_SOL.

Example PATCH Request Body:

```
{
     "BitRate": "9600",
     "InterfaceEnabled": false
}
```

- **Request**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.30   VirtualMediaCollection

AMI's LMedia and RMedia feature redirected images will be shown in this list.

> Virtual Media Members will be shown to the user only when:
> - VirtualMedia is enabled in BMC.
> - ProtocolEnabled property for VirtualMedia in ManagerNetworkProtocol should have the value as "true".

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Managers/{{manager_instance}}/
VirtualMedia

Content-Type: application/json
```

- **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.31   Account Service

This resource shall be used to represent a management account service for a Redfish implementation. Allows user to create multiple account with different roles and privileges.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/AccountService
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 46   Account Service Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
ServiceEnabled	Boolean	False	This indicates whether this service is enabled.
AuthFailureLogging Threshold	Number	False	This is the number of authorization failures that need to occur before the failure attempt is logged to the manager log. This represents a modulo function value, thus the failure shall be logged every nth occurrence where n represents the value of this property. Minimum Value: 0.
MinPasswordLength(C)	Number	True	This property shall reference the minimum password length that the implementation will allow a password to be set to. Minimum Value: 0.
MaxPassword Length(C)	Number	True	This property shall reference the maximum password length that the implementation will allow a password to be set to. Minimum Value: 0.
AccountLockout Threshold(C)	Number	False	The number of failed login attempts before a user account is locked for a specified duration. (0=never locked)Minimum Value: 0.

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Name	Type	ReadOnly	Description
AccountLockout Duration(C)	Number	False	This property shall reference the period of time in seconds that an account is locked after the number of failed login attempts reaches the threshold referenced by Account Lockout Threshold, within the window of time referenced by Account Lockout Counter Reset After. The value shall be greater than or equal to the value of Account Lockout Reset After. If set to 0, no lockout shall occur. Minimum Value: 0.
AccountLockout CounterReset After(C)	Number	False	This property shall reference the threshold of time in seconds from the last failed login attempt at which point the Account Lockout Threshold counter (that counts number of failed login attempts) is reset back to zero (at which point Account Lockout Threshold failures would be required before the account is locked). This value shall be less than or equal to Account Lockout Duration. The threshold counter also resets to zero after each successful login. Minimum Value: 0.
Accounts	Object	True	This property shall contain the link to a collection of type ManagerAccountCollection.
Roles	Object	True	This property shall contain the link to a collection of type RoleCollection.

B.   PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/AccountService
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 46 Account Service Property** for which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Editing AccountService :

```
{
      "AccountLockoutCounterResetAfter": 853,
      "AccountLockoutDuration": 853,
      "AccountLockoutThreshold": 853,
      "AuthFailureLoggingThreshold": 853,
      "ServiceEnabled": true,
}
```

- **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.32   ManagerAccountCollection

It is a collection of resources that represents the user accounts.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/AccountService/Accounts
Content-Type: application/json
```

- **Response**

  Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

B.   POST [Creating new Account]

- Make sure ServiceEnabled property in AccountService is true for creating an account.
- If ServiceEnabled property in AccountService is false please use PATCH on AccountService to change ServiceEnabled to true.

- **Request**

```
POST  https://{{ip}}/redfish/v1/AccountService/Accounts
Content-Type: application/json
```

Example POST Request:

```
{
      "Name": "Test User Account",
      "Description": "Test User Account",
      "Enabled": true,
      "Password": "superuser",
      "UserName": "user_account",
      "RoleId": "Operator",
      "Locked": false
}
```

- **Response**

  The response status is 201 and the response body is a GET Response with the properties of the newly created Account. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.33   Manager Account

This resource shall be used to represent resources that represent the user accounts for the manager.

> Default Administrator Account can be created using system-builder application.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/AccountService/Accounts/{{account_
instance}}
Content-Type: application/json
```

- **Response**

   The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 47   Manager Account Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object		Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Password(C)	String	False	The value of this property shall be the password for this account. Should not be displayed in the response.
UserName(C)	String	False	The value of this property shall be the user name for this account.
RoleId	String	False	The value of this property shall be the ID of the Role resource that configured for this account.

(continued on the next page)

Name	Type	ReadOnly	Description
Locked	Boolean	False	This property (when set to true) shall indicate that the account service has automatically locked the account due to the property accountLockoutThreshold having been exceeded. If Locked is set to true by account service, the account is locked and the user shall not be able to login redfish unless the property is unlocked by administrator. If set to false, the account will not be locked. A user admin shall be able to write a false to the property to clear the lockout condition, prior to the lockout duration period. By default, the account service will set the value of Locked to false. (The acCount shall not be locked and the failed attempt should not exceed the accountLockedThreshold). Only the Administrator will be able to unlock the locked account in case it is set to true automatically in case of failed login attempts but setting the account as locked account (i.e value to true) by an Administrator is an invalid operation.
Enabled	Boolean	False	This property shall enable (if set to true) or disable (if set to false) the account for future logins. The value of Enable over-rides the locked property.
Links	Object	-	The links object contains the links to other resources that are related to this resource. **Name / Type / ReadOnly / Description** Role / Object / True / A reference to the Role object defining Privileges for this account-returned when the resource is read. The ID of the role is the same as property RoleId.

B.   PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/AccountService/Accounts/
{{account_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 47 Manager Account Property** for which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Editing an Account:

```
{
     "Enabled": true,
     "Password": "superuser",
     "UserName": "user_account",
     "RoleId": "ReadOnly",
     "Locked": false
}
```

- **Response**

    The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.34   Role Collection

It displays a collection of ID's subscribed to the roles in Redfish.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/AccountService/Roles
Content-Type: application/json
```

- **Response**

    Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

B.   POST [Creating new Custom Role]

- **Request**

```
POST  https://{{ip}}/redfish/v1/AccountService/Roles
Content-Type: application/json
```

Request Body

Creation of a custom Role requires that the Id and Name properties be in the request body. In addition to these properties, either AssignedPrivileges, OemPrivileges, or both AssignedPrivileges and OemPrivileges must be in the request body.

Example POST Request:

```
{
        "AssignedPrivileges": [
                "ConfigureUsers",
                "ConfigureManager",
                "ConfigureSelf",
                "Login",
                "ConfigureComponents"
        ],
        "Description": "TestRole User Role",
        "Id": "TestRole",
        "Enabled": true,
        "IsPredefined": true,
        "Name": "TestRole Role",
        "OemPrivileges": [
                "OemPowerControl",
                "OemClearLog"
        ]
}
```

- **Response**

  The response status is 201 and the response body is a GET Response with the properties of the newly created Account. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.35   Role

This resource shall be used to represent resources that represent the user role for the user account.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/AccountService/Roles/{{role_instance}}
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 48   Role Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
IsPredefined	Boolean	True	This property is used to indicate if the Role is one of the Redfish Predefined Roles vs a Custom role.
AssignedPrivileges	Array	False	The value of this property shall be the redfish privileges that the role includes. For pre-defined roles, this property shall be readOnly. For custom roles some implementations may not allow writing this property. Refer to Appendix: Appendix A.4 for the HTTP methods for URI support and the Privilege enforced for those actions.

Enum	Description
Login	Able to log into the service and read resources
ConfigureManager	Able to configure Manager resources
ConfigureUsers	Able to configure Users and their Accounts
ConfigureSelf	Able to change the password for the current user Account
Configure Components	Able to configure components managed by this service.

Name	Type	ReadOnly	Description
OemPrivileges	Array	False	The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be readOnly. For custom roles some implementations may not allow writing this property.

B.   PATCH

• **Request**

```
PATCH https://{{ip}}/redfish/v1/AccountService/Roles/{{role_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 48 Role Properties** for which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Editing an Account:

```
{
      "AssignedPrivileges": [
            "ConfigureComponents",
            "Login",
            "ConfigureSelf"
      ]
}
```

• **Response**

The response status is success with status code as 200 and the updated Role. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

> PATCH is supported for User defined Roles and is not supported for Predefined Roles. Error response with 405 Method Not allowed is displayed if request body content type is chosen as application/json else 415 Unsupported Media Type would be displayed.

C. DELETE

> DELETE is not supported for Predefined Roles.

• **Request**

```
DELETE        https://{{ip}}/redfish/v1/AccountService/Roles/
{{role_instance}}
Content-Type: application/json
```

• **Response**

The response status is 204 and no response body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.36   Event Service

The Event Service resource contains properties for managing event subscriptions and generates the events sent to subscribers. The resource has links to the actual collection of subscriptions (called Event Destinations).

A. GET

• **Request**

```
https://{{ip}}/redfish/v1/EventService
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 49   Event Service Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
ServiceEnabled(C)	Boolean	False	This indicates whether this service is enabled.
DeliveryRetryAttempts(C)	Number	True	The number of retrys attempted for any given event to the subscription destination before the subscription is terminated.
DeliveryRetryIntervalSeconds(C)	Number	True	The interval in seconds between the retry attempts for any given event to the subscription destination.
EventTypesForSubscription	Array	True	The types of events that subscriptions can subscribe to. The semantics associated with the enumerations values are defined in the Redfish specification.

Enum	Description
StatusChange	The status of this resource has changed.
ResourceUpdated	The value of this resource has been updated.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
Alert	A condition exists which requires attention.

Name	Type	ReadOnly	Description
Actions	Object	True	The Actions object contains the available custom actions on this resource like SubmitTestEvent or any Oem Action.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
Subscriptions(N)	Object	True	This is a reference to a collection of Event Destination resources. The value of this property shall contain the link to a collection of type EventDestinationCollection.

B. PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/EventService
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 49 Event Service Property** for which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Enabling or Disabling EventService:

```
{
     "ServiceEnabled": true,
}
```

- **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

C. POST

- **Request**

```
POST  https://{{ip}}/redfish/v1/EventService/Actions/
EventService.SubmitTestEvent
Content-Type: application/json
```

Example POST Request Body :

```
{
     "EventType": "StatusChange"
}
```

- **Response**

The response status is 204 and no response body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.37   Event SubscriptionCollection

It displays a collection of ID's subscribed to this Redfish EventService and conforms to the Event Destination Collection Schema.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/EventService/Subscriptions
Content-Type: application/json
```

- **Response**

  Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

B.   POST

- **Request**

```
POST  https://{{ip}}/redfish/v1/EventService/Subscriptions
Content-Type: application/json
```

Example POST Request Body:

```
{
        "Context": "ABCDEFGH",
        "Destination": "http://10.0.145.99:3002/",
        "EventTypes": [
                "Alert",
                "StatusChange"
        ],
        "Protocol": "Redfish"
}
```

- **Response**

  The response status is 201 and the response body is a GET Response with the properties of the newly created EventDestination Entity as given below. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.38   Event Subscription

This resource shall be used to represent resources that represent the Event Subscriptions and conforms to the Event Destination Schema.

> A subscription instance is shown only when events are subscribed or posted using POST Action.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/EventService/Subscriptions/
{{Subscriptions_instance}}
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 50   Event Subscription Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
EventTypes	Array	True	This property shall contain the types of events that shall be sent to the destination.

			Enum	Description
			StatusChange	The status of this resource has changed.
			ResourceUpdated	The value of this resource has been updated.
			ResourceAdded	A resource has been added.
			ResourceRemoved	A resource has been removed.
			Alert	A condition exists which requires attention.

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Name	Type	ReadOnly	Description
Context	String	False	A client-supplied Description that is stored with the event destination subscription. This property shall contain a client supplied context that will remain with the connection through the connections lifetime.
Protocol	String	True	The protocol type of the event connection. This property shall contain the protocol type that the event will use for sending the event to the destination. A value of Redfish shall be used to indicate that the event type shall adhere to that defined in the Redfish specification. "enum": ["Redfish"]

B.   PATCH

• **Request**

```
PATCH https://{{ip}}/redfish/v1/EventService/Subscriptions/
{{Subscriptions_instance}}
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in **Table 49 Event Service Properties** for which ReadOnly is False that can be sent as Request body parameters in json format.

Example Request Body:

```
{
    "Context": "Event_1"
}
```

• **Response**

The response status is success with status code as 204 and no body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

C.   DELETE

• **Request**

```
DELETE      https://{{ip}}/redfish/v1/EventService/
Subscriptions/{{Subscriptions_instance}}
Content-Type: application/json
```

• **Response**

The response status is 204 and no response body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.39   Task Service

This resource shall be used to represent a task service for a Redfish implementation. It represents the properties for the service itself and has links to the actual list of tasks.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/TasksService
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 51   Task Service Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)(C)	String	True	Name of the Resource.
Description(C)	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
CompletedTaskOverWritePolicy(C)	String	True	The value of this property shall indicate how completed tasks are handled should the task service need to track more tasks. **Enum** / **Description** Manual / Completed tasks are not automatically overwritten. Oldest / Oldest completed tasks are overwritten.
DateTime	String	True	The current DateTime value for the TaskService, with offset from UTC, in Redfish Timestamp format.
LifeCycleEventOnTaskStateChange	Boolean	True	The value of this property, if set to true, shall indicate that the service shall send a Life Cycle event to Listener Destinations registered for such events upon change of task state.
Service Enabled(C)	Boolean	False	This indicates whether this service is enabled.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
Tasks	Object	True	The value of this property shall be a link to a resource of type Task Collection.

B.   PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/TaskService
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in Table 51Task Service Propertyfor which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Enabling or Disabling TaskService:

```
{
      "ServiceEnabled": true,
}
```

- **Response**

The response status is success with status code as 200 with GET response. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.40   Task Collection

It displays the collection of links to each task.

> The list will be populated and point the odata.id links to the task resources only if the tasks are created using OEM POSTTask URI as mentioned in the AMI OEM Redfish Entities Section, otherwise the Members list will be empty.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/TaskService/Tasks
Content-Type: application/json
```

- **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.41   Task

This URI represents the details of the task created. Check the response for its attributes.

> This URI will be available only if any tasks are added onto Tasks Collection.

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/TaskService/Tasks/{{task_instance}}
Content-Type: application/json
```

• **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 52   Task Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)(C)	String	True	Name of the Resource.
Description(C)	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
TaskState	String	True	The value of this property shall indicate the state of the task.

Enum	Description
New	New shall be used to indicate that the task is a new task which has just been instantiated and is in the initial state and indicates it has never been started.
Starting	Task is starting. Starting shall be used to indicate that the task is moving from the New, Suspended, or Service states into the Running state.
Running	Task is running normally. Running shall be used to indicate that the Task is running.
Suspended	Task has been suspended. Suspended shall be used to indicate that the Task is stopped (e.g., by a user), but can be restarted in a seamless manner.

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Name	Type	ReadOnly	Description

			Enum	Description
			Interrupted	Task has been interrupted. Interrupted shall be used to indicate that the Task was interrupted (e.g., by a server crash) in the middle of processing, and the user should either re-run/restart the Task.
			Pending	Task is pending and has not started. Pending shall be used to indicate that the Task has been queued and will be scheduled for processing as soon as resources are available to handle the request.
			Stopping	Task is in the process of stopping. Stopping shall be used to indicate that the Task is in the process of moving to a Completed, Killed, or Exception state.
			Completed	Task has completed. Completed shall be used to indicate that the task has completed normally.
			Killed	Task was terminated. Killed shall be used to indicate that the task has been stopped by a Kill state change request (non-graceful shutdown).
			Exception	Task has stopped due to an exception condition. Exception shall be used to indicate that the Task is in an abnormal state that might be indicative of an error condition.
			Service	Task is running as a service. Service shall be used to indicate that the Task is in a state that supports problem discovery, or resolution, or both. This state is used when a corrective action is possible.
StartTime	String	True	The date-time stamp that the task was last started. The value of this property shall indicate the time the task was started.
EndTime	String	True	The value of this property shall indicate the time the task was completed.
TaskStatus	String	True	The value of this property shall be the completion status of the task, as defined in the Status Section of the Redfish specification and shall not be set until the task has completed.
Messages	Array	True	This is an array of messages associated with the task.

4.3.42 JSON Schema file collection

It displays the collection of links to each schema hosted locally for the OEM JSONSchemaFiles.

The list will be populated and point the odata.id links to the JSONSchemas, only if any OEM URI's are present otherwise the Members list will be empty.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/JsonSchemas
Content-Type: application/json
```

- **Response**

  Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.43 JsonSchemaFile

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

Example: `/redfish/v1/JsonSchemas/Configurations.v1_0_0` represents the odata. id link to the Configurations Schema.

A. GET

- **Request**

```
https://{ip}}/redfish/v1/JsonSchemas/<json_schema_name>
Content-Type: application/json
```

- **Response**

  The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 53   JSON Schema file Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.

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Name	Type	ReadOnly	Description
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Languages(M)	Array	True	The value of this property shall be a Description consisting of an RFC 5646 language code.
Schema (M)	String	True	The value of this property shall be the value of the @odata.type property for that schema and shall conform to the syntax specified in the Redfish specification for the Type property.
Location (M)	Array	True	Location information for this schema file. Refer Table 54JSON Schema File Location Property.

Table 54   JSON Schema File Location Property

Name	Type	ReadOnly	Description
Language	String	True	The language code for the file the schema is in.
Uri	String	True	Link to locally available URI for schema. The value of this property shall be a URI co-located with the Redfish service that specifies the location of the schema file. This property shall only be used for individual schema files. The file name portion of the URI shall conform to the format [SchemaType].[MajorVersion].[MinorVersion].json and be in conformance with the Redfish specification.
ArchiveUri	String	True	If the schema is hosted on the service in an archive file, this is the link to the archive file. The value of this property shall be a URI co-located with the Redfish service that specifies the location of the schema file. This property shall only be used for archive files (zip or other formats). The value of ArchiveFile shall have the file name of the individual schema file within the archive file. Platform specific porting needed.
PublicationUri	String	True	Link to publicly available (canonical) URI for schema. The value of this property shall be a URI not co-located with the Redfish service that specifies the canonical location of the schema file. This property shall only be used for individual schema files. Platform specific porting needed.
ArchiveFile	String	True	If the schema is hosted on the service in an archive file, this is the name of the file within the archive. The value of this property shall be the file name of the individual schema file within the archive file specified by the ArchiveUri property. The file name shall conform to the format [SchemaType].[MajorVersion].[MinorVersion].json and be in conformance with the Redfish specification. Platform specific porting needed.

4.3.44   SessionCollection

It displays the collection of links to each session.

> The list will be populated and point the odata.id links to the session resources, only if the sessions are created via the below given POST API otherwise the Members list will be empty.

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/SessionService/Sessions
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

B.   POST [Creating new Session]

• **Request**

```
POST  https://{{ip}}/redfish/v1/SessionService/Sessions
Content-Type: application/json
```

Example POST Request:

```
{
      "UserName": "Administrator",
      "Password": "superuser"
}
```

• **Response**

The response status is 201 and the response body is a GET Response with the properties of the newly created Session. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.45   Session Service

This resource shall be used to represent the Session Service Properties for a Redfish implementation. It represents the properties for the service itself and has links to the actual list of sessions.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/SessionService
Content-Type: application/json
```

- **Response**

   The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 55   SessionService Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
ServiceEnabled(C)	Boolean	False	This indicates whether this service is enabled.
Session Timeout(C)	Number	False	This is the number of seconds of inactivity that a session may have before the session service closes the session due to inactivity. Minimum Value :0 & Maximum Value : 86400.
Sessions	Object	True	This property shall contain the link to a collection of Sessions.

B. PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/SessionService
Content-Type: application/json
```

Request Body

Please refer to the properties that are patchable in Table 55SessionService Property for which ReadOnly is False that can be sent as Request body in json format.

Example Request Body for Enabling or Disabling SessionService and setting the session timeout:

```
{
        "ServiceEnabled": true,
        "SessionTimeout": 300
}
```

- **Response**

The response status is success with status code as 200 with GET response. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.46   Session

Displays the Session details for the given session.

> This URI is available only when the session is created a by the above given POST API.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/SessionService/Sessions/{{session_id}}
Content-Type: application/json
```

- **Response**

The response of the request will be in JSON format. The properties are mentioned in the following table

Table 56   Session Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.

(continued on the next page)

Name	Type	ReadOnly	Description
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**.
			This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
UserName	String	True	The UserName for the account for this session. The value of this property shall be the UserName that matches a registered account identified by a ManagerAccount resource registered with the Account Service.
Password	String	True	This property is used in a POST to specify a password when creating a new session. The value of this property shall be the password for this session.

B.   DELETE

• **Request**

```
DELETE       https://{{ip}}/redfish/v1/SessionService/Sessions/
{{session_id}}
Content-Type: application/json
```

• **Response**

The response status is 204 and no response body. For Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.3.47   Message Registry File Collection

Contains a list of registries supported by the redfish service.

This URI is available only when the session is created a by the above given POST API.

A.   GET

• **Request**

```
https://{{ip}}/redfish/v1/Registries/
Content-Type: application/json
```

• **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.48   MessageRegistryFile

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

For Example: `/redfish/v1/Registries/Base.1.0.0` represents the Base Registry containing the messages for the redfish server.

A.   GET

- **Request**

```
https ://{{ip}}/redfish/v1/Registries/{{Registry_instance}}
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table

Table 57   Message Registry File Property

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Languages(M)	Array	True	Language codes for the schemas available. The value of this property shall be a Description consisting of an RFC 5646 language code.
Registry(M)	String	True	The value of this property shall be the value of the Registry Name, Major and Minor version and shall conform to the syntax specified in the Redfish specification for the MessageId property without the MessageKey.
Location(M)	Array	True	Location information for this schema file. Refer Table 54JSON Schema File Location Property.

4.3.49 NetworkInterfaceCollection

It displays the collection of network interface resource instances available in the system.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/Self/NetworkInterfaces
Content-Type: application/json
```

- **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.50 NetworkAdapterCollection

It displays the collection of network adapter resource instances available in the system.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Chassis/Self/NetworkAdapters
Content-Type: application/json
```

- **Response**

Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.51 NetworkAdapter

A NetworkAdapter represents the physical network adapter capable of connecting to a computer network. Examples include but are not limited to Ethernet, Fibre Channel, and converged network adapters.

A. GET

- **Request**

```
https://{{ip}}/redfish/v1/Chassis/Self/NetworkAdapters/
{{NetwrokAdapter_instance}}
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 58   NetworkAdapter Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
Status	Object	True	Refer to section **4.3.3 Resource** for Resource.Oem.
Manufacturer	String	True	The manufacturer or OEM of this network adapter.
Model	String	True	The model string for this network adapter.
SKU	String	True	The manufacturer SKU for this network adapter.
SerialNumber	String	True	The serial number for this network adapter.
PartNumber	String	True	Part number for this network adapter.
Controllers	Array		The set of network controllers ASICs that make up this NetworkAdapter.
Actions	Object	True	NetworkAdapter.ResetSettingsToDefault are the available actions for this resource.
NetworkDevice Functions(N)	Object	True	A reference to the collection of NetworkDeviceFunction associated with this NetworkInterface.

Table 59   Controller Properties

Name	Type	ReadOnly	Description
FirmwarePackage Version	String	True	Resource Identifier.
Enabled	Boolean	False	This property shall enable (if set to true) or disable (if set to false) the account for future logins. The value of Enable over-rides the locked property.
Links	String	True	Links for this controller.

Name	Type	ReadOnly	Description
PCIeDevices @odata.count	Number	True	An integer representing the number of items in a collection. Require PCIe support, only north bound available.
PCIeDevices	Array		An array of references to the PCIeDevice collection.Note: Require PCIe support, only north bound available.
NetworkDevice Functions@ odata.count	Number	True	An integer representing the number of items in a collection.
NetworkDevice Functions	Array		An array of references to the NetworkDeviceFunctions.

Name	Type	ReadOnly	Description
Controller Capabilities	String	True	Description of the Resource

Name	Type	ReadOnly	Description
NetworkPort Count	Number	True	The number of physical ports on this controller.
NetworkDevice FunctionCount	Number	True	The maximum number of physical functions available on this controller.
DataCenter Bridging	Object	-	This object shall contain capability, status, and configuration values related to Data Center Bridging (DCB) for this controller.
Virtualization Offload	Object	-	This object shall contain capability, status, and configuration values related to virtualization offload for this controller.
NPIV	Object	-	N_Port ID Virtualization (NPIV) capabilties for this controller.

Table 60   DataCenterBridging Properties

Name	Type	ReadOnly	Description
Capable	Boolean	True	Whether this controller is capable of Data Center Bridging (DCB).

Table 61   VirtualizationOffload Properties

Name	Type	ReadOnly	Description			
VirtualFunction	Object	True	**Name**	**Type**	**ReadOnly**	**Description**
			DeviceMax Count	Number	True	The maximum number of Virtual Functions (VFs) supported by this controller.
			NetworkPort MaxCount	Number	True	The maximum number of Virtual Functions (VFs) supported per network port for this controller.
			MinAssignment GroupSize	Number	True	The minimum number of Virtual Functions (VFs) that can be allocated or moved between physical functions for this controller.
SRIOV	String	True	Single-Root Input/Output Virtualization (SR-IOV) capabilities.			
			Name	**Type**	**ReadOnly**	**Description**
			SRIOVVEPA Capable	Boolean	True	Whether this controller supports Single Root Input/Output Virtualization (SR-IOV) in Virtual Ethernet Port Aggregator (VEPA) mode.

Table 62   NPIV Properties

Name	Type	ReadOnly	Description
MaxDeviceLogins	Number	True	The maximum number of N_Port ID Virtualization (NPIV) logins allowed simultaneously from all ports on this controller.
MaxPortLogins	Number	True	The maximum number of N_Port ID Virtualization (NPIV) logins allowed per physical port on this controller.

4.3.52   Storage Collection

It displays the collection of storage resource instances available in the system.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/Self/Storage
Content-Type: application/json
```

- **Response**

    Please refer to section **4.3.5 Computer System Collection** for the JSON response properties.

4.3.53   SecureBoot

This resource contains UEFI Secure Boot information. It represents properties for managing the UEFI Secure Boot functionality of a system.

	This API will be patchable by Host Interface, (Extra AMI Bios Support is needed)

	Please contact with your sales representative for further information on AMI BIOS Image with required modules distribution.

A.   GET

- **Request**

```
https://{{ip}}/redfish/v1/Systems/Self/SecureBoot
Content-Type: application/json
```

- **Response**

    The response of the request will be in JSON format. The properties are mentioned in the following table.

Table 63   SecureBoot Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.etag	String	True	Refer to section **4.3.1 ODATA properties**.

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Name	Type	ReadOnly	Description
Oem	Object	-	Refer to Resource Complex Types under section **4.3.3 Resource**. This property will be a part of JSON response only if an OEM property is implemented according to "**How to Add OEM extensions (v1.1)**" document.
Id(M)	String	True	Resource Identifier.
Name(M)	String	True	Name of the Resource.
Description	String	True	Provides description of the resource. Refer to section **4.3.3 Resource**.
SecureBootEnable	Boolean	False	Setting this property to true enables UEFI Secure Boot, and setting it to false disables it. This property can be enabled only in UEFI boot mode.
Actions	Object	True	This action is used to reset the Secure Boot keys. SecureBoot allows the user to perform SecureBoot.ResetKeys action and it's allowable values are as given below. It can also contain an Oem Object under Oem attribute under this Actions.

Enum	Description
ResetAllKeysTo Default	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.

Name	Type	ReadOnly	Description
SecureBootCurrent Boot	String	True	The value of this property shall indicate the UEFI Secure Boot state during the current boot cycle.

Enum	Description
Enabled	Secure Boot is currently enabled.
Disabled	Secure Boot is currently disabled.

Name	Type	ReadOnly	Description
SecureBootMode	String	True	Current Secure Boot Mode as defined in the UEFI Specification.

Enum	Description
SetupMode	Secure Boot is currently in Setup Mode.
UserMode	Secure Boot is currently in User Mode.
AuditMode	Secure Boot is currently in Audit Mode.
DeployedMode	Secure Boot is currently in Deployed Mode.

4.4 Redfish AMI OEM Entities

This Section provides the API's that are available as part of AMI OEM Extensions.

> AMI OEM Extensions support should be enabled in PRJ.

4.4.1 Configurations

This gives support for Certificate Authentication(CA) by enabling the user to upload the public certificate to the redfish server. This allows additional configuring of the Redfish service.

> This URI is available when CA support is enabled.

A. GET

- **Request**

```
GET   https://{{ip}}/redfish/v1/configurations
Content-Type: application/json
```

Table 64   Configuration Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
Id	String	True	Resource Identifier.
Name	String	True	Name of the Resource.
CertificateAuthorityUrl	String	False	The URL for the web server where the CA certificate is stored.

- **Response**

    The response of the request will return 200 with response body in JSON format with the OData properties.

B. PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/configurations
Content-Type: application/json
```

The request property is same as Get Response "**CertificateAuthorityUrl**" property.

Example PATCH Request Body

```
{
      "CertificateAuthorityUrl":"https://{{ip}}/cert/ca-cert.
      pem" ]
}
```

- **Response**

  The response status is success by following scenario:

  - The response status 200 means success and the response body is a GET Response with the changed values specified in the Patchable properties in Request body.

  - On error, the response status will be 400 and the body will contain the response error.

  For Detailed Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.4.2 PAM Configuration

A. GET

- **Request**

```
GET   https://{{ip}}/redfish/v1/AccountService/Configurations
Content-Type: application/json
```

Table 65   Account Service Properties

Name	Type	ReadOnly	Description
@odata.context	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.id	String	True	Refer to section **4.3.1 ODATA properties**.
@odata.type	String	True	Refer to section **4.3.1 ODATA properties**.
Id	String	True	Resource Identifier.
Name	String	True	Name of the Resource.
PAMEnabled	Boolean	False	Indicates whether or not PAM authentication should be used when authenticating Redfish requests.
PAMOrder	Array	False	Array that represents the order the PAM modules will be checked for authentication.

- **Response**

  The response of the request will return 200 with response body in JSON format with the OData properties.

B. PATCH

- **Request**

```
PATCH https://{{ip}}/redfish/v1/AccountService/Configurations
Content-Type: application/json
```

Example PATCH Request Body

```
{
     "PAMEnabled": true, "PAMOrder": [ "ACTIVE DIRECTORY",
     "RADIUS", "IPMI", "LDAP" ]
}
```

- **Response**

  The response status is success by following scenario:

  - The response status 200 means success and the response body is a GET Response with the changed values specified in the Patchable properties in Request body.
  - A message will be included in the response when the lighttpd web server needs to be restarted.
  - On error, the response status will be 400 and the body will contain the response error.

  For Detailed Error Responses refer to section **4.2.4 B** and section **4.2.4 C**.

4.4.3   Manager Factory Reset – [DEBUG ONLY FEATURE]

The FactoryReset action in Redfish will clear the Redfish database, repopulate it with default values using db_init, clear the SEL in IPMI, and then repopulate data from IPMI to Redfish.

A.   POST

- **Request**

```
POST  https://{{ip}}/redfish/v1/ Managers/Self/Actions/Manager.
FactoryReset
Content-Type: application/json
```

Example POST Request Body

```
{
     "FactoryResetType": "ResetAll"
}
```

- **Response**

  The response of the request will be 204 No content.

4.5 Known Limitations

4.5.1 NULL Value

Null value in JSON means Property does not have any value so in our Redfish implementation we have chosen not to display such values in GET Response neither allow in PATCH Requests.

A. PATCH Requests

Property with **"null" value in the request is not supported for PATCH requests** and a 400 bad request with PropertyValueTypeError is returned.

For example: `{"AssetTag":null}` is an invalid request.

B. GET Responses

Property with "null" value will not be displayed in the GET response.

4.5.2 GET Request BODY

Lighttpd is the master web server which receives request and proxy to Redfish and other services as needed. Lighttpd has a known limitation of not accepting body in GET request.

Chapter 4: Redfish Technology Pack

Appendix

The Appendix shows the location of the LAN ports for server management and BMC connector on server motherboards. This section also presents common problems that you may encounter when installing or using the server management board.

A.1 LAN ports for server management

The ASUS server motherboards that support ASMB9-iKVM comes with three (3) LAN (RJ-45) ports: one for network connection and the other two for server management.

For easy identification, the LAN ports for server management are Shared LAN and DM_LAN1 ports. You must use the Shared LAN and DM_LAN1 ports for server management to connect the remote server to the local/central host (direct LAN connection) or to the network hub or router.

Refer to the illustration below to identify the Shared LAN and DM_LAN1 ports for server management on some server motherboards.
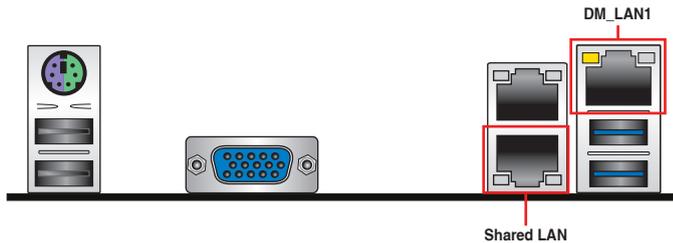
DM_LAN1

Shared LAN

Refer to your motherboard's user guide for the location of Shared LAN and DM_LAN1 ports.

A.2   Troubleshooting

This troubleshooting guide provides answers to some common problems that you may encounter while installing and/or using ASUS ASMB9-iKVM. These problems require simple troubleshooting that you can perform by yourself. Contact the Technical Support if you encounter problems not mentioned in this section.

Problem	Solution
The local/central server cannot connect to the ASMB9-iKVM board	1. Check if the LAN cable is connected to the LAN port. 2. Make sure that the IP address of both the remote and local/central servers are on the same subnet. (Refer to chapter 2 for details.) Try "ping xx.xx.xx.xx" (remote server ip) on local/central server and make sure remote server could reply the ping request. 3. Check if the IP source is set to [DHCP]. When set to [DHCP], you'll not be able to configure the IP address.
All the SEL (System Event Log) cannot be displayed	The maximum SEL number is 900 events.
The date/time shown in SEL (System Event Log) screen is incorrect	Refer to section 4.4.9 to check if the time zone is set up correctly.
ASMB9-iKVM has network connection problems in Firewall environment	Ask MIS to add the following port numbers in Firewall: 5123 (virtual floppy) (TCP) 5120 (virtual CDROM) (TCP) 623 (IPMI) (TCP & UDP) 80 (HTTP) (TCP) 7578 (iKVM) (TCP) 443 (HTTPs) (TCP) 161 (SNMP) (UDP)
The Java redirection screen cannot be displayed normally	Click **Refresh Page** button to refresh the redirection screen.

The ASMB JAVA console only works with the onboard VGA. Other add-on video cards may not properly display the ASMB JAVA console.

A.3 Sensor Table

Memory ECC

Sensor No.	Sensor Name	Sensor Type	Sensor Type code	Sensor Value or Event Type	Event Data 3
D1h	CPU1_ECC1	Memory ECC Sensor	0Ch	Discrete (6Fh) 0x01: Correctable ECC 0x02: Uncorrectable ECC 0x40: Presence detected	0x00h: DIMM_A1, 0x01h: DIMM_A2 0x02h: DIMM_A3, 0x03h: DIMM_A4, 0x04h: DIMM_B1, 0x05h: DIMM_B2, 0x06h: DIMM_B3, 0x07h: DIMM_B4 0x08h: DIMM_C1, 0x09h: DIMM_C2 0x0ah: DIMM_C3, 0x0bh: DIMM_C4 0x0ch: DIMM_D1, 0x0dh: DIMM_D2 0x0eh: DIMM_D3, 0x0fh: DIMM_D4 0x10h: DIMM_E1, 0x11h: DIMM_E2 0x12h: DIMM_E3, 0x13h: DIMM_E4 0x14h: DIMM_F1, 0x15h: DIMM_F2 0x16h: DIMM_F3, 0x17h: DIMM_F4 0x18h: DIMM_G1, 0x19h: DIMM_G2 0x12h: DIMM_G3, 0x1bh: DIMM_G4 0x1ch: DIMM_H1, 0x1dh: DIMM_H2 0x1dh: DIMM_H3, 0x1fh: DIMM_H4
D3h	CPU2_ECC1	Memory ECC Sensor	0Ch	Discrete (6Fh) 0x01: Correctable ECC 0x02: Uncorrectable ECC 0x40: Presence detected	0x00h: DIMM_D1, 0x01h: DIMM_D2 0x02h: DIMM_D3, 0x03h: DIMM_D4 0x04h: DIMM_E1, 0x05h: DIMM_E2 0x06h: DIMM_E3, 0x07h: DIMM_E4 0x08h: DIMM_F1, 0x09h: DIMM_F2 0x0ah: DIMM_F3, 0x0bh: DIMM_F4 0x0ch: DIMM_G1, 0x0dh: DIMM_G2 0x0eh: DIMM_G3, 0x0fh: DMM_G4 0x10h: DIMM_H1, 0x11h: DIMM_H2 0x12h: DIMM_H3, 0x13h: DIMM_H4 0x14h: DIMM_C1, 0x15h: DIMM_C2 0x16h: DIMM_C3, 0x17h: DIMM_C4 0x18h: DIMM_I1, 0x19h: DIMM_I2 0x1ah: DIMM_I3, 0x1bh: DIMM_I4 0x1ch: DIMM_J1, 0x1dh: DIMM_J2 0x1eh: DIMM_J3, 0x1fh: DIMM_J4 0x20h: DIMM_K1, 0x21h: DIMM_K2 0x22h: DIMM_K3, 0x23h: DIMM_K4 0x24h: DIMM_L1, 0x25h: DIMM_L2 0x26h: DIMM_L3, 0x27h: DIMM_L4 0x28h: DIMM_M1, 0x29h: DIMM_M2 0x2ah: DIMM_M3, 0x2bh: DIMM_M4 0x2ch: DIMM_N1, 0x2dh: DIMM_N2 0x2eh: DIMM_N3, 0x2fh: DIMM_N4 0x30h: DIMM_O1, 0x31h: DIMM_O2 0x32h: DIMM_O3, 0x33h: DIMM_O4 0x34h: DIMM_P1, 0x35h: DIMM_P2 0x36h: DIMM_P3, 0x37h: DIMM_P4

Memory Error

Sensor No.	Sensor Name	Sensor Type	Sensor Type code	Sensor Value or Event Type	Event Data 3
DBh	Memory_Train_ERR	OEM Memory Sensor	C5h	Discrete (6Fh) 0x01: Memory Train Error	0x00:DIMM_A1 0x01:DIMM_A2 0x02:DIMM_A3 0x03:DIMM_A4 0x04:DIMM_B1 0x05:DIMM_B2 0x06:DIMM_B3 0x07:DIMM_B4 0x08:DIMM_C1 0x09:DIMM_C2 0x0a:DIMM_C3 0x0b:DIMM_C4 0x0c:DIMM_D1 0x0d:DIMM_D2 0x0e:DIMM_D3 0x0f:DIMM_D4 0x10:DIMM_E1 0x11:DIMM_E2 0x12:DIMM_E3 0x13:DIMM_E4 0x14:DIMM_F1 0x15:DIMM_F2 0x16:DIMM_F3 0x17:DIMM_F4 0x18:DIMM_G1 0x19:DIMM_G2 0x1a:DIMM_G3 0x1b:DIMM_G4 0x1c:DIMM_H1 0x1d:DIMM_H2 0x1e:DIMM_H3 0x1f:DIMM_H4 0x20:DIMM_I1 0x21:DIMM_I2 0x22:DIMM_I3 0x23:DIMM_I4 0x24:DIMM_J1 0x25:DIMM_J2 0x26:DIMM_J3 0x27:DIMM_J4 0x28:DIMM_K1 0x29:DIMM_K2 0x2a:DIMM_K3 0x2b:DIMM_K4 0x2c:DIMM_L1 0x2d:DIMM_L2 0x2e:DIMM_L3 0x2f:DIMM_L4 0x30:DIMM_M1 0x31:DIMM_M2 0x32:DIMM_M3 0x33:DIMM_M4 0x34:DIMM_N1 0x35:DIMM_N2 0x36:DIMM_N3 0x37:DIMM_N4 0x38:DIMM_O1 0x39:DIMM_O2 0x3a:DIMM_O3 0x3b:DIMM_O4 0x3c:DIMM_P1 0x3d:DIMM_P2 0x3e:DIMM_P3 0x3f:DIMM_P4

Backplane HD

Sensor No.	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
0x68	Backplane1 HD1	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x69	Backplane1 HD2	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6A	Backplane1 HD3	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6B	Backplane1 HD4	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6C	Backplane1 HD5	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6D	Backplane1 HD6	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6E	Backplane1 HD7	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x6F	Backplane1 HD8	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x78	Backplane2 HD1	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x79	Backplane2 HD2	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7A	Backplane2 HD3	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7B	Backplane2 HD4	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7C	Backplane2 HD5	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7D	Backplane2 HD6	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7E	Backplane2 HD7	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild
0x7F	Backplane2 HD8	Drive Slot	0x0D	Discrete(0x6F) 0x01: Drive Presence 0x02: Drive Fault 0x80: Rebuild

Power Supply

Sensor No.	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
0x81	PSU1 Temp	Temperature	0x01	Threshold(0x01) Upper Non-Critical - going high Upper Critical - going high
0x82	PSU1 Fan1	FAN	0x04	Threshold(0x01) Lower Non-critical - going low Lower Critical - going low
0x83	PSU1 Fan2	FAN	0x04	Threshold(0x01) Lower Non-critical - going low Lower Critical - going low
0x92	PSU1 Over Temp	Temperature	0x01	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x93	PSU1 FAN Low	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe
0x94	PSU1 AC	Power Supply	0x08	Discrete(0x6F) 0x01: Presence Detected 0x08: Power Supply input lost (AC/DC)
0x95	PSU1 Slow FAN1	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x96	PSU1 Slow FAN2	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x97	PSU1 PWR Detect	Power Supply	0x08	Discrete(0x6F) 0x01: Presence Detected 0x02: Power Supply Failure Detected
0x84	PSU2 Temp	Temperature	0x01	Threshold(0x01) Upper Non-Critical - going high Upper Critical - going high
0x85	PSU2 Fan1	FAN	0x04	Threshold(0x01) Lower Non-critical - going low Lower Critical - going low
0x86	PSU2 Fan2	FAN	0x04	Threshold(0x01) Lower Non-critical - going low Lower Critical - going low
0x9A	PSU2 Over Temp	Temperature	0x01	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x9B	PSU2 FAN Low	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe
0x9C	PSU2 AC Lost	Power Supply	0x08	Discrete(0x6F) 0x01: Presence Detected 0x08: Power Supply input lost (AC/DC)
0x9D	PSU2 Slow FAN1	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x9E	PSU2 Slow FAN2	FAN	0x04	Discrete(0x07) 0x01: Transition to OK 0x10: Transition to Non-Critical from more severe 0x40: Transition to Non-Recoverable
0x9F	PSU2 PWR Detect	Power Supply	0x08	Discrete(0x6F) 0x01: Presence Detected 0x02: Power Supply Failure Detected

Hardware Monitor

Lun	No	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
00h	31h	CPU1 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	32h	CPU2 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	33h	MB Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	cch	TR1 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	cdh	TR2 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	c6h	TR3 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	c7h	TR4 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	ceh	TR5 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	cfh	TR6 Temperature	Temperature	01h	Threshold (01h)
					Upper Non-critical - going high
					Upper Critical - going high
00h	34h	+VCORE1	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	35h	+VCORE2	02h Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high

Lun	No	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
00h	36h	+3.3V	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	37h	+5V	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	38h	+12V	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	3bh	+5VSB	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	3ch	VBAT	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	40h	+3.3VSB	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	4dh	+VDDQ_ABC_CPU1	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	4eh	+VDDQ_DEF_CPU1	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high

(continued on the next page)

Lun	No	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
00h	50h	+VDDQ_GHJ_CPU2	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	51h	+VDDQ_KLM_CPU2	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
00h	c3h	+VCCIO1	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
01h	30h	+VCCIO2	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
01h	B0h	VSOC1 (For AMD platform only)	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
01h	B1h	VSOC2 (For AMD platform only)	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
01h	B2h	+VDDIO_ABCD_CPU1 (For AMD platform only)	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high
01h	B3h	+VDDIO_EFGH_CPU1 (For AMD platform only)	Voltage	02h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
					Upper Non-critical - going high
					Upper Critical - going high

Lun	No	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
01h	B4h	+VDDIO_IJKL_CPU2 (For AMD platform only)	Voltage	02h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low Upper Non-critical - going high Upper Critical - going high
01h	B5h	+VDDIO_MNOP_CPU2 (For AMD platform only)	Voltage	02h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low Upper Non-critical - going high Upper Critical - going high
00h	A0h	CPU_FAN1	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A1h	CPU_FAN2	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A2h	FRNT_FAN1	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A3h	FRNT_FAN2	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A4h	FRNT_FAN3	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A5h	FRNT_FAN4	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A6h	REAR_FAN1	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A7h	REAR_FAN2	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A8h	FRNT_FAN5	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low
00h	A9h	FRNT_FAN6	Fan	04h	Threshold (01h) Lower Non-critical - going low Lower Critical - going low

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Lun	No	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
00h	AAh	FRNT_FAN7	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
00h	ABh	FRNT_FAN8	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
00h	ACh	SYS_FAN1	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
00h	39h	SYS_FAN2	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
00h	3Ah	SYS_FAN3	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low
00h	3Fh	SYS_FAN4	Fan	04h	Threshold (01h)
					Lower Non-critical - going low
					Lower Critical - going low

CPU CATERR

Sensor No.	Sensor Name	Sensor Type	Sensor Type Code	Sensor Value or Event Type
0xDA	CPU_CATERR	Processor	07h	Discrete (6Fh) 0x01: IERR

A.4   Redfish Assigned Privileges

User needs to have this privilege for performing the following operations:

The configure portion is mainly applicable for PATCH / POST / DELETE.

ConfigureComponents

ConfigureComponents Privilege is required for the following HTTP methods in the below given URI's:

Action URL	Privilege Enforced
PATCH System Instance	ConfigureComponents
POST Chassis / Manager / System LogService	ConfigureComponents required for ClearLog
PATCH/POST/PUT BIOS SD	ConfigureComponents
PATCH Chassis Instance	ConfigureComponents
PATCH Chassis/System LogService	ConfigureComponents
PATCH NetworkDeviceFunction Instance	ConfigureComponents
PATCH NetworkPort Instance	ConfigureComponents
PATCH SecureBoot	ConfigureComponents
PATCH Storage Instance	ConfigureComponents
PATCH System VLAN Instance	ConfigureComponents
PATCH System Volume Instance	ConfigureComponents

ConfigureManager

ConfigureManager Privilege is required for the following HTTP methods in the below given URI's:

Action URL	Privilege Enforced
PATCH Chassis Power Instance	ConfigureManager
PATCH/POST/DELETE EventService	ConfigureManager
PATCH/DELETE EventService/ Subscriptions	ConfigureManager
PATCH Manager Instance	ConfigureManager
PUT/POST/DELETE Manager EthernetInterface SD	ConfigureManager
PATCH Manager EthernetInterface Instance	ConfigureManager
POST Manager LogService	ConfigureManager for ClearLog
PATCH Manager LogService	ConfigureManager
PATCH Manager NetworkProtocol Instance	ConfigureManager
PATCH Manager SerialInterface Instance	ConfigureManager
PATCH TaskService	ConfigureManager

ConfigureUsers

ConfigureUsers Privilege is required for the following HTTP methods in the below given URI's:

Action URL	Privilege Enforced
PATCH AccountService	ConfigureUsers
POST/PATCH/DELETE Accounts	ConfigureUsers
PATCH Account Instance	ConfigureUsers or ConfigureSelf
PATCH/POST/DELETE AccountService/ Roles	ConfigureUsers
PATCH/DELETE for Other sessions	ConfigureUsers

A.5   Redfish Reference documents

• Redfish Scalable Platforms Management API Specification – DSP0266_1.1.0

• Redfish Host Interface Specification - DSP0270_1.0.0

• MegaRAC Redfish -How to Add OEM extensions (v1.1)

• MegaRAC Redfish - System Builder User Guide (v1.1)

• MegaRAC Redfish – HostInterface (LanOverUSB) (v1.1)

• MegaRAC Redfish - BMC Hardware Health Management Getting Started Guide (v1.1)

Simplified EU Declaration of Conformity

English ASUSTeK Computer Inc. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related Directives. Full text of EU declaration of conformity is available at: www.asus.com/support

Français AsusTek Computer Inc. déclare par la présente que cet appareil est conforme aux critères essentiels et autres clauses pertinentes des directives concernées. La déclaration de conformité de l'UE peut être téléchargée à partir du site Internet suivant : www.asus.com/support.

Deutsch ASUSTeK Computer Inc. erklärt hiermit, dass dieses Gerät mit den wesentlichen Anforderungen und anderen relevanten Bestimmungen der zugehörigen Richtlinien übereinstimmt. Der gesamte Text der EU-Konformitätserklärung ist verfügbar unter: www.asus.com/support

Italiano ASUSTeK Computer Inc. con la presente dichiara che questo dispositivo è conforme ai requisiti essenziali e alle altre disposizioni pertinenti con le direttive correlate. Il testo completo della dichiarazione di conformità UE è disponibile all'indirizzo: www.asus.com/support

Русский Компания ASUS заявляет, что это устройство соответствует основным требованиям и другим соответствующим условиям соответствующих директив. Подробную информацию, пожалуйста, смотрите на www.asus.com/support

Български С настоящото ASUSTeK Computer Inc. декларира, че това устройство е в съответствие със съществените изисквания и другите приложими постановления на свързаните директиви. Пълният текст на декларацията за съответствие на ЕС е достъпна на адрес: www.asus.com/support

Hrvatski ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj sukladan s bitnim zahtjevima i ostalim odgovarajućim odredbama vezanih direktiva. Cijeli tekst EU izjave o sukladnosti dostupan je na: www.asus.com/support

Čeština Společnost ASUSTeK Computer Inc. tímto prohlašuje, že toto zařízení splňuje základní požadavky a další příslušná ustanovení souvisejících směrnic. Plné znění prohlášení o shodě EU je k dispozici na adrese: www.asus.com/support

Dansk ASUSTeK Computer Inc. erklærer hermed, at denne enhed er i overensstemmelse med hovedkravene og andre relevante bestemmelser i de relaterede direktiver. Hele EU-overensstemmelseserklæringen kan findes på: www.asus.com/support

Nederlands ASUSTeK Computer Inc. verklaart hierbij dat dit apparaat voldoet aan de essentiële vereisten en andere relevante bepalingen van de verwante richtlijnen. De volledige tekst van de EU-verklaring van conformiteit is beschikbaar op: www.asus.com/support

Eesti Käesolevaga kinnitab ASUSTeK Computer Inc, et see seade vastab asjakohaste direktiivide oluliste nõuetele ja teistele asjassepuutuvatele sätetele. EL vastavusdeklaratsiooni täielik tekst on saadaval järgmisel aadressil: www.asus.com/support

Suomi ASUSTeK Computer Inc. ilmoittaa täten, että tämä laite on asiaankuuluvien direktiivien olennaisten vaatimusten ja muiden tätä koskevien säädösten mukainen. EU-yhdenmukaisuusilmoituksen koko teksti on luettavissa osoitteessa: www.asus.com/support

Ελληνικά Με το παρόν, η AsusTek Computer Inc. δηλώνει ότι αυτή η συσκευή συμμορφώνεται με τις θεμελιώδεις απαιτήσεις και άλλες σχετικές διατάξεις των Οδηγιών της ΕΕ. Το πλήρες κείμενο της δήλωσης συμβατότητας είναι διαθέσιμο στη διεύθυνση: www.asus.com/support

Magyar Az ASUSTeK Computer Inc. ezennel kijelenti, hogy ez az eszköz megfelel a kapcsolódó Irányelvek lényeges követelményeinek és egyéb vonatkozó rendelkezéseinek. Az EU megfelelőségi nyilatkozat teljes szövege innen letölthető: www.asus.com/support

Latviski ASUSTeK Computer Inc. ar šo paziņo, ka šī ierīce atbilst saistīto Direktīvu būtiskajām prasībām un citiem citiem saistošajiem nosacījumiem. Pilns ES atbilstības paziņojuma teksts pieejams šeit: www.asus.com/support

Lietuvių "ASUSTeK Computer Inc." šiuo tvirtina, kad šis įrenginys atitinka pagrindinius reikalavimus ir kitas svarbias susijusių direktyvų nuostatas. Visą ES atitikties deklaracijos tekstą galima rasti: www.asus.com/support

Norsk ASUSTeK Computer Inc. erklærer herved at denne enheten er i samsvar med hovedsaklige krav og andre relevante forskrifter i relaterte direktiver. Fullstendig tekst for EU-samsvarserklæringen finnes på: www.asus.com/support

Polski Firma ASUSTeK Computer Inc. niniejszym oświadcza, że urządzenie to jest zgodne z zasadniczymi wymogami i innymi właściwymi postanowieniami powiązanych dyrektyw. Pełny tekst deklaracji zgodności UE jest dostępny pod adresem: www.asus.com/support

Português A ASUSTeK Computer Inc. declara que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes das Diretivas relacionadas. Texto integral da declaração da UE disponível em: www.asus.com/support

Română ASUSTeK Computer Inc. declară că acest dispozitiv se conformează cerințelor esențiale și altor prevederi relevante ale directivelor conexe. Textul complet al declarației de conformitate a Uniunii Europene se găsește la: www.asus.com/support

Srpski ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj u saglasnosti sa osnovnim zahtevima i drugim relevantnim odredbama povezanih Direktiva. Pun tekst EU deklaracije o usaglašenosti je dostupan da adresi: www.asus.com/support

Slovensky Spoločnosť ASUSTeK Computer Inc. týmto vyhlasuje, že toto zariadenie vyhovuje základným požiadavkám a ostatým príslušným ustanoveniam príslušných smerníc. Celý text vyhlásenia o zhode pre štáty EÚ je dostupný na adrese: www.asus.com/support

Slovenščina ASUSTeK Computer Inc. izjavlja, da je ta naprava skladna z bistvenimi zahtevami in drugimi ustreznimi določbami povezanih direktiv. Celotno besedilo EU-izjave o skladnosti je na voljo na spletnem mestu: www.asus.com/support

Español Por la presente, ASUSTeK Computer Inc. declara que este dispositivo cumple los requisitos básicos y otras disposiciones pertinentes de las directivas relacionadas. El texto completo de la declaración de la UE de conformidad está disponible en: www.asus.com/support

Svenska ASUSTeK Computer Inc. förklarar härmed att denna enhet överensstämmer med de grundläggande kraven och andra relevanta föreskrifter i relaterade direktiv. Fulltext av EU-försäkran om överensstämmelse finns på: www.asus.com/support

Українська ASUSTeK Computer Inc. заявляє, що цей пристрій відповідає основним вимогам та іншим відповідним положенням відповідних Директив. Повний текст декларації відповідності стандартам ЄС доступний на: www.asus.com/support

Türkçe AsusTek Computer Inc., bu aygıtın temel gereksinimlerle ve ilişkili Yönergelerin diğer ilgili koşullarıyla uyumlu olduğunu beyan eder. AB uygunluk bildiriminin tam metni şu adreste bulunabilir: www.asus.com/support

Bosanski ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj usklađen sa bitnim zahtjevima i ostalim odgovarajućim odredbama vezanih direktiva. Cijeli tekst EU izjave o usklađenosti dostupan je na: www.asus.com/support

ASUS contact information

ASUSTeK COMPUTER INC.
Address   4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
Telephone   +886-2-2894-3447
Fax   +886-2-2890-7798
Web site   http://www.asus.com

Technical Support
Telephone   +86-21-38429911
Fax   +86-21-58668722 ext: 9101
Online Support   http://support.asus.com/techserv/techserv.aspx

ASUSTeK COMPUTER INC. (Taiwan)
Address   4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
Telephone   +886-2-2894-3447
Fax   +886-2-2890-7798
Web site   http://www.asus.com

Technical Support
Telephone   +886-2-2894-3447 (0800-093-456)
Online Support   http://support.asus.com/techserv/techserv.aspx

ASUSTeK COMPUTER INC. (China)
Address   No. 5077 Jindu Road, Minhang District, Shanghai
Telephone   +86-21-5442-1616
Fax   +86-21-5442-0099
Web site   http://www.asus.com.cn

Technical Support
Telephone   +86-20-2804-7506 (400-620-6655)
Online Support   http://support.asus.com/techserv/techserv.aspx

ASUS contact information

ASUS COMPUTER INTERNATIONAL (America)
Address   48720 Kato Rd., Fremont, CA 94538, USA
Fax   +1-510-608-4555
Web site   http://usa.asus.com

Technical Support
Support fax   +1-812-284-0883
General support   +1-812-282-2787
Online support   http://support.asus.com/techserv/techserv.aspx

ASUS COMPUTER GmbH (Germany and Austria)
Address   Harkort Str. 21-23, D-40880 Ratingen, Germany
Fax   +49-2102-959911
Web site   http://www.asus.de
Online contact   http://www.asus.de/sales

Technical Support
Telephone   +49-1805-010923
Support Fax   +49-2102-959911
Online support   http://support.asus.com/techserv/techserv.aspx

ASUS Czech Service s.r.o. (Europe)
Address   Na Rovince 887, 720 00   Ostrava – Hrabová, Czech
Republic
Telephone   +420-596766888
Web site   http://www.asus.cz

Technical Support
Telephone   +420-596-766-891
Fax   +420-596-766-329
E-mail   advance.rma.eu@asus.com
Online Support   http://support.asus.com/techserv/techserv.aspx

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ASUS contact information

ASUS Holland BV (The Netherlands)
Address   Marconistraat 2, 7825GD EMMEN, The Netherlands
Web site   http://www.asus.com

Technical Support
Telephone   +31-(0)591-5-70292
Fax   +31-(0)591-666853
E-mail   advance.rma.eu@asus.com
Online Support   http://support.asus.com/techserv/techserv.aspx

ASUS Polska Sp. z o.o. (Poland)
Address   Ul. Postępu 6, 02-676 Warszawa, Poland
Web site   http://pl.asus.com

Technical Support
Telephone   +48-225718033
Online Support   http://support.asus.com/techserv/techserv.aspx

ASK-Service (Russia and CIS)
Address   г.Москва, ул. Орджоникидзе, д.10, Россия
Telephone   (495) 640-32-75
Web site   http://ru.asus.com

Technical Support
Telephone   008-800-100-ASUS (008-800-100-2787)
Online Support   http://vip.asus.com/eservice/techserv.aspx?SLanguage=ru