



SuperServer Automation Assistant

UEFI

(SAA)

User's Guide

Revision 1.4.0-p1

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Version History

Date	Rev	Description
Dec-05-2024	1.2.0	1. Created this document.
April-14-2025	1.3.0	1. Supported ClearEventLog with clear_bmc_eventlog and clear_bios_eventlog options. 2. Added the --action option and introduced Redfish support for the BmcReset command. 3. Added GetBmcUserList and SetBmcUserList commands. Added GB200 Redfish Host Interface and environment variable setup 4. Added --action Status and redfish host interface for chassisintrusion command.
July-30-2025	1.4.0	1. Added support for GetBiosInfo and UpdateBios commands on GB200. 2. Added support for GetBmcInfo commands on GB200. 3. Added support for GetCpldInfo and UpdateCpld commands on GB200. 4. Added support for GetGpuInfo and UpdateGpu commands on GB200. 5. Added support for the GetEventLog command on GB200. 6. Added support for the GetSystemInfo command on GB200. 7. Added support for GetBackplaneCpldInfo and UpdateBackplaneCpld commands on GB200. 8. Added support for GetAomboardCpldInfo and UpdateAomboardCpld commands on GB200. 9. Added GB200 Redfish Host Interface and enviroment variable setup. 10. Removed the --action EnableIPv6AutoCfg and --action DisableIPv6AutoCfg options from the BmcLanManage command. 11. Added the -f option support.

1. Overview

The SuperServer Automation Assistant (SAA) is designed to help IT administrators easily update firmware images and configurations on Supermicro systems. Advanced applications are also provided to facilitate system management. To update configurations, users can edit system DMI information from readable text files as well as by using this automation assistant.

The SAA supports both Redfish and IPMI for system management. Users can manage BMC-based systems on the local host through an in-band channel.

1.1 Features

- Command-line interface (CLI) and scriptable
- Operates through in-band methods
- System Management
 - Obtains a summary of information from the managed system
 - Gets the FRU information from the managed system or an input dumped FRU file
 - Restores dumped FRU information to the managed system
 - Updates FRU information.
- BIOS Management
 - Updates BIOS
 - Gets the BIOS information of the managed system/input BIOS image file
 - Gets the DMI information of the managed system
 - Edits the given DMI information text file
 - Updates DMI information
 - Gets boot information of the managed system
 - Sets boot Option of the managed system
- BMC Management
 - Updates BMC

- Gets the BMC information from either the managed system or an input BMC image file
- Loads the default factory BMC configuration
- Performs BMC reset
- Manages BMC LAN
- Gets/Sets the BMC host name
- Gets the BMC user list
- Sets the BMC user list
- Applications
 - Sends IPMI raw commands
- GPU Management
 - Gets the GPU information of the managed system
 - Updates Delta or Delta-Next GPU firmware
- CPLD Management
 - Gets the CPLD information of the managed system/input CPLD image file
 - Updates CPLD
 - Gets the Switchboard CPLD information of the managed system
 - Executes updates on Switchboard CPLD based on type selected
 - Gets the backplane CPLD information of the managed system
 - Updates Backplane CPLD
 - Gets the Fanboard CPLD information of the managed system
 - Executes updates on Fanboard CPLD based on type selected
 - Gets the Miscellaneous CPLD information of the managed system/input image file
 - Executes updates on Miscellaneous CPLD based on type selected
- Security Management
 - Executes RoT-related actions
 - Gets system lockdown status
 - Gets the CPU ERoT information of the managed system.
 - Updates CPU ERoT.
 - Gets the SPDM information of the managed system.

- Gets the GPU EROt information of the managed system.
- Health Management
 - Gets and clears chassis intrusion status for the managed system
 - Gets IPMI sensor values of the managed system
 - Checks and reports the basic health status of the BMC
- System Management
 - Gets the event log of the managed system
 - Clears the event log of the managed system
 - Gets the maintenance event log of the managed system
 - Clears the maintenance event log of the managed system
- Multi-Node Management
 - Gets or sets the TwinPro information of the managed system
 - Gets the multi-node LCMC information of the managed system
 - Updates multi-node LCMC
- FPGA Management
 - Gets the motherboard FPGA information of the managed system.
 - Updates motherboard FPGA.

1.2 Operations Requirements

1.2.1 In-Band Usage Requirements

With the use of in-band, SAA can perform BIOS/BMC/CPLD Management functions for selected Supermicro motherboards/systems. The managed system must meet the following requirements.

System Requirements:

Environment	Requirements
Hardware	50 MB free disk space
	128 MB available RAM

Firmware image	X12/H12 select systems
Operating System	EFI shell

The software you need in advance:

The software you need in advance:

OS	Program/Script	Description
EFI shell	SAA.efi	The main program for SAA

1.2.2 Additional In-Band Usage Requirements

For in-band commands, the managed system must have a BMC firmware image and an IPMI driver installed. The BMC firmware image should meet the following requirements.

Firmware Image	Requirement
BMC Version	X12 ATEN platform (SMT_X12): 1.00 or later H12 ATEN platform (SMT_H12): 1.00 or later

1.3 Typographical Conventions

This manual uses the following typographical conventions.

Convention	Definition
Bold	Keywords needing attention are in bold.
<i>Italics</i>	Variables and section names are in italics.
{ }	Curly braces indicate that at least one of the enclosed items is required.
[]	Square brackets indicate that the enclosed item or items are optional.
< >	Angle brackets enclose the parameters in the syntax description.

	A vertical bar separate the items in a list.
Courier-New font size 10	represents Command Line Interface (CLI) instructions in Linux terminal mode.
[shell]#	represents the input prompt in Linux terminal mode.
[SAA_HOME]#	represents the SAA home directory prompt in Linux terminal mode.

- **Obligatory choices**

Curly braces and vertical bars – choose only one option.

{ --enable | --disable }

- **Optional choices**

One item in square brackets – You can choose it or omit it.

[--overwrite]

Square brackets and vertical bars – choose none or only one.

[--load_unique_password | --load_default_password]

2. Installation and Setup

2.1 Installing

To install SAA in EFI shell, follow these steps.

- Extract the saa_x.x.x_UEFI_x86_64_YYYYMMDD.zip archive file.
- Go to the extracted saa_x.x.x_UEFI_x86_64 directory. Name this directory as “SAA_HOME”.
- Copy the directory saa_x.x.x_UEFI_x86_64 to a USB device.
- Inject plug the USB device into the target system.
- Run SAA in the SAA_HOME directory.

Linux Example:

```
[Shell]# FS0:
```

```
[FS0:]# cd SAA_HOME
```

```
[SAA_HOME]# SAA.efi
```



Note: It is recommended that SAA tool with SAA release package should be used because binary files are required for certain commands.

2.2 For GB200 RHI Configuration

To configure the Redfish Host Interface on the GB200, please follow these steps:

- In the BMC GUI, navigate to Settings > Network > hostusb0.
Set the following values:
IPv4 address: 10.0.1.1

Gateway: 0.0.0.0

Subnet Mask: 255.255.0.0



Note: If the BMC is reset, the Redfish Host Interface configuration may be lost. Reconfigure it after a BMC reset or system reboot if necessary.

3. Basic User Interface

UEFI SAA is a binary executable file written in the C++ language. To display the usage information, use this command:

```
[SAA_HOME]# SAA.efi
```

To display the usage information for each SAA command, use this syntax:

```
[SAA_HOME]# SAA.efi -h -c <command name>
```

Example:

```
[SAA_HOME]# SAA.efi -h -c UpdateBios
```

Usage Information:

Options	Description or usage
-h	Shows help information.
-v	Displays the verbose output on the screen.
-l	<InterfaceName> (case sensitive) Redfish_HI = Executes in-band commands using Redfish Host Interface.
-u	<BMC/CMM user ID>
-p	<BMC/CMM user password>
-f	<BMC/CMM user password> Reads the first line of password file as password.
-c	<command name>

System Management	
Commands	Long Options

GetSystemInfo	None
GetFruInfo	<p>--file <file name> (Optional) Saves the dumped FRU data to a file.</p> <p>--file_only (Optional) Works with the --file option and only reads FRU information from the input dumped FRU file.</p> <p>--overwrite (Optional) Overwrites the output file.</p> <p>--dump (Optional) Works with the --file option and dumps FRU data.</p> <p>--format <file format> (Optional) Works with the --file and --dump options to download FRU data to file in one of the following specified formats: BINARY = Binary format TEXT = Text format If the --format option is not provided, the default format is BINARY.</p>
ChangeFruInfo	<p>--item <item name> Updates the FRU information with given FRU field. CT = Chassis Type CP = Chassis Part Number CS = Chassis Serial Number BDT = Board Mfg. Date/Time ("YYYY/MM/DD HH:MM") BM = Board Manufacturer BPN = Board Product Name BS = Board Serial Name BP = Board Part Number PM = Product Manufacturer PN = Product Name PPM = Product Part/Model Number PV = Product Version PS = Product Serial Number PAT = Asset Tag ALL = All Fields</p> <p>--value <assignment value> Updates the value of the given FRU field. If the item is ALL, the format is "<CT>,<CP>,<CS>,<BDT>,<BM>,<BPN>,<BS>,<BP>,<PM>,<PN>,<PPM>,<PV>,<PS>,<PAT>"</p> <p>--fru_version <FRU version> Updates the FRU version.</p>
GetPsFruInfo	None

RestoreFruInfo	<p>--file <file name> Reads the dumped FRU file.</p> <p>--format <file format> (Optional) Works with the --file option to read a FRU file in one of the following specified formats: BINARY = Binary format TEXT = Text format If the --format option is not provided, the default format is BINARY.</p>
----------------	--

BIOS Management	
Commands	Long Options
UpdateBios	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the BIOS with the given BIOS image file.</p> <p>--reboot (Optional) Forces the managed system to reboot or power up after operation.</p> <p>--flash_smbios (Optional) Overwrites and resets the SMBIOS data. This option is used only for specific purposes. Unless you are familiar with SMBIOS data, do not use this option.</p> <p>--preserve_nv (Optional) Preserves the NVRAM region.</p> <p>--preserve_mer (Optional) Preserves the ME firmware region. This option is used only for specific purposes. Unless you are familiar with ME firmware image, do not use this option.(Not available on X12 and later RoT systems.)</p> <p>--preserve_setting (Optional) Preserves BIOS configurations. This option is used only for specific purposes. Unless you are familiar with BIOS configurations, do not use this option.</p> <p>--erase_OA_key (Optional) Erases OA key.</p> <p>--backup (Optional) Backs up the current BIOS image. (Only supported by the RoT systems.)</p> <p>--forward (Optional) Confirms the Rollback ID and upgrades to the next revision. (Only available</p>

	<p>on X12/H12 and later platforms except the H12 non-RoT systems.)</p> <p>--staged <action> (Optional) Sets action to: 1 = update: The update process will start at the next system boot. 2 = abort: Aborts the previously staged update task. 3 = getinfo: Check whether if there was any pending staged update task.</p> <p>--clear_password (Optional) Clears the BIOS password.</p> <p>--erase_secure_boot_key (Optional) Erases the secure boot key.</p> <p>--reset_boot_option (Optional) Resets BIOS boot configurations.</p>
GetBiosInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Reads BIOS information from an input BIOS image file.</p> <p>--showall (Optional) Prints the BIOS version, BIOS revision and BIOS OEM FID information.</p> <p>--file_only (Optional) Works with --file, and only reads BIOS information from the input image file.</p>
GetDmiInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Saves the DMI information to a file. Prints the DMI information appearing on the screen if the file-saving function is not available.</p> <p>--overwrite (Optional) Overwrites the output file.</p>
EditDmiInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> The DMI information file to be edited (or created if it does not exist).</p>

	<p>--item_type <item type> Specifies the item type.</p> <p>--item_name <item name> Specifies the item name.</p> <p>--shn <short name> Specifies the item in short name format.</p> <p>--value <assignment value> Assigns the value to the item.</p> <p>--default Assigns the default value to the item.</p> <p>Notes:</p> <ul style="list-style-type: none"> • Either [--item_type, --item_name] or [--shn] is required. • Either [--value] or [--default] is required.
ChangeDmiInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the DMI information with the given text file.</p> <p>--reboot (Optional) Forces the managed system to reboot or power up after operation.</p>
GetBootOption	None
SetBootOption	<p>--device_type <Device Type ID> Sets the Device_Type to the following numbers:</p> <ul style="list-style-type: none"> 0: No Override 1: PXE 2: Hard Drive 3: CD DVD 4: BIOS Setup 5: USB Key 6: Virtual USB Hard Drive 7: Virtual Floppy 8: ISO Image 9: UEFI: Hard Drive 10: UEFI: CD DVD 11: UEFI: USB Key 12: Virtual UEFI: USB Hard Drive 13: UEFI: ISO Image 14: UEFI: PXE

	15: UEFI: Floppy Virtual Floppy 16: UEFI: BIOS Shell --action <action> (Optional) Sets power action with: 0 = reset 1 = softshutdown --next_boot_only <Enable/Disable> (Optional) Sets NextBootOnly status to Enable/Disable The default value is Enable --bypass_password <Enable/Disable> Sets ByPassWord status to Enable/Disable The default value is Disable
--	---

BMC Management	
Commands	Long Options
UpdateBmc	-I Redfish_HI Uses the Redfish Host Interface. --file <file name> Updates the BMC with the given BMC file. --overwrite_cfg (Optional) Overwrites the current BMC configuration using the factory default values in the given BMC image file. --overwrite_sdr (Optional) Overwrites current BMC SDR data. For AMI BMC FW, it must use the --overwrite_cfg option as well. --overwrite_ssl (Optional) Overwrites current BMC SSL configuration. --backup (Optional) Backs up the current BMC image. (Only supported by the RoT systems.) --forward (Optional) Confirms the Rollback ID and upgrades to the next revision.
GetBmcInfo	-I Redfish_HI Uses the Redfish Host Interface. --file <file name> (Optional)

	<p>Reads the BMC information from the input BMC image file.</p> <p>--file_only (Optional) Works with --file option, and only reads BMC information from the input image file.</p>
BmcLanManage	<p>--action <action> Sets action to: 1 = GetInfo 2 = ChangeIp 3 = ChangeMac 4 = ChangeSubnetMask 5 = ChangeGateway 6 = EnableDHCP 7 = DisableDHCP 8 = GetLinkStatus 9 = ChangeIPv6Mode 10 = ChangeIPv6DNS 11 = ClearIPv6DNS 12 = ChangeIPv6StaticIP 13 = RemoveIPv6StaticIP 14 = EnableIPv6StaticRoute 15 = DisableIPv6StaticRoute 16 = ChangeIPv6StaticRouteInfo 17 = ClearIPv6StaticRouteInfo 18 = ChangeIPProtocol 19 = ChangeLANInterface 20 = EnableVLAN 21 = DisableVLAN</p> <p>--bmc_ip <BMC IP> (Optional) Sets the BMC IP Address.</p> <p>--bmc_mac <BMC MAC> (Optional) Sets the BMC MAC Address.</p> <p>--bmc_subnet_mask <BMC subnet mask> (Optional) Sets the BMC subnet mask.</p> <p>--ipv6_id <ID for IPv6 address> (Optional) Specifies a ID for the IPv6 IP address or router.</p> <p>--ipv6_mode <IPv6 DHCPv6 mode> (Optional) Sets the IPv6 DHCPv6 mode to: 1 = Stateless 2 = Stateful 3 = Disabled</p> <p>--ipv6_addr <IPv6 address> (Optional) Sets the IPv6 address.</p>

--ipv6_prefix_value <IPv6 prefix value> (Optional)

Sets the prefix value for the IPv6 static route.

--ipv6_prefix_len <IPv6 prefix length> (Optional)

Sets the prefix length for the IPv6 static IP address or static route.

--ip_protocol <IP address protocol> (Optional)

Sets the IP address protocol to:

1 = IPv4

2 = IPv6

3 = Dual

--lan_interface <LAN interface> (Optional)

Sets the LAN interface to:

1 = Dedicated

2 = Shared

3 = Failover

4 = Share-AIOM

5 = Share-AOC

6 = Failover-AIOM

7 = Failover-AOC

8 = Share-Onboard

--vlan_tag <VLAN tag> (Optional)

Sets the VLAN tag.

LoadDefaultBmcCfg	<p>--reboot (Optional) Forces the managed system to reboot or power up after operation.</p> <p>--clear_user_cfg (Optional) Clears user configuration.</p> <p>--preserve_user_cfg (Optional) Preserves user configuration.</p> <p>--load_unique_password (Optional) Loads the unique BMC password.</p> <p>--load_default_password (Optional) Loads the default BMC password.</p> <p>--load_default_lan (Optional) Loads the default BMC LAN configuration.</p> <p>--load_default_fru (Optional) Loads the default FRU configuration.</p> <p>--bmc_boot_check (Optional) Check if BMC is booted up after reset.</p>
BmcReset	<p>--action <action> (Optional) Sets action to: 1 = ColdReset 2 = WarmReset</p> <p>--bmc_boot_check (Optional) Checks if BMC boots up within 4 minutes after reset.</p> <p>Note: 1.If the BmcReset command is executed without the --action option, SAA will perform a BMC cold reset.</p>
BmcHostName	<p>--action <action> Sets action to: 1 = Get 2 = Set</p> <p>--value <value> (Optional) Works with the --action Set option. Sets the BMC host name to a specified value.</p>

GetBmcUserList	None
SetBmcUserList	<p>--action <action> Sets action to: 1 = Add 2 = Del 3 = Level 4 = SetPwd 5 = Test 6 = EnableType 7 = EnableAccount 8 = EditUserName</p> <p>--user_id <user ID> (Optional) The BMC user ID.</p> <p>--user_name (Optional) The BMC user name.</p> <p>--user_password <user password> (Optional) The BMC user password.</p> <p>--user_privilege <user privilege> (Optional) For privilege level: Administrator: 4 Operator: 3 User: 2 Callback: 1 No Access: 15 The "Callback" privilege level is not supported on an open BMC system. The "No Access" privilege level is not supported.</p> <p>--user_status <user enable> (Optional) Manages the status of a BMC user. 0 = Disable 1 = Enable</p> <p>--account_type <account type> (Optional) Supported account types for BMC management. 0 = SNMP</p> <p>--account_type_status <account type status> (Optional) Manage account type status. 0 = Disable 1 = Enable</p> <p>--ap <authentication protocol> (Optional) The authentication protocol. 0 = MD5</p>

	<p>1 = SHA</p> <p>--pp <private protocol> (Optional) The authentication protocol. 0 = DES 1 = AES</p> <p>--ak <authentication key> (Optional) The authentication key.</p> <p>--pk <private key> (Optional) The private key.</p> <p>--manage_account_type <manage account type> (Optional) Manages the status of account types. The format is "SNMP:Enable,Redfish:Disable." Supported account types are:</p> <ol style="list-style-type: none"> 1. Redfish 2. SNMP
DownloadBmcCfg	<p>--file <file name> Downloads the BMC configuration to a file.</p> <p>--overwrite (Optional) Overwrites the output file.</p> <p>--format <file format> (Optional) Works with the --file option to download the BMC configuration to a file in one of the following specified formats: BINARY = Binary format TEXT = Text format If the --format option is not provided, the default format is BINARY.</p>
UploadBmcCfg	<p>--file <file name> Uploads BMC configuration to the managed system.</p> <p>--individually (Optional) Uploads each BMC with corresponding configuration file individually.</p> <p>--format <file format> (Optional) Works with the --file option to upload the BMC configuration from file in one of the following specified formats: BINARY = Binary format TEXT = Text format If the --format option is not provided, the default format is BINARY.</p>

CPLD Management	
Commands	Long Options
GetCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Reads the CPLD information from an input CPLD image file.</p> <p>--file_only (Optional) Works with the --file option, and only reads CPLD information from the input image file.</p>
UpdateCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the CPLD with the given CPLD image file.</p> <p>--reboot Forces the managed system to reboot or power up after operation.</p> <p>--poweroff Forces the managed system to power off during the update operation.</p> <p>--index <number> (Optional) Updates the specific CPLD with the given index.</p>
GetSwitchboardCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p>
UpdateSwitchboardCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the Main or Side Switchboard CPLD with the given image file.</p> <p>--reboot (Optional) Forces the managed system to reboot or power up after operation.</p> <p>--type Sets action to: 1 = Main 2 = Left 3 = Right</p>

	<p>--index <number> (Optional) Sets the CPLD index. The default value is 1. The index count starts from 1.</p>
GetBackplaneCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p>
UpdateBackplaneCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--manual_ejected Confirmed that all drives on backplane have been ejected manually.</p> <p>--file <file name> Updates the Backplane CPLD with the given FW image file.</p> <p>--index <number> Updates the specific Backplane CPLD with the given index.</p> <p>--dev_id <number> (Optional) Sets the CPLD index. The default value is 1.</p>
GetFanboardCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p>
UpdateFanboardCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the Fanboard CPLD with the given Fanboard CPLD image file.</p> <p>--type Sets action to: 1 = Front 2 = Rear or the corresponding Fanboard ID number.</p> <p>--index <number> (Optional) Sets the CPLD index. The default value is 1, and the index count starts from 1.</p> <p>--reboot (Optional)</p>

	Forces the managed system to reboot or power up after operation.
GetAomboardCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Reads the CPLD information from an input CPLD image file.</p> <p>--file_only (Optional) Works with the --file option, and only reads CPLD information from the input image file.</p>
UpdateAomboardCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the AOM board with the given FW image file.</p> <p>--dev_id <number> (Optional) Updates the AOM board CPLD with the given AOM device ID.</p> <p>--index <number> (Optional) Set the CPLD index, default value is 1.</p> <p>--aom_type <type> (Optional) Sets AOM type to update. The default value is "AOMboard"</p> <ul style="list-style-type: none"> • AOMboard • AOM_SCM • or other supported AOM type string. <p>--reboot (Optional) Forces the managed system to reboot after operation.</p> <p>--poweroff (Optional) Forces the managed system to power off during the update.</p>
GetMiscCpldInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Reads the CPLD information from an input CPLD image file.</p> <p>--file_only (Optional)</p>

	Works with the --file option, and only reads CPLD information from the input image file.
UpdateMiscCpld	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the Miscellaneous CPLD with the given FW image file.</p> <p>--reboot Forces the managed system to reboot after operation.</p>

Applications	
Commands	Long Options
RawCommand	<p>--raw <raw command> Inputs hex-value commands.</p>

GPU Management	
Commands	Long Options
GetGPUInfo	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name>(Optional) Reads the GPU information from an input GPU image file.</p> <p>--file_only (Optional) Works with --file, and only reads GPU information from the input image file.</p>
UpdateGPU	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> Updates the GPU with the given firmware package.</p> <p>--item <item name> FW item types of GPU firmware:</p> <p>1 = HGX 2 = HGX_FPGA 3 = HGX_HMC 4 = HGX_HMC_EROT 5 = HGX_FPGA_EROT</p>

	6 = HGX_PCIESWITCH 7 = HGX_PCIESWITCH_EROT 8 = HGX_GPU 9 = HGX_GPU_EROT 10 = HGX_NVSWITCH 11 = HGX_NVSWITCH_EROT 12 = HGX_RETIMER 13 = MI300X 14 = MGX_GPU --reboot (Optional) Forces the managed system to reboot or power up after operation.
--	--

Security Management	
Commands	Long Options
BiosRotManage	-I Redfish_HI Uses the Redfish Host Interface. --action <action> Sets action to: 1 = GetInfo 2 = UpdateGolden 3 = Recover --reboot (Optional) Works with --action UpdateGolden and Recover. Forces the managed system to reboot or power up after operation.
BmcRotManage	-I Redfish_HI Uses the Redfish Host Interface. --action <action> Sets action to: 1 = GetInfo 2 = UpdateGolden 3 = Recover
CpldRotManage	-I Redfish_HI Uses the Redfish Host Interface. --action <action> Sets action to:

	1 = GetInfo 2 = UpdateGolden
FpgaRotManage	-I Redfish_HI Uses the Redfish Host Interface. --action <action> Sets action to: 1 = GetInfo 2 = UpdateGolden
GetLockdownMode	-I Redfish_HI Uses the Redfish Host Interface.
GetCpuERoTInfo	-I Redfish_HI Uses the Redfish Host Interface.
UpdateCpuERoT	-I Redfish_HI Uses the Redfish Host Interface. --file <file name> Updates the CPU ERoT with the given FW image file.
CpuERotManage	-I Redfish_HI Uses the Redfish Host Interface. --action <action> Sets action to: 1 = GetInfo 2 = UpdateGolden 3 = Recover
GetGpuERoTInfo	-I Redfish_HI Uses the Redfish Host Interface.

Health Check	
Commands	Long Options
ChassisIntrusion	--action 1 = Clear

CheckSensorData (OOB only)	<p>--action (Optional) 1 = Show 2 = Del 3 = GetVer 4 = SetVer</p> <p>--file <file name>(Optional) Saves the SDR information to a file. Prints the SDR information appearing on the screen if the file-saving function is not available.</p> <p>--overwrite (Optional) Overwrites the output file.</p> <p>--sdr_id (Optional) The SDR ID for delete.</p> <p>--sdr_major_version (Optional) The SDR major version.</p> <p>--sdr_minor_version (Optional) The SDR minor version.</p>
CheckSelfTest	<p>-I Redfish_HI Uses the Redfish Host Interface.</p>

System Event Log	
Commands	Long Options
GetEventLog	<p>-I Redfish_HI Uses the Redfish Host Interface.</p> <p>--file <file name> (Optional) Saves the event log to a file. Prints the event log onscreen if the file-saving function is not available.</p> <p>--overwrite (Optional) Overwrites the output file.</p> <p>--info (Optional) Print the current and total capacity of event log.</p> <p>--year <year> (Optional) Filters event logs within n years.</p> <p>--month <month> (Optional)</p>

	<p>Filters event logs within n months.</p> <p>--day <day> (Optional) Filters event logs within n days.</p> <p>--format <file format> (Optional) Saves the event log to a file in CSV format.</p>
ClearEventLog	<p>--reboot (Optional) Forces the managed system to reboot or power up after operation.</p> <p>--clear_bmc_eventlog (Optional) Only clears the BMC event log.</p> <p>--clear_bios_eventlog (Optional) Only clears the BIOS event log.</p>
GetMaintenEventLog	<p>--st <start time> (Optional) Enters the start time YYYYMMDD.</p> <p>--et <end time> (Optional) Enters the end time YYYYMMDD.</p> <p>--file <file name> (Optional) Saves the maintenance event log to a file. Prints the maintenance event log on screen if the file-saving function is not available.</p> <p>--count <maintenance log count> (Optional) Enters the log count. If the count is equal to zero, the entire maintenance event log will display.</p> <p>--overwrite(Optional) Overwrites the output file.</p>
ClearMaintenEventLog	<p>--gen_log (Optional) Generates a log entry indicating the successful clearing of the maintenance event log.</p>

Motherboard FPGA Management	
Commands	Long Options

GetMotherboardFpgaInfo	-I Redfish_HI Uses the Redfish Host Interface.
UpdateMotherboardFpga	-I Redfish_HI Uses the Redfish Host Interface. --file <file name> Updates the FPGA with the given FPGA image file. --reboot Forces the managed system to reboot or power up after operation.

Multi-Node Management	
Commands	Long Options
TpInfo	--action <action> Sets action to: 1 = GetInfo 2 = Set --item <item> (Optional) Sets item to: 1 = nodeID 2 = systemName 3 = systemPN 4 = systemSN 5 = chassisPN 6 = chassisSN 7 = backPlanePN 8 = backPlaneSN 9 = chassisLocation 10 = bpLocation 11 = bpnRevision 12 = bpnID 13 = nodePN 14 = nodeSN 15 = configID --value <value> (Optional) Works with the --action Set and --item options. Sets the value for the specific item.

GetMultinodeLcmcInfo	-I Redfish_HI Uses the Redfish Host Interface.
UpdateMultinodeLcmc	-I Redfish_HI Uses the Redfish Host Interface. --file <file name> Updates the multi-node LCMC with the given multi-node LCMC image file. --reboot Forces the managed system to reboot or power up after operation.

Power Management	
Commands	Long Options
GetPsuInfo	-I Redfish_HI Uses the Redfish Host Interface.
DcmiManage	--type <type> Manages system with type: STD_DCMCI --action <action> Manages system with action: GetCap GetPowerStatus GetMCID SetMCID --value <value> (Optional) Assigns value.



Notes:

- During execution, DO NOT remove the AC power on the managed system.
- DO NOT flash BMC and BIOS firmware images at the same time.

3.1 DMI Information Text File Format

DMI.txt is designed to display the supported editable DMI items in text format for easier update. An example below shows how this file demonstrates the DMI information items. Each item consists of an item name, a short name, a value, and comments.

```
[System]
Version          {SYVS}    = "A Version"           // string value
Serial Number    {SYSN}    = $DEFAULT$             // string value
UUID             {SYUU}    = 00112233-4455-6677-8899-AABBCCDDEEFF // 4-2-2-
2-6 formatted 16-byte hex values
// Bytes[ 0-3 ]: The low field of the timestamp
// Bytes[ 4-5 ]: The middle field of the timestamp
// Bytes[ 6-7 ]: The high field of the timestamp (multiplexed with
//               the version number)
// Bytes[ 8-9 ]: The clock sequence (multiplexed with the variant)
// Bytes[10-15]: The spatially unique node identifier
// Byte Order   :
//             UUID {00112233-4455-6677-8899-AABBCCDDEEFF} is stored as
//             33 22 11 00 55 44 77 66 88 99 AA BB CC DD EE FF
```

- A DMI type is quoted by brackets. DMI information items are next to the DMI type.
- The name of a DMI information item is always followed by its short name.
- The item name and its short name stays at the left side of the “=” character.
- A short name is always enclosed by brackets.
- A value (of one information item) always stays at the right side of the “=” character.
- String values are enclosed by double quotation marks.
- \$DEFAULT\$ signature without double quotation marks is used to load default value for a string-valued item.
- There is no default value for non-string-value items.
- Do not use quotation marks for non-string-value items.
- The value type is always shown after a value and begins with “//” (two slashes).
- The value meanings for a non-string-value item are listed next to the item.*

In this example, the “Version” DMI item belongs to the “System” DMI type with short name SYVS. It is string-value by “A Version” and can be changed to any other string value. For the “Serial Number” item, its value is set as \$DEFAULT\$. After updating the DMI information, the item value of the “Serial Number” will be reset to factory default.

The UUID item is a specially formatted hex-value item. Its value meanings are explained next to it.



Notes:

- You can remove unnecessary DMI items so that its value will not be changed after an update.
 - The DMI type is required for DMI items.
 - Each item can be identified either by its short name or by the combination of its item type and item name.
 - Any line that begins with “//” will be ignored.
 - A version number is included at the beginning of every DMI.txt file. This version number should not be modified because it is generated by SAA according to the BIOS of the managed system for DMI version control.
-

3.2 Redfish Host Interface

The Redfish Host Interface can be used by software running on a computer system to access the Redfish Service used to manage the computer system. For details on the Redfish Host Interface, refer to the Redfish Host Interface Specification by DMTF.

3.2.1 Redfish Host Interface

Different from the standard in-band operation, you need <username> and <password> to access the managed system.

Syntax:

```
SAA.efi -I Redfish_HI -u <username> -p <password> -c <command>
```

Alternatively, you can use the -f option to specify a user password file, eliminating the need to manually enter the password each time. For simplicity, only the first syntax will be presented in the subsequent content.

Syntax:

```
SAA.efi -I Redfish_HI -u <username> -f <password file> -c <command>
```

**Notes:**

- Use the -p option or -f option to assign a password. These two options cannot be used together.
-

4. Managing Systems

In this chapter, we describe basic user operations for managing a single system through the in-band channel. For the node product key requirement please see Appendix B. Management Interface and License Requirements.

4.1 System Management

4.1.1. Getting System Summary Firmware Image Information

Use the 'GetSystemInfo' command to retrieve comprehensive firmware image information from the managed system. This command provides a system-wide summary that encompasses the firmware details of components including System, LAN, BMC, BIOS, CPLD, and SCP version, if supported.

Single System	
In-Band	SAA.efi -c GetSystemInfo

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c GetSystemInfo
```

The console output contains the following information.

```
Managed system.....localhost
  IPv4.....10.168.24.116
  BMC MAC address.....3A:EC:EF:CE:41:3B
  Firmware revision.....00.23.37
  Firmware build time.....2021/06/28
  BIOS version.....1.1
  BIOS build time.....06/21/2021
  CPLD version.....F0.09.46
  IPv6.....FE80:0000:0000:0000:AEEC:FFFF:FECE:413B/64
```

```
System LAN1 MAC address...3A:EC:EF:CE:40:0F
System LAN2 MAC address...3A:EC:EF:CE:40:A5
```

4.1.2. Managing FRU Information

4.1.2.1. Getting FRU Information

Use the "GetFruInfo" command to get or dump FRU information from the managed system and read FRU information from the local FRU file.

Single System	
In-Band	SAA.efi -c GetFruInfo [--file <filename> [--dump [--format <file format>] [--overwrite] --file_only]]

Example:

In-Band:

```
[SAA_HOME]# SAA.efi -c GetFruInfo
```

The console output contains the following information.

```
FRU information [Version=00.00]
=====
[BMC, ID=0, Size=256 bytes]
  Chassis Type (CT): 01
  Chassis Part Number (CP): FruCP03
  Chassis Serial Number (CS): FruCS03
  Board mfg. Date/Time (BDT): 2024/03/17 10:47
  Board Manufacturer Name (BM): FruBM03
  Board Product Name (BPN): FruBPN03
  Board Serial Number (BS): FruBS03
  Board Part Number (BP): FruBP03
  Product Manufacturer (PM): FruPM03
  Product Name (PN): FruPN03
  Product Part/Model Number (PPM): FruPPM03
  Product Version (PV): FruPV03
  Product Serial Number (PS): FruPS03
  Product Asset Tag (PAT): FruPAT03
```

```
[SAA_HOME]# SAA.efi -c GetFruInfo --file dumpedFile --dump --overwrite
```



```
[SAA_HOME]# SAA.efi -c GetFruInfo --file dumpedFile --dump --format  
BINARY --overwrite
```

```
[SAA_HOME]# SAA.efi -c GetFruInfo --file dumpedFile --dump --format TEXT  
--overwrite
```

The console output contains the following information.

```
FRU information [Version=00.00]  
=====
```

```
[BMC, ID=0, Size=256 bytes]  
  Chassis Type (CT): 01  
  Chassis Part Number (CP): FruCP03  
  Chassis Serial Number (CS): FruCS03  
  Board mfg. Date/Time (BDT): 2024/03/17 10:47  
  Board Manufacturer Name (BM): FruBM03  
  Board Product Name (BPN): FruBPN03  
  Board Serial Number (BS): FruBS03  
  Board Part Number (BP): FruBP03  
  Product Manufacturer (PM): FruPM03  
  Product Name (PN): FruPN03  
  Product Part/Model Number (PPM): FruPPM03  
  Product Version (PV): FruPV03  
  Product Serial Number (PS): FruPS03  
  Product Asset Tag (PAT): FruPAT03  
File "dumpedFile" is created
```

```
[SAA_HOME]# SAA.efi -c GetFruInfo --file dumpedFile --file_only
```

The console output contains the following information.

```
Chassis Type (CT): 01  
Chassis Part Number (CP): FruCP03  
Chassis Serial Number (CS): FruCS03  
Board mfg. Date/Time (BDT): 2024/03/17 10:47  
Board Manufacturer Name (BM): FruBM03  
Board Product Name (BPN): FruBPN03  
Board Serial Number (BS): FruBS03  
Board Part Number (BP): FruBP03  
Product Manufacturer (PM): FruPM03  
Product Name (PN): FruPN03  
Product Part/Model Number (PPM): FruPPM03  
Product Version (PV): FruPV03  
Product Serial Number (PS): FruPS03  
Product Asset Tag (PAT): FruPAT03
```

4.1.2.2. Changing FRU Information

Use the “ChangeFruInfo” command to change the FRU information from the managed system.

Single System	
In-Band	SAA.efi -c ChangeFruInfo {--item <item name> --value <assignment value> --fru_version <FRU version>}

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c ChangeFruInfo --fru_version 00.01
```

```
[SAA_HOME]# SAA.efi -c ChangeFruInfo --item CT --value 0x01
```

```
[SAA_HOME]# SAA.efi -c ChangeFruInfo --item ALL --value  
"0x01,2,3,2024/01/01 00:00,5,6,7,8,9,10,11,12,13,14"
```

The console output contains the following information.

```
ChangeFruInfo command is completed.  
Chassis Type (CT): 01  
Chassis Part Number (CP): 2  
Chassis Serial Number (CS): 3  
Board mfg. Date/Time (BDT): 2024/01/01 00:00  
Board Manufacturer Name (BM): 5  
Board Product Name (BPN): 6  
Board Serial Number (BS): 7  
Board Part Number (BP): 8  
Product Manufacturer (PM): 9  
Product Name (PN): 10  
Product Part/Model Number (PPM): 11  
Product Version (PV): 12  
Product Serial Number (PS): 13  
Product Asset Tag (PAT): 14
```

4.1.2.3. Restoring FRU Information

Use the “RestoreFruInfo” command to restore the FRU information on the managed system.

Single System	
In-Band	SAA.efi -c RestoreFruInfo --file <filename> [--format <file format>]

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c RestoreFruInfo --file dumpedFile
```

```
[SAA_HOME]# SAA.efi -c RestoreFruInfo --file dumpedFile --format BINARY
```

```
[SAA_HOME]# SAA.efi -c RestoreFruInfo --file dumpedFile --format TEXT
```

The console output contains the following information.

```
RestoreFruInfo command is completed.
Chassis Type (CT): 01
Chassis Part Number (CP):
Chassis Serial Number (CS):
Board mfg. Date/Time (BDT): 2021/08/30 18:01
Board Manufacturer Name (BM): Supermicro
Board Product Name (BPN):
Board Serial Number (BS): WM218S011157
Board Part Number (BP):
Product Manufacturer (PM):
Product Name (PN):
Product Part/Model Number (PPM):
Product Version (PV):
Product Serial Number (PS):
Product Asset Tag (PAT):
```

4.1.3. Getting PSFRU Health Information

Use the “GetPsFruInfo” command to get the current PSFRU(Power Supply Field Replaceable unit) information from the managed system.

Single System	
In-Band	SAA.efi -c GetPsFruInfo

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c GetPsFruInfo
```

Output

```
[Module 1](SlaveAddress = 0x70)
    Status: ON
    Temperature: 62 C
    Fan 1: 7067 RPM
    FAN 2: N/A
```

4.1.4. Getting Fan Mode Information

Use the “GetFanMode” command to get the current fan mode information from the managed system. The command also displays all the supported fan modes on the system.

Single System	
In-Band	SAA.efi -c GetFanMode

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c GetFanMode
```

Output

```
Current Fan Speed Mode: Heavy IO
Supported Fan Modes:
Mode : Type
0 : Standard
1 : Full
2 : Optimal
3 : PUE2 Optimal
4 : Heavy IO
```

4.1.5. Setting Fan Mode

Use the “SetFanMode” command to set the fan mode of the managed system. The Fan mode command requires fan mode ID, that can be known from the “GetFanMode” command. The command sets the fan mode only if it’s supported on the system. After setting the mode, the command displays the current fan mode along with the supported fan modes.

Single System	
In-Band	SAA.efi -c SetFanMode --fanmode <Fan Mode ID>

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c SetFanMode --fanmode 4
```

Output

```
Fan mode changed to: Heavy IO
Supported Fan Modes:
Mode  : Type
0      : Standard
1      : Full
2      : Optimal
3      : PUE2 Optimal
4      : Heavy IO
```

4.2. BIOS Management

4.2.1. Getting BIOS Firmware Image Information

Use the “GetBiosInfo” command to get the BIOS firmware image information from the managed system as well as the local BIOS firmware image (with the --file option).

Single System

In-Band	SAA.efi -c GetBiosInfo [-I Redfish_HI -u <username> -p <password>] [--file <filename> [--file_only]] [--showall]
---------	--

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetBiosInfo --file Supermicro_BIOS_signed.rom
```

The console output contains the following information when secure flash is signed from a local BIOS image.

```
Managed system.....169.254.3.254
  Board ID.....0660
  BIOS build date.....2012/10/17
Local BIOS image file....Supermicro_BIOS_signed.rom
  Board ID.....0988
  BIOS build date.....2018/5/7
```

In-Band :

```
[SAA_HOME]# SAA.efi -c GetBiosInfo --file Supermicro_BIOS_signed.rom --file_only
```

The console output contains the following information when RoT is signed from a local BIOS image.

```
Local BIOS image file....Supermicro_BIOS_signed.rom
  Board ID.....1B6A
  BIOS build date.....2021/01/12
```

4.2.2. Updating the BIOS Firmware Image

Use the “UpdateBios” command with the BIOS firmware image Supermicro_BIOS.rom to run SAA to update the managed system.

Single System

In-Band	SAA.efi -c UpdateBios -I Redfish_HI -u <username> -p <password> --file <filename> [options...]
---------	--

Option Commands	Descriptions
--reboot	Forces the managed system to reboot or power up after operation.
--flash_smbios	Overwrites and resets the SMBIOS data.
--preserve_mer	Preserves the ME firmware region.
--preserve_nv	Preserves the NVRAM.
--preserve_setting	Preserves BIOS configurations.
--erase_OA_key	Erases the OA key.
--backup	Backs up the current BIOS image. (Only supported by RoT systems.)
--forward	Confirms the Rollback ID and upgrades to the next revision.
--staged <action>	Sets action to: 1 = update: The Update process will start at the next system boot. 2 = abort: Aborts the previous staged update task. 3 = getinfo: Checks if there was any pending staged update task.
--clear_password	Clears the BIOS password.
--erase_secure_boot_key	Erases the secure boot key.
--reset_boot_option	Resets the BIOS boot configurations.



Notes:

- X12/H12 RoT platforms support staged updates only if both BMC and CPLD support it as well.
- For some X12/H12 RoT platforms, BIOS can only be updated while the system is powered off. In this case, the --reboot option is required. Therefore, for in-band BIOS updates, SAA will power off the system after uploading a BIOS image to start the update process.

The system will be powered on automatically after the BIOS update has completed.

- For X12/H12 and later RoT platforms, in-band BIOS updates can only be done through the Redfish Host Interface. For details, refer to 3.2 Redfish Host Interface.
- The --backup option backs up the current BIOS image on the managed system, not the BIOS file to be updated.
- Due to a known GRUB2 loader issue, the system may not be able to boot and may hang up after BIOS update is upgraded. If the GRUB2 loader version is not the latest, please downgrade the BIOS to the previous version and upgrade the GRUB2 loader to the latest version. Then perform a BIOS upgrade to the target BIOS again. For more details, please refer to the FAQ on the Supermicro website <https://www.supermicro.com/support/faqs/faq.cfm?faq=33400>.

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateBios --  
file Supermicro_BIOS.rom --reboot
```



Notes:

- The in-band usage of this function does not require node product key activation.
- The firmware image can be successfully updated only when the board ID of the firmware image and the managed system are the same.
- You must reboot or power up the managed system for the changes to take effect.
- DO NOT flash the BIOS and BMC firmware images at the same time.
- The --preserve_nv and --flash_smbios options cannot be used at the same time.
- The --flash_smbios option is used to erase and restore SMBIOS information as factory default values. Unless you are familiar with SMBIOS data, do not use this option.
- The --preserve_nv option is used to preserve BIOS NVRAM data. Unless you are familiar with BIOS NVRAM, do not use this option.
- The --preserve_mer option is used to preserve the ME firmware region. Unless you are familiar with the ME firmware region, do not use this option.

- The --preserve_setting is used to preserve the BIOS setup configuration.

4.2.3. Getting DMI Information

Use the “GetDmiInfo” command to execute SAA to get the current supported editable DMI information from the managed system and save it in the DMI.txt file.



Notes:

- This DMI file is synchronized to BMC from BIOS when the system reboots or powers up.
- If the customer has flashed a BMC firmware image, this function will not work until the managed system is first rebooted or powered up.
- The supported editable DMI items could vary from BIOS to BIOS. SAA will only show supported items.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetDmiInfo --file <DMI.txt> [--overwrite]

Example:

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetDmiInfo --file DMI.txt --overwrite
```

4.2.4. Editing DMI Information

There are two ways to edit DMI information for the managed system. You can either execute the EditDmiInfo command or manually edit the received DMI.txt file.

Manually Editing

1. Follow the steps in 4.2.3 Getting DMI Information to get the DMI information text file (DMI.txt).

2. Replace the item values in the DMI.txt file with the desired values illustrated in 3.1 DMI Information XML Text Format.
3. Remove the unchanged items in the text file. Note that this step is optional.



Note: The supported editable DMI items may be changed for different BIOS versions. The version variable of the DMI.txt file must be the same as that from the managed system and should not be edited.

Executing the EditDmiInfo Command

The EditDmiInfo command will only update (or add) the specified DMI item in the specified DMI.txt file. When you edit an empty file, a new file will be created. You can specify a DMI item using [--item_type, --item_name] options or using --shn option with the item's short name. The editable item type, item name and item short name can be found in the DMI.txt file. To get a DMI.txt file, follow the steps in 4.2.3 Getting DMI Information.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c EditDmiInfo --file <DMI.txt> [--item_type <Item Type> --item_name <Item Name> --shn <Item Short Name>] [--value <Item Value> --default]

Example:

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c EditDmiInfo --file DMI.txt --item_type "System" --item_name "Version" --value "1.02"
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c EditDmiInfo --file DMI.txt --shn SYVS --value "1.02"
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c EditDmiInfo --file DMI.txt --shn SYVS --default
```

4.2.5. Updating DMI Information

1. Follow the steps in 4.2.4 Editing DMI Information to prepare the edited DMI.txt file for updating DMI information.
2. Use the "ChangeDmiInfo" command with the edited DMI.txt file to run SAA to update the DMI information.



Notes:

- The supported editable DMI items may be changed for different BIOS versions. The version variable of the DMI.txt file must be the same as that from the managed system and should not be edited.
- The uploaded information will only take effect after a system reboots or powers up.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c ChangeDmiInfo --file <DMI.txt> [--reboot]

Example:

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c ChangeDmiInfo -
-file DMI.txt --reboot
```

4.2.6. Getting Boot Option Information

Use the "GetBootOption" command to retrieve the boot option from the target system. The GetBootOption command can obtain the NextBootOnly, BypassPassword, and Device Type settings.

Single System	
In-Band	SAA.efi -c GetBootOption

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c GetBootOption
```

The console output contains the following information

```
SuperServer Automation Assistant 1.1.0 (2024/11/14) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
  NextBootOnly .....Enable
  BypassPassword .....Disable
  DeviceType.....0: No Override
```

4.2.7. Setting Boot Option Information

Use the "SetBootOption" command to configure the boot options for the target system. This command can set the NextBootOnly, BypassPassword, and Device Type settings. If do not use the "--next_boot_only" and "--bypass_password" options, the default value will be "Disable." After executing the SetBootOption command, no power operations will be performed. However, if use the "--action" option, power operations will be carried out.

Single System	
In-Band	SAA.efi -c SetBootOption --device_type <Device Type ID> --action <action> --next_boot_only <Enable/Disable> --bypass_password <Enable/Disable>

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c SetBootOption --device_type 1
```

The console output contains the following information

```
SuperServer Automation Assistant 1.1.0 (2024/11/14) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.

Set boot device done
```

```
[SAA_HOME]# SAA.efi -c SetBootOption --next_boot_only 1 --bypass_password 1 --device_type 1 --action 0
```

The console output contains the following information

```
SuperServer Automation Assistant 1.1.0 (2024/11/14) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.

Set boot device done

Proceeding to hard reset the managed system
```

4.3. BMC Management

4.3.1. Getting BMC Firmware Image Information

Use the “GetBmcInfo” command to get the BMC firmware image information from the managed system as well as the BMC firmware image.

Single System	
In-Band	SAA.efi -c GetBmcInfo [-I Redfish_HI -u <username> -p <password>] [--file <filename> [--file_only]]

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetBmcInfo --file Supermicro_BMC.bin
```

The console output contains the following information.

```
Managed system.....169.254.3.254
    BMC type.....H13_Rot2.0_ATEN_AST2600_2_2
    BMC version.....01.03.52
Local BMC image file.....Supermicro_BMC.bin
    BMC type.....H13_Rot2.0_ATEN_AST2600_2_2
    BMC version.....01.04.01
```

In-Band :

```
[SAA_HOME]# SAA.efi -c GetBmcInfo --file Supermicro_BMC.bin --file_only
```

The console output contains the following information.

```
Local BMC image file.....Supermicro_BMC.bin
BMC type.....X13_ATEN_AST2600_1_1
BMC version.....01.01.13
```



Note: Three-digit BMC version numbers are supported.

4.3.2. Updating the BMC Firmware Image

Use the “UpdateBmc” command with BMC firmware image Supermicro_BMC.bin to run SAA to update the managed system.



Notes:

- BMC will be reset after updating.
- BMC configurations will be preserved by default after updating unless the `--overwrite_cfg` option is used.
- DO NOT flash BIOS and BMC firmware images at the same time.
- The `--overwrite_cfg` option overwrites the current BMC configuration using the factory default values in the given BMC image file.
- The `--overwrite_sdr` option overwrites current BMC SDR data. For AMI BMC FW, it is also required to use the `--overwrite_cfg` option.
- Signed BMC update is supported.
- In-band updates of the BMC can only be done through Redfish Host Interface. For details, refer to 3.2 Redfish Host Interface.
- The `--backup` option backs up the current BMC image on the managed system, not the BMC file updated to the managed system.

Single System

In-Band

```
SAA.efi -c UpdateBmc -l Redfish_HI -u <username> -p <password> --
file <filename> [--overwrite_cfg] [--overwrite_sdr] [--backup] [--forward]
```

	<code>[--overwrite_ssl]</code>
--	--------------------------------

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateBmc --  
file Supermicro_BMC.bin
```

4.3.3. Managing the BMC LAN

Use the “BmcLanManage” command to manage the BMC LAN from the managed system. This command supports the following features.

- **Getting Information**

Use the “BmcLanManage” command with the “--action GetInfo” option to retrieve BMC LAN information.

- **Setting BMC IP**

Use the “BmcLanManage” command with the “--action ChangeIP” option to set BMC IP.

- **Setting BMC MAC**

Use the “BmcLanManage” command with the “--action ChangeMAC” option to set BMC MAC.

- **Setting BMC Subnet Mask**

Use the “BmcLanManage” command with the “--action ChangeSubnetMask” option to set the BMC subnet mask.

- **Setting BMC Gateway**

Use the “BmcLanManage” command with the “--action ChangeGateway” option to set the BMC gateway.

- **Setting DHCP**

Use the “BmcLanManage” command with the “--action EnableDHCP” or “--action DisableDHCP” option to enable or disable DHCP, respectively.

- **Getting Link Status**

Use the “BmcLanManage” command with the “--action GetLinkStatus” option to retrieve the connection status of the BMC LAN interface.

- **Setting LAN Interface**

Use the “BmcLanManage” command with the “--action ChangeLANInterface” option to set the LAN interface.

- **Setting VLAN**

Use the “BmcLanManage” command with the “--action EnableVLAN” or “--action DisableVLAN” option to enable or disable the VLAN.

- **Setting IP Address Protocol**

Use the “BmcLanManage” command with the “--action ChangeIPProtocol” option to set the IP address protocol.

- **Setting up IPv6 Configuration**

Use the “BmcLanManage” command with the following actions to set the IPv6 configuration.

Action		
ChangeIPv6Mode	ChangeIPv6DNS	ClearIPv6DNS
ChangeIPv6StaticIP	RemoveIPv6StaticIP	EnableIPv6StaticRoute
DisableIPv6StaticRoute	ChangeIPv6StaticRouteInfo	ClearIPv6StaticRouteInfo

Single System	
In-Band	SAA.efi -c BmcLanManage --action <action> [option...]

The supported actions along with the corresponding options are listed in the table below:

Action	Supported Option	Augment	Description
GetInfo	None	None	None

ChangeIP	--bmc_ip	<BMC IP>	Enters an IPv4 IP.
ChangeMAC	--bmc_mac	<BMC MAC>	Enters an MAC.
ChangeSubnetMask	--bmc_subnet_mask	<BMC subnet mask>	Enters an IPv4 subnet mask.
ChangeGateway	--bmc_gateway	<BMC gateway IP>	Enters an IPv4 gateway.
EnableDHCP	None	None	None
DisableDHCP	None	None	None
GetLinkStatus	None	None	None
ChangeIPv6Mode	--ipv6_mode	<IPv6 DHCPv6 mode>	Sets the IPv6 DHCPv6 mode to: 1 = Stateless 2 = Stateful 3 = Disabled
ChangeIPv6DNS	--ipv6_addr	<IPv6 address>	Enters an IPv6 DNS.
ClearIPv6DNS	None	None	None
ChangeIPv6StaticIP	--ipv6_id	<ID for IPv6 address>	Enters an ID to specify an IPv6 static IP.
	--ipv6_addr	<IPv6 address>	Enters an IPv6 address.
	--ipv6_prefix_len	<IPv6 prefix length>	Enters an IPv6 prefix length.
RemoveIPv6StaticIP	--ipv6_id	<ID for IPv6 address>	Enters an ID to specify an IPv6 static IP.
EnableIPv6StaticRoute	None	None	None
DisableIPv6StaticRoute	None	None	None

ChangeIPv6StaticRouteInfo	--ipv6_id	<ID for IPv6 address>	Enters an ID to specify an IPv6 static router.
	--ipv6_addr	<IPv6 address>	Enters an IPv6 address.
	--ipv6_prefix_value	<IPv6 prefix value>	Enters an IPv6 prefix value.
	--ipv6_prefix_len	<IPv6 prefix length>	Enters an IPv6 prefix length.
ClearIPv6StaticRouteInfo	--ipv6_id	<ID for IPv6 address>	Enters an ID to specify an IPv6 static router.
ChangeIPProtocol	--ip_protocol	<IP address protocol>	Sets the IP address protocol to: 1 = IPv4 2 = IPv6 3 = Dual
ChangeLANInterface	--lan_interface	<LAN interface>	Sets the LAN interface to: 1 = Dedicated 2 = Shared 3 = Failover 4 = Share-AIOM 5 = Share-AOC 6 = Failover-AIOM 7 = Failover-AOC 8 = Share-Onboard
EnableVLAN	--vlan_tag	<VLAN tag>	Enters an integer value for the VLAN tag.
DisableVLAN	None	None	None

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c BmLanManage --action GetInfo
```

The console output contains the following information.

```
Managed system.....localhost
  IP Address Protocol.....Dual
  IPv4 Address.....192.168.34.56
  BMC MAC Address.....AA:BB:CC:1A:CC:3D
  Subnet Mask.....255.255.0.0
  Gateway.....192.168.0.250
  DHCP.....Enabled

IPv6
=====
  DHCPv6 Mode.....Stateful
  DUID.....01 00 00 00 00 00 00 00 00 00 01 23 45 67
89 AB
  Auto Configuration.....Disabled
  DNSv6 Mode.....Dynamic
  DNS.....2001:db8::fd

  Dynamic IP
  =====
  Max IP.....4

  ID.....1
  IP.....2001:0DB8:0000:0000:CC06:31DD:8968:E7C4
  Prefix.....64

  Static IP
  =====
  Max IP.....5

  Static Route
  =====
  Status.....Disabled

  Router 1
  Prefix to Route.....0000:0000:0000:0000:0000:0000:0000:0000/255
  Router Address.....0000:0000:0000:0000:0000:0000:0000:0000

  Router 2
  Prefix to Route.....0000:0000:0000:0000:0000:0000:0000:0000/255
  Router Address.....0000:0000:0000:0000:0000:0000:0000:0000

Others
=====
  Current LAN Interface.....Failover-AIOM
  Supported LAN Interfaces:
  1 = Dedicated
  2 = Shared
  3 = Failover
  4 = Share-AIOM
  6 = Failover-AIOM
```

```
VLAN Status.....Enabled
VLAN Tag.....10
```

```
[SAA_HOME]# SAA.efi -c BmCLanManage --action ChangeIP --bmc_ip
192.168.34.56
```

The console output contains the following information.

```
Status: After receiving the command, the BMC will reboot itself. The BMC will
temporarily not respond to any commands.
.....
Done

Status: Please check the IP Address for results.
```

```
[SAA_HOME]# SAA.efi -c BmCLanManage --action ChangeMAC --bmc_mac
AA:BB:CC:DD:EE:FF
```

The console output contains the following information.

```
Status: After receiving the command, the BMC will reboot itself. BMC will
temporarily not respond to any commands.
.....
Done

Status: Please check the MAC Address for results.
```

```
[SAA_HOME]# SAA.efi -c BmCLanManage --action GetLinkStatus
```

The console output contains the following information.

```
Managed system.....localhost
General
=====
  HostName.....Test
  MAC Address.....3C:EC:EF:98:79:EC
  VLAN.....Off
  VLAN ID.....N/A
  LAN Interface.....Dedicate
  RMCP Port.....623
```

```

Active Interface.....Dedicate
Dedicated
=====
Link.....Auto Negotiation
Status.....Connected
Speed.....1G
Duplex.....Full Duplex
Share
=====
Speed.....Disconnected
Speed.....Unknown
Duplex.....Unknown

```

```

[SAA_HOME]# SAA.efi -c BmclanManage --action ChangeIPv6StaticRouteInfo --
ipv6_id 1 --ipv6_addr AAAA:BBBB:CCCC:DDDD:EEEE:FFFF:1111:2222 --
ipv6_prefix_len 64

```

The console output contains the following information.

```

Done

Status: Please check the IPv6 static IP for result.

```



Notes:

- If DHCP service is enabled, SAA can't set the BMC IP address, subnet mask, and gateway.
- If no VLAN tag is provided with the BmclanManage --action EnableVLAN option, SAA will use the previously saved value.

4.3.4. Loading Factory BMC Settings

Supermicro has implemented a new security feature for the BMC firmware stack. Supermicro will no longer use the default password “ADMIN” for new devices or systems. All such systems are shipped with a “Unique Pre-Programmed Password” for user admin on every hardware device with BMC. For more information about the implementation of a BMC unique password and how to locate it, please refer to the [BMC Unique Password Guide](#).

Use the “LoadDefaultBmcCfg” command to reset the BMC of the managed system to its factory default settings. Allowed option combinations depend on the managed system state. Unsupported option combinations will be rejected.

Action Option	Reset Network	Reset User Cfg	Reset FRU	Reset Password to
-- preserve_user _cfg	N	N	N	Preserved
-- clear_user_cf g with -- load_default_ password	N	Y	N	ADMIN
-- clear_user_cf g with -- load_unique_ password	N	Y	N	Unique Password
-- clear_user_cf g with -- load_unique_ password and -- load_default_l an	Y	Y	N	Unique Password
-- clear_user_cf g with -- load_unique_ password, -- load_default_l an and	Y	Y	Y	Unique Password

-- load_default_fru				
------------------------	--	--	--	--

Single System	
In-Band	SAA.efi -c LoadDefaultBmcCfg [--preserve_user_cfg --clear_user_cfg [--load_default_password --load_unique_password [--load_default_lan [--load_default_fru]]]] [--bmc_boot_check [--reboot]]

Example:

In-Band:

```
[SAA_HOME]# SAA.efi -c LoadDefaultBmcCfg --preserve_user_cfg --bmc_boot_check --reboot
```

```
[SAA_HOME]# SAA.efi -c LoadDefaultBmcCfg --clear_user_cfg --load_default_password
```

```
[SAA_HOME]# SAA.efi -c LoadDefaultBmcCfg --clear_user_cfg --load_unique_password
```

```
[SAA_HOME]# SAA.efi -c LoadDefaultBmcCfg --clear_user_cfg --load_unique_password --load_default_lan
```

```
[SAA_HOME]# SAA.efi -c LoadDefaultBmcCfg --clear_user_cfg --load_unique_password --load_default_lan --load_default_fru --bmc_boot_check
```

The console output contains the following information.

```
Restoring BMC user, FRU, and network configuration to factory default settings
and resetting the BMC password to the unique password.
Please wait for the BMC to reboot, which may take about 3 to 4 minutes.
.....
.....
.....
.....
Checking BMC status...Done
BMC rebooted successfully.
After restoring the BMC to its default settings, some SAA commands may not work
```

correctly. If you encounter issues, please reboot the managed system.



Note: The `--load_unique_password` option only supports systems with a BMC unique password installed.

4.3.5. Performing a BMC Unit Reset

Use the “BmcReset” command to unit reset the BMC for the target system.

Single System	
In-Band	<code>SAA.efi [-I Redfish_HI -u <username> -p <password> [--bmc_boot_check]] -c BmcReset [--action <action>]</code>

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c BmcReset
```

The console output contains the following information.

```
The BMC will be reset immediately.
```

```
[SAA_HOME]# SAA.efi -c BmcReset --bmc_boot_check
```

The console output contains the following information.

```
The BMC will be reset immediately.
Please wait a few minutes for the BMC to restart.
.....
Done.
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p ADMIN -c BmcReset --action
WarmReset
```


The console output contains the following information.

```
The BMC will be reset immediately.
```



Note: If the BmcReset command is executed without the --action option, SAA will perform a BMC cold reset.

4.3.6. Getting and Setting the BMC Host Name

Use the “BmcHostName” command to get and set the BMC host name.

Single System	
In-Band	SAA.efi -c BmcHostName --action <action> [--value <value>]

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c BmcHostName --action Set --value testHostName
```

```
[SAA_HOME]# SAA.efi -c BmcHostName --action Get
```

The console output contains the following information.

```
Host name : testHostName
```

4.3.7. Downloading the BMC Configuration

Use the “DownloadBmcCfg” command to download the BMC configuration from the managed system as a binary or text format file.

Single System

In-Band	SAA.efi -c DownloadBmcCfg [--file <file name>] [--format <file formate>] [--overwrite]
---------	--

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c DownloadBmcCfg --format BINARY --file
bmc_config.bin --overwrite
```

The console output contains the following information.

```
File "bmc_config.bin" is created
```



Notes:

- If no --format option is specified, BINARY format is used by default.
- If the file name exists, the --overwrite option is necessary.

4.3.8. Uploading the BMC Configuration

Use the "UploadBmcCfg" command to upload the BMC configuration to the managed system by binary or text format file.

Single System	
In-Band	SAA.efi -c UploadBmcCfg [--file <file name>] [--format <file formate>]

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c UploadBmcCfg --format BINARY --file bmc_config.bin
```

The console output contains the following information.

```
Uploaded file successfully
```

Please wait for 1 minute to reboot the BMC.



Notes: If no --format option is specified, BINARY format is used by default.

4.3.9. Getting the BMC User List

Use the “GetBmcUserList” command to get the current BMC user list from the managed system.

Single System	
In-Band	saa.efi [-I Redfish_HI -u <username> -p <password>] -c GetBmcUserList

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c GetBmcUserList
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.2.0 (2024/11/20) (UEFI_ARM64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
Maximum number of Users          : 10
Count of currently enabled Users : 1
User ID | User Name | Privilege Level | Enabled
===== | ===== | ===== | =====
      2 | ADMIN | Administrator | Yes
===== | ===== | ===== | =====
```

```
The BMC user list.
```

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetBmcUserList
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.2.0 (2024/11/20) (UEFI_ARM64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.

Maximum number of Users          : 16
Count of currently enabled Users : 1
User ID | User Name | Privilege Level | Enabled | Account Types
===== | ===== | ===== | ===== | =====
      2 | ADMIN | Administrator | Yes | Redfish/IPMI
===== | ===== | ===== | ===== | =====

The BMC user list.
```

4.3.10. Managing the BMC User List

Use the “SetBmcUserList” command to manage the current BMC user list for the target system.

- **Adding new BMC Users**

Use the “SetBmcUserList” command with the “--action Add” option to add a new BMC user.

- **Deleting the BMC Users**

Use the “SetBmcUserList” command with the “--action Del” option to delete a BMC user.

- **Modifying a BMC User Privileges**

Use the “SetBmcUserList” command with the “--action Level” option to modify a BMC user's privileges.

- **Changing a BMC user password**

Use the “SetBmcUserList” command with the “--action SetPwd” option to change a BMC user password.

- **Testing BMC user login**

Use the “SetBmcUserList” command with the “--action Test” option to verify a BMC user's login credentials.

- **Enabling the BMC User Type**

Use the “SetBmcUserList” command with the “--action EnableType” option to activate a BMC user type.

- **Enabling a BMC User Account**

Use the “SetBmcUserList” command with the “--action EnableAccount” option to activate a BMC user account.

- **Editing the BMC User Name**

Use the “SetBmcUserList” command with the “--action EditUserName” option to edit a BMC user's username

Single System	
In-Band	<pre>saa -c SetBmcUserList --action add --user_id <userid> --user_name <username> --user_password <userpassword> --user_privilege <userprivilege> saa -I Redfish_HI -u <username> -p <password> -c SetBmcUserList -- action add --user_id <userid> --user_name <username> -- user_password <userpassword> --user_privilege <userprivilege> [-- user_status <status>] [--manage_account_type <type:status>] [--ap <protocol> --pp <protocol> --ak <key> --pk <key>]] saa -c SetBmcUserList --action <action> --user_id <userid> [-- user_name <username>] [--user_password <userpassword>] [-- user_privilege <userprivilege>] saa -I Redfish_HI -u <username> -p <password> -c SetBmcUserList -- action Test --user_name <username> --user_password <userpassword> saa -I Redfish_HI -u <username> -p <password> -c SetBmcUserList -- action EnableType --user_id {--account_type <type> -- account_type_status <status> --manage_account_type <type:status>} [--ap <protocol> --pp <protocol> --ak <key> --pk <key>] saa -I Redfish_HI -u <username> -p <password> -c SetBmcUserList -- action EnableAccount --user_id <userid> --user_status <status></pre>

	<pre>saa -l Redfish_HI -u <username> -p <password> -c SetBmcUserList -- action EditUserName --user_id <userid> --user_name <username></pre>
--	---

Example:

In-Band :

```
[SAA_HOME]# SAA.efi -c SetBmcUserList --action 1 --user_id 3 --user_name  
NAME3 --user_password PASSWORD3 --user_privilege 3
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)  
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC user is added for the user ID 3
```

```
[SAA_HOME]# SAA.efi -c SetBmcUserList --action 2 --user_id 3
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)  
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC user is deleted for the user ID 3
```

```
[SAA_HOME]# SAA.efi -c SetBmcUserList --action 3 --user_id 3 --  
user_privilege 3
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)  
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC privilege is set for the user ID 3
```

```
[SAA_HOME]# SAA.efi -c SetBmcUserList --action 4 --user_id 3 --  
user_password PASSWORD3
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)  
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC password is set for the user ID 3
```

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList  
--action 1 --user_id 3 --user_name NAME3 --user_password PASSWORD3 --  
user_privilege 3 --user_status Disable --manage_account_type  
SNMP:Enable,Redfish:Disable --ap SHA --pp 1 --ak KEY --pk KEY
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList  
--action 5 --user_name NAME3 --user_password PASSWORD3
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)  
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC user login successfully.  
The BMC user privilege: Operator.
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList  
--action 6 --user_id 3 --account_type SNMP --account_type_status enable -  
-ap SHA --pp 1 --ak KEY --pk KEY
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList  
--action 6 --user_id 3 --manage_account_type SNMP:Enable,Redfish:Disable  
--ap SHA --pp 1 --ak KEY --pk KEY
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The account types are set for the user ID 3
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList
--action 7 --user_id 3 --user_status Disable
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC user status is set for the user ID 3
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c SetBmcUserList
--action 8 --user_id 3 --user_name NAME4
```

The console output contains the following information.

```
SuperServer Automation Assistant 1.3.0 (2025/03/13) (UEFI_x86_64)
Copyright(C) 2024 Super Micro Computer, Inc. All rights reserved.
```

```
The BMC user name is set for the user ID 3
```



Note: The "No Access" user privilege is not supported.

4.4. Applications

4.4.1. Sending an IPMI Raw Command

Use the “RawCommand” command to send an IPMI raw command to the target system.

Single System	
In-Band	SAA.efi -c RawCommand --raw <raw command>

Example:

In - Band :

```
[SAA_HOME]# SAA.efi -c RawCommand --raw "06 01"
```

```
[SAA_HOME]# SAA.efi -c RawCommand --raw "0x06 0x01"
```

The console output contains the following information.

```
00
20 01 09 95 02 BF 7C 2A 00 7A 09 00 10 00 00
```

If the execution “Status” field for a managed system is SUCCESS, the console output of the managed system will be shown in the “Execution Message” section of the managed system in the created log file.



Notes: A raw command must be quoted.

4.5. GPU Management

4.5.1. Getting GPU Information

Use the “GetGpuInfo” command to get the current GPU information of the HGX H100/MI300X/MGX GH200/GB200 platforms from the managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetGpuInfo
In-Band	SAA.efi -c GetGpuInfo --file <filename> --file_only

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetGpuInfo
```

The console output contains the following information for the HGX H100 on X13/H13 systems.

```
Managed system.....169.254.3.254
  HGX Model.....NVIDIA HGX 8-GPU
  HMC
    version.....HGX-22.10-1-rc31
    ERot version...00.02.0120.0000_n00
  FPGA
    version.....2.0E
    ERot version...00.02.0120.0000_n00
  PCIe Switch
    version.....1.7.5F
    ERot version...00.02.0120.0000_n00
  GPU SXM [1]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [2]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [3]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [4]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [5]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [6]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [7]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  GPU SXM [8]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  NVSwitch [0]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  NVSwitch [1]
    version.....96.00.61.00.01
    ERot version...00.02.0120.0000_n00
  NVSwitch [2]
    version.....96.00.61.00.01
```

```

ERot version.....00.02.0120.0000_n00
NVSwitch [3]
  version.....96.00.61.00.01
  ERot version.....00.02.0120.0000_n00
PCiE Retimer [0]
  version.....1.31.X
PCiE Retimer [1]
  version.....1.31.X
PCiE Retimer [2]
  version.....1.31.X
PCiE Retimer [3]
  version.....1.31.X
PCiE Retimer [4]
  version.....1.31.X
PCiE Retimer [5]
  version.....1.31.X
PCiE Retimer [6]
  version.....1.31.X
PCiE Retimer [7]
  version.....1.31.X

```

HGX information

```
=====
```

```

[GPU1]
  Location.....1
  Model.....H100 80GB HBM3
  Serial Number.....1655022001438
  Part Number.....2330-885-A1
  Firmware Version....96.00.61.00.01
  Temperature(C).....42
[GPU2]
  Location.....2
  Model.....H100 80GB HBM3
  Serial Number.....1655022002786
  Part Number.....2330-885-A1
  Firmware Version....96.00.61.00.01
  Temperature(C).....37
[GPU3]
  Location.....3
  Model.....H100 80GB HBM3
  Serial Number.....1655022002925
  Part Number.....2330-885-A1
  Firmware Version....96.00.61.00.01
  Temperature(C).....39
[GPU4]
  Location.....4
  Model.....H100 80GB HBM3
  Serial Number.....
  Part Number.....2330-885-A1
  Firmware Version....96.00.61.00.01
  Temperature(C).....39
[GPU5]
  Location.....5

```

```

Model.....H100 80GB HBM3
Serial Number.....1654422019860
Part Number.....2330-885-A1
Firmware Version....96.00.61.00.01
Temperature(C).....41
[GPU6]
Location.....6
Model.....H100 80GB HBM3
Serial Number.....
Part Number.....2330-885-A1
Firmware Version....96.00.61.00.01
Temperature(C).....36
[GPU7]
Location.....7
Model.....H100 80GB HBM3
Serial Number.....1654422019241
Part Number.....2330-885-A1
Firmware Version....96.00.61.00.01
Temperature(C).....36
[GPU8]
Location.....8
Model.....H100 80GB HBM3
Serial Number.....1654522011398
Part Number.....2330-885-A1
Firmware Version....96.00.61.00.01
Temperature(C).....40

```

HGX Delta-Next System Temperature

=====

```

[HBM]
Reading Temperature...35 degreeC
HBM 1 Temperature.....35 degreeC
HBM 2 Temperature.....31 degreeC
HBM 3 Temperature.....32 degreeC
HBM 4 Temperature.....34 degreeC
HBM 5 Temperature.....34 degreeC
HBM 6 Temperature.....31 degreeC
HBM 7 Temperature.....31 degreeC
HBM 8 Temperature.....34 degreeC
[FPGA]
Reading Temperature...43 degreeC
[PCI Switch]
Reading Temperature...54 degreeC
[PLX]
Reading Temperature...48 degreeC
PLX 1 Temperature.....48 degreeC
PLX 2 Temperature.....41 degreeC
PLX 3 Temperature.....44 degreeC
PLX 4 Temperature.....48 degreeC
PLX 5 Temperature.....29 degreeC
[ReTimer]
Reading Temperature...73 degreeC
ReTimer 1 Temperature..70 degreeC

```

```

ReTimer 2 Temperature..69 degreeC
ReTimer 3 Temperature..63 degreeC
ReTimer 4 Temperature..64 degreeC
ReTimer 5 Temperature..69 degreeC
ReTimer 6 Temperature..70 degreeC
ReTimer 7 Temperature..71 degreeC
ReTimer 8 Temperature..73 degreeC
[NVSwitch]
Reading Temperature....37 degreeC
NVSwitch 1 Temperature.35 degreeC
NVSwitch 2 Temperature.35 degreeC
NVSwitch 3 Temperature.37 degreeC
NVSwitch 4 Temperature.35 degreeC

```

The console output contains the following information for the MGX GPU systems.

```

GPU information
=====
[GPU(0)]
Location.....0
GPU Vendor.....NVIDIA
Model.....GH200 480GB
Serial Number.....1642723000173
Part Number.....2330-885-A1
Firmware Version....96.00.61.00.01
PCIe Type.....Gen4
Max PCIe Type.....Gen5
Lanes In Use.....1
UUID.....3949b757-be6b-568c-88f4-5a833404cb8c
Max Speed.....1980 MHz
Min Speed.....345 MHz
Operating Speed.....690 MHz

```

The console output contains the following information for the HGX GB200 GPU systems.

```

Managed system.....164.254.3.254
HGX Model.....NVIDIA HGX 4-GPU
HMC
version.....GB200Nvl-25.01-F
ERot version...01.04.0008.0000_n04
CPLD
version.....0.1C
CPU [0]
version.....29
ERot version.....01.04.0008.0000_n04
CPU [1]

```

```

version.....29
ERot version.....01.04.0008.0000_n04
FPGA [0]
version.....1.20
ERot version.....01.04.0008.0000_n04
FPGA [1]
version.....1.20
ERot version.....01.04.0008.0000_n04
GPU [1]
version.....97.00.82.00.85
InfoROM version.....G548.0201.00.06
GPU [2]
version.....97.00.82.00.85
InfoROM version.....G548.0201.00.06
GPU [3]
version.....97.00.82.00.85
InfoROM version.....G548.0201.00.06
GPU [4]
version.....97.00.82.00.85
InfoROM version.....G548.0201.00.06
PCIe Switch Config
version.....01151024
[Chassis 1]
Name.....HGX_Chassis_0
Model.....GB200 NVL
Manufacturer.....NVIDIA
Serial Number.....N/A
Part Number.....N/A
PowerState.....On
LocationType.....Backplane
[HMC 1]
Name.....HGX_BMC_0
Model.....GB200 NVL
Manufacturer.....NVIDIA
Serial Number.....1335024120069
Part Number.....699-24764-0001-RC2
PowerState.....On
LocationType.....Slot
Temperature(C).....36.94
[CPLD 1]
Name.....HGX_CPLD_0
Model.....MAX10 10M08
Manufacturer.....Intel
Serial Number.....NA
Part Number.....115-3953-000
PowerState.....On
LocationType.....Embedded
[FPGA 0]
Name.....HGX_FPGA_0
Model.....NA
Manufacturer.....NVIDIA
Serial Number.....NA
Part Number.....115-3916-000

```

```

PowerState.....On
LocationType.....Embedded
[FPGA 1]
Name.....HGX_FPGA_1
Model.....NA
Manufacturer.....NVIDIA
Serial Number.....NA
Part Number.....115-3916-000
PowerState.....On
LocationType.....Embedded
[CPU 0]
Name.....HGX_CPU_0
Model.....Grace A02P
Manufacturer.....NVIDIA
Serial Number.....0x0000000017830A0050000000005010100
Part Number.....900-2G548-0001-000
PowerState.....On
LocationType.....Embedded
Temperature(C).....35.84
[CPU 1]
Name.....HGX_CPU_1
Model.....Grace A02P
Manufacturer.....NVIDIA
Serial Number.....0x0000000017830A0040C00000000C0181C0
Part Number.....900-2G548-0001-000
PowerState.....On
LocationType.....Embedded
Temperature(C).....36.06
[GPU 0]
Name.....HGX_GPU_0
Model.....GB200 186GB HBM3e
Manufacturer.....NVIDIA
Serial Number.....1650425127856
Part Number.....900-2G548-0001-000
PowerState.....On
MaxPowerWatts.....1200
MinPowerWatts.....200
LocationType.....Embedded
Temperature(C).....32.06
Temperature1(C).....54.94
InterfaceType.....PCIe
LanesInUse.....1
MaxLanes.....16
[GPU 1]
Name.....HGX_GPU_1
Model.....GB200 186GB HBM3e
Manufacturer.....NVIDIA
Serial Number.....1650425127856
Part Number.....900-2G548-0001-000
PowerState.....On
MaxPowerWatts.....1200
MinPowerWatts.....200
LocationType.....Embedded

```

```

Temperature(C).....31.94
Temperature1(C).....55.06
InterfaceType.....PCIe
LanesInUse.....1
MaxLanes.....16
[GPU 2]
Name.....HGX_GPU_2
Model.....GB200 186GB HBM3e
Manufacturer.....NVIDIA
Serial Number.....1650625020467
Part Number.....900-2G548-0001-000
PowerState.....On
MaxPowerWatts.....1200
MinPowerWatts.....200
LocationType.....Embedded
Temperature(C).....32.78
Temperature1(C).....54.22
InterfaceType.....PCIe
LanesInUse.....1
MaxLanes.....16
[GPU 3]
Name.....HGX_GPU_3
Model.....GB200 186GB HBM3e
Manufacturer.....NVIDIA
Serial Number.....1650625020467
Part Number.....900-2G548-0001-000
PowerState.....On
MaxPowerWatts.....1200
MinPowerWatts.....200
LocationType.....Embedded
Temperature(C).....32.00
Temperature1(C).....55.00
InterfaceType.....PCIe
LanesInUse.....1
MaxLanes.....16

```

In-band:

The console output contains the following information.

```

Managed system.....local
Local Firmware File.....NVIDIA_HGX_H100.pkg
Version.....HGX-H100x8_0002_230428.1.2

```



Note:

GetGPUInfo is only available on NVIDIA H100 Delta-Next, MI300X, MGX GH200, and GB200 systems. For details, refer to Appendix G.

Supported Platform Matrix for GetGpuInfo/UpdateGpu and the following URL: <https://www.supermicro.com/support/resources/gpu>

4.5.2. Updating the GPU Firmware Image

Use the “UpdateGpu” command with the HGX H100 GPU/MI300X/MGX GH200/GB200 firmware image to update the GPU firmware of a managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c UpdateGpu --file <filename> --item <itemname> [--reboot] [--force__update]

The --item option supports the following values:

Item name
HGX
HGX_FPGA
HGX_HMC
HGX_HMC_EROT
HGX_FPGA_EROT
HGX_PCIESWITCH
HGX_PCIESWITCH_EROT
HGX_GPU
HGX_GPU_EROT
HGX_NVSWITCH
HGX_NVSWITCH_EROT
HGX_RETIMER

MI300X
MGX_GPU

Example:

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateGpu --
item HGX --file NVDIA_HGX_H100.pkg --reboot
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateGpu --
item HGX_RETIMER --dev_id 1,2 --file NVDIA_HGX_H100_Retimer.pkg --reboot
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateGpu --
item MI300X --file MI300X.pldm --reboot
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateGpu --
item HGX --file NVDIA_GB200.pldm --reboot [--force_update]
```



Note:

The UpdateGPUInfo command is only available on NVIDIA H100 Delta-Next, MI300X and MGX GH200 systems. For details, refer to Appendix G. Supported Platform Matrix for GetGpuInfo/UpdateGpu.

4.6. CPLD Management

4.6.1. Getting CPLD Firmware Image Information

Use the “GetCpldInfo” command to get the CPLD firmware image information from the managed system as well as the local CPLD firmware image (with the --file option).

Single System	
In-Band	SAA.efi -c GetCpldInfo [-I Redfish_HI -u <username> -p <password>] [--file <filename> [--file_only]]

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetCpldInfo --  
file CPLD.bin
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
  CPLD 1 version.....F1.00.01  
Local CPLD image file...CPLD.bin  
  CPLD version.....F1.00.CD
```

In-Band :

```
[SAA_HOME]# SAA.efi -c GetCpldInfo --file CPLD.bin --file_only
```

The console output contains the following information.

```
Local CPLD image file...CPLD.bin  
  CPLD version.....F1.00.CD
```



Note: There could be multiple motherboard CPLDs on a single motherboard, in which case their information would be shown indexed.

4.6.2. Updating the CPLD Firmware Image

Use the “UpdateCpld” command with the CPLD firmware image CPLD.bin to run SAA to update the motherboard CPLD of a managed system and use the --index option to specify the CPLD index for systems with multiple motherboard CPLDs supported. The command will update the first motherboard CPLD without the --index input.

Single System

In-Band	SAA.efi -c UpdateCpld -I Redfish_HI -u <username> -p <password> --file <filename> [--index <num>] [--reboot --poweroff]
---------	---

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateCpld --file CPLD.bin --reboot
```



Notes:

- This command is only available on X12/H12 RoT, X13/H13, and later platforms.
- The system needs to be powered off while updating the CPLD firmware.
- This command will update the first motherboard CPLD by default.
- DO NOT update CPLD firmware with a wrong index.

4.6.3. Getting Switchboard CPLD Firmware Image Information

The command “GetSwitchboardCpldInfo” supports the following features on CPLD RoT systems of X13/H13 and later platforms. Execute the command to get firmware installed on all the switchboards of the managed system. However, currently, local switchboard firmware image information is not yet supported (with the --file_only option).

Currently, this command is only supported through Redfish communication. Hence, in-band commands can only be done through the Redfish Host Interface.

Single System	
In-Band	SAA.efi -c GetSwitchboardCpldInfo -I Redfish_HI -u <username> -p <password>

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
GetSwitchboardCpldInfo
```

The console output contains the following information of all switchboard CPLDs that can be updated.

```
Managed system.....169.254.3.254  
  [Main Switchboard]  
    CPLD 1 version.....10  
    CPLD 2 version.....0F  
  [Left Switchboard]  
    CPLD 2 version.....32  
  [Right Switchboard]  
    CPLD 2 version.....3F
```

The switchboard CPLD has the following details:

Type	Descriptions
Main Switchboard	<i>It is possible to install many main switchboards.</i>
Left Switchboard	<i>It is possible to install many left switchboards.</i> Left switchboards only can be displayed if the system has fully booted up.
Right Switchboard	<i>It is possible to install many right switchboards.</i> Right switchboards only can be displayed if the system has fully booted up.



Notes:

- Left/Right Switchboard CPLD #1 does not support user retrieval of information.
- When the system is in the process of powering up, it is possible for this command to fail. Please wait until the system has fully booted up and try again.

4.6.4. Updating Switchboard CPLD Firmware Image

The command “UpdateSwitchboardCpld” supports the following features on CPLD RoT systems of X13/H13 and later platforms. Execute the command with the Switchboard

CPLD image switchboard.ied to update the managed system.

Single System	
In-Band	SAA.efi -c UpdateSwitchboardCpld -I Redfish_HI -u <username> -p <password> --file <filename> --type <type> [--index <index>] [--reboot]

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
UpdateSwitchboardCpld --file Left_Switchboard_CPLD2.jed --type Left --
index 2
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
[Left Switchboard]  
    CPLD 2 version.....3F
```

Status: Start updating Switchboard CPLD for 169.254.3.254

```
*****WARNING*****  
Do not remove AC power from the server.  
*****
```

Uploading FW.....Done
Preparing updating FW.....Done
Updating FW...>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>Done

Status: Switchboard CPLD is updated for 169.254.3.254

Note: Update done. No further action is needed for this firmware to take effect.



Note:

- Left/Right Switchboard CPLD #1 does not support user retrieval of firmware.
- Side Switchboard CPLD (Left or Right) firmware can be used interchangeably to update, but does not update the Main Switchboard, as it has its own firmware.

- The Reboot option is required when updating the Main Switchboard CPLD, since it can only be updated when the system is in the power-off state. The Reboot option is optional when updating Side Switchboard CPLDs.
- Updating Side Switchboard CPLDs requires the system to be in a fully booted up state.
- When the system is in the process of powering up, it is possible for this command to fail. Please wait until the system has fully booted up and try again.

4.6.5. Getting Backplane CPLD Firmware Information

Use the “GetBackplaneCpldInfo” command to get the backplane CPLD firmware information from the backplane on the managed system.

Single System	
In-Band	SAA.efi -c GetBackplaneCpldInfo -I Redfish_HI -u <username> -p <password>

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
GetBackplaneCpldInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254
  [Backplane 1]
    CPLD 1 ID.....0023
    CPLD 1 version.....0C
```



Note:

- This command is only available on platforms with storage backplanes installed.
- A maximum of four backplane CPLDs can be detected.

- _____



Note:

- This command is only available on platforms with storage backplanes installed.
- A maximum of four backplane CPLDs can be updated.
- Backplane and CPLD index numbers may not be displayed if they are not supported by the managed system.

4.6.7. Getting Fanboard CPLD Firmware Image Information

Use the “GetFanboardCpldInfo” command to get the Fanboard CPLD firmware image information of X13/H13 and later RoT platforms from the managed system.

Single System	
In-Band	SAA.efi -c GetFanboardCpldInfo -I Redfish_HI -u <username> -p <password>

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
GetFanboardCpldInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
[Fanboard 1]  
CPLD 1 version.....01  
[Fanboard 2]  
CPLD 1 version.....01
```

4.6.8. Updating Fanboard CPLD Firmware Image

Use the “UpdateFanboardCpld” command with the Fanboard CPLD firmware image fanboard.jed to run SAA on CPLD RoT systems of X13/H13 and later platforms to update the Fanboard CPLD of a managed system.

Single System	
In-Band	SAA.efi -c UpdateFanboardCpld -I Redfish_HI -u <username> -p <password> --file <filename> --type <Fanboard_ID> [--index <CPLD_ID>]

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
UpdateFanboardCpld --file Fanboard_CPLD.bin --type 1 --index 1
```

4.6.9. Getting AOM Board CPLD Firmware Image Information

Use the “GetAomboardCpldInfo” command to get the Aomboard CPLD firmware image information from the managed system (for X13/H13 and later platforms).

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetAomboardCpldInfo [--file <filename> [--file_only]]

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
GetAomboardCpldInfo --file CPLD.jed
```

The console output contains the following information.

```
Managed system.....169.254.3.254
  [AOM_SCM 1]
    CPLD 1 name.....CPLD AOM BMC AOM-SCM-DC6
    CPLD 1 ID.....06E0
    CPLD 1 version.....1A
Local CPLD image file.....CPLD.jed
  CPLD 1 UFFN.....CPLD_AOM-SCM-DC6-
17XX06E0_20241209_1A.XX.XX_STDsp.jed
  CPLD 1 ID.....06E0
  CPLD 1 version.....1A
```

4.6.10. Updating AOM Board CPLD Firmware Image

Use the “UpdateAomboardCpld” command with the AOM board CPLD firmware image to update the AOM board CPLD of a managed system on X13/H13 and later platforms.

Single System	
In-Band	SAA.efi -l Redfish_HI -u <username> -p <password> -c UpdateAomboardCpld --file <filename> --dev_id <AOMboard_ID> [--index <CPLD_INDEX> --aom_type <AOM>]

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
UpdateAomboardCpld --file CPLD.jed --dev_id 1 --index 1 --aom_type
AOMboard
```

The console output contains the following information.

[illegible]

4.6.11. Getting Miscellaneous CPLD Firmware Image Information

Use the “GetMiscCpldInfo” command to get the motherboard Miscellaneous CPLD firmware information from the managed system.

Single System	
In-Band	SAA.efi -c GetMiscCpldInfo -I Redfish_HI -u <username> -p <password> [--file <filename> [--file_only]]

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetMiscCpldInfo --file MISC_CPLD.jed
```

The console output contains the following information.

```
Managed system.....169.254.3.254
  CPLD Name.....CPLD Motherboard Miscellenous
  CPLD ID.....03E0
  CPLD Rev.....0E
Local CPLD image file...MISC_CPLD.jed
  CPLD UFFN.....CPLD_X03-GP03E0-10XX03E0_20240220_0D.XX.XX_STDsp.jed
  CPLD ID.....03E0
  CPLD Rev.....0D
```

4.6.12. Updating Miscellaneous CPLD Firmware Image

Use the “UpdateMiscCpld” command with the Miscellaneous CPLD firmware image to update the motherboard Miscellaneous CPLD of a managed system.

Single System	
In-Band	SAA.efi -c UpdateMiscCpld -I Redfish_HI -u <username> -p <password> --file <filename> --reboot

Example:

In-band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateMiscCpld  
--file MISC_CPLD.jed --reboot
```

The console output contains the following information.

```
Status: Start updating Miscellaneous CPLD for 169.254.3.254  
  
*****WARNING*****  
Do not remove AC power from the server.  
*****  
  
Uploading FW .....Done  
  
Note: System will be powered off shortly to continue the update process.  
  
Warning: Please wait for the system to power on again. Do not remove AC power  
before system reboot.  
  
Status: System shutdown command applied.
```

4.7. Security Management

4.7.1. Managing BIOS RoT Functions

The "BiosRotManage" command supports the following features on RoT systems:

- **Getting Information on BIOS**

Use the "BiosRotManage" command with the "--action GetInfo" option to retrieve information on active BIOS, backed-up BIOS and golden BIOS.

- **Updating the golden BIOS Image**

Use the "BiosRotManage" command with the "--action UpdateGolden" option to replace the golden image with an active BIOS image.

- **Recovering BIOS**

Use the "BiosRotManage" command with the "--action Recover" option to recover BIOS from the backup image or the golden image. By priority, the managed system recovers BIOS from the backup image. If the backup image is corrupted, it will then try to recover from the golden image.

**Note:**

To execute the "UpdateGolden" or "Recover" commands, if it is necessary to power off the system, then it requires the --reboot option.

Single System	
In-Band	<code>SAA.efi -c BiosRotManage -I Redfish_HI -u <username> -p <password> --action <action> [--reboot]</code>

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c BiosRotManage -  
-action GetInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
  BIOS build date.....2020/06/08  
  Backup BIOS build date.....2020/05/05  
  Golden BIOS build date.....2020/06/08
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c BiosRotManage -  
-action UpdateGolden --reboot
```

The console output contains the following information.

Note: The system will be powered off shortly to continue the process. Please wait for the system to power on again, then check the Maintenance Event log for results.

Warning: Please wait for the system to power on again. Do not remove AC power before the system reboots.

Status: System shutdown command issued.

4.7.2. Managing BMC RoT Functions

The "BmcRotManage" command supports the following features on RoT systems:

- **Getting Information on BMC**
Use the "BmcRotManage" command with the option "--action GetInfo" to retrieve information on an active BMC, backed-up BMC, or golden BMC.
- **Updating the golden Image**
Use the "BmcRotManage" command with the "--action UpdateGolden" option to replace the golden image with an active BMC firmware.
- **Recovering BMC**
Use the "BmcRotManage" command with the "--action Recover" option to recover BMC from the backup image or the golden image. By priority, the managed system recovers the BMC from the backup image. If the backup image is corrupted, it will then recover from the golden image.

Single System	
In-Band	SAA.efi -c BmcRotManage -I Redfish_HI -u <username> -p <password> --action <action>

Example:

In-Band Redfish Host Interface:

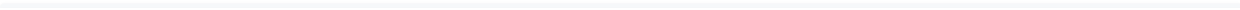
```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c BmcRotManage --
action GetInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254
  BMC version.....09.10.19
  Backup BMC version.....00.10.08
  Golden BMC version.....09.10.19
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c BmcRotManage --
action UpdateGolden
```

The console output contains the following information.



.....

.....

.....

.....

.....

.....

.....

.....

Done

Status: Please check Maintenance Event log for result.

4.7.3. Managing CPLD RoT Functions

The "CpldRotManage" command supports the following features on RoT systems of X13 RoT2.0 and later platforms:

- **Getting Information on CPLD**
Use the "CpldRotManage" command with the option "--action GetInfo" to retrieve information on an active CPLD or golden CPLD.
- **Updating the golden Image**
Use the "CpldRotManage" command with the "--action UpdateGolden" option to replace the Golden image with active CPLD firmware.

Single System	
In-Band	SAA.efi -c CpldRotManage -l Redfish_HI -u <username> -p <password> --action <action>

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CpldRotManage -  
-action GetInfo
```

The console output contains the following information.


```
Managed system.....169.254.3.254
CPLD version.....F5.07.02
Golden CPLD version.....F5.07.01
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CpldRotManage -
-action UpdateGolden
```

The console output contains the following information.

```
Status: System is backing up current FW as golden image. Please wait for 2
minutes.
.....
.....
.....
Done

Status: Please check golden FW version for result.
```

4.7.4. Acquiring the BMC System Lockdown Mode

When a managed system is in lockdown mode, configuration changes and firmware updates are not allowed. To find out the status of the managed system, use the “GetLockdownMode” command.

Single System	
In-Band	SAA.efi -c GetLockdownMode SAA.efi -c GetLockdownMode -I Redfish_HI -u <username> -p <password>

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c GetLockdownMode -I Redfish_HI -u ADMIN -p PASSWORD
```

The console output contains the following information.

```
Managed system.....169.254.3.254
System Lockdown.....No
```



Note:

The -I Redfish_HI option is only supported on the OpenBmc platform.

4.7.5. Managing FPGA RoT Functions

The "FpgaRotManage" command supports the following features on RoT systems of X13 RoT2.0 and later platforms:

- **Getting Information on FPGA**

Use the "FpgaRotManage" command with the option "--action GetInfo" to retrieve information on an active FPGA or golden FPGA.

- **Updating the golden Image**

Use the "FpgaRotManage" command with the "--action UpdateGolden" option to replace the Golden image with active FPGA firmware.

Single System	
In-Band	SAA.efi -c FpgaRotManage -I Redfish_HI -u <username> -p <password> --action <action>

Example:

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c FpgaRotManage -
-action GetInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254
FPGA version.....F3.74.35
Golden FPGA version.....F3.74.34
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c FpgaRotManage -  
-action UpdateGolden
```

The console output contains the following information.

```
Status: System is backing up current FW as golden image. Please wait for 4  
minutes.  
.....  
.....  
.....  
.....  
.....  
Done  
  
Status: Please check golden FW version for result.
```

4.7.6. Getting CPU ERoT Firmware Image Information

Use the “GetCpuERotInfo” command to get the ERoT CPU firmware image information of NVIDIA MGX™ systems from the managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetCpuERotInfo

Example:

In-band :

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetCpuERotInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
[CPU 0]  
    ERoT version.....01.03.0103.0000_n01  
[CPU 1]  
    ERoT version.....01.03.0103.0000_n01
```

4.7.7. Updating CPU ERoT Firmware Image

Use the “UpdateCpuERot” command with the CPU ERoT firmware image CPU_ERoT.fwpkg to run SAA on NVIDIA MGX™ systems to update the CPU ERoT of a managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c UpdateCpuERot --file <filename>

Example:

In-band :

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c UpdateCpuERot -  
-file CPU_ERoT.fwpkg
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
  [CPU 0]  
    ERoT version.....01.03.0103.0000_n01  
  [CPU 1]  
    ERoT version.....01.03.0103.0000_n01
```

4.7.8. Managing CPU ERoT RoT Functions

The “CpuERotManage” command supports the following features on NVIDIA MGX™ Systems:

- **Getting Information on CPU ERoT**
Use the “CpuERotManage” command with the “--action GetInfo” option to retrieve information about the active ERoT CPU and the golden ERoT CPU.
- **Updating the Golden Image**
Use the “CpuERotManage” command with the “--action UpdateGolden” option to replace the golden image with an active ERoT CPU firmware.
- **Recovering ERoT CPU**
Use the “CpuERotManage” command with the “--action Recover” option to recover

ERoT CPU from the backup image or the golden image. By priority, the managed system recovers ERoT CPU from the backup image. If the backup image is corrupted, it will then recover from the golden image.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c CpuERotManage --action <action>

Example:

In-band :

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CpuERotManage -
-action GetInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254
CPU ERoT 0 version.....01.03.0103.0000_n01
Golden CPU ERoT version.....01.03.0103.0000_n01
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CpuERotManage -
-action UpdateGolden
```

The console output contains the following information.

```
.....
Status: System is backing up current FW as golden image. Please wait for 2
minutes.
.....
.....
Done
Status: Please check golden FW version for result.
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CpuERotManage -
-action Recover
```

The console output contains the following information.

```

.....
Status: System is recovering CPU ERoT firmware image. Please wait for 2 minutes.
.....
.....
Done
Status: Please check CPU ERoT version for result.

```

4.7.9. Getting GPU External RoT (ERoT) Firmware Image Information

Use the “GetGpuERotInfo” command to get the External RoT (ERoT) GPU firmware image information of NVIDIA MGX™ systems from the managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetGpuERotInfo

Example:

In-Band through Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetGpuERotInfo
```

The console output contains the following information.

```

Managed system.....169.254.3.254
  [GPU 0]
    ERoT version.....01.03.0136.0000_n01

```

4.8. Health Management

4.8.1. ChassisIntrusion

The “ChassisIntrusion” command manages the chassis intrusion sensor status. Use the --action Clear option to clear the chassis intrusion sensor status and use the --action Status option to get the status of chassis intrusion.

Single System	
In-Band	SAA.efi [-I Redfish_HI -u <username> -p <password>] -c ChassisIntrusion --action <action>

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c ChassisIntrusion --action Clear
```

The console output contains the following information.

```
Chassis intrusion has been cleared successfully.
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c
ChassisIntrusion --action Status
```

The console output contains the following information.

```
Managed system.....169.254.3.254
Intrusion Sensor.....HardwareIntrusion
```

4.8.2. Checking Sensor Data

Use the “CheckSensorData” command to get the SDR information from the managed system.

Single System	
In-Band	SAA.efi -c CheckSensorData --action <action> [--sdr_id] [--sdr_major_version <major_version> --sdr_minor_version <minor_version>] [--file <SDR.txt> [--overwrite]]

- **Shows SDR and saves into file**

Use the “CheckSensorData” command with the “--action Show | 1” option to retrieve BMC Sensor Data Record and the “--file <filename>” option to save SDR to a file.

- **Deletes a specified SDR**

Use the “CheckSensorData” command with the “--action Delete | 2” --sdr_id <sdr_id>” option to delete a specified BMC Sensor Data Record from the output of the “--action Show” command.

- **Gets SDR version**

Use the “CheckSensorData” command with the “--action GetVer | 3” option to get the BMC Sensor Data Record version. The format is <Major>.<Minor>.

- **Sets SDR version**

Use the “CheckSensorData” command with the “--action SetVer | 4” --sdr_major_version <major_version> --sdr_minor_version <minor_version>” option to set the BMC Sensor Data Record version.

Example:

In-band :

```
[SAA_HOME]# SAA.efi -c CheckSensorData --action Show
```

The console output contains the following information.

Status	(#)Sensor	Reading	Low Limit	High Limit
-----	-----	-----	-----	-----
OK	(4) CPU Temp	53C/127F	5C/41F	100C/212F
OK	(71) PCH Temp	45C/113F	5C/41F	90C/194F
OK	(138) System Temp	35C/95F	5C/41F	85C/185F
OK	(205) Peripheral Temp	34C/93F	5C/41F	85C/185F
OK	(272) CPU_VRMIN Temp	38C/100F	5C/41F	100C/212F
OK	(339) PVCC_CPU	1.24 V	0.00 V	1.89 V
	(406) M2_SSD1 Temp	N/A	N/A	N/A
	(473) NVMe_SSD1 Temp	N/A	N/A	N/A
	(540) NVMe_SSD2 Temp	N/A	N/A	N/A
OK	(607) DIMMAB Temp	34C/93F	5C/41F	85C/185F
	(674) FAN	N/A	N/A	N/A
OK	(741) 12V	12.16 V	10.80 V	13.18 V
OK	(808) 5VCC	5.08 V	4.49 V	5.50 V
OK	(875) 3.3VCC	3.30 V	2.97 V	3.62 V
	(942) VBAT	N/A	N/A	N/A
OK	(1009) P5V_AUX	5.08 V	4.49 V	5.50 V
OK	(1076) P3V3_AUX	3.30 V	2.95 V	3.63 V
OK	(1143) P1V8_AUX	1.79 V	1.61 V	1.97 V
OK	(1210) PVCCIN_PCH_AUX	1.81 V	1.61 V	1.98 V
OK	(1277) P1V05_PCH_AUX	1.03 V	0.94 V	1.15 V

OK	(1344)	2.5V BMC		2.49 V	2.23 V	2.74 V
OK	(1411)	P1V2_VDDQ		1.22 V	1.07 V	1.39 V
OK	(1478)	1.0V BMC		0.98 V	0.90 V	1.09 V
OK	(1545)	P3.3V_BMC_RGM		3.28 V	2.95 V	3.62 V
	(2081)	PS1 Status		N/A	N/A	N/A
OK	(2148)	MLP_NIC Temp		48C/118F	5C/41F	100C/212F

In-band:

```
[SAA_HOME]# SAA.efi -c CheckSensorData --action Delete --sdr_id 2148
```

The console output contains the following information.

```
The record of sensor ID 2148 has been deleted.
```

In-band:

```
[SAA_HOME]# SAA.efi -c CheckSensorData --action GetVer
```

The console output contains the following information.

```
SDR version is 2c.2c
```

In-band:

```
[SAA_HOME]# SAA.efi -c CheckSensorData --action SetVer --
sdr_major_version 100 --sdr_minor_version 100
```

The console output contains the following information.

```
SDR version is 64.64
```

4.8.3. Checking and Reporting Basic Health Status of the BMC

Use the “CheckSelfTest” command to show the basic status of the BMC system.

Single System

In-Band	SAA.efi -c CheckSelfTest SAA.efi -I Redfish_HI -u <username> -p <password> -c CheckSelfTest
---------	--

Example:

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c CheckSelfTest
```

The console output contains the following information.

```
Self-test passed.
```

```
Self Test function not implemented in this controller
```

```
[Controller operational firmware corrupted]
```

```
Corrupted or inaccessible data or device  
[Controller update boot block corrupted]
```

```
Corrupted or inaccessible data or device  
[Internal Use Area corrupted]
```

```
Corrupted or inaccessible data or device  
[SDR repository empty]
```

```
Corrupted or inaccessible data or device  
[IPMB signal lines do not respond]
```

```
Corrupted or inaccessible data or device  
[FRU device not accessible]
```

Corrupted or inaccessible data or device
[SDR repository not accessible]

Corrupted or inaccessible data or device
[SEL device not accessible]

Fatal hardware error

N/A

Device specific, CCh



Note:

The -I Redfish_HI option is only supported on the OpenBmc platform.

4.9. System Event Log

4.9.1 Getting System Event Log

Use the “GetEventLog” command to display the current system event log, including both BIOS and BMC events, from the managed system. With the --file option, the event log can be saved to the EventLog.txt file.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetEventLog [--year --month --day] [--file <EventLog.txt> [--overwrite]] [--format CSV]
In-Band	SAA.efi -c GetEventLog --info [--file <EventLog.txt> [--overwrite]]

Example:

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetEventLog
```

The console output contains the following information.

Event ID	Created Time	Sensor Type	Severity	Message
-----	-----	-----	-----	-----
1	2024-03-30T19:14:05Z	OEM	OK	[LAN-0005] Dedicated LAN Link Up - Assert
2	2024-03-30T19:16:39Z	OEM	OK	[LAN-0003] System NIC (1) Link Up - Assert
3	2024-03-30T19:34:57Z	OEM	OK	[LAN-0003] System NIC (1) Link Up - Assert
4	2024-03-30T19:34:57Z	OEM	Warning	[LAN-0004] System NIC (2) Link Down - Assert
5	2024-03-30T19:40:44Z	OEM	OK	[LAN-0005] Dedicated LAN Link Up - Assert

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c GetEventLog --format csv --file EventLog.txt
```

The console output contains the following information.

```
Event ID,Created Time,Sensor Type,Severity,Message,
1,2023-11-04T20:27:08Z,OEM,OK,[LAN-0005] Dedicated LAN Link Up,
2,2023-11-04T20:32:51Z,OEM,OK,[LAN-0003] System NIC (1) Link Up,
3,2023-11-04T20:32:51Z,OEM,Warning,[LAN-0004] System NIC (2) Link Down,
4,2023-11-04T20:37:54Z,OEM,OK,[LAN-0003] System NIC (1) Link Up,
5,2023-11-04T20:59:12Z,OEM,OK,[LAN-0003] System NIC (1) Link Up
```

In-band:

```
[SAA_HOME]# SAA.efi -c GetEventLog --info
```

The console output contains the following information.

```
Total Entries:          32
SEL Version:            1.5
Free Space:             65535 bytes
Recent Entry Added:     2023/08/23 00:56:11
```

```
Recent Entry Erased:      2023/08/19 18:41:24
Number of alloc units:    512
Alloc unit size:          20 bytes
Number of free alloc units: 480
Largest free blk:         480
Max record size:          20
Get/Set SEL Time:         2023/08/28 05:37:12
```

4.9.2 Clearing the System Event Log

Use the “ClearEventLog” command to clear the BMC and BIOS event logs on the managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c ClearEventLog [--reboot] [--clear_bios_eventlog] [--clear_bmc_eventlog]
In-Band	SAA.efi -c ClearEventLog

Note: In-Band usage only supports the `--clear_bmc_eventlog` option.

Example:

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c ClearEventLog
```

The console output contains the following information.

```
Status: Clearing event log in BMC.

Status: Preparing to clear event log in BIOS

Status: BIOS is updated for 169.254.3.254

Note: You have to reboot or power up the system for the changes to take effect
```

In-band:

```
[SAA_HOME]# SAA.efi -c ClearEventLog --clear_bmc_eventlog
```

The console output contains the following information.

```
Status: Clearing event log in BMC
```

In-band :

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c ClearEventLog -  
-clear_bios_eventlog --reboot
```

The console output contains the following information.

```
Status: Clearing event log in BMC  
  
Status: System will reboot now.  
  
Warning: Please wait for the system to power on again. Do not remove AC power  
before system reboot.  
  
Status: System reboot command applied.
```

4.9.3 Getting the System Maintenance Event Log

Use the “GetMaintenEventLog” command to display the managed system’s current maintenance event logs, including both BIOS and BMC maintenance event logs. The --st and --et options can be used to specify a time range for the logs. With the “--count” option, the GetMaintenEventLog command can display the specified number of logs. With the “--file” option, the maintenance event log can be saved to a MaintenEventLog.txt file.

Single System	
In-Band	SAA.efi -c GetMaintenEventLog [--st <start time> --et <end time>] [--count <log count>] [--file <MaintenEventLog.txt> [--overwrite]]

Example:

In-band :

```
[SAA_HOME]# SAA.efi -c GetMaintenEventLog --file MaintenEventLog.txt --  
overwrite
```

```
[SAA_HOME]# SAA.efi -c GetMaintenEventLog --count 5 --file  
MaintenEventLog.txt --overwrite
```

```
[SAA_HOME]# SAA.efi -c GetMaintenEventLog --st 20200601 --et 20200602 --  
file MaintenEventLog.txt --overwrite
```

```
[SAA_HOME]# SAA.efi -c GetMaintenEventLog --st 20200601 --et 20200602 --  
count 5 --file MaintenEventLog.txt --overwrite
```

4.9.4 Clearing the System Maintenance Event Log

Use the “ClearMaintenEventLog” command to clear the maintenance event log on the target system.

Single System	
In-Band	SAA.efi -c ClearMaintenEventLog [--gen_log]

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c ClearMaintenEventLog
```

```
[SAA_HOME]# SAA.efi -c ClearMaintenEventLog --gen_log
```

The console output contains the following information.

```
Done.
```

4.10. Motherboard FPGA Management

4.10.1. Getting Motherboard FPGA Information

Use the "GetMotherboardFpgaInfo" command to get the Motherboard FPGA information from the managed system.

Single System	
In-Band	SAA.efi -c GetMotherboardFpgaInfo -I Redfish_HI -u <username> -p <password>

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
GetMotherboardFpgaInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
FPGA version.....F3.74.33
```

4.10.2. Updating the Motherboard FPGA Firmware Image

Use the "UpdateMotherboardFpga" command with the FPGA firmware image to update the motherboard FPGA on a managed system.

Single System	
In-Band	SAA.efi -c UpdateMotherboardFpga -I Redfish_HI -u <username> -p <password> --file <filename> --reboot

Example:

In-Band Redfish Host Interface:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
UpdateMotherboardFpga --file FPGA.bin --reboot
```

The console output contains the following information.


```

Managed system.....169.254.3.254
  FPGA version.....F3.74.33
Local FPGA image file....FPGA.bin

Status: Start updating FPGA for 169.254.3.254

*****WARNING*****
  Do not remove AC power from the server.
*****

Uploading FW.....Done

Note: System will be powered off shortly to continue the update process.
Warning: Please AC cycle the system after update completed. Do not remove AC
power before update completed.

Status: System shutdown command applied.

```



Notes:

- The in-band usage of this function does not require activation of a node product key.
- Before updating, ensure that the AOM CPLD is updated to a version compatible with the motherboard FPGA firmware images. These components are highly interdependent.
- The system will automatically power off during the update process. Once the update is complete, you will need to manually power on the system.

4.11. Multi-Node Management

4.11.1. Managing the TwinPro Information

Use the “TpInfo” command to get and change the TwinPro information.

Single System	
In-Band	SAA.efi -c TpInfo --action <action> [--item <item> [--value <value>]]

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c TplInfo --action GetInfo
```

The console output contains the following information.

Node	Power	IP	Watts	Current	CPU1	CPU2	System
1	Active	192.168.34.56	38W	2.2A	28C	N/A	37C
2							

Node	Node P/N	Node S/N
1		
2		

Configuration ID : 2
Current Node ID : 1
System Name :
System P/N :
System S/N :
Chassis P/N :
Chassis S/N :
Backplane P/N :
Backplane S/N :
Chassis Location : 00 00 00 00 00
BP Location : Left
MCU Version : 0.07
BPN Revision : 1.02

```
[SAA_HOME]# SAA.efi -c TplInfo --action Set --item systemName --value testName
```

```
[SAA_HOME]# SAA.efi -c TplInfo --action GetInfo --item systemName
```

The console output contains the following information.

```
systemname : testName
```



Notes:

- The item "configID" is displayed in hexadecimal format.
- For the "Set" action, the item "configID" accepts values in either decimal or hexadecimal format.
For hexadecimal input, use the "0x" prefix. Input without the "0x"

prefix will be interpreted as decimal.
For example, if you want to change the configID to 0x21 (which is equivalent to 33 in decimal), you can use either of the following commands:--value 0x21 or --value 33.

4.11.2. Getting Multi-Node LCMC Firmware Image Information

Use the “GetMultinodeLcmcInfo” command to get the multi-node LCMC firmware image information from the managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c GetMultinodeLcmcInfo

Example:

In-band :

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
GetMultinodeLcmcInfo
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
LCMC version.....0.06
```

4.11.3. Updating the Multi-node LCMC Firmware Image

Use the “UpdateMultinodeLcmc” command with the given multi-node LCMC firmware image to run SAA to update the multi-node LCMC firmware of a managed system.

Single System	
In-Band	SAA.efi -I Redfish_HI -u <username> -p <password> -c UpdateMultinodeLcmc --file <filename> --reboot

Example:

In-band:

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p PASSWORD -c  
UpdateMultinodeLcmc --file LCMC.jed --reboot
```

The console output contains the following information.

```
Managed system.....169.254.3.254  
  LCMC version.....0.06  
Local LCMC image file...LCMC.jed  
Status: Start updating Multi-node LCMC for 169.254.3.254  
  
*****WARNING*****  
  Do not remove AC power from the server.  
*****  
  
Uploading FW .....Done  
  
Note: System will be powered off shortly to continue the update process.  
  
Warning: Please wait for the system to power on again. Do not remove AC power  
before system reboot.  
  
Status: System shutdown command applied.
```

4.12. Power Management

4.12.1. Getting the Power Supply Unit Information

Use the “GetPsuInfo” command to get the power supply unit information.

Single System	
In-Band	SAA.efi [-I Redfish_HI -u <username> -p <password>] -c GetPsuInfo

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c GetPsuInfo
```

```
[SAA_HOME]# SAA.efi -I Redfish_HI -u ADMIN -p ADMIN PASSWORD -c  
GetPsuInfo
```

The console output contains the following information.

```
[Module 1](SlaveAddress = 0x78)  
PWS Module Number: PWS-605P-1H  
PWS Serial Number: P605A0E39B07611  
PWS Revision: REV1.1  
PMBus Revision: 0x8B22  
Status: [STATUS OK](00h)  
AC Input Voltage: 122.00 V  
AC Input Current: 0.46 A  
DC 12V Output Voltage: 12.38 V  
DC 12V Output Current: 4.50 A  
Temperature 1: 25 C  
Temperature 2: 53 C  
Fan 1: 2688 RPM  
Fan 2: N/A  
DC 12V Output Power: 55 W  
AC Input Power: 55 W  
Current Sharing Control: Not Supported
```

4.12.2. Managing Data Center Manageability Interface

The DcmiManage command can manage the system through the Data Center Manageability Interface (DCMI) for Supermicro platforms.

The following table summarizes the supported actions in the DcmiManage command with the standard DCMI specification and Intel Node Manager version 2.0.

Option	--type	--action
Description	STD_DCMI = Standard DCMI specification	GetCap = Lists DCMI capabilities information GetPowerStatus = Displays DCMI power reading information GetMCID = Lists management controller identifier string SetMCID = Sets management controller identifier string



Note: Starting with 14th-generation platforms, only the following --action values are supported with the --type STD_DCMI option: SetMCID, GetMCID, and GetPowerStatus. The GetCap action is not supported by the BMC on these platforms.

4.12.2.1. Standard Data Center Manageability Interface Specification

4.12.2.1. Listing Data Center Manageability Interface Capabilities Information

Use the DcmiManage command with option --action GetCap to list the DCMI capabilities of a managed system.

Single System	
In-Band	SAA.efi -c DcmiManage --type STD_DCMI --action GetCap

Example:

In-band:

```
[SAA_HOME]# SAA.efi -c DcmiManage --type STD_DCMI --action GetCap
```

The console output contains the following information.

```
DCMI Version = 1.1
Mandatory Platform capabilities
Temperature Monitor      :Compliant
Chassis Power            :Compliant
SEL logging              :Compliant
Identification Support   :Compliant

Optional Platform capabilities
Power Management         :Compliant

Manageability Access Capabilities
VLAN Capable              :Available
SOL Supported             :Available
OOB Primary LAN Channel Available :Available
OOB Secondary LAN Channel Available :Not present
OOB Serial TMODE Available :Not present
In-Band KCS Channel Available :Available

SEL Attributes
SEL automatic rollover enabled :Not present
Number of SEL entries          :0

Identification Attributes
Asset Tag Support             :Available
DHCP Host Name Support        :Not present
GUID Support                  :Available

Temperature Monitoring
```

```

Baseboard temperature      :At least 1
Processors temperature     :At least 1
Inlet temperature         :At least 1

Power Management Device Slave Address
7-bit I2C Slave Address of device on IPMB  :10

Power Management Controller Channel Number
Channel Number            :00
Device Revision           :01

Manageability Access Attributes
Mandatory Primary LAN OOB Support(RMCP+ Support Only) :supported
Optional Secondary LAN OOB Support(RMCP+ Support Only):Not supported
Optional Serial OOB TMODE Capability                  :Not supported

```

4.12.2.2. Displaying Data Center Manageability Interface Power Reading Information

Use the DcmiManage command with the --action GetPowerStatus option to display the related DCMI power status of a managed system.

Single System	
In-Band	SAA.efi -c DcmiManage --type STD_DCMI --action GetPowerStatus

Example:

In-band :

```
[SAA_HOME]# SAA.efi -c DcmiManage --type STD_DCMI --action GetPowerStatus
```

The console output contains the following information.

```

Instantaneous power reading | 184 W
Minimum during sampling period | 19 W
Maximum during sampling period | 337 W
Average during sampling period | 161 W
IPMI timestamp              | 2024/09/23 03:41:09
Sampling period              | 7309000 Milliseconds
Power reading state          | Activated

```

4.12.2.3. Getting Management Controller Identifier String

Use the DcmiManage command with the --action GetMCID option to get the management controller identifier string from a managed system.

Single System	
In-Band	SAA.efi -c DcmiManage --type STD_DCMI --action GetMCID

Example:

In-band :

```
[SAA_HOME]# SAA.efi -c DcmiManage --type STD_DCMI --action GetMCID
```

4.12.2.4. Setting Management Controller Identifier String

Use the DcmiManage command with the --action SetMCID option to set the management controller identifier string from a managed system. The following is the supported option for option --action SetMCID.

Option	Description
--value	Specifies MCID string value.

Single System	
In-Band	SAA.efi -c DcmiManage --type STD_DCMI --action SetMCID --value <value>

Example:

In-band :

```
[SAA_HOME]# SAA.efi -c DcmiManage --type STD_DCMI --action SetMCID --value example
```

The console output contains the following information.

```
MCID: example
```


Appendix A. SAA Exit Codes

Exit Code Number	Description
0	Successful
Others	Failed
GROUP1 (1~30) Command line parsing check failed	
1	GetOpt unexpected option code
2	Unknown option
3	Missing argument
4	No host IP/user/password
5	Missing option
6	Unknown command
7	Option conflict
8	Can not open file
9	File already exists
10	Host is unknown
11	Invalid command line data
12	Function access denied
GROUP2 (31~59) Resource management error	
31	File management error
32	Thread management error
33	TCP connection error
34	UDP connection error

35	Program interrupted and terminated
36	Required device does not exist
37	Required device does not work
38	Function is not supported
39	FTP server reports error
GROUP3 (60~79) File parsing errors	
60	Invalid configuration file
61	Utility internal error
62	Invalid input file
63	Invalid firmware flash ROM
64	Invalid download file
65	Invalid internal file
GROUP4 (80~90) IPMI operation errors	
80	Node Product key is not activated
81	Internal communication error
82	Board information mismatch
83	Does not support OOB
84	Does not support get file
85	File is not available for download
86	Required tool does not exist
87	IPMI standard error
GROUP5 (100~119) In-band operation errors	
100	Cannot open driver

101	Driver input/output control failed
102	Driver report: ****execution of command failed****
103	BIOS does not support this in-band command
104	Driver report: ****file size out of range****
105	Cannot load driver
106	Driver is busy. Please try again later
107	ROM chip is occupied. Please try again later
108	Kernel module verification error
109	This operation is prohibited
GROUP6 (120~199) IPMI communication errors	
120	Invalid Redfish response
144	IPMI undefined error
145	IPMI connect failed
146	IPMI login failed
147	IPMI execution parameter validation failed
148	IPMI execution exception occurred
149	IPMI execution failed
150	IPMI execution exception on slave CMM or unavailable
151	IPMI execution exception on module not present
152	IPMI execution only for CMM connected
153	IPMI execution on non-supported device
154	IPMI execution only for BMC connected

155	IPMI delivered invalid data
180	IPMI command not found
181	IPMI command IP format error
182	IPMI command parameter length invalid
GROUP7 (200~) Special Group	
200	System call failed
249	Special action is required
250	Managed firmware error
251	Rooted exception
252	Nested exception
253	Known limitation
254	Manual steps are required

Appendix B. Management Interface and License Requirements

[Group] Command	Management Interface Supported	Execution Mode File-based (F) / Command-based (C)	Minimum Required Licenses for Managed System	Note
	Out-Of-Band			
	(Local)			
[System Management]				
GetSystemInfo	Yes	C	No license required	
GetFruInfo	Yes	F + C	No license required	
ChangeFruInfo	Yes	C	No license required	
RestoreFruInfo	Yes	F	No license required	
GetPsFruInfo	Yes	C	No license required	
GetFanMode	Yes	C	No license required	
SetFanMode	Yes	C	No license required	
[BIOS Management]				
GetBiosInfo	Yes	C	No license required	
UpdateBios	Yes	C	No license required	

GetDmiInfo	Yes	F	SFT-OOB-LIC	
ChangeDmiInfo	Yes	F	SFT-OOB-LIC	
EditDmiInfo	Yes	F	SFT-OOB-LIC	
GetBootOption	Yes	C	No license required	
SetBootOption	Yes	C	No license required	
[BMC Management]				
GetBmcInfo	Yes	C	No license required	
UpdateBmc	Yes	C	No license required	
BmcLANManage	Yes	C	No license required	
LoadDefaultBmcCfg	Yes	C	No license required	
BmcReset	Yes	C	No license required	
BmcHostName	Yes	C	No license required	
GetBmcUserList	Yes	C	No license required	
SetBmcUserList	Yes	C	No license required	
DownloadBmcCfg	Yes	F	No license required	
UploadBmcCfg	Yes	F	No license required	
[Applications]				
RawCommand	Yes	C	>No license required	

[GPU Management]				
GetGpuInfo	Yes	C	SFT-DCMS-SINGLE	
UpdateGpu	Yes	C	SFT-DCMS-SINGLE	
[CPLD Management]				
GetCpldInfo	Yes	C	No license required	
UpdateCpld	Yes	C	No license required	
GetSwitchboardCpldInfo	Yes	C	No license required	
UpdateSwitchboardCpld	Yes	C	No license required	
GetFanboardCpldInfo	Yes	C	No license required	
UpdateFanboardCpld	Yes	C	No license required	
GetBackplaneCpldInfo	Yes	C	No license required	
UpdateBackplaneCpld	Yes	C	No license required	
GetAomboardCpldInfo	Yes	C	SFT-DCMS-SINGLE	
UpdateAomboardCpld	Yes	C	SFT-DCMS-SINGLE	
GetMiscCpldInfo	Yes	C	No license required	
UpdateMiscCpld	Yes	C	No license required	
[Security Management]				
BiosRotManage	Yes	C	No license required	SFT-DCMS-SINGLE is

				required for Recovery
BmcRotManage	Yes	C	No license required	SFT-DCMS-SINGLE is required for Recovery
CpldRotManage	Yes	C	No license required	
FpgaRotManage	Yes	C	No license required	
GetLockdownMode	Yes	C	SFT-DCMS-SINGLE	
GetCpuERoTInfo	Yes	C	No license required	
UpdateCpuERoT	Yes	C	No license required	
CpuERoTManage	Yes	C	No license required	
GetGpuERoTInfo	Yes	C	SFT-DCMS-SINGLE	
[Health Management]				
ChassisIntrusion	Yes	C	No license required	
CheckSensorData	Yes	C	No license required	
CheckSelfTest	Yes	C	SFT-OOB-LIC	
[System Event Log]				
GetEventLog	Yes	C	No license required	
ClearEventLog	Yes	C	No license required	
GetMaintenEventLog	Yes	C	No license required	

ClearMaintenEventLog	Yes	C	No license required	
[Motherboard FPGA Management]				
GetMotherboardFpgaInfo	Yes	C	No license required	
UpdateMotherboardFpga	Yes	C	No license required	
[Multi-Node Management]				
TpInfo	Yes	C	No license required	
GetMultinodeLcmclInfo	Yes	C	No license required	
UpdateMultinodeLcmcl	Yes	C	No license required	
[Power Management]				
GetPsuInfo	Yes	C	No license required	
DcmiManage	Yes	C	No license required	

Appendix C. Known Limitations

BIOS Management

- System will be powered off during BIOS updates on X12/H12 RoT platforms if the BMC and CPLD firmware does not support BIOS update without power off.

Appendix D. Third-Party Software

Program	Library	Version	License
SAA	simpleopt	3.5	MIT
SAA	Libcurl	8.3.0	MIT
SAA	openssl	3.5.1	OpenSSL
SAA	EDK2 Compress/ Decompress	EDK2	BSD
SAA	EDK2 Json	1.0	BSD

Appendix E. System Lockdown Mode Table

[Group] Command	Authority for System Lockdown Mode
	Read only
[System Management]	
GetSystemInfo	Yes
GetFruInfo	Yes
ChangeFruInfo	No
RestoreFruInfo	No
GetPsFruInfo	Yes
GetFanMode	No
SetFanMode	No
[BIOS Management]	
UpdateBios	No
GetBiosInfo	Yes
GetDmiInfo	Yes
EditDmiInfo	Yes
ChangeDmiInfo	No
ChangeDmiInfo	No
GetBootOption	No
SetBootOption	No
[BMC Management]	
UpdateBmc	No
GetBmcInfo	Yes
BmcLanManage	Yes for action GetInfo and GetLinkStatus
LoadDefaultBmcCfg	No
BmcReset	No

BmcHostName	Yes for action Get
GetBmcUserList	Yes
SetBmcUserList	No
DownloadBmcCfg	Yes
UploadBmcCfg	No
[Applications]	
RawCommand	Yes
[GPU Management]	
GetGpuInfo	Yes
UpdateGpu	No
[CPLD Management]	
GetCpldInfo	Yes
UpdateCpld	No
GetSwitchboardCpldInfo	Yes
UpdateSwitchboardCpld	No
GetBackplaneCpldInfo	Yes
UpdateBackplaneCpld	No
GetFanboardCpldInfo	Yes
UpdateFanboardCpld	No
GetAomboardCpldInfo	Yes
UpdateAomboardCpld	No
GetMiscCpldInfo	Yes
UpdateMiscCpld	No
[Security Management]	
BiosRotManage	Yes for action GetInfo
BmcRotManage	Yes for action GetInfo
CpldRotManage	Yes for action GetInfo
FpgaRotManage	Yes for action GetInfo

GetLockdownMode	Yes
GetCpuERoTInfo	Yes
UpdateCPUERoT	No
CPUERoTManage	Yes
GetGpuERoTInfo	Yes
[Health Management]	
ChassisIntrusion	No
CheckSensorData	Yes
CheckSelfTest	No
[System Event Log]	
GetEventLog	Yes
ClearEventLog	No
GetMaintenEventLog	Yes
ClearMaintenEventLog	No
[Motherboard FPGA Management]	
GetMotherboardFpgaInfo	Yes
UpdateMotherboardFpga	No
[Multi-Node Management]	
TpInfo	Yes for action GetInfo
GetMultinodeLcmcInfo	Yes
UpdateMultinodeLcmc	No
[Power Management]	
GetPsuInfo	No
DcmiManage	No for action SetMCID

Appendix F. Component Firmware Information

Component	Command		
	Get Information	Update Firmware	RoT Management
BIOS	GetBiosInfo	UpdateBios	BiosRotManage
BMC	GetBmcInfo	UpdateBmc	BmcRotManage
CPLD	GetCpldInfo	UpdateCpld	CpldRotManage
GPU	GetGpuInfo	UpdateGpu	N/A
Backplane storage CPLD	GetBackplaneCpldInfo	UpdateBackplaneCpld	N/A
AOM board CPLD	GetAomboardCpldInfo	UpdateAomboardCpld	N/A
Fan board CPLD	GetFanboardCpldInfo	UpdateFanboardCpld	N/A
PCIe Switchboard CPLD	GetSwitchboardCpldInfo	UpdateSwitchboardCpld	N/A
Motherboard FPGA	GetMotherboardFpgaInfo	UpdateMotherboardFpga	FpgaRotManage

Appendix G. Supported Platform Matrix for GetGpuInfo/UpdateGpu

The table below provides a mapping of GPU platforms to corresponding Supermicro product SKUs, along with the supported status of the GetGpuInfo and UpdateGpu commands on SAA UEFI. The GetGpuInfo command checks the detailed GPU information and the UpdateGpu command performs firmware updates on GPU components.

Platform	Supermicro product SKUs	GetGpuInfo	UpdateGpu
Intel PVC	SYS-821GV-TNR	X	X
Intel Gaudi 2	SYS-820GH-TNR2	X	X
Nvidia H100 DeltaNext	<ul style="list-style-type: none">SYS-821GE-TNHRAS-8125GS-TNHR	V	V
Nvidia H100 4-GPUs 40 GB/80 GB	SYS-420GP-TNAR	X	X
Nvidia A100 Delta	<ul style="list-style-type: none">SYS-420GP-TNARAS-4124GO-NART	X	X
Nvidia A100 Redstone	<ul style="list-style-type: none">SYS-421GU-TNXRSYS-420GU-TNXRSYS-220GQ-TNARAS-2124GQ-NART	X	X

Appendix H. MGX(CG1) Platform Supported Command Table

The table below provides a scoped list of commands that are supported on MGX(CG1) platforms.

Component	Command		
	Get Information	Update Firmware	RoT Management
BIOS	GetBiosInfo	UpdateBios	BiosRotManage
BMC	GetBmcInfo	UpdateBmc	BmcRotManage
GPU	GetGpuInfo	UpdateGpu	N/A
Backplane storage CPLD	GetBackplaneCpldInfo	UpdateBackplaneCpld	N/A
AOM board CPLD	GetAomboardCpldInfo	UpdateAomboardCpld	N/A
Miscellaneous CPLD	GetMiscCpldInfo	UpdateMiscCpld	N/A
Motherboard FPGA	GetMotherboardFpgaInfo	UpdateMotherboardFpga	FpgaRotManage
CPU ERoT	GetCpuErotInfo	UpdateCpuErot	CpuERotManage
GPU ERoT	GetGpuErotInfo	N/A	N/A

Appendix I. BMC Password Rule

I.1.1 Platforms X12/H12 and Later (Excluding H12 Non-RoT Systems)

New password rules have been applied to X12/H12 and later platforms, excluding H12 non-RoT systems. You must use the following rules to create a BMC password.

- The password cannot be reverse of or the same as user name.
- The password length is limited to 8 to 19 characters.
- The password must include characters from at least three of the following categories:
 - Alpha a-z
 - Alpha A-Z
 - Numeric 0-9
 - Special characters

The following table lists all supported special characters.

~	`	!	@	#	\$	%	^
&	*	()	-	_	=	+
[{]	}	\		;	,
<	.	>	/	?			

I.1.2 Ampere OpenBMC Platforms

New password rules have been applied to Ampere OpenBMC systems. You must use the following rules to create a BMC password.

- The password cannot be reverse of or the same as user name.
- The password length is limited to 8 to 20 characters.

- The password must include characters from at least three of the following categories:
 - Alpha a-z
 - Alpha A-Z
 - Numeric 0-9
 - Special characters

The following table lists all supported special characters.

`	!	@	#	\$	%	^	&
*	()	-	_	=	+	[
{]	}	\		;	,	<
.	>	/	?				

Contacting Supermicro

Headquarters:

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)

Website: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Website: www.supermicro.nl

Asia-Pacific

Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 235
Taiwan (R.O.C.)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: support@supermicro.com.tw

Website: www.supermicro.tw