



**Supermicro Update Manager  
(SUM)  
User's Guide**

**Revision 1.6**

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## Version History

Date	Rev	Description
July-02-2013	1.0	1. Created this document.
July-30-2013	1.0a	1. Revised the software description of SUM and SMCIPMITool.jar in <a href="#">1.2.1 Remote Management Server Requirements</a> .
September-12-2013	1.1	1. Added in-band Usage related sections. 2. Changed the command LoadFactoryDefault to LoadDefaultBiosCfg.
October-02-2013	1.2	1. Added Get/Change DMI information capability. 2. Added multi-system usage for OOB channel. 3. Eliminated --me_type option for the in-band UpdateBios command. 4. In-band UpdateBios command supports X10 MB.
January-06-2014	1.2a	1. Required BMC firmware and IPMI driver to be installed for all in-band commands except the UpdateBios command. 2. Required product key to be activated for all in-band commands except the UpdateBios command. 3. Added the summary of running multiple systems. 4. Added exit code 80. Description: Product key is not activated.
June-09-2014	1.3	Major revision with new management command groups.  1. Added BMC Management commands: GetBmcInfo, UpdateBmc, GetBmcCfg, ChangeBmcCfg.  2. Added System Check commands: CheckAssetInfo, CheckSensorData, CheckSystemUtilization.  3. Added System Event Log commands: GetEventLog and ClearEventLog.  4. Added in-band-usage for ActivateProductKey command.  5. Added exit code 68. Description: Invalid BMC configuration text file.

		6. Added exit code 69. Description: Invalid asset information.
July-31-2014	1.4	<p>1. Added Application commands: TpmProvision, MountIsoImage, UnmountIsoImage.</p> <p>2. For X10 Grantley platform, in-band update bios requires --reboot option.</p> <p>3. Revised CheckSystemUtilization output message for HDD/Network.</p> <p>4. Revise output message for CheckAssetInfo: units format matches dmidecode outoput.</p> <p>5. Added exit code 36. Required device does not exist.</p> <p>6. Added exit code 37. Required device does not work.</p> <p>7. Added notices for exit code when using in-band command with --reboot option through ssh connection.</p>
Feb-06-2015	1.4a	<p>1. Added a notice for in-band UpdateBios command for jumper-less solution: You sshould use default OS when multi-boot is installed.</p> <p>2. Changed the TpmProvision command: cleartpm option should be used with --image_url option.</p> <p>3. Added support for checking SFT-SUM and SFT-DCMS-Single node product key.</p> <p>4. Added a notice for In-band UpdateBios command: The command will disable some functions in OS, but they will be recovered after OS reboot.</p> <p>5. Added a notice for in-band UpdateBios using ssh connection: Change the timeout length for both ssh client and server site to be two times longer than the typical time length of execution.</p> <p>6. Changed the name "Product Key" to "Node Product Key".</p> <p>7. Added exit code 11. Invalid command line data.</p> <p>8. Added the notice of using the CheckSensorData command output.</p> <p>9. Updated the CheckAssetInfo command output: adding the CPU version field and changing the name "Network Interface" to "Add-on Network Interface".</p>

		<p>10. Added <i>Appendix C: Platform Feature Support Matrix</i>.</p> <p>11. Added the OS architecture information in the CheckSystemUtilization command output message.</p> <p>12. Added a reminder for In-band Windows driver setup.</p>
July-23-2015	1.5	<p>1. Added in-band support for BMC management commands: GetBmcInfo, UpdateBmc, GetBmcCfg, and ChangeBmcCfg.</p> <p>2. Added in-band support for EventLog management commands: GetEventLog and ClearEventLog.</p> <p>3. Added in-band support for CheckOOBSupport command.</p> <p>4. Removed requirement of actool.</p> <p>5. Removed JAVA environment requirement for all commands, except OOB UpdateBios and UpdateBmc commands.</p> <p>6. Changed the ActivateProductKey command: supports 344 bytes node product key format.</p> <p>7. Added Key management commands: QueryProductKey, ClearProdcutKey.</p> <p>8. Added a BIOS management command: EditDmiInfo.</p> <p>9. Added Appendix D Third-Party Software.</p> <p>10. Added the log support when rare exceptions occurred.</p> <p>11. Added exit code 12: Function access denied.</p>
January-28-2016	1.6	<p>1. Supported X11 platform.</p> <p>2. Removed JAVA requirement.</p> <p>3. Supported FreeBSD OS for FreeBSD 7.1 x86_64 or later.</p> <p>4. Supported RHEL4 OS for RHEL4u3 x86_64 or later</p> <p>5. Added auto-activation feature using credential files</p> <p>6. Added --overwrite_cfg and --overwrite_sdr option for UpdateBmc command.</p> <p>7. In-Band UpdateBios supported MEDisabling feature which has similar</p>

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	<p>procedure as original jumperless procedure that requires twice reboot.</p> <p>8. Added HTTP image server support for MountIsoImage and TpmProvision commands.</p> <p>9. Added exit code 38: Function is not supported.</p> <p>10. Added Feature Toggled On information in CheckOOBSupport command output.</p> <p>11. Third-Party Software: Removed ipmitool/JLine. Added openssl/libcurl.</p> <p>12. In-Band jumperless procedure show full log path when twice reboot is needed.</p> <p>13. Removed TAS from package. Added TAS requirement note.</p>
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# 1 Overview

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The Supermicro Update Manager (SUM) can be used to manage the BIOS and BMC firmware image update and configuration update for select Supermicro systems. In addition, system checks as well as event log management are also supported. Moreover, special applications are also provided to facilitate system management. To update configurations, users can edit system BIOS settings, DMI information and BMC configurations from readable text files, as well as use this update manager to apply these configurations.

Two channels are possible for management: the OOB (Out-Of-Band) channel, i.e. communication through the BMC IPMI interface, and the in-band channel, i.e. communication through the local system interfaces. By the OOB channel, most management commands (except CheckSystemUtilization) can be executed independently of the OS on the managed system and even before the system OS is installed.

## 1.1 Features

- Command-line interfaced (CLI) and scriptable
- Independent from operating system on managed systems (for OOB usage)
- Operates through OOB (Out-Of-Band) and in-band methods
- Supports concurrent execution of OOB commands on multiple systems through a system list file
- System Check
  - Checks asset device information remotely
  - Checks asset device health remotely
  - Checks system utilization remotely
- BIOS Management
  - Pre-checks system board ID to prevent flashing the wrong BIOS image
  - Supports readable BIOS settings text files
  - Supports readable DMI information text file to be edited
  - Updates basic input/output system (BIOS) ROM remotely and locally
  - Jumperless update of ME Flash Descriptor (FDT) region when locally update BIOS ROM
  - Updates BIOS configurations (settings) remotely and locally
  - Updates DMI information remotely and locally

- BMC Management
  - Supports readable BMC settings text files in xml format
  - Updates BMC firmware remotely and locally
  - Updates BMC configuration remotely and locally
- System Event Log
  - Retrieves and clears BMC and BIOS event logs remotely and locally
- Applications
  - Enable/disable trusted execution technology (TXT) features from trusted platform module (TPM)
  - Mount/Unmount ISO image file from SAMBA/HTTP-shared folder

## 1.2 Operations Requirements

### 1.2.1 OOB Usage Requirements (Remote Management Server)

To run remote update operations, you must meet the following requirements:

System Requirements:

Environment	Requirements
Hardware	50 MB free disk space
	128 MB available RAM
	Ethernet network interface card
Operating System	Linux: Red Hat Enterprise Linux Server 4 Update 3 (x86_64) or later Windows: Windows Server 2008 (x86_64) or later FreeBSD: FreeBSD 7.1 (x86_64) or later

The software you should have in advance:

Program/Script	Description
SUM	The main program for SUM

### 1.2.2 Extra OOB Usage Requirements (Remote Management Server)

N/A

### 1.2.3 OOB Usage Requirements (Managed Systems)

SUM can remotely manage the selected Supermicro motherboards/systems. Before use, you must activate the node product key for the managed systems. For details, see [3. Licensing Managed Systems](#).

In addition, both the BMC firmware and BIOS ROM must meet the following requirements.

Firmware	Requirements
BMC Version	X9 ATEN platform (SMT_X9): 3.14 or later X10 ATEN platform (SMT_X10): 1.52 or later X11 ATEN platform (SMT_X11): 1.00 or later X9 AMI platform (SMM_X9): 2.32 or later
BIOS Version	Version 2.0 or later for select X9 Romley and X10 Denlow systems Version 1.0 or later for select X10 Grantley/X11 systems

The TPM provision command requires TPM ISO files.

Program/Script	Description
TPM_20151105.zip	ReleaseNote.txt Release note for TPM ISO images usage DOS/TPM_DOS_20151105.ISO Image for Greenlow platform with TPM 1.2 DOS/TPM_DOS_Lock_20151105.ISO Lock Image for Greenlow platform with TPM 1.2 EFI/TPM_20151105.ISO Image for Grantley platform with TPM 1.2 EFI/TPM_Lock_20151105.ISO Lock Image for Grantley platform with TPM 1.2

The CheckSystemUtilization command requires additional packages to be installed on the managed system.

Program/Script	Description	Privilege Requirement
TAS_1.0.1_20150605.zip	A Thin Agent Service (TAS) program to	To install and execute, TAS needs the root privilege of the

	be installed on the managed systems  Collect utilization information on managed system and update information to BMC	operating system running on the managed system.
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Below OS and tools are pre-requisite for TAS to be installed successfully on the managed system.

OS	Supported OS list	Program/Script
Windows	Windows 2k8 R2 SP1 Windows 2012 R2	.Net framework 3.5 <a href="#">smartmontools</a> 6.2
Linux	RHEL 6.5 RHEL 7.0 SLES 11 SP3 Ubuntu 14.04 LTS CentOS 6.5	ethtool package 2.6.33 openlpmi driver smartmontools 5.42 glibc 2.12

Below firmware is pre-requisite for TAS to run successfully on the managed system.

Firmware	Requirements
BMC Version	X10 ATEN platform (SMT_X10) : 1.58 or later  X11 ATEN platform (SMT_X11) : 1.00 or later

### 1.2.4 In-Band Usage Requirements

With the use of in-band, SUM can perform BIOS/BMC/EventLog 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	BIOS Version 3.0 or later for X9 Romley and X10 Denlow select systems.
	BIOS Version 1.0 or later for X10 Grantley/X11 select systems.
Operating System	Red Hat Enterprise Linux Server 4 updates 3 (x86_64) or later.

	Windows: Windows Server 2008 (x86_64) or later FreeBSD: FreeBSD 7.1 (x86_64) or later
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#### Notes:

- Though SUM can be run on Red Hat Enterprise Linux Server 4 updates 3 or later, several OS might not be supported by hardware. Please check below link for OS support list. [OS compatibility support list.](#)

#### Execution Privilege Requirements:

Privilege	Description
SUM Execution Privilege	To execute in-band functions, SUM needs the root/Administrator privilege of the operating system running on the managed system.

The software you should get in advance:

OS	Program/Script	Description
Linux/Windows/FreeBSD	SUM	The main program for SUM

The drivers you should get in advance: (unless “InBand SMI E7h” support is noted in BIOS ReleaseNote and sum is executed in Linux OS). Currently, we do not support driver usage for FreeBSD OS.

OS	Program/Script	Description
Windows (x86_64)	driver/pmdll64.dll driver/phymem64.sys	Sends/Receives data to/from BIOS
Red Hat. Enterprise Linux Server n.x (x86_64)	RHLn_x86_64/sum_bios.ko	n = 4, 5, 6, or 7 Sends/Receives software SMI data to/from BIOS



#### Notes:

- For Windows 2008 (Win7) server, Windows driver requires Windows patch #3033929. <https://technet.microsoft.com/en-us/library/security/3033929.aspx>  
Click below link to download the patch  
<https://www.microsoft.com/en-us/download/confirmation.aspx?id=46083>



### 1.2.5 Additional In-Band Usage Requirements

For in-band commands (except for GetBiosInfo and UpdateBios), the managed system must have BMC firmware and an IPMI driver installed. The BMC firmware should meet the following requirements.

Firmware	Requirement
BMC Version	X9 ATEN platform (SMT_X9): 3.14 or later X10 ATEN platform (SMT_X10): 1.19 or later X11 ATEN platform (SMT_X11): 1.00 or later X9 AMI platform (SMM_X9): 2.32 or later

The drivers you should get in advance:

OS	Program/Script	Description
Red Hat. Enterprise Linux Server 4u3 or later (x86_64)/ FreeBSD 7.1 or later (x86_64)	built-in IPMI driver	Sends/Receives data to/from BMC
Windows (x86_64)	driver/superdll_ss m64.dll driver/superbmc. sys	Sends/Receives data to/from BMC/

If the Linux/FreeBSD OS does not have the built-in IPMI driver, you should install the following software:

Program/Script	Description
OpenIPMI.x86_64	IPMI driver for accessing BMC through its KCS interface

## 1.3 Typographical Conventions

This manual uses the following typographical conventions.

`Courier-New font size 10` represents Command Line Interface (CLI) instructions in Linux terminal mode.

**Bold** is used for keywords needing attention.

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*Italics* is used for variables and section names.

<> encloses the parameters in the syntax description.

[shell]# represents the input prompt in Linux terminal mode.

| A vertical bar separates the items in a list.

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## 2 Installation and Setup

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### 2.1 Installing SUM

To install SUM in Linux/FreeBSD OS, follow these steps. Windows installation and usage is similar.

1. Extract the `sum_x.x.x_Linux_x86_64_YYYYMMDD.tar.gz` archive file.
2. Go to the extracted `sum_x.x.x_Linux_x86_64` directory. Name this directory as “SUM\_HOME”.
3. Run SUM in the SUM\_HOME directory.

Linux Example:

```
<shell#> tar xzf sum_x.x.x_Linux_x64_YYYYMMDD.tar.gz
```

```
<shell#> cd sum_x.x.x_Linux_x86_64
```

```
<SUM_HOME#> ./sum
```

### 2.2 Setting Up OOB Managed Systems

To set up OOB managed systems, follow these steps:

1. Connect the BMC to the LAN.
2. Update the BMC firmware in the managed systems to support OOB functions (if the current version does not support it). Note that you can use the SUM `UpdateBmc` command to flash BMC firmware even when BMC does not support OOB functions.
3. Flash the BIOS ROM to the managed systems to support OOB functions (if the current version does not support it). Note that you can use the SUM `UpdateBios` command (either in-band or OOB) to flash BIOS even when BIOS does not support OOB functions. However, when using an OOB channel, if the onboard BIOS or the BIOS image file does not support OOB functions, the DMI information (such as the MB serial number) might be lost after system reboot.
4. Install the TAS package on the OS of the managed system (for `CheckSystemUtilization` command only).

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### 2.2.1 Installing TAS package

TAS package (TAS\_1.0.1\_20150605.zip) can be acquired from Supermicro. Only Windows and Linux platforms are supported. To install TAS, follow below steps.

1. Copy the TAS\_1.0.1\_20150605.zip package to the operation system (OS) of managed system
2. Extract the TAS\_1.0.1\_20150605.zip archive file. Two archive files will be created. One, e.g., win.zip, for Windows systems; the other, e.g., linux.tar.gz, for Linux systems. One additional readme file will be created. You can check the INSTALLATION section in the readme file or follow below steps.
3. Install TAS pre-requisite tools listed in [1.2.2 OOB Usage Requirements \(Managed Systems\)](#)
4. For Windows systems,
  - a. Extract the file win.zip
  - b. Select correct system architecture. For x86\_64/x86\_32 system, select folder 64/32.
  - c. Run setup.exe
4. For Linux systems,
  - a. Extract the file linux.tar.gz
  - b. Select correct system architecture
  - c. Run install.sh

Example: for x86\_64 Linux system

```
<shell#> tar xzf linux.tar.gz
```

```
<shell#> cd 64
```

```
<shell#> ./install.sh
```

## 2.3 Setting Up In-Band Managed Systems

For Windows OS, no action is required. As a reminder, if the version of the currently installed Windows driver is old, SUM would stop TAS/SD5, load a new driver and restart TAS/SD5. For Linux OS, the following actions are required unless “InBand SMI E7h” support is noted in BIOS ReleaseNote. If E7h is not supported

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by BIOS, to set up the Linux in-band managed systems, simply copy and paste the OS specific driver file "sum\_bios.ko", under the SUM\_HOME/driver directory, to the SUM\_HOME directory.

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## 3 Licensing Managed Systems

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Each node is licensed by a product key. To access most SUM functions, it is required that a managed system activates the node product keys. To view a complete list of these functions, please refer to [Appendix B. Management Interface and License Requirements](#). Product key activation is not required on the management server running SUM. The node product key is binding in the MAC address of the BMC LAN port. Two license key formats are supported: xxxx-xxxx-xxxx-xxxx-xxxx-xxxx for SFT-OOB-LIC and a 344-byte ASCII string for the other node product keys.

The following sections describe the steps for activation. First, you can receive the node product keys from Supermicro as in [3.1 Receiving Node Product Keys from Supermicro](#). With these node product keys, you can then activate these systems as described in [3.2 Activating Managed Systems](#).

SUM also provided auto-activation methods for customer usage. For this usage please refer to

### 3.1 Receiving Node Product Keys from Supermicro

To receive node product keys from Supermicro, follow these steps:

1. Collect BMC MAC address and list them in one file, e.g., mymacs.txt.

Example:

```
003048001012
003048001013
003048001014
```

2. Send this file (mymacs.txt) to Supermicro to obtain a node product key file (mymacs.txt.key). The node product key file includes the MAC address and node product key.

Example:

```
003048001012;1111-1111-1111-1111-1111-1111-1111
003048001013;2222-2222-2222-2222-2222-2222-2222
003048001014;3333-3333-3333-3333-3333-3333-3333
```

---

## 3.2 Activating Managed Systems

To activate a single system, see [5.1.1 Activating a Single Managed System](#). To simultaneously activate multiple systems see [6.2.1 Activating Multiple Managed Systems](#).

## 3.3 Auto-Activating Managed Systems

Sometimes, activation product key is a burden on customers. To relief customer from activating product keys, SUM provides an auto-activation feature to do activation automatically. Follow below steps to do auto-activation.

1. Receive Credential file (cred.bin) from Supermicro by providing the MAC address list (mymac.txt) which can be obtained by Step1 of [3.1 Receiving Node Product Keys from Supermicro](#)
2. Put the Credential file into SUM\_HOME/credential directory
3. SUM will auto-activate product key from cred.bin when running license related commands.

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## 4 Basic User Interface

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SUM is a binary executable file, which is written in C++ language. Running this file on either Windows or Linux/FreeBSD is similar. In this document, we only provide you with the examples of running on Linux. To display the usage information, use this command:

```
<SUM_HOME#> ./sum
```

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

```
sum -h -c <command name>
```

Example:

```
<SUM_HOME#> ./sum -h -c UpdateBios
```

### Usage Information

Options	Description
-h	Shows help information
-v	Displays the verbose output on the screen
-i	<BMC IP address or BMC host name>
-l	<BMC system list file name>
-u	<BMC user ID>
-p	<BMC user password>
-c	<command name> (case insensitive)

System Check	
Commands	Long options
CheckOOBSupport	None
CheckAssetInfo <b>(OOB only)</b>	None
CheckSensorData <b>(OOB only)</b>	None
CheckSystemUtilization <b>(OOB only)</b> (TAS thin agent required)	None
Key Management	
Commands	Long options
ActivateProductKey	--key <node product key value>



	Uses the node product key to activate the managed system.
QueryProductKey	None
ClearProductKey	--key_index <node product key index> The index of the key to be cleared --key_name <node product key name> The name of the key to be cleared Valid key name: OOB, SSM , SD5 , SUM , SPM , SCM , DCMS , DCMS-SITE (Either --key_index or --key_name is required)
<b>BIOS Management</b>	
<b>Commands</b>	<b>Long options</b>
UpdateBios	--file <file name> Updates with the given BIOS image file. --reboot Forces the managed system BIOS to reboot. (Required) For in-band usage when JPME2LESS or MEDisabling feature is supported(since X10 Grantley platform) (Optional) For other usages. --flash_smbios (Optional) Overwrites SMBIOS data. This option is used only for specific purposes. Unless you are familiar with SMBIOS data, do not use this option. --preserve_mer (Optional) Preserves ME firmware region. This option is used only for specific purposes. Unless you are familiar with ME firmware, do not use this option. --preserve_nv (Optional) Preserves NVRAM. This option is used only for specific purposes. Unless you are familiar with BIOS NVRAM, do not use this option.
GetBiosInfo	--file <file name> (Optional) Shows the information of the given BIOS image file.
GetDefaultBiosCfgTextFile	--file <file name> Saves the default BIOS configurations to a file. --overwrite (Optional) Overwrites the output file.
GetCurrentBiosCfgTextFile	--file <file name> Saves the current BIOS configurations to a file. --overwrite (Optional) Overwrites the output file.
ChangeBiosCfg	--file <file name> Updates with the given BIOS configuration file. --reboot (Optional) Forces the managed system to reboot or power up.
LoadDefaultBiosCfg	--reboot (Optional) Forces the managed system to reboot or power up.
GetDmiInfo	--file <file name>

	<p>Saves the current DMI information to a file.</p> <p>--overwrite (Optional) Overwrites the output file.</p>
EditDmiInfo	<p>--file &lt;file name&gt; The DMI information file to be edited (created when it does not exist).</p> <p>--item_type &lt;item type&gt; Specifies the item type name.</p> <p>--item_name &lt;item name&gt; Specifies the item name.</p> <p>--shn &lt;short name&gt; Specifies the item in short name format.</p> <p>--value &lt;assignment value&gt; Assigns the value to the item.</p> <p>--default Assigns the default value to the item.</p> <p>Notes:</p> <ol style="list-style-type: none"> <li>1. Either [--item_type, --item_name] or [--shn] is required.</li> <li>2. Either [--value] or [--default] is required.</li> </ol>
ChangeDmiInfo	<p>--file &lt;file name&gt; Updates from the given DMI information file.</p> <p>--reboot (Optional) Forces the managed system to reboot or power up.</p>
<b>BMC Management</b>	
<b>Commands</b>	<b>Long options</b>
UpdateBmc	<p>--file &lt;file name&gt; Updates with the given BMC image file.</p> <p>--overwrite_cfg (Optional) Overwrites current BMC configurations including network settings using factory default values in the given BMC image file. This might cause IPMI connection lost. For ATEN BMC FW or AMI Hermon BMC FW, this option requires --overwrite_sdr option.</p> <p>--overwrite_sdr (Optional) Overwrites current BMC SDR data For AMI BMC FW, this option requires --overwrite_cfg option.</p>
GetBmcInfo	<p>--file &lt;file name&gt; (Optional) Shows the information of the given BMC image file.</p>
GetBmcCfg	<p>--file &lt;file name&gt; Saves the current BMC configuration to a file.</p> <p>--overwrite (Optional) Overwrites the output file.</p>
ChangeBmcCfg	<p>--file &lt;file name&gt; Updates from the given BMC configuration file.</p>
<b>System Event Log</b>	

Commands	Long options
GetEventLog	--file <file name> (optional) Saves the system event log to a file. If this option is not used, the log will be shown on the screen output.
ClearEventLog	--reboot (Optional) Forces the managed system to reboot or power up.
<b>Applications (OOB Only)</b>	
Commands	Long options
TpmProvision	--reboot --image_url <URL> The URL to access the shared image file SAMBA URL: 'smb://<host name or ip>/<shared point>/<file path>' SAMBA UNC: '\\<host name or ip>\<shared point>\<file path>' HTTP URL: 'http://<host name or ip>/<shared point>/<file path>' --id <ID> (optional) The specified ID to access the shared file --pw <Password> (optional) The specified password to access the shared file --cleartpm (optional)
MountIsoImage	--image_url <URL> The URL to access the shared image file SAMBA URL: 'smb://<host name or ip>/<shared point>/<file path>' SAMBA UNC: '\\<host name or ip>\<shared point>\<file path>' HTTP URL: 'http://<host name or ip>/<shared point>/<file path>' --id <ID> (optional) The specified ID to access the shared file --pw <Password> (optional) The specified password to access the shared file
UnmountIsoImage	None



#### Notes:

- During execution, DO NOT remove the AC power on the managed system.
- DO NOT flash IPMI firmware and BIOS at the same time.
- To execute SUM, use either the relative path method, e.g. ./sum or absolute path method, e.g. /opt/sum\_x.x.x\_Linux\_x64/sum in script file or shell command line.
- DO NOT update BIOS image and configuration to the same managed system concurrently by in-band and OOB method.
- For in-band usage, simply ignore the -i, -u and -p options.
- For concurrent execution of OOB commands for managing multiple systems, use the -l option. For details on how to manage multiple systems, see [6 Managing Multiple](#)

---

### Systems (OOB Only).

- When rare exceptions occur, a log file *sum.log* will be created in SUM\_HOME directory. Information of the rare exceptions will be logged in that file for later investigation.
  - For --reboot option in OOB usage, if target OS does not support software shutdown, system will be forced powered off and then powered up. Please make sure usage of this option to avoid data lost. For RedHat 7.x OS, to enable software shutdown support, we can run below command in console prompt.  
gsettings set org.gnome.settings-daemon.plugins.power button-power shutdown
- 

## 4.1 Format of BIOS Settings Text File

The BIOS settings file is designed to display the BIOS setup menu in text format for easier configurations. An example below shows how this file demonstrates BIOS setup items. Each setup item consists of a variable, a value, options and dependency.

```
[Advanced|CPU Configuration|CPU Power Management Configuration]
```

```
Power Technology=01    // 00 (Disabled), *01 (Energy Efficient), 02 (Custom)
```

```
EIST=01                // 00 (Disabled), *01 (Enabled)          Power Technology =  
"Custom"
```

```
Turbo Mode=01          // 00 (Disabled), *01 (Enabled)          Power Technology =  
"Custom" and EIST = "Enabled"
```

```
C1E Support=01         // 00 (Disabled), *01 (Enabled)          Power Technology =  
"Custom"
```

- A setup submenu is quoted by brackets. Setup items are next to the setup submenu.
- A variable (of one setup item) always stays at the left side of the "=" character.
- A value (of one variable) always stays at the right side of the "=" character.
- Options (of one variable) shown after "//". "\*" indicates the default option.
- A dependency (if available) will be separated from an option command by eight spaces. It indicates that the variable is visible and configurable when other variable(s) are set to a designated value.

---

In this example, the *Power Technology* configuration item is in the *CPU Power Management* configuration submenu. It is currently set to 01 for Energy Efficient (the default) and can be set to 00 and 02 as well. The *EIST* variable is equal to 01 for Enabled (the default) and can be set to 00 when the *Power Technology* variable is set to Custom (02).

If the desired changes are limited to the *Power Technology* configuration, delete all except the two lines shown as below:

```
[Advanced|CPU Configuration|CPU Power Management Configuration]
```

```
Power Technology=01      // 00 (Disable), *01 (Energy Efficient), 02 (Custom)
```



**Notes:**

- You can remove unnecessary menu items (or variables) so that its value will not be changed after an update.
- If all menu items are removed (or the file becomes empty), no configurations are changed.
- The Setup submenu is required in order to setup following items.

---

## 4.2 Format of DMI Information Text File

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-valued items.
- Do not use quotation marks for non-string-valued items.
- The value type is always shown after a value and begins with "/".
- The value meanings for a non-string-valued 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-valued 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-valued 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 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 SUM according to the BIOS of the managed system for DMI version control.
-

---

## 4.3 Format of the BMC Configuration Text File

The BMCCfg.xml file is designed to display the supported editable BMC configuration elements in xml text format for easier update. An example below shows how this file demonstrates the BMC configurable elements.

```
<?xml version="1.0"?>
<BmcCfg>
  <!--You can remove unnecessary elements so that-->
  <!--their values will not be changed after update-->
  <StdCfg Action="None">
    <!--Supported Action:None/Change-->
    <!--Standard BMC configuration tables-->
    <FRU Action="Change">
      <!--Supported Action:None/Change-->
      <Configuration>
        <!--Configuration for FRU data-->
        <BoardMfgName>Supermicro</BoardMfgName>
        <!--string value, 0~16 characters-->
      </Configuration>
    </FRU>
  </StdCfg>
  <OemCfg Action="Change">
    <!--Supported Action:None/Change-->
    <!--OEM BMC configuration tables-->
    <ServiceEnabling Action="Change">
      <!--Supported Action:None/Change-->
      <Configuration>
        <!--Configuration for ServiceEnabling-->
        <HTTP>Enable</HTTP>
        <!--Enable/Disable-->
      </Configuration>
    </ServiceEnabling>
  </OemCfg>
</BmcCfg>
```



- 
- The xml version is shown in the first line.
  - The root table name is "*BmcCfg*". Its name tag pair is *<BmcCfg>* and *</BmcCfg>*. All information belongs to the root table is enclosed in-between this name tag pair.
  - There could be two children for the root table: "*StdCfg*" and "*OemCfg*".
  - "*StdCfg*" and "*OemCfg*" could have child tables.
  - Configurable elements are listed in the "*Configuration*" part of each child table.
  - Each configurable element has a name tag pair. The element value is enclosed by its name tag pair.
  - Comments could be given following any element or table name tag. Each comment is enclosed by "*<!--*" and "*-->*" tags. The supported usage of each element and table are shown in its following comments.
  - Configuration tables could have "*Action*" attribute. Supported actions are shown in the comments. If action is "*None*", all the configuration and children of this table will be skipped.
  - Configuration tables could contain more table specific attributes in case needed.

In this example, the *Action* is *None* for the *StdCfg* table. As such, SUM will skip updating the element *BoardMfgName* of the table *FRU*. On the other hand, SUM will try to update the value as *Enable* for the *HTTP* element of the *ServiceEnabling* table in the *OemCfg* table.



**Notes:**

- Child tables or configurable elements can be deleted to skip update for these tables or configuration elements.
  - Child tables or configurable elements cannot be left alone without parents.
  - XML version line and the root table should not be deleted.
-

---

## 5 Managing a Single System

---

In this chapter, we describe basic user operations for managing a single system, either through the OOB channel or, if applicable, through the in-band channel. In-band channel usage is similar to OOB usage except for several differences:

1. For in-band usage, do not use the -i, -u, -p options.
2. For in-band usage, supported commands and their node product key requirement could be different (see [Appendix B. Management Interface and License Requirements](#)).
3. A Linux driver could be required for in-band usage. For details, please see [2.3 Setting Up In-Band Managed Systems](#). If a Linux driver is required, and you are executing SUM in this server for the first time, you have to copy and paste the OS specific driver file "sum\_bios.ko" under the SUM\_HOME/driver directory to the SUM\_HOME directory. For example, if the OS is RHEL 5.x. execute

```
<SUM_HOME#> cp ./driver/RHL5_x86_64/sum_bios.ko ./
```

### 5.1 Key Management for a Single System

#### 5.1.1 Activating a Single Managed System

To activate systems individually, follow these steps by using the command "ActivateProductKey".

1. Obtain a node product key from Supermicro. See [3.1 Receiving Product Keys from Supermicro](#).
2. Use the following SUM command.

Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c ActivateProductKey --  
key <nodeproductkey>
```

Example:

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ActivateProductKey --  
key 1111-1111-1111-1111-1111-1111
```

---

**In-Band:**

```
<SUM_HOME#> ./sum -c ActivateProductKey --key 1111-1111-1111-1111-1111-1111
```

## 5.1.2 Querying the Node Product Keys

To query the node product keys activated in the managed system, use the command “QueryProductKey.”

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c QueryProductKey
```

**Example:****OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c QueryProductKey
```

**In-Band:**

```
<SUM_HOME#> ./sum -c QueryProductKey
```

The console output contains the information below. Each line is a node product key that has been activated in the managed system. In each line, the first field is the key index while the second field is the key name. Except for the OOB key, all keys have extra fields describing detailed attributes.

```
[0] OOB
[1] DCMS, version: none, invoice: none, creation date: 2014/03/10 09:51:38(Key
is good.)
[2] SUM, version: none, invoice: none, creation date: 2014/09/10 09:51:38(Key is
expired.)
Number of product keys: 2
```

## 5.1.3 Clearing Node Product Key

To clear the node product keys activated in the managed system, use the command “ClearProductKey”.

Before executing the “ClearProductKey command,” query the existing NodeProductKeyName and NodeProductKeyIndex values from the output of the command “QueryProductKey”(see [5.1.2 Querying Node Product Key](#)).

**Syntax:**

---

```
sum [-i <IP or host name> -u <username> -p <password>] -c ClearProductKey --  
key_name <NodeProductKeyName>
```

```
sum [-i <IP or host name> -u <username> -p <password>] -c ClearProductKey --  
key_index <NodeProductKeyIndex>
```

Example:

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ClearProductKey --  
key_name SUM
```

**In-Band:**

```
<SUM_HOME#> ./sum -c ClearProductKey --key_index 1
```

In the OOB example, the SUM key will be cleared. In the In-band example, the key with index 1 will be cleared.



**Notes:**

- There is no one-to-one mapping between key name and key index.
- 

## 5.2 System Checks for a Single System

### 5.2.1 Checking OOB Support

Use the command “CheckOOBSupport” to check if both BIOS and BMC firmware support OOB functions.



**Notes:**

- If your BMC does not support OOB functions, you can update the BMC firmware using the SUM UpdateBmc command.
  - To update the BIOS in the managed system to support OOB functions, you can use the SUM UpdateBios command (either in-band or OOB) to flash BIOS even when BIOS does not support OOB functions. For details, see [5.3.2 Updating the BIOS Image](#). However, when using OOB channel, if the onboard BIOS or the BIOS image file does not support OOB functions, the DMI information, such as MB serial number, might get lost after
-

- 
- 
- system reboot.
  - If Feature Toggled On is No, all licensed features will be turned OFF and Node Product Key Activated will be N/A.
- 

#### Known Limitations:

- If we roll back BIOS from OOB-supported version to non-supported version, the information for “BIOS build date” and “OOB support in BIOS” fields will not be changed accordingly.

#### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c CheckOOBSupport
```

#### Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c CheckOOBSupport
```

The console output contains the following information.

[KEY]

Node Product Key Activated.....OOB

Feature Toggled On.....YES

[BMC]

BMC FW Version.....02.41

BMC Supports OOB BIOS Config.....Yes

BMC Supports OOB DMI Edit.....Yes

[BIOS]

BIOS Board ID.....0660

BIOS Build Date.....2013/9/18

BIOS Supports OOB BIOS Config.....Yes

BIOS Supports OOB DMI Edit.....Yes

---

## 5.2.2 Checking Asset Information (OOB Only)

Use the command “CheckAssetInfo” to check the asset information for the managed system.

Syntax:

```
sum -i <IP or host name> -u <username> -p <password> -c CheckAssetInfo
```

Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c CheckAssetInfo
```

The console output contains the following information.

System

=====

Product Name: SuperPN

Version: 0123456789

Serial Number: SuperSN

UUID: 00000000-0000-0000-0000-002590FB9E40

Baseboard

=====

Product Name: SuperBPN

Version: 1.00

Serial Number: OM144S013179

CPU

===

[CPU(1)]

Family: Intel(R) Xeon(R) processor

Manufacturer: Intel

Version: Intel(R) Xeon(R) CPU E5-2650L v3 @ 1.80GHz

Current Speed: 2200 MHz

Enabled Cores: 12

---

Total Cores: 12

## Memory

=====

### [MEM(1)]

Locator: DIMMA1

Manufacturer: Hynix Semiconductor

Manufacturing Date (YY/WW): 14/05

Part Number: HMA41GR7MFR4N-TFT1

Serial Number: 101E199C

Size: 8192 MB

Speed: 2133 MHz

[MEM(2)] N/A

[MEM(3)] N/A

[MEM(4)] N/A

[MEM(5)] N/A

[MEM(6)] N/A

[MEM(7)] N/A

[MEM(8)] N/A

## Add-on Network Interface

=====

### [NIC(1)]

Product Name: Supermicro Network Adapter

Serial Number: 0123456789ABCDEFGH

Part Number: 0123456

MAC Address1: 002590E5AE3E

MAC Address2: 002590E5AE3F

Slot Number: 2

Slot Type: General Slot

## System Network Interface

---

=====

[ LAN (1) ]

MAC Address: 0025908334F6

[ LAN (2) ]

MAC Address: 0025908334F7

IPMI Network Interface

=====

[ IPMI ]

MAC Address: 002590885DD7



**Notes:**

- Items supported only since X10 Grantley platform and select systems: System: Version, UUID; CPU; BaseBoard; Memory; Add-on Network Interface.
  - Items generally supported: System: Product Name, Serial Number; System Network Interface; IPMI Network Interface.
- 

### 5.2.3 Checking Sensor Data (OOB Only)

Use the command “CheckSensorData” to check the sensor data for the managed system.



**Notes:**

- Supported sensors vary from motherboard to motherboard and firmware to firmware.
  - Since select X10 systems, network add-on card temperature can be retrieved.
  - For PS and Chassis Intru sensors, the “Reading” field is only used to debug. Users only need to check if the “Status” field shows “OK”.
- 

Syntax:

```
sum -i <IP or host name> -u <username> -p <password> -c CheckSensorData
```

Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c CheckSensorData
```



---

For CPU temperature sensor, the console output contains the following information.

Status	(#) Sensor	Reading	Low Limit	High Limit
OK	(4) CPU Temp	48C/118F	N/A	97C/207F

## 5.2.4 Checking System Utilization (OOB Only)

Use the command “CheckSystemUtilization” to check the device utilization status for the managed system.



### Notes:

- This command requires a TAS agent to be installed on the OS of the managed system.
- The OS of the managed system must be booted for the TAS agent to collect the real-time device utilization.
- This command is supported since X10 platforms and select systems

---

### Syntax:

```
sum -i <IP or host name> -u <username> -p <password> -c CheckSystemUtilization
```

### Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c CheckSystemUtilization
```

The console output contains the following information.

```
Time
====
    Last Sample Time: 2014-05-16_17:16:02

OS
==
    OS Name: RedHatEnterpriseServer
    OS Version: 6.4 x86_64

CPU
===
    CPU Utilization: 2.74 %
```

---

## Memory

=====

Memory Utilization: 8 %

## HDD(1)

=====

HDD name: /dev/sda

SMART Status: Ok

Total Partitions: 2

### [Partition(1)]

Partition Name: /dev/sda1

Utilization: N/A

Used Space: N/A

Total Space: 17.58 GB

### [Partition(2)]

Partition Name: /dev/sda2

Utilization: 22.01 %

Used Space: 3.62 GB

Total Space: 17.30 GB

## Network

=====

Total Devices: 2

### [NIC(1)]

Device Name: eth0

Utilization: <1 %

Status: up

### [NIC(2)]

Device Name: eth1

Utilization: 0 %

Status: down

---

## 5.3 BIOS Management for a Single System

### 5.3.1 Getting BIOS Image Information

Use the command “GetBiosInfo” to receive the BIOS image information from the managed system as well as the BIOS image file.

Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c GetBiosInfo [--file  
<filename>]
```

Example:

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c GetBiosInfo --file  
SMCI_BIOS.ROM
```

**In-Band:**

```
<SUM_HOME#> ./sum -c GetBiosInfo --file SMCI_BIOS.ROM
```

The console output contains the following information.

```
Managed system.....192.168.34.56  
    Board ID.....0660  
    BIOS build date.....2012/10/17  
Local BIOS image file....SMCI_BIOS.ROM  
    Board ID.....0660  
    BIOS build date.....2012/10/17
```

### 5.3.2 Updating the BIOS Image

Use the command UpdateBios with BIOS image file SMCI\_BIOS.rom to run SUM to update the managed system.

Syntax:

---

```
sum [-i <IP or host name> -u <username> -p <password>] -c UpdateBios --file  
<filename> [options...]
```

Option Commands	Descriptions
--reboot	Forces the managed system to reboot.
--flash_smbios	Overwrites SMBIOS data.
--preserve_mer	Preserves ME Firmware Region.
--preserve_nv	Preserves NVRAM.



#### Notes:

- When doing in-band UpdateBios command, SUM will disable watchdog and unload me/mei driver from the OS if exists.
- When using ssh connection to do in-band UpdateBios command, ssh timeout on both client and server side should be adjusted to avoid broken pipe during command execution. Typical execution time is within 30 minutes. Timeout value should be longer than 30 minutes.
- --reboot option is required for in-band usage since X10 Grantley platform. System might reboot once or twice depending on whether the Flash Descriptor (FDT) is identical between managed system and the updating image file. Different message will be shown on the screen in these two cases. If rebooted twice, a log file will be created as well in the directory /var/log/supermicro/. In Windows OS, the log will be created in SUM\_HOME/log/ directory. The file name will be accompanied with a timestamp, e.g., sum\_jumperless\_update\_YYYYMMDDhhmmss.log  
When FDT is the same, "FDT is same" message will be shown on the screen output. In such case, only one reboot is required. When FDT is different, "FDT is different" message will be shown on the screen output. In such case, twice reboot is required and full log file name will be shown on the screen output, such as "BIOS will be updated after system reboot, The update log will be save to /var/log/supermicro/sum\_jumperless\_update\_20151001085546.log"
- Since X11, some MB will support MEDisabling in-band UpdateBios feature. For this feature, twice reboot is always required. The screen output message will be "ME firmware is in normal mode currently". The full log file name will be shown on screen as well.
- When multiple boot is installed, we should use default boot OS to run this command so that when FDT is different, the jumper-less solution can continue updating BIOS after

---

the first reboot.

- OOB UpdateBios command does not support communication through AMI BMC FW. Please use SUM version 1.4.2 for it.
  - OOB UpdateBios command has not been supported for MBs that implemented client ME such as X11SAE-F, X11SAT-F, X11SSZ-(Q)F/LN4F, X11SBA-(LN4)F, C7-series.
  - For X9DRL MB, dmi information might not be kept after OOB BIOS Update.
- 

Example:

**OOB :**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c UpdateBios --file  
SMCI_BIOS.rom --reboot
```

**In-Band :**

```
<SUM_HOME#> ./sum -c UpdateBios --file SMCI_BIOS.rom --reboot
```



**Notes:**

- The OOB usage of this function is available when the BMC node product key is activated.
  - The in-band usage of this function does not require node product key activation.
  - The image can be successfully updated only when the board ID of the image file and the managed system are the same.
  - You have to reboot or power up the managed system for the changes to take effect.
  - When using an OOB channel, if the onboard BIOS or the BIOS image file does not support OOB functions, the DMI information, such as the motherboard serial number, might get lost after a system reboot.
  - DO NOT flash BIOS and IPMI firmware at the same time.
  - --preserve\_nv and --flash\_smbios cannot be used at the same time.
  - --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.
  - --preserve\_nv option is used to preserve BIOS NVRAM data. Unless you are familiar with BIOS NVRAM, do not use this option.
  - --preserve\_mer option is used to preserve ME firmware. Unless you are familiar with ME firmware, do not use this option.
-

---

### 5.3.3 Receiving Current BIOS Settings

Use the command `GetCurrentBiosCfgTextFile` to execute SUM to get the current BIOS settings from the managed system and save it in the `USER_SETUP.txt` file.



#### Notes:

- This BIOS configuration file is synchronized to BMC/IPMI from BIOS when the system reboots or powers up.
- If the customer has flashed IPMI firmware, this function will not work until the managed system is first rebooted or powered up.

---

#### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c  
GetCurrentBiosCfgTextFile --file <USER_SETUP.txt> [--overwrite]
```

#### Example:

##### OOB:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c  
GetCurrentBiosCfgTextFile --file USER_SETUP.txt --overwrite
```

##### In-Band:

```
<SUM_HOME#> ./sum -c GetCurrentBiosCfgTextFile --file USER_SETUP.txt --overwrite
```

### 5.3.4 Updating BIOS Settings Based on the Current BIOS Settings

1. Follow the steps in [5.3.3 Receiving Current BIOS Settings](#).
2. Edit the item/variable values in the user setup text file `USER_SETUP.txt` to the desired values as illustrated in [4.1 Format of BIOS Settings Text File](#).
3. Remove any unchanged items/variables in the text file. Note that this step is optional.
4. Use the command `ChangeBiosCfg` with the updated `USER_SETUP.txt` file to run SUM to update the BIOS configuration.



#### Notes:

- The editable BIOS configuration items may be changed for different BIOS versions.

---

---

Please make sure the BIOS configurations are consistent with the BIOS version.

- The uploaded configuration will only take effect after a system reboot or power up.
- 

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c ChangeBiosCfg --file  
<USER_SETUP.txt> [--reboot]
```

**Example:**

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ChangeBiosCfg --file  
USER_SETUP.txt --reboot
```

**In-Band:**

```
<SUM_HOME#> ./sum -c ChangeBiosCfg --file USER_SETUP.txt --reboot
```

### 5.3.5 Receiving Factory BIOS Settings

Use the command `GetDefaultBiosCfgTextFile` to execute SUM to get the default factory BIOS settings from the managed system and save it in the `USER_SETUP.txt` file.

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c  
GetDefaultBiosCfgTextFile --file <USER_SETUP.txt> [--overwrite]
```

**Example:**

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c  
GetDefaultBiosCfgTextFile --file USER_SETUP.txt --overwrite
```

**In-Band:**

```
<SUM_HOME#> ./sum -c GetDefaultBiosCfgTextFile --file USER_SETUP.txt --overwrite
```

---

### 5.3.6 Updating BIOS Settings Based on the Factory Settings

1. Follow the steps in [5.3.5 Receiving Factory BIOS Settings](#).
2. Follow steps 2 to 4 in [5.3.4 Updating BIOS Settings Based on the Current BIOS Settings](#).

### 5.3.7 Loading Factory BIOS Settings

Use the command LoadDefaultBiosCfg to execute SUM to reset the BIOS settings of the managed system to the factory default settings.



**Note:** The uploaded configuration will take effect only after a reboot or power up.

---

Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c LoadDefaultBiosCfg [--reboot]
```

Example:

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c LoadDefaultBiosCfg --reboot
```

**In-Band:**

```
<SUM_HOME#> ./sum -c LoadDefaultBiosCfg --reboot
```

### 5.3.8 Receiving DMI Information

Use the command GetDmiInfo to execute SUM 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/IPMI from BIOS when the system reboots or powers up.
  - If the customer has flashed IPMI firmware, 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. SUM will only show supported items.
- 

#### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c GetDmiInfo --file  
<DMI.txt> [--overwrite]
```

#### Example:

##### OOB:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c GetDmiInfo --file  
DMI.txt --overwrite
```

##### In-Band:

```
<SUM_HOME#> ./sum -c GetDmiInfo --file DMI.txt --overwrite
```

### 5.3.9 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 [5.3.8 Receiving DMI Information](#) to receive the DMI information text file (DMI.txt).
2. Replace the item values in the DMI.txt file with the desired values illustrated in [4.2 Format of DMI Information Text File](#).
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 updates (or add if not exists) the specified DMI item in the specified DMI.txt file. When you edit from 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 receive a DMI.txt file, follow the steps in [5.3.8 Receiving DMI Information](#).

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c EditDmiInfo --file
<DMI.txt> --item_type <Item Type> --item_name <Item Name> --value <Item Value>
sum [-i <IP or host name> -u <username> -p <password>] -c EditDmiInfo --file
<DMI.txt> --shn <Item Short Name> --value <Item Value>
sum [-i <IP or host name> -u <username> -p <password>] -c EditDmiInfo --file
<DMI.txt> --shn <Item Short Name> --default
```

**Example:**

**OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c EditDmiInfo --file
DMI.txt --item_type "System" --item_name "Version" --value "1.02"
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c EditDmiInfo --file
DMI.txt --shn SYVS --value "1.02"
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c EditDmiInfo --file
DMI.txt --shn SYVS --default
```

**In-Band:**

```
<SUM_HOME#> ./sum -c EditDmiInfo --file DMI.txt --shn SYVS --value 1.01
```

## 5.3.10 Updating DMI Information

1. Follow the steps in [5.3.9 Editing DMI Information](#) to prepare the edited DMI.txt file for updating DMI information.
2. Use the command ChangeDmiInfo with the edited DMI.txt file to run SUM 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.
  - X9DRL MB does not support DMI related functions
- 

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c ChangeDmiInfo --file  
<DMI.txt> [--reboot]
```

**Example:****OOB:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ChangeDmiInfo --file  
DMI.txt --reboot
```

**In-Band:**

```
<SUM_HOME#> ./sum -c ChangeDmiInfo --file DMI.txt --reboot
```

## 5.4 BMC Management for a Single System

### 5.4.1 Getting BMC Image Information

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

**Syntax:**

```
sum [-i <IP or host name> -u <username> -p <password>] -c GetBmcInfo [--file  
<filename>]
```

**Example:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c GetBmcInfo --file  
SMCI_BMC.ROM
```

---

The console output contains the following information.

```
Managed system.....192.168.34.56
  BMC type.....X10_ATEN
  BMC version.....01.30
Local BMC image file.....SMCI_BMC.ROM
  BMC type.....X10_ATEN
  BMC version.....01.33
```

## 5.4.2 Updating the BMC Image

Use the command `UpdateBmc` with BMC image file `SMCI_BMC.rom` to run SUM to update the managed system.



### Notes:

- BMC will be reset after updating.
- BMC configurations will be default preserved after updating unless `--overwrite_cfg` option is used.
- DO NOT flash BIOS and IPMI firmware at the same time.
- `UpdateBmc` command does not support AMI BMC FW. For OOB `UpdateBmc` usage, please use SUM version 1.4.2.
- `--overwrite_cfg` option overwrites current BMC configurations including network settings using factory default values in the given BMC image file. This might cause IPMI connection lost. For ATEN BMC FW or AMI Hermon BMC FW, this option requires `--overwrite_sdr` option.
- `--overwrite_sdr` option overwrites current BMC SDR data. For AMI BMC FW, this option requires `--overwrite_cfg` option.

---

### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c UpdateBmc --file
<filename> [--overwrite_cfg] [--overwrite_sdr]
```

### Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c UpdateBmc --file
SMCI_BMC.rom
```

---

### 5.4.3 Receiving BMC settings

Use the command GetBmcCfg to execute SUM to get the current BMC settings from the managed system and save it in the BMCCfg.xml file.



**Note:** Received tables/elements might not be identical between two managed systems. Only supported tables/elements for that system will be received.

---

#### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c GetBmcCfg --file  
<BMCCfg.xml> [--overwrite]
```

#### Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c GetBmcCfg --file  
BMCCfg.xml --overwrite
```

### 5.4.4 Updating BMC Settings

1. Follow the steps in [5.4.3 Receiving BMC settings](#).
2. Edit the configurable element values in the BMC configuration text file BMCCfg.xml to the desired values as illustrated in [4.3 Format of BMC Configuration Text File](#).
3. Skip unchanged tables in the text file by setting the Action attribute as “None”. Note that this step is optional.
4. Remove unchanged tables/elements in the text file. Note that this step is optional.
5. Use the command ChangeBmcCfg with the updated BMCCfg.xml file to run SUM to update the BMC configuration.

#### Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c ChangeBmcCfg --file  
<BMCCfg.xml>
```

#### Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ChangeBmcCfg --file  
BMCCfg.xml
```



**Note:** The connection could drop if the LAN configuration is changed.

---

## 5.5 Event Log Management for a Single System

### 5.5.1 Getting System Event Log

Use the command `GetEventLog` to execute SUM to show the current system event log (including both BIOS and BMC event log) from the managed system. With the `--file` option, you can choose to save it in the `EventLog.txt` file.

Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c GetEventLog [--file  
<EventLog.txt>] [--overwrite]
```

Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c GetEventLog --file  
EventLog.txt --overwrite
```

### 5.5.2 Clearing System Event Log

Use the command `ClearEventLog` to execute SUM to clear the event log (both BMC and BIOS event log) in the managed system.



**Notes:**

- BIOS event log in BMC will be cleared immediately.
  - BIOS event log in BIOS will be cleared only after system BIOS reboot.
- 

Syntax:

```
sum [-i <IP or host name> -u <username> -p <password>] -c ClearEventLog [--  
reboot]
```

Example:

---

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p XXXXXX -c ClearEventLog --reboot
```

## 5.6 Applications for a Single System (OOB Only)

### 5.6.1 Providing TPM Module Capabilities

Use the command TpmProvision to execute SUM to enable TPM module capabilities for the managed system. Before executing the command, the TPM module should be installed on the managed system.

Syntax:

```
sum -i <IP or host name> -u <username> -p <password> -c TpmProvision --image_url  
<URL> --reboot [--id <id for URL> --pw <password for URL>]
```

Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c TpmProvision --image_url  
'smb://192.168.35.1/MySharedPoint/MyFolder/TPM.iso' --id smbaid --pw smbpasswd --  
reboot
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c TpmProvision --image_url  
'http://192.168.35.1/MySharedPoint/MyFolder/TPM.iso' --id smbaid --pw smbpasswd -  
-reboot
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c TpmProvision --image_url  
'\\192.168.35.1\MySharedPoint\MyFolder\TPM.iso' --id smbaid --pw smbpasswd --  
reboot
```



#### Notes:

- This command is supported since X10 Grantley Platform or select systems.
- TpmProvision command has not been supported for TPM 2.0 device.
- The TPM ISO images are not included in the SUM package. You need to acquire this image by contacting Supermicro separately. Each SUM release could require different ISO images as noted in SUM release notes. Please acquire correct TPM\_yyyymmdd.zip, unzip the zip file and get TPM ISO images for usage.
- With TPM ISO images, TPM capabilities can be enabled/cleared. TPM.iso will not lock TPM while TPM\_Lock.iso will lock TPM.
- Different platform might require different TPM ISO file. Please check the TPM release

---

notes for usage.

- The BIOS will be rebooted several times during provisioning.
  - To clear TPM capability, see [5.6.2 Clearing TPM Module Capabilities](#).
  - Space character is prohibited for SAMBA password
  - SUM will check if TPM module status on the managed system. If not installed/not functioning, exit code 36/37 will be returned respectively. If the TPM is locked, exit code 37 will be returned.
- 

## 5.6.2 Clearing TPM Module Capabilities

Use the command TpmProvision with options --cleartpm and --reboot to execute SUM to clear TPM module capabilities from the managed system. For usage of the --image\_url option, refer to the Notes in [5.6.1 Providing TPM Module Capabilities](#).

Syntax:

```
sum -i <IP or host name> -u <username> -p <password> -c TpmProvision --image_url  
<URL> [--id <id for URL> --pw <password for URL>] --cleartpm --reboot
```

Example:

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c TpmProvision --image_url  
'smb://192.168.35.1/MySharedPoint/MyFolder/TPM.iso' --id smbuid --pw smbpasswd --  
cleartpm --reboot
```



### Notes:

- This command is supported since X10 Grantley Platform or select systems. X11 Greenlow platform has not been supported yet.
- 

## 5.6.3 Providing an ISO Image as a Virtual Media through BMC and File Server

Use the command MountIsoImage to execute SUM to provide ISO image as a virtual media to the managed system through SAMBA/HTTP server.

Syntax:



---

```
sum -i <IP or host name> -u <username> -p <password> -c MountIsoImage --  
image_url <URL> [--id <id for URL> --pw <password for URL>]
```

**Example:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c MountIsoImage --  
image_url 'smb://192.168.35.1/MySharedPoint/MyFolder/Image.iso' --id smbuid --pw  
smbpasswd
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c MountIsoImage --  
image_url 'http://192.168.35.1/MySharedPoint/MyFolder/Image.iso' --id smbuid --pw  
smbpasswd
```

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c MountIsoImage --  
image_url '\\192.168.35.1\MySharedPoint\MyFolder\Image.iso' --id smbuid --pw  
smbpasswd
```



**Note:**

- Space character is prohibited for SAMBA password.

---

## 5.6.4 Removing ISO Image as a Virtual Media

Use the command `UnmountIsoImage` to execute SUM to remove ISO image as a virtual media from the managed system.

**Syntax:**

```
sum -i <IP or host name> -u <username> -p <password> -c UnmountIsoImage
```

**Example:**

```
<SUM_HOME#> ./sum -i 192.168.34.56 -u ADMIN -p ADMIN -c UnmountIsoImage
```

---

## 6 Managing Multiple Systems (OOB Only)

---

For managing multiple systems, SUM provides the -l option to concurrently execute any OOB command on multiple systems through a system list file.

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c <OOB command>
[command options]
```

The systems to be managed should be listed row-by-row in the system list file. Two formats are supported for general commands as follows. (For the ActivateProductKey command, different formats are used. See [6.2.1 Activating Multiple Managed Systems.](#))

**Format 1:** BMC\_IP\_or\_HostName

**Format 2:** BMC\_IP\_or\_HostName Username Password

If Format 1 is used, the user has to specify -u and -p options in the command line. If Format 2 is used, the user can remove -u and -p options from the command line. If Format 2 is used but -u and -p options are not removed from the command line, the Username/Password in the system list file is adopted.

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetDmiInfo --file DMI.txt
--overwrite
```

SList.txt:

```
192.168.34.56
192.168.34.57 ADMIN1 PASSWORD1
```

In this example, for the first system, SUM will use (192.168.34.56, ADMIN, PASSWORD) as the (IP, Username, Password) to execute the GetDmiInfo command. For the second system, SUM will use (192.168.34.57, ADMIN1, PASSWORD1) as the (IP, Username, Password) to execute the GetDmiInfo

---

command. SUM will run these two executions concurrently. To see the execution status and results, see [6.1.2 File Output](#), [6.1.3 Screen Output](#) and [6.1.4 Log Output](#).

For the usage of commands that take input files as arguments such as the UpdateBios command, see [6.1.1 File Input](#) for its usage.



**Note:** SUM does not accept repeated system names in the system list file.

---

## 6.1 Input Output Controls for Multiple Systems

### 6.1.1 File Input

SUM uses the input file specified in the command line (through --file option) to manage multiple systems.

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c UpdateBios --file  
SMCI_BIOS.rom
```

SList.txt:

192.168.34.56

192.168.34.57

In this example, SUM uses the input file SMCI\_BIOS.rom specified in the command line to concurrently update BIOS for both systems 192.168.34.56 and 192.168.34.57 listed in the SList.txt file.



**Note:** SUM DOES NOT support using different input file for each individual system at one command.

---

---

### 6.1.2 File Output

When SUM outputs files for multiple systems, each managed system has one corresponding output file.

The file name is the file name specified in the command line (through --file option) appended by “.” and the “BMC\_IP\_or\_Hostname”, which is obtained from the system list file.

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetDmiInfo --file DMI.txt
```

SList.txt:

```
192.168.34.56
```

```
192.168.34.57
```

In this example, SUM gets the DMI information from system 192.168.34.56 and outputs to file “DMI.txt.192.168.34.56”. For system 192.168.34.57, the DMI information is stored in the file “DMI.txt.192.168.34.57”.

### 6.1.3 Screen Output

When SUM begins the execution for the managed systems, progress output will be continuously updated to a log file created when SUM is invoked. The log file name (shown on the screen), is the system list file name appended by “.log.”, “yyyy-mm-dd\_hh:mm:ss” and “\_PID” strings.

When the SUM finishes execution, the final execution status for each system will be shown on the screen output row-by-row. Each row consists of “System Name”, “Elapsed”, “Status” and “Exit Code”. “System name” is the “BMC\_IP\_or\_Hostname” from the system list file. “Elapsed” is the time elapsed when the command is executed. Four types of “Status” are provided as indicators: “WAITING”, “RUNNING”, “SUCCESS”, or “FAILED.” The status summary will be shown before and after the status list. After listing the final status, SUM will exit and return the exit code of the concurrent executions.

Users can also press the “ENTER” key to see the current execution status before the program is finished.

The format of the current status is the same as the final status.

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetDmiInfo --file DMI.txt  
--overwrite
```

---

SList.txt:

192.168.34.56

192.168.34.57

### Screen Output:

Supermicro Update Manager (for UEFI BIOS) 1.2.0 (2013/10/02) Copyright (C) 2013  
Super Micro Computer, Inc. All rights reserved

Start to do GetDmiInfo for machines listed in SList.txt

Log file created:

SList.txt.log\_2013-10-02\_15:57:40\_7370

Press ENTER to see the current execution status:

-----Current Status-----

Executed Command:

./sum -l SList.txt -u ADMIN -p \*\*\*\*\* -c GetDmiInfo --file DMI.txt --overwrite

Summary:

2 EXECUTIONS ( WAITING: 0 RUNNING: 1 SUCCESS: 1 FAILED: 0 )

Status List:

System Name	Elapsed	Status	Exit Code
192.168.34.56	00:00:02	SUCCESS	0
192.168.34.57	00:00:03	RUNNING	

Summary:

2 EXECUTIONS ( WAITING: 0 RUNNING: 1 SUCCESS: 1 FAILED: 0 )

-----

-----Final Results-----

Executed Command:

./sum -l SList.txt -u ADMIN -p \*\*\*\*\* -c GetDmiInfo --file DMI.txt --overwrite

Summary:

2 EXECUTIONS ( WAITING: 0 RUNNING: 0 SUCCESS: 2 FAILED: 0 )

Status List:

System Name	Elapsed	Status	Exit Code
192.168.34.56	00:00:02	SUCCESS	0
192.168.34.57	00:00:07	SUCCESS	0

Summary:

2 EXECUTIONS ( WAITING: 0 RUNNING: 0 SUCCESS: 2 FAILED: 0 )

#### 6.1.4 Log Output

When SUM is invoked for the managed systems, a log file will be created. This log file will be continuously updated with the execution message for every system. The log file name, which will be shown on the screen, is the system list file name appended by “.log.”, “yyyy-mm-dd\_hh:mm:ss” and “\_PID” strings. The log file consists of one “Last Update Time” section, one “Execution parameters” section, one “Summary” section, one “Status List” section and, for each system, one “Execution Message” section. The following example shows the log file SList.txt.log\_2013-10-02\_15:57:40\_7370 which was created from the example in [6.1.3 Screen Output](#).

Example:

```
-----Last Update Time-----
2013-10-02_15:57:47
Process finished.
-----Execution parameters-----
IPMI server port: 38927
Executed Command:
./sum -l SList.txt -u ADMIN -p ***** -c GetDmiInfo --file DMI.txt --overwrite
-----Summary-----
2 EXECUTIONS ( WAITING: 0 RUNNING: 0 SUCCESS: 2 FAILED: 0 )
-----Status List-----
System Name      |Start Time      |End Time        |Elapsed |Status  |Exit Code
192.168.34.56    |10-02_15:57:40 |10-02_15:57:42 |00:00:02|SUCCESS |0
192.168.34.57    |10-02_15:57:40 |10-02_15:57:47 |00:00:07|SUCCESS |0
-----Execution Message-----
```

---

System Name

192.168.34.56

Message

Supermicro Update Manager (for UEFI BIOS) 1.2.0 (2013/10/02) Copyright (C) 2013  
Super Micro Computer, Inc. All rights reserved

File "DMI.txt.192.168.34.56" is created.

-----Execution Message-----

System Name

192.168.34.57

Message

Supermicro Update Manager (for UEFI BIOS) 1.2.0 (2013/10/02) Copyright (C) 2013  
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File "DMI.txt.192.168.34.57" is created.

## 6.2 Key Management for Multiple Systems

### 6.2.1 Activating Multiple Managed Systems

Users can activate multiple systems concurrently using SUM through the -l option and the command `ActivateProductKey`. (You should first obtain the node product keys for the managed systems. See [3.1 Receiving Node Product Keys from Supermicro](#).)

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c ActivateProductKey
```

The systems to be managed should be listed row-by-row in the system list file. For the `ActivateProductKey` command, two formats are supported.

**Format 1:** BMC\_IP\_or\_HostName Node\_Product\_Key

**Format 2:** BMC\_IP\_or\_HostName Username Password Node\_Product\_Key

If Format 1 is used, the user has to specify -u and -p options in the command line. If Format 2 is used, the user can remove -u and -p options from the command line. If Format 2 is used but -u and -p options are not

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removed from the command line, the Username/Password in the system list file is adopted. The --key option, if specified in the command line, will be ignored.

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ActivateProductKey
```

SList.txt:

```
192.168.34.56 1111-1111-1111-1111-1111-1111
192.168.34.57 ADMIN1 PASSWORD1 2222-2222-2222-2222-2222-2222
```

In this example, for the first system SUM will use (192.168.34.56, ADMIN, PASSWORD, 1111-1111-1111-1111-1111-1111) as the (IP, Username, Password, NodeProductKey) to execute the command ActivateProductKey. For the second system SUM will use (192.168.34.57, ADMIN1, PASSWORD1, 2222-2222-2222-2222-2222-2222) as the (IP, Username, Password, NodeProductKey) to execute the command ActivateProductKey. SUM will activate these two systems concurrently. The presentation of execution status and results will be similar to [6.1.3 Screen Output](#) and [6.1.4 Log Output](#).

## 6.2.2 Querying Node Product Key

To query the node product keys activated in the managed system, use the command “QueryProductKey.”

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c QueryProductKey
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c QueryProductKey
```

SList.txt:

```
192.168.34.56
192.168.34.57
```

If the execution status of a system is SUCCESS, the node product keys activated in that system will be shown in the “Execution Message” section in the created log file.



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### 6.2.3 Clearing Node Product Keys

To clear the node product keys activated in the managed system, use the command “ClearProductKey”. However, before executing the command “ClearProductKey”, query the existing NodeProductKeyName and NodeProductKeyIndex values from the output of the command “QueryProductKey” (see [6.2.2 Querying Node Product Key](#)).

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c ClearProductKey --  
key_name <NodeProductKeyName>
```

```
sum -l < system list file > [-u <username> -p <password>] -c ClearProductKey --  
key_index <NodeProductKeyIndex>
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ClearProductKey --  
key_name SUM  
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ClearProductKey --  
key_index 1  
SList.txt:  
    192.168.34.56  
    192.168.34.57
```

If the execution status for a system is SUCCESS, for the --key\_name example the SUM key will be cleared from these two managed systems. For the --key\_index example, the key with index 1 will be cleared in these two managed systems.

## 6.3 System Checks for Multiple System

### 6.3.1 Checking OOB Support

Use the command “CheckOOBSupport” to check if both BIOS and BMC firmware support OOB functions for multiple systems. The received information will be the same as that in [5.2.1 Checking OOB Support](#).

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c CheckOOBSupport
```

---

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c CheckOOBSupport
SList.txt:
    192.168.34.56
    192.168.34.57
```

If the execution status for a system is SUCCESS, the BIOS and BMC capabilities of that system will be shown in the “Execution Message” section in the created log file.

### 6.3.2 Checking Asset Information

Use the command “CheckAssetInfo” to check the asset information in the managed systems. The received information will be the same as that in [5.2.2 Checking Asset Information \(OOB Only\)](#).

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c CheckAssetInfo
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c CheckAssetInfo
SList.txt:
    192.168.34.56
    192.168.34.57
```

If the execution status for a system is SUCCESS, the asset configuration of that system will be shown in the “Execution Message” section in the created log file.

### 6.3.3 Checking Sensor Data

Use the command “CheckSensorData” to check the sensor data in the managed systems. The message output will be the same as that in [5.2.3 Checking Sensor Data \(OOB Only\)](#).

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c CheckSensorData
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c CheckSensorData
```

---

```
SList.txt:
    192.168.34.56
    192.168.34.57
```

If the execution status for a system is SUCCESS, the sensor data of that system will be shown in the “Execution Message” section in the created log file.

### 6.3.3 Checking System Utilization

Use the command “CheckSystemUtilization” to check the utilization status in the managed systems. The message output will be the same as that in [5.2.4 Checking System Utilization \(OOB Only\)](#).

Syntax:

```
sum -l < system list file > [-u <username> -p <password>] -c
CheckSystemUtilization
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c CheckSystemUtilization
SList.txt:
    192.168.34.56
    192.168.34.57
```

If the execution status for a system is SUCCESS, the utilization status of that system will be shown in the “Execution Message” section in the created log file.

## 6.4 BIOS Management for Multiple Systems

### 6.4.1 Getting BIOS Image Information

Use the command “GetBiosInfo” to receive the BIOS image information from the multiple managed systems as well as the input BIOS image file. The message output will be the same as that in [5.3.1 Getting BIOS Image Information](#).

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c GetBiosInfo [--file
<filename>]
```

---

#### Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetBiosInfo --file  
SMCI_BIOS.ROM
```

SList.txt:

192.168.34.56

192.168.34.57



**Note:** If the execution status for a system is SUCCESS, the BIOS information of that system will be shown in the “Execution Message” section of that system in the created log file.

---

### 6.4.2 Updating the BIOS Image

Use the command UpdateBios with the BIOS image file SMCI\_BIOS.rom to run SUM to update multiple systems. For detailed usage notes of the UpdateBios command, see the usage notes in [5.3.2 Updating the BIOS Image](#).

#### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c UpdateBios --file  
<filename> [options...]
```

Option Commands	
--reboot	Forces the managed systems to reboot
--flash_smbios	Overwrites SMBIOS data
--preserve_mer	Preserves ME Firmware Region
--preserve_nv	Preserves NVRAM

#### Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c UpdateBios --file  
SMCI_BIOS.rom
```

SList.txt:

192.168.34.56

---

192.168.34.57

The execution progress for that system will be continuously updated to the “Execution Message” section of that system in the created log file.

### 6.4.3 Receiving Current BIOS Settings

Use the command `GetCurrentBiosCfgTextFile` to execute SUM to get the current BIOS settings from the multiple managed systems and save it in the output files individually for each system listed in the system list file.

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c  
GetCurrentBiosCfgTextFile --file <USER_SETUP.txt> [--overwrite]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetCurrentBiosCfgTextFile  
--file USER_SETUP.txt --overwrite
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system (e.g. 192.168.34.56) is SUCCESS, its current settings will be stored in its output file, e.g. `USER_SETUP.txt.192.168.34.56`. `--overwrite` is the option to force overwrite its output file, e.g. `USER_SETUP.txt.192.168.34.56`, if the output file already exist.

### 6.4.4 Updating BIOS Settings Based on a Current Sample Settings

1. Select one managed system as the golden sample for current BIOS settings.
2. Follow the steps in [5.3.3 Receiving Current BIOS Settings](#) for that system.
3. Edit the item/variable values in the user setup text file `USER_SETUP.txt` to the desired values as illustrated in [4.1 Format of BIOS Settings Text File](#).
4. Remove unchanged items/variables in the text file. Note that this step is optional.
5. Use the command `ChangeBiosCfg` with the updated `USER_SETUP.txt` file to run SUM to update the BIOS configurations for multiple systems.



**Note:** The uploaded configurations will only take effect after the managed systems reboot or power up.

---

**Syntax:**

```
sum -l <system list file> [-u <username> -p <password>] -c ChangeBiosCfg --file  
<USER_SETUP.txt> [--reboot]
```

**Example:**

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ChangeBiosCfg --file  
USER_SETUP.txt --reboot
```

SList.txt:

192.168.34.56

192.168.34.57

## 6.4.5 Receiving Factory BIOS Settings

Use the command `GetDefaultBiosCfgTextFile` to execute SUM to get the default factory BIOS settings from the managed systems and save it in the output files individually for each system listed in the system list file.

**Syntax:**

```
sum -l <system list file> [-u <username> -p <password>] -c  
GetDefaultBiosCfgTextFile --file <USER_SETUP.txt> [--overwrite]
```

**Example:**

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetDefaultBiosCfgTextFile  
--file USER_SETUP.txt
```

SList.txt:

192.168.34.56

192.168.34.57

If the execution Status for a system (e.g. 192.168.34.56) is SUCCESS, its default settings will be stored in its output file, e.g. `USER_SETUP.txt.192.168.34.56`. `--overwrite` is the option to force overwrite its output file, e.g. `USER_SETUP.txt.192.168.34.56`, if the output file already exist.

---

## 6.4.6 Updating BIOS Settings Based on Factory Sample Settings

1. Select one managed system as the golden sample for factory default BIOS settings.
2. Follow the steps in [5.3.5 Receiving Factory BIOS Settings](#) for that system.
3. Follow steps 3 to 5 in [6.4.4 Updating BIOS Settings Based on a Current Sample Settings](#).

## 6.4.7 Loading Factory BIOS Settings

Use the command LoadDefaultBiosCfg to execute SUM to reset the BIOS settings of the managed systems to the factory default settings.



**Note:** The uploaded configurations will only take effect after the managed systems reboot or power up.

---

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c LoadDefaultBiosCfg [-reboot]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c LoadDefaultBiosCfg --reboot
```

SList.txt:

```
192.168.34.56
```

```
192.168.34.57
```

## 6.4.8 Receiving DMI Information

Use the command GetDmiInfo to execute SUM to get the current supported editable DMI information from the managed systems and save it in the output files individually for each system listed in the system list file.

For detailed usage notes of the command GetDmiInfo, see [5.3.8 Receiving DMI Information](#)

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c GetDmiInfo --file <DMI.txt> [--overwrite]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetDmiInfo --file DMI.txt --overwrite
```

---

SList.txt:

192.168.34.56

192.168.34.57

If the execution Status for a system (e.g. 192.168.34.56) is SUCCESS, its DMI settings will be stored in its output file, e.g. DMI.txt.192.168.34.56. --overwrite is the option to force overwrite its output file, e.g.DMI.txt.192.168.34.56, if the output file already exist.

### 6.4.9 Editing DMI Information

Use the command EditDmiInfo to execute SUM to edit the editable DMI items. For details on the EditDmiInfo command, refer to [5.3.9 Editing DMI Information](#).

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c EditDmiInfo --file  
<DMI.txt> --item_type <Item Type> --item_name <Item Name> --value <Item Value>  
sum -l <system list file> [-u <username> -p <password>] -c EditDmiInfo --file  
<DMI.txt> --shn <Item Short Name> --value <Item Value>  
sum -l <system list file> [-u <username> -p <password>] -c EditDmiInfo --file  
<DMI.txt> --shn <Item Short Name> --default
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c EditDmiInfo --file  
DMI.txt --item_type "System" --item_name "Version" --value "1.01"
```

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c EditDmiInfo --file  
DMI.txt --shn SYVS --value "1.01"
```

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c EditDmiInfo --file  
DMI.txt --shn SYVS --default
```

SList.txt:

192.168.34.56

192.168.34.57

If the execution Status for a system (e.g. 192.168.34.56) is "SUCCESS", its edited DMI information will be updated in its output file, e.g. DMI.txt.192.168.34.56.



---

## 6.4.10 Updating DMI Information Based on a Sample DMI Information

1. Select one managed system as the golden sample for DMI information.
3. Follow [5.3.9 Editing DMI Information](#) to prepare the edited DMI.txt file for updating DMI information.
2. Use the command ChangeDmiInfo with the edited DMI.txt file to run SUM to update the DMI information for multiple systems



### Notes:

- The uploaded information will only take effect after the managed systems reboot or power up.
- For detailed usage notes of the command ChangeDmiInfo, see [5.3.10 Updating DMI Information](#)

---

### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c ChangeDmiInfo --file  
<DMI.txt> [--reboot]
```

### Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ChangeDmiInfo --file  
DMI.txt --reboot
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

## 6.5 BMC Management for Multiple Systems

### 6.5.1 Getting BMC Image Information

Use the command “GetBmcInfo” to receive the BMC image information from the multiple managed systems as well as the input BMC image file. The information will be the same as that in [5.4.1 Getting BMC Image Information](#).

### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c GetBmcInfo [--file  
<filename>]
```

---

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetBmcInfo --file  
SMCI_BMC.ROM
```

SList.txt:

192.168.34.56

192.168.34.57

If the execution status for a system is SUCCESS, the BMC information of that system will be shown in the “Execution Message” section of that system in the created log file.

## 6.5.2 Updating the BMC Image

Use the command UpdateBmc with BMC image file SMCI\_BMC.rom to run SUM to update multiple systems. For detailed usage notes of the UpdateBmc command, see the usage notes in [5.4.2 Updating the BMC Image](#).

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c UpdateBmc --file  
<filename> [--overwrite_cfg] [--overwrite_sdr]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c UpdateBmc --file  
SMCI_BMC.rom
```

SList.txt:

192.168.34.56

192.168.34.57

The execution progress for that system will be continuously updated to the “Execution Message” section of that system in the created log file.

## 6.5.3 Receiving BMC Settings

Use the command GetBmcCfg to execute SUM to get the current BMC settings from the multiple managed systems and save it in the output files individually for each system listed in the system list file. For detailed usage notes of the GetBmcCfg command, see the usage notes in [5.4.3 Receiving BMC settings](#).

---

### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c GetBmcCfg --file <BMCCfg.xml> > [--overwrite]
```

### Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetBmcCfg --file  
BMCCfg.xml --overwrite
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system (e.g. 192.168.34.56) is SUCCESS, its current settings will be stored in its output file, e.g. BMCCfg.xml.192.168.34.56. --overwrite is the option to force overwrite its output file, e.g. BMCCfg.xml.192.168.34.56, if the output file already exists.

## 6.5.4 Updating BMC Settings

1. Select one managed system as the golden sample for current BMC settings.
2. Follow the steps in [5.4.3 Receiving BMC settings](#) for that system.
3. Edit the configurable element values in the BMC configuration text file BMCCfg.xml to the desired values as illustrated in [4.3 Format of BMC Configuration Text File](#).
4. Skip unchanged tables in the text file by setting Action attribute as “None”. Note that this step is optional.
5. Remove unchanged tables/elements in the text file. Note that this step is optional.
6. Use the command ChangeBmcCfg with the updated BMCCfg.xml file to run SUM to update the BMC configurations for multiple systems.



### Notes:

- Some table settings cannot be applied to each managed system uniformly, e.g., FRU and LAN configurations. You might need to change its table action to “None” in step 4 or remove tables/elements in step 5.
- LAN IPAddress field will be skipped in multiple system usage.

- 
- For detailed usage notes of the ChangeBmcCfg command, see the usage notes in [5.4.4 Updating BMC Settings](#).
- 

**Syntax:**

```
sum -l <system list file> [-u <username> -p <password>] -c ChangeBmcCfg --file  
<BMCCfg.xml>
```

**Example:**

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ChangeBmcCfg --file  
BMCCfg.xml
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a managed system is SUCCESS, its BMC settings will be updated.

## 6.6 Event Log Management for Multiple Systems

### 6.6.1 Getting System Event Log

Use the command GetEventLog to execute SUM to show the current system event log (including both BIOS and BMC event log) from the multiple managed systems and save them in the output files individually for each system listed in the system list file with the --file option. Without --file option, you can choose to show the event log in the execution log file instead. For detailed execution notes, see [5.5.1 Getting System Event Log](#).

**Syntax:**

```
sum -l <system list file> [-u <username> -p <password>] -c GetEventLog [--file  
<EventLog.txt>] [--overwrite]
```

**Example:**

---

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c GetEventLog --file  
EventLog.txt
```

```
SList.txt:
```

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system (e.g. 192.168.34.56) is SUCCESS, its event log will be stored in its output file, e.g. EventLog.txt.192.168.34.56. --overwrite is the option to force overwrite its output file, e.g. EventLog.txt.192.168.34.56, if the output file already exists. If --file options is not used, the event log for each managed system will be shown in the “Execution Message” section of that system in the created execution log file.

## 6.6.2 Clearing System Event Log

Use the command ClearEventLog to execute SUM to clear the event log (both BMC and BIOS event log) for each managed systems. For detailed execution notes, see [5.5.2 Clearing System Event Log](#).

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c ClearEventLog [--  
reboot]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p PASSWORD -c ClearEventLog --reboot
```

```
SList.txt:
```

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system is SUCCESS, its event log will be cleared.

---

## 6.7 Applications for Multiple Systems

### 6.7.1 Providing TPM Module Capabilities

Use the command `TpmProvision` to execute SUM to enable TPM module capabilities for the managed systems. Before executing the command, the TPM modules should be installed on the managed systems. For detailed notes of the `TpmProvision` command, see [5.6.1 Providing TPM Module Capabilities](#).

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c TpmProvision --  
image_url <URL> --reboot [--id <id for URL> --pw <password for URL>]
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c TpmProvision --image_url  
'smb://192.168.35.1/MySharedPoint/MyFolder/TPM.iso' --id smbhid --pw smbpasswd --  
reboot
```

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c TpmProvision --image_url  
'http://192.168.35.1/MySharedPoint/MyFolder/TPM.iso' --id smbhid --pw smbpasswd -  
-reboot
```

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c TpmProvision --image_url  
'\\192.168.35.1\MySharedPoint\MyFolder\TPM.iso' --id smbhid --pw smbpasswd --  
reboot
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system is SUCCESS, its TPM capabilities will be enabled.

---

## 6.7.2 Clearing TPM Module Capabilities

Use the command TpmProvision with options --cleartpm and --reboot to execute SUM to clear TPM module capabilities from the managed systems. For detailed notes of the --cleartpm option usage, see

[5.6.2 Clearing TPM Module Capabilities](#).

### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c TpmProvision --  
image_url <URL> [--id <id for URL> --pw <password for URL>] --cleartpm --reboot
```

### Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c TpmProvision --image_url  
'\\192.168.35.1\MySharedPoint\MyFolder\TPM.iso' --id smbaid --pw smbpasswd --  
cleartpm --reboot
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system is SUCCESS, its TPM capabilities will be cleared.

## 6.7.3 Providing an ISO Image as a Virtual Media through BMC and File Server

Use the command MountIsoImage to execute SUM to provide ISO image as a virtual media to the managed systems through SAMBA/HTTP server. For detailed MountIsoImage command notes, see [5.6.3 Providing an ISO Image as a Virtual Media through BMC and File Server](#).

### Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c MountIsoImage --  
image_url <URL> --reboot [--id <id for URL> --pw <password for URL>]
```

### Example:

---

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c MountIsoImage --image_url  
'smb://192.168.35.1/MySharedPoint/MyFolder/Image.iso' --id smbids --pw smbpasswd  
  
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c MountIsoImage --image_url  
'http://192.168.35.1/MySharedPoint/MyFolder/Image.iso' --id smbids --pw smbpasswd  
  
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c MountIsoImage --image_url  
'\\192.168.35.1\MySharedPoint\MyFolder\Image.iso' --id smbids --pw smbpasswd
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system is SUCCESS, the Image.iso file will be provided as a virtual media to the managed system.

### 6.7.4 Removing ISO Image as a Virtual Media

Use the command UnmountIsoImage to execute SUM to remove ISO image as a virtual media from the managed system.

Syntax:

```
sum -l <system list file> [-u <username> -p <password>] -c UnmountIsoImage
```

Example:

```
<SUM_HOME#> ./sum -l SList.txt -u ADMIN -p ADMIN -c UnmountIsoImage
```

SList.txt:

```
192.168.34.56  
192.168.34.57
```

If the execution status for a system is SUCCESS, the provided virtual media will be removed from the managed system.



## Appendix A. SUM Exit Codes

Exit Code Number	Description
0	Successful
Others	Failed
<b>GROUP1 (1~30) Command line parsing check failed</b>	
1	GetOpt unexpected option code
2	Unknown option
3	Missing argument
4 <preserved>	
5	Missing option
6	Unknown command
7	Option conflict
8	File does not exist
9	File already exists
10	Host is unknown
11	Invalid command line data
12	Function access denied
<b>GROUP2 (31~59) Resource management error</b>	
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
<b>GROUP3 (60~79) File parsing errors</b>	
60	Invalid BIOS configuration text file
61	Utility internal error
62	Invalid firmware image file
63	Invalid firmware flash ROM
64	Invalid DMI information from BIOS
65	Invalid DMI information text file
66<preserved>	
67	Invalid system list file
68	Invalid BMC configuration text file
69	Invalid asset information
<b>GROUP4 (80~99) IPMI operation errors</b>	
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
<b>GROUP5 (100~119) InBand operation errors</b>	
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
<b>GROUP6 (120~) IPMI communication errors</b>	
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
153	IPMI execution on non-supported device
180	IPMI command not found
181	IPMI command IP format error
182	IPMI command parameter length invalid



**Notes:**

- When using in-band commands with --reboot option through ssh connection to the managed OS, ssh connection would be closed by the managed OS when system starts to reboot. The exit code for the ssh connection could be 255 instead of 0 (Success).

## Appendix B. Management Interface and License Requirements

[ Group ] Command	SFT-OOB-LIC, SFT-SUM-LIC, or SFT-DCMS-Single Node Product Key Required	Management Interface	
		OOB (Remote)	In-Band (Local)
<b>[ System Check ]</b>			
CheckOOBSupport	No	Yes	Yes
CheckAssetInfo	Yes	Yes	No
CheckSystemUtilization	Yes	Yes	No
CheckSensorData	No	Yes	No
<b>[ Key Management ]</b>			
ActivateProductKey	No	Yes	Yes
QueryProductKey	No	Yes	Yes
ClearProductKey	No	Yes	Yes
<b>[ BIOS Management ]</b>			
UpdateBios	Yes for OOB; No for In-Band	Yes	Yes
GetBiosInfo	No	Yes	Yes
GetDefaultBiosCfgTextFile	Yes	Yes	Yes
GetCurrentBiosCfgTextFile	Yes	Yes	Yes
ChangeBiosCfg	Yes	Yes	Yes
LoadDefaultBiosCfg	Yes	Yes	Yes
GetDmiInfo	Yes	Yes	Yes
ChangeDmiInfo	Yes	Yes	Yes
<b>[ BMC Management ]</b>			
UpdateBmc	No	Yes	Yes
GetBmcInfo	No	Yes	Yes
GetBmcCfg	Yes	Yes	Yes
ChangeBmcCfg	Yes	Yes	Yes
<b>[ System Event Log ]</b>			
GetEventLog	Yes	Yes	Yes
ClearEventLog	Yes	Yes	Yes
<b>[ Applications ]</b>			
TpmProvision	Yes	Yes	No
MountIsoImage	Yes	Yes	No
UnmountIsoImage	Yes	Yes	No

## Appendix C. Platform Feature Support Matrix

SUM (OOB & In-Band) Solution Feature  [ Group ] Command	HW & FW Compatibility			
	Without BMC	With BMC		
	All platform listed in the with BMC columns	X9 Romley	B9 Romley	A1/B1 series X10 Denlow
<b>[ Key Management ]</b>				
ActivateProductKey	No	Yes	Yes	Yes
QueryProductKey	No	Yes	Yes	Yes
ClearProductKey	No	Yes	Yes	Yes
Support SFT-OOB-LIC	No	Yes	Yes	Yes
Support SFT-SUM-LIC	No	No	No	Yes
Support SFT-DCMS-Single	No	No	No	Yes
<b>[ BIOS Management ]</b>				
UpdateBios	Yes for in-band No for OOB	Yes	Yes	Yes
GetBiosInfo	Yes for in-band No for OOB	Yes	Yes	Yes
GetDefaultBiosCfgTextFile	No	Yes	Yes	Yes
GetCurrentBiosCfgTextFile	No	Yes	Yes	Yes
ChangeBiosCfg	No	Yes	Yes	Yes
LoadDefaultBiosCfg	No	Yes	Yes	Yes
GetDmiInfo	No	Yes	Yes	Yes
EditDmiInfo	No	Yes	Yes	Yes
ChangeDmiInfo	No	Yes	Yes	Yes
<b>[ BMC Management ]</b>				
UpdateBmc	No	Yes	Yes	Yes
GetBmcInfo	No	Yes	Yes	Yes
GetBmcCfg	No	No	No	No
ChangeBmcCfg	No	No	No	No
<b>[ System Check ]</b>				
CheckOOBSupport	No	Yes	Yes	Yes
CheckAssetInfo	No	No	No	No
CheckSystemUtilization	No	No	No	No
CheckSensorData	No	Yes	Yes	Yes
<b>[ System Event Log ]</b>				
GetEventLog	No	No	No	No
ClearEventLog	No	No	No	No
<b>[ Application ]</b>				
TpmProvision	No	No	No	No
MountIsoImage	No	Yes	No	Yes
UnMountIsoImage	No	Yes	No	Yes

SUM (OOB & In-Band) Solution Feature	HW & FW Compatibility	
	With BMC	
	X10/B10/MicroBlade Grantley/X11	C7
<b>[ Key Management ]</b>		
ActivateProductKey	Yes	Yes
QueryProductKey	Yes	Yes
ClearProductKey	Yes	Yes
Support SFT-OOB-LIC	Yes	Yes
Support SFT-SUM-LIC	Yes	Yes
Support SFT-DCMS-Single	Yes	Yes
<b>[ BIOS Management ]</b>		
UpdateBios	Yes	Yes
GetBiosInfo	Yes	Yes
GetDefaultBiosCfgTextFile	Yes	Yes
GetCurrentBiosCfgTextFile	Yes	Yes
ChangeBiosCfg	Yes	Yes
LoadDefaultBiosCfg	Yes	Yes
GetDmiInfo	Yes	Yes
EditDmiInfo	Yes	Yes
ChangeDmiInfo	Yes	Yes
<b>[ BMC Management ]</b>		
UpdateBmc	Yes	Yes
GetBmcInfo	Yes	Yes
GetBmcCfg	Yes	Yes
ChangeBmcCfg	Yes	Yes
<b>[ System Check ]</b>		
CheckOOBSupport	Yes	Yes
CheckAssetInfo	Yes	Yes
CheckSystemUtilization	Yes	Yes
CheckSensorData	Yes	Yes
<b>[ System Event Log ]</b>		
GetEventLog	Yes	No
ClearEventLog	Yes	No
<b>[ Application ]</b>		
TpmProvision	Yes	No
MountIsoImage	Yes	Yes
UnMountIsoImage	Yes	Yes



**Notes:**

- InBand UpdateBmc command does not support AMI BMC firmware.
  - TpmProvision command has not been supported for TPM 2.0 device
  - OOB UpdateBios command has not been supported for MBs that implemented client ME such as X11SAE-F, X11SAT-F, X11SSZ-(Q)F/LN4F, X11SBA-(LN4)F, C7-series
  - DMI information related functions does not work for X9DRL MB
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## Appendix D. Third-Party Software

The following open source libraries are used in SUM package:

Program	Library	License
sum	simpleopt	MIT
sum	pugixml	MIT
sum	libcurl	MIT
sum	openssl	OpenSSL
sum	pantheios	BSD
phymem.sys/pmdll.dll	phymem	CPOL



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