Intel® Server Configuration Utility

User Guide

Single build reference on how to use the command-line tool, covering all platforms that support Intel® Server Configuration Utility.

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Document Revision History

Date	Revision	Changes
August 2021	1.0	• Initial release. First version of the single build user guide for all platforms that support the Intel® Server Configuration Utility.
January 2022	1.1	• Added new command for the utility to upload `fsc.ini` files.
March 2022	1.2	• Added KCS policy control modes section.

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1. Introduction

The Intel® Server Configuration Utility is a command-line tool that can be used to display and/or set a variety of system BIOS and management firmware settings. In addition, the utility can be used to save system settings or restore them from a file.

This *Intel® Server Configuration Utility User Guide* describes features and instructions on the use of all the commands supported by the command-line tool's version 16.x.x onwards. Different from the previous platform-specific document versions, this single build user guide covers all the Intel® server products that support the Intel® Server Configuration Utility.

The Intel® Server Configuration Utility is only supported on the following Intel® server products:

- Intel® Server Board S2600WT/S2600WTR
- Intel® Server Board S2600KP/S2600KPR
- Intel® Server Board S2600TP/S2600TPR
- Intel® Server Board S2600CW/S2600CWR
- Intel® Server Board S2600WF/S2600WFR
- Intel® Server Board S2600ST/S2600STR
- Intel® Server Board S2600BP/S2600BPR
- Intel® Server Board S9200WK
- Intel® Server Board D50TNP
- Intel® Server Board M50CYP
- Intel® Server Board D40AMP
- Intel® Server Board M70KLP
- Intel® Server Board M20NTP2SB

The Intel® Server Configuration Utility is not intended for and must not be used on any non-Intel server products.

Note: Not all the BIOS or management firmware settings can be set using this utility. For a complete list of BIOS settings, see the technical product specification (TPS) of the Intel® server board that is being configured. Refer to the *Intelligent Platform Management Interface Specification 2.0* for information on the standard management firmware settings.

1.1 Purpose of the Document

This document describes the functionality of the Intel® Server Configuration Utility. This server configuration utility is a command-line tool that is used to:

- Save selective BIOS and/or firmware settings to a file.
- Write BIOS and Firmware settings from a file to a server.
- Configure selected firmware settings.
- Configure selected BIOS settings.
- Configure selected system settings.
- Display selected firmware.
- Display selected BIOS settings.

1.2 Target Audience

This user guide is intended for original equipment manufacturers and the person(s) responsible for configuring the system BIOS and management firmware settings on an Intel® server system.

1.3 Operating Systems Supported

This version of the Intel® Server Configuration Utility supports the operating system versions listed in Table 1. Use Table 1 to determine which operating systems are supported for a specific Intel® server board.

Table 1 Operating Systems Supported

Platforms	Operating systems / Preboot Environment Supported
• Intel® Server Board S2600WT/S2600WTR • Intel® Server Board S2600KP/S2600KPR • Intel® Server Board S2600TP/S2600TPR • Intel® Server Board S2600CW/S2600CWR • Intel® Server Board S2600WF/S2600WFR • Intel® Server Board S2600ST/S2600STR • Intel® Server Board S2600BP/S2600BPR • Intel® Server Board S9200WK • Intel® Server Board D50TNP • Intel® Server Board M50CYP • Intel® Server Board D40AMP • Intel® Server Board M70KLP • Intel® Server Board M20NTP2SB	• UEFI Shell. • Windows Server* 2019. • Windows Server* 2016. • Windows Server* 2012 R2. • Windows 10*. • RHEL* 8.1, 8.2, 7.3, 7.5 and 7.6–64 bit. • SLES* 15, 12 service pack 3–64 bit. • Ubuntu* 16.04 LTS and Ubuntu* 20.04 LTS.

1.1 KCS Policy Control Modes – Messages in the Integrated Baseboard Management Controller (Integrated BMC) Web Console

The keyboard controller style (KCS) policy control modes allow an authenticated BMC administrative user to control the level of protection from IPMI commands executed over the KCS channels. Within this generation of BMC firmware, three different KCS policy control modes are supported: allow all, restricted, and deny all.

1.1.1 Allow All/Provisioning

This configuration setting is intended for normal IPMI-compliant communications between the host operating system and the BMC. This mode should be used when provisioning the BMC configuration for deployment.

In this mode, update, display, configuration changes, and help commands are executable.

1.1.2 Restricted/Provisioned Passlist

This configuration setting disables the IPMI KCS command interfaces between the host operating system and the BMC. This is a configuration that is non-compliant with IPMI. The restricted mode impacts the operation of the Intel® Server Management software running on the host operating system.

This mode only applies to the IPMI commands over the KCS interfaces and does not apply to the authenticated network interfaces to the BMC.

In this mode, only display and help commands are executable.

When the KCS policy control mode is set to Restricted, the message displayed can be one of the following:

- `KCS Policy Control Mode is currently set to "RESTRICTED". This function depends on an unrestricted KCS environment to operate. To run utility, please change "KCS Policy Control Mode" using BMC web console or other authenticated session.`
- `KCS Policy Control Mode is currently set to "Provisioned Host Disabled". This function depends on an unrestricted KCS environment to operate. To run utility, please change "KCS Policy Control Mode" using BMC web console or other authenticated session.`

1.1.3 Deny All/Provisioned Host Disabled

This configuration setting enables the BMC firmware to use of an access control list that allows applications executing on the host operating system to have access to a limited set of IPMI commands using the KCS interfaces. This is a configuration that is non-compliant with IPMI. The deny all mode may impact the operation of the Intel® Server Management software running on the host operating system.

This mode only applies to the IPMI commands over the KCS interfaces and does not apply to the authenticated network interfaces to the BMC.

In this mode, none of the commands are executable.

When the KCS policy control mode is set to Deny All, the message displayed can be one of the following:

- `KCS Policy Control Mode is currently set to "DENY ALL". This function depends on an unrestricted KCS environment to operate. To run utility, please change "KCS Policy Control Mode" using BMC web console or other authenticated session.`
- `KCS Policy Control Mode is currently set to "Provisioned Host Disabled". This function depends on an unrestricted KCS environment to operate. To run utility, please change "KCS Policy Control Mode" using BMC web console or other authenticated session.`

1.4 Reference Documents

The following documents must be referenced for additional support and usage information.

- *IPMI – Intelligent Platform Management Interface Specification 2.0.*
- Server TPSs for BIOS setup options.
- *Intel® Server Configuration Utilities Deployment Procedure for Windows PE 2005*.*

1.5 Support Information

For more information, visit Intel's support site at http://support.intel.com/support/.

For an updated support contact list, see http://www.intel.com/support/9089.htm/.

1.6 Prerequisites

On Red Hat Enterprise Linux* (RHEL*), SUSE Linux Enterprise Server* (SLES*), CentOS*, UEFI aware Linux* or other Linux*.

Install the necessary libraries if the utility fails and displays one of the following error messages while loading the libraries:

- "Error while loading shared libraries: libncurses.so.5: cannot open shared object file: No such file or directory."
  - To fix this, run `rpm –ivh xxxx.rpm` to install `libstdc++` and `ncurses rpms` for the corresponding operating system.
- "Error: /lib/ld-linux.so.2: Bad ELF interpreter: No such file or directory."
  - This error indicates that development and optional packages are not installed. Install the necessary packages accordingly.
- "Depends on libncurses5 (>= 6); however: Version of libncurses5:amd64 on system is 5.9+20140913-1+deb8u2."
  - This message indicates `libncurses version must be >= 6`. Install new `libncurses`.

On RHEL*, SLES*, CentOS*, UEFI aware Linux* or other Linux*:

- There might be a driver conflict between the internal driver and the kernel. The user needs to start the `OpenIPMI` driver and, and make sure the `/dev/ipmi0` device exists.

For RHEL*, run the following command and make sure the `/dev/ipmi0` device exists:

- `#modprobe ipmi_devintf or #modprobe ipmi_si`

For SLES*, run the following command and make sure the `/dev/ipmi0` device exists:

- `#service ipmi start`

Install the `lsb_release` package to use the installation script on Linux*.

Intel® Server Configuration Utility works only if it is executed with administrator privilege on Windows* and with root privilege on Linux* operating systems.

The user must make sure that an administrator password has been installed in the system before setting any operation to `biossettings`. This measure is a security design on AMIBIOS* and exclusively applies for the Intel® Server System M70KLP Family.

2. Product Overview

Intel® Server Configuration Utility is a command-line tool that provides the ability to save, restore, display, and set selected system BIOS and Firmware settings. The firmware configuration parameters on which this utility operates are fully described in the IPMI and the Baseboard Management Controller (BMC) specifications.

Note: To clone an existing firmware and/or BIOS configuration from one system to another, both systems must have identical versions of firmware and BIOS on them. This condition must be met because the configurable settings in firmware or BIOS may vary from version to version.

To copy the BIOS and Firmware configuration from one system to another, the following process is used:

1. The user runs the utility on the server they want to duplicate, specifying the save option. This step saves a subset of firmware and BIOS settings to a file.
2. The user runs the utility on the target server, specifying the restore option and the file created on the primary system to restore those settings to the target system.
3. The user runs Intel® Server Configuration Utility to change any of the parameters that cannot be duplicated on the two servers. For example, the host IP address stored in the firmware cannot be the same for two servers.

Intel® Server Configuration Utility supports configuration of individual parameters of the firmware and the BIOS. For the proper functionality of the firmware, some options group the parameters to identify settings that are dependent on each other.

Note: BIOS variable(s) meant for the preliminary BMC configuration cannot be saved or restored using Intel® Server Configuration Utility.

2.1 Save Process Overview

Save Process saves the following BIOS and Firmware settings also into an editable (`.ini`) file format. This INI file is typically a text file and gets generated dynamically, depending on the user choice from the command line.

Note: Save/Restore process following the INI file is not a way for exact cloning between the servers. Rather, this process is a way to clone a subset of BIOS/firmware configurable settings and a means of duplicating those settings in the deployed servers.

2.1.1 BIOS Settings

The BIOS variables that are neither exposed by the BIOS API nor relevant to the end user, cannot be saved or restored. BIOS variables like password and time are not saved in the INI file. Except the ones previously mentioned, almost all the BIOS Setup variables could be saved and restored back.

2.1.2 Intel® Server Management Firmware Settings

A subset of the Intel® Server Management firmware configurable items is saved into the INI files. See Appendix B for the lists of firmware settings saved in the INI file.

An example of a typical INI file is presented in Appendix B.

2.2 Restore Process Overview

Intel® Server Configuration Utility restores BIOS and Firmware settings from a text file known as INI file. The advantage of using an INI file is that user can modify and change the values of any of the settings available in the INI file. In this scenario, the INI file cannot be used to clone servers. Rather, it provides a mechanism of configuring same items with different values as per the end user will.

Server-specific settings can be modified using the command-line arguments described in Section 3.1. These settings can be specified as options on the same command line as the restore (`/r`) command-line option. Also, by executing Intel® Server Configuration Utility with the appropriate options after a restore operation is done.

Note: The information contained in the INI file header must match the system information of the server.

While restoring the configuration, the system information of the INI file must match with the system information. The utility aborts the restore operation with the corresponding error message if any of the above does not match.

3. Intel® Server Configuration Utility Installation and Removal

This chapter provides instructions for the user to install and to remove the Intel® Server Configuration Utility.

3.1 Prerequisites

- Download the latest server configuration utility package, `Syscfg_Vx.x.x_AllOS.zip`.
- For the latest package, go to https://downloadcenter.intel.com/.

Note: Intel® Server Configuration Utility requires Windows* administrative or Linux* root permissions.

3.2 UEFI: Installation and Removal of Intel® Server Configuration Utility

3.2.1 Intel® Server Configuration Utility Installation on UEFI

This section provides instructions to install the utility on UEFI.

1. Unzip `Syscfg_Vx.x.x_AllOS.zip` into a local directory (for example, `fs0:\syscfg`).
2. Go to the `UEFI_x64` folder.
3. Run `syscfg.efi` with command lines under UEFI Shell.

3.2.2 Intel® Server Configuration Utility Removal from UEFI

Remove the folder where `syscfg.efi` is located.

3.3 Windows*: Installation and Removal of Intel® Server Configuration Utility

3.3.1 Intel® Server Configuration Utility Installation on Windows*

This section provides instructions to install the utility on Windows*.

1. Copy the `Syscfg_Vx.x.x_AllOS.zip` file into the local directory (for example, `C:\syscfg`).
2. Unzip the file.
3. Install the driver, go to the `Win_x64\Drivers` folder, and run `install.cmd` to install the IPMI, SMI, and memory map drivers.
4. Open the CMD terminal as administrator.
5. Go to `Win_x64` and run `syscfg.exe`.

3.3.2 Intel® Server Configuration Utility Removal from Windows*

1. Go to the `Win_x64\Drivers` folder.
2. Run `uninstall.cmd` (for removing the drivers).
3. Remove the `Win_x64` folder completely.
4. Reboot the system for the changes to take effect.

3.4 Linux*: Installation and Removal of Intel® Server Configuration Utility

3.4.1 Prerequisites in Linux*

The following prerequisites are needed to install and use the utility:

- Boot to Red Hat Enterprise Linux* (RHEL*), SUSE Linux Enterprise Server* (SLES*), or the CentOS* system.
- On Red Hat*, CentOS*, SUSE*, UEFI-aware Linux*, there might be a driver conflict between an internal driver and the kernel. Start the `OpenIPMI` driver and make sure the `/dev/ipmi0` device exists.

3.4.2 Intel® Server Configuration Utility Installation on Linux*

This section provides instructions to install the utility on Linux*.

3.4.2.1 Installation on Linux* Using Script

1. Unzip the package `Syscfg_Vx.x.x_AllOS.zip` in a directory.
2. Go to the `Linux_x64` directory. If no previous version of the utility is installed, skip to step 4.
3. If another version has been previously installed, remove that version before installing the new version, by running `uninstall.sh`.
4. Install the utility, by running `install.sh`.

3.4.2.2 Installation on Linux* Using RPM

1. Copy `rpm` for Intel® Server Configuration Utility from the corresponding folder to a local folder.
2. Go to the `Linux_x64` directory.
3. For RHEL* older than 8.0, copy from `Linux_x64\RHEL\RHEL7`.
4. For RHEL* 8.0 and above, copy from `Linux_x64\RHEL\RHEL8`.
5. For SLES* older than 15, copy from `Linux_x64\SLES\SLES12`.
6. For SLES*15 and above, copy from `Linux_x64\SLES\SLES15`.
7. If another version has been previously installed, remove that version before installing the new version. Run `rpm -e syscfg`.
8. Install the utility. Run `rpm -ivh syscfgxx.rpm`. This step installs the utility in `/usr/bin/syscfg/`.
9. On RHEL*/SLES*, after installing the `rpm`, close the terminal from which `rpm` was installed, then execute the utility from a new terminal.

3.4.2.3 Installation on Linux* Using DEB

1. Go to `Linux_x64/UBUNTU/UBUNTUXX` directory, XX –16 or 20.
2. Run `dpkg -i xxxx.deb`.

3.4.2.4 Execute Intel® Server Configuration Utility on Linux* without Installation

1. Unzip the package.
2. Go to the `Linux_x64\XXX\XXX` directory based on distro. For example, for RHEL8, go to `Linux_x64/RHEL/RHEL8/`.
3. Unzip `syscfg.zip`.
4. Run the executable `/syscfg -h`.

3.4.3 Intel® Server Configuration Utility Removal from Linux*

This section provides instructions to remove the utility from Linux*.

3.4.1.1 Removal using `scriptRun`

Run `uninstall.sh` from `Linux_x64` directory.

3.4.1.2 RPM removal

Run `rpm -e syscfg`.

3.4.1.3 DEB removal

Run `dpkg -r syscfg`.

4. Use of Intel® Server Configuration Utility

Intel® Server Configuration Utility is a command-line scriptable utility that can be used to save and restore BIOS and firmware settings to a file, or to set and display individual BIOS settings. Intel® Server Configuration Utility may be used in a script to automate the process of configuring multiple servers. A few commands may not be supported on all platforms due to limitations in the platform firmware/BIOS. The description of each command lists any limitations.

The general syntax is:

```
syscfg [{/|-}command [arguments]] […next_command [arguments]]
```

Multiple commands may be specified on a single line, unless otherwise noted in the command reference description. The maximum line length is 127 characters.

This list explains the general characters usage:

- **-, /.** Options can also be specified with a hyphen ("-"), or with a forward slash ("/"). If no options are specified, version information is displayed.
- **/.** Throughout the document, all command-line options are preceded by a "/".
- **[].** Optional arguments for a given command-line option are shown in square brackets ("[" and "]").
- **<>.** Required arguments are shown in angle brackets ("<" and ">").
- **[]** and **<>**. Arguments that are required under certain circumstances are enclosed by angle brackets and the dependency is indicated in parentheses within the angle brackets.

Command-line length is dependent on the limitations imposed by the shell. Multiple options can be specified on the same command-line as long as the length restriction is observed. Multiple options are processed so that all options and corresponding arguments are validated first. If any illegal values are detected, an error message is displayed.

Next, data is written to the correct destination (BIOS or firmware). If an error occurs during a write operation, command processing stops at that point and an error message is displayed. This measure makes possible to write some data on a command line to the hardware and restrict other data from being written to the hardware.

If the command line is greater than 127 characters in length, the utility gives an error message and does not process any part of the command. When multiple options are used, only the status message for the last option is displayed. `bbo`, `help`, and `display` commands are meant to be used as stand-alone.

Notes:

- This version of Intel® Server Configuration Utility can be run from EFI, Linux*, the Windows* command prompt, and Windows* Preinstallation Environment (Windows* PE). Some platforms may not support all the operating environments for this utility.
- Intel® Server Configuration Utility requires Windows* administrative or Linux* root permissions.
- To clone an existing firmware and/or BIOS configuration from one system to another, each system must have identical versions of firmware and BIOS on them. This condition must be met because the configurable settings in firmware or BIOS may vary from version to version.

To copy the BIOS and Firmware configuration from one system to another, use the following process:

1. Run the utility on the system to be duplicated, specifying the save option. This step saves a subset of firmware and BIOS settings to a file.
2. Run the utility on the target system, specifying the restore option and the file created on the primary system to restore those settings to the target system.
3. Run Intel® Server Configuration Utility to change any of the parameters that cannot be duplicated on the two systems. For example, the host IP address stored in the firmware cannot be the same for two servers.

The utility supports configuration of individual parameters of the firmware and BIOS. Some options group the parameters to identify settings that are dependent on each other for the firmware proper functionality.

Note: BIOS variable(s) meant for preliminary Baseboard Management Controller (BMC) configuration cannot be saved or restored using Intel® Server Configuration Utility.

4.1 String Input

Some Intel® Server Configuration Utility options require arguments input as strings, such as a community string for LAN alerts. Restrictions about the valid characters are listed in this document, including the description of the arguments. Double quotation marks are used to signify the beginning and end of each string. A blank string must also be enclosed in double quotation marks. Double quotation marks are not allowed within any string for any other purpose.

4.2 Numeric Input

Restrictions regarding the values accepted for each numeric argument are listed in this document, including the description of the arguments. Numeric argument values may be required in hexadecimal or in decimal depending on the argument. In general, input is in decimal.

4.3 Command Consistency

All the utility's binaries targeted for different operating systems/EFI have consistent command behavior on the respective shells.

4.4 Channel Numbers in Examples

Unless otherwise specified, examples in this section assume IPMI channel 4 is a serial channel, and IPMI channels 1, 2 and 3 are LAN channels. Actual channel numbers may vary depending on platform BMC types.

Note: Refer to the respective BMC firmware external product specification (EPS) for more detailed information on the channel number assignments and their types.

4.5 Runtime Variable Access – `AMISetupNVLock` (for the Intel® Server System M70KLP Family Only)

The `AMISetupNVLock` command is an essential command that must be set before any BIOS settings. By providing the BIOS administrator password, `AMISetupNVLock` allows the user to unlock Boot Services accessible variables for runtime access.

```
syscfg /bsnvlock "BIOS Admin password"
```

This line returns `0xF` for `EFI_ACCESS_DENIED` on invalid password input. If the system does not have an administrator password set, it returns `0x6` for `EFI_NOT_READY`. After three failed attempts, the unlock interface is locked until the next system reboot. Once unlocked, writing the same variable with an invalid or empty password re-locks `AMISetupNVLock`.

Example

The following example enables the runtime variable access in a system with administrator password set to admin@123:

```
syscfg /bsnvlock "admin@123"
```

Note: This command does not apply in Intel® server platforms based on 1st or 2nd Gen Intel® Xeon® Scalable processor families, or Intel® server platforms based on 3rd Gen Intel® Xeon® Scalable processor family.

4.6 Save a Configuration

The utility uses a text-based `.ini` file to save and restore BIOS and management firmware settings in both binary and text formats. Being a text-based file, the available BIOS and management firmware settings can be easily modified and saved using any text editing tool.

To save the BIOS and Firmware configuration to a file, do the following:

1. Boot to one of the supported operating systems on the target system.
2. Change directories to the location of the `syscfg` executable file. This location must be writable to allow the system configuration to be saved.
   - In Windows*, Windows PE*, or EFI, type:
     - `syscfg /s <filename>.ini`
   - In Linux*, type:
     - `./syscfg /s <filename>.ini`

Use this saved INI file to restore the configuration on this target server or other servers using the `/r` command.

Table 2. Save/Restore Configuration Command-Line Options and Arguments

Options and arguments	Description
`/s [filename] [options]`	Writes the current system BIOS and Firmware configuration to the specified file. If no filename is specified, the default name `syscfg.ini` is used. No other command-line options except `/f` and `/b` can be used with this option. If the filename is specified, it must come immediately after the `/s` switch. This switch can be used with `/f` or `/b` option, to save just one of the component settings instead of all of them. The `/f` option saves only firmware settings to the configuration file and the `/b` option saves the BIOS settings to the configuration file. Combining `/f` and `/b` saves all settings into the file. **Note:** `/f` option is used in conjunction with `/s` and the switches `/s` and `/f` can be swapped and used. The filename must be followed after `/s` switch. For example, `syscfg /f /s filename.ini` successfully saves the files.
`/r [filename] <options> [command line options]`	Loads the BIOS or firmware settings from the specified file and writes them to the system. The default filename is `syscfg.ini`. If a filename is specified, it must come immediately after the `/r` option. The option must be specified such as `/f` and `/b` to selectively restore firmware settings or BIOS settings to the system, respectively. If no option is specified then the utility displays an error message and exits with an error code. Combining `/f` and `/b` restores all settings from the file. If other command-line options are specified, the utility first writes the contents of the file into the system and then processes the command-line options to overwrite any specified settings. If a BIOS administrator password is set, that password must be supplied using the `/bap` option along with the `/r` option. If the supplied password does not match the stored password, the restore operation is aborted and the utility displays an error message. **Note:** `/f` option is used in conjunction with `/r` and the switches `/r` and `/f` can be swapped and used. The filename must be followed by `/r` switch. For example, `syscfg /f /r filename.ini` successfully restores the files.
`/f`	This option is used in conjunction with `/s` or `/r` to save or restore the firmware settings only. When restoring the firmware settings, the input binary file must also contain the firmware settings, so this utility can restore them. Otherwise, this utility displays an error message and exits with an error code.
`/b`	This option is used in conjunction with `/s` or `/r` to save or restore the BIOS settings only. When restoring the BIOS settings, the input binary file must also contain the BIOS settings, so this utility can restore them. Otherwise, this utility displays an error message and exits with an error code.
`/nobo`	This option is used in conjunction with `/r` to skip restoring the boot order.

4.7 Restore a Configuration

The Intel® Server Configuration Utility supports restoring BIOS and management firmware settings in both binary and text mode using a text-based `.ini` file. In the following scenario, the `.ini` file does not clone servers, but instead provides a mechanism of configuring the same items with different values as needed.

To restore or install a system configuration from a saved `.ini` file, use the following procedure.

Note: For restoring read-only fields, the section name headers and key names must not be edited or deleted from the `.ini` file.

---

1. Boot the system to one of the supported operating systems.
2. Change to the directory containing the `syscfg` executable. The saved `.ini` configuration file must also be in this directory.
3. To restore the saved BIOS settings:
   - In Windows*, Windows PE*, or EFI, type:
     - `syscfg /r <filename>.ini /b`
   - In Linux*, type:
     - `./syscfg /r <filename>.ini /b`

4. On an Intel® server platform, the BIOS administrator password must be supplied.
   - If the BIOS administrator password is set:
     - In Windows*, Windows PE*, or EFI, type:
       - `syscfg /r filename.ini /b /bap <BIOS administrator password>`
     - In Linux*, type:
       - `./syscfg /r filename.ini /b /bap <BIOS administrator password>`
   - If the BIOS administrator password is not set:
     - In Windows*, Windows PE*, or EFI, type:
       - `syscfg /r filename.ini /b`
     - In Linux*, type:
       - `./syscfg /r filename.ini /b`

Notes:

- For restoring purpose, non-editable fields, section name headers, and key names must not be edited or deleted from the INI file. If any of these fields is edited/deleted, the utility behavior and error messages can be unpredictable.
- Save and restore of Host IP, Subnet Mask and Default Gateway IP is not supported.
- In Linux*, the user is restricted to save a file in `/` root path. The user is also restricted to restore any file from `/` path.
- As some BIOS settings have dependencies, using only once a `syscfg INI` file to save/restore BIOS settings may not be able to achieve the goal. The solution is to use a command line or an INI file to change/restore twice. For example, if the user wants to restore ATS Support, the Intel® Virtualization Technology for Directed I/O (Intel® VT-d) must be restored from “Disable” to “Enable” first to make ATS Support visible; then, do a second restore to change ATS Support value. Upon system reboot, the new BIOS settings take effect.
- The BIOS password must be set before restoring command for Intel® Server System M70KLP Family and Intel® Server M20NTP Family.
- Run `syscfg /bsnvlock "BIOS_Admin_Password"` before restoring command for Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

4.8 Display Intel® Server Configuration Utility Help

To display Intel® Server Configuration Utility help, type:

- `syscfg /h`

4.9 Display Current BIOS and Firmware Versions

To display the current BIOS and Firmware settings, type:

- `syscfg /i`

5. Use of Commands

This chapter lists the generic commands and switches, basic input/output system (BIOS) commands, and firmware commands, including all of their tasks.

5.1 Intel® Server Configuration Utility Commands – Quick Reference (Generic, BIOS, and Firmware)

Table 3 lists all the Intel® Service Configuration Utility commands, which are classified as generic, BIOS, and firmware.

Table 3. Intel® Server Configuration Utility Commands - Quick Reference

Generic Commands/Switches		BIOS Commands	
/d	Display	/bap	BIOS Administrator Password
/i	Information	/bup	BIOS User Password
/q	Quiet Mode switch	/bbosys	System Boot Order
/r	Restore	/bbo	System Boot Order in detail
/s	Save	/bcs	BIOS Configure Setting
/fsc	Upload INI Files	/bldfs	BIOS Load Default Factory Settings
		/bvar	This command creates a UEFI variable
		/secureboot	Set EFI Secure Boot status
		/securebootkey	Set EFI Secure Boot key

Firmware Commands

Channel Commands		LAN Commands		PEF Commands		User Commands	
/c	Channels	/lac	LAN Alert Configuration	/pefc	PEF Configure	/u	Users
/csel	Clear SEL	/lae	LAN Alert Enable	/peff	PEF Filter	/ue	User Enable
/dt	Date and Time	/lc	LAN Configuration	/pefp	PEF Policy	/up	User privilege
/eac	Email Alert Configuration	/le	LAN Enable				
/eae	Email Alert Enable	/lfo	LAN Failover				
/h	Help						

Miscellaneous Commands			
/prp	Power Restore Policy	/sdp	Set shutdown policy
/rbmc	Reset BMC	/sole	Serial-over-LAN
/rfs	Restore firmware settings	/bmcsol	Save BMC SOL log
/rnm	Reset Intel® Node Manager	/fan	Fan settings
/sbmcdl	Save BMC debug log	/gpc	Graceful power cycle

5.2 Generic Commands/Switches

5.2.1 Information (/i)

The /i option displays the BIOS version, the firmware boot code version, the firmware operational code version, and the firmware PIA version. If a filename is specified as an argument, the information displayed is from the file. If no filename is given, the information comes from the system.

Usage

```
syscfg /i [filename.ini]
```

Description

Displays the BIOS and Firmware versions of the system or the saved BIOS and Firmware settings in a System Configuration File. See Table 4.

Table 4. Information (/i) Option

Option	Description
Filename	Filename for a System Configuration File in the current working directory. If the filename is not specified, the command displays the BIOS and Firmware versions of the current system.

Examples

```
syscfg /i
syscfg /i btp.ini
```

5.2.2 Quiet (/q)

Usage

```
syscfg options /q
```

Description

Suppresses all messages. See Table 5.

Table 5. Quiet (/q) Options

Option	Description
Options	Any other valid option. The /q switch must be at the end of the command line.
/q	Quiet Mode. This option prevents all output from the command.

Example

```
syscfg /r /f /b /q
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.2.3 Restore (/r)

Usage

```
syscfg /r [filename.ini] {/f | /b | /f /b}
```

Description

Restores the BIOS and Firmware settings from an INI file. See Table 6.

Table 6. Restore (/r) Options

Option	Description
Filename	Filename of the syscfg configuration file in the current working directory. If no filename is specified, the default filename syscfg.ini is used based on the parameter supplied, as explained in the examples. The filename suffix must be .ini.
/f	Restore the firmware settings. See Appendix B for a list of the settings that are restored.
/b	Restore the BIOS settings. See Appendix B for a list of the settings that are restored.
/nobo	This option is used with /r to skip restoring boot order.

Examples

```
syscfg /r /f /b (default filename is syscfg.ini)
syscfg /r saved.ini /f
syscfg /r myscfg.ini /b /bap kwqt821
syscfg /r ini /f /b (default filename is syscfg.ini)
syscfg /r ini /f /b /nobo (default filename is syscfg.ini)
syscfg /r saved.ini /f
syscfg /r myscfg.ini /b /bap kwqt128
```

Notes:

- One or both of the /r and /f options are required. If the BIOS administrator password is set, use the /bap command to enter the password.
- The static IP address assigned by a DHCP server, the BIOS boot order, and other dynamic BIOS settings are not saved or restored.

5.2.4 Save (/s)

Usage

```
syscfg /s [filename.ini] {/f | /b | /f /b
```

Description

Saves the BIOS and Firmware settings to an .ini file. See Table 7.

Table 7. Save (/s) Options

Option	Description
Filename	Filename to be used for the Intel® Server Configuration Utility configuration file in the current working directory. If no filename is specified, the default filename syscfg.ini is used based on the parameter supplied explained in the examples. The filename suffix must be .ini; if omitted, syscfg adds the .ini suffix. The filename must consist of alphanumeric characters only.
/f	Save the firmware settings. See Appendix B for a list of the settings that are saved.
/b	Save the BIOS settings. See Appendix B for a list of the settings that are saved.

Examples

```
syscfg /s /f /b (default filename is syscfg.ini)
syscfg /s saved.ini /f

syscfg /s ini /f /b (default filename is syscfg.ini)
syscfg /s saved.ini /b
```

Notes:

- The save/restore process following the INI file is not a means for exact cloning between the servers; it is a means to clone a subset of BIOS/firmware configurable settings and duplicate those settings in the deployed servers.
- These features are not supported for Intel® server platforms: save and restore of host IP, subnet mask, default gateway IP, and backup gateway IP.

5.2.5 Upload INI Files (`/fsc`)

Usage

```
syscfg /fsc [filename.ini]
```

Description

The files that can be uploaded are: `fanmap.ini`, `zonemap.ini`, `fscprofile.ini`, `fscprofile_acoustic.ini`, `fscprofile_performance.ini`, `intel_config.ini`, and `intel_config_1.ini`.

Table 8. Save (`/fsc`) Options

Option	Description
`Filename`	Filename to be used for the Intel® Server Configuration Utility configuration file in the current working directory. The filename suffix must be `.ini`. The filename must consist of alphanumeric characters only. Whichever or all the files mentioned in Description can be uploaded.

Examples

```
syscfg /fsc fanmap.ini zonemap.ini fscprofile.ini fscprofile_acoustic.ini
fscprofile_performance.ini intel_config.ini intel_config_1.ini

syscfg /fsc fanmap.ini
```

Note: This command is applicable for the Intel® Server M20NTP Family only.

5.2.6 Display (/d)

The /d option displays the firmware and BIOS settings from the system. These are settings that can be configured from the command-line interface.

Usage

```
syscfg /d {CHANNEL Channel_ID | BIOS | BIOSSETTINGS { | LAN Channel_ID
LAN_Alert_Destination_Index | POWER | PEF Filter_Table_Index
[Policy_Table_Index] | SOL Channel_ID} | USER User_ID [Channel_ID] | FWADVCFG
Channel_ID [User_ID [SMTP_Configuration_Index] ] | SDP | SECUREBOOT }
```

Description

Displays the specified settings for the baseboard management controller (BMC) and the BIOS. See Table 9.

Table 9. Display (/d) Options

Option	Description
CHANNEL	Displays the BMC channel configuration for the specified channel.
Channel_ID	IPMI channel ID.
BIOS	Displays the current values of the BIOS settings that can be configured with this utility (except the administrator and user passwords).
BIOSSETTINGS	Displays values of a BIOS settings' subset. The arguments that follow this keyword are used to select which BIOS settings to display.
BIOS_Setting_Name	The name of the BIOS settings on the BIOS Setup screen. For board-specific settings names, refer to the BIOS setup technical product specification.
LAN	Displays the BMC LAN channel configuration. The operating system settings may be different.
POWER	Displays the power restore policy.
PEF	Displays the platform event filters.
SOL	Displays the serial-over-LAN settings.
USER	Displays the BMC user settings.
Channel_ID	IPMI channel ID.
LAN_Alert_Destination_Index	Enter the LAN Alert Destination Index.
Filter_Table_Index	Enter the Filter Table Index.
Policy_Table_Index	Enter the PEF Policy Table Index.
User_ID	Enter an integer between 1 and *n*, where *n* is the number of users supported by the platform for the BMC user ID. User ID 1 is the anonymous user (no password).
FWADVCFG	Displays the advanced firmware settings for the channel, users, and SMTP configuration.
Channel_ID	IPMI channel ID.
User_ID	BMC user ID. When used with the FWADVCFG keyword, the configuration information is displayed for the user.
SMTP_Configuration_Index	Specifies the SMTP configuration in the firmware email alert tables.
SDP	Displays the current shutdown policy in the system.
SECUREBOOT	Displays the current EFI secure boot status.
FAN	Displays the fan settings, including fan PWM offset, fan UCC, airflow limit and exit air temperature.

Examples

```
syscfg /d channel 1
syscfg /d lan 1 2
syscfg /d pef 2 1
syscfg /d BIOSSETTINGS "Set Fan Profile"
syscfg /d FWADVCFG 3 2 1
syscfg /d sdp
syscfg /d secureboot
syscfg /d fan
```

Note: In the Intel® Server Board S1200V3RPS, the Intel® Server Configuration Utility does not support the `/d` BIOS option.

5.2.6.1 Display Channel Configuration (`/d channel`)

This option displays the IPMI channel settings for a particular channel. This option has the following format:

```
syscfg /d channel <channel ID>
```

Example

The following example displays the channel settings for the channel number 1.

```
syscfg /d channel 1
```

Refer to Table 9 for sample display.

5.2.6.2 Display LAN Configuration (`/d lan`)

This option displays the current settings for a particular LAN channel. This option has the following format:

```
syscfg /d lan <channel ID> [< LAN Alert Destination Index>]
```

Example

This example displays the LAN configuration where the LAN channel number is 1:

```
syscfg /d lan 1
```

The following example displays the LAN configuration where the LAN channel number is 1 and the LAN Alert Destination Index is 2:

```
syscfg /d lan 1 2
```

5.2.6.3 Display PEF Configuration (`/d pef`)

This option displays the platform event filters (PEF) configuration for a particular `filter table index – policy table entry` combination. This option can be used also with `filter table index` alone. In that case, only a subset of PEF configuration is displayed.

This option has the following format:

```
syscfg /d pef <filter table index> [<policy table index>]
```

Examples

The following example displays the PEF filter and policy configurations corresponding to the filter table index 2 and policy table index 1.

```
syscfg /d pef 2 1
```

The next example displays only the PEF filter configuration.

```
syscfg /d pef 2
```

Refer to Table 9 for sample display.

5.2.6.4 Display SOL Configuration (`/d sol`)

This option displays the SOL configuration for a particular LAN channel. This option has the following format:

```
syscfg /d sol <channel ID>
```

Example

This example displays the current SOL settings for the LAN channel 1.

```
syscfg /d sol 1
```

Refer to Table 9 for sample display.

5.2.6.5 Display User Configuration (`/d user`)

This option displays the current user settings for a particular user. This option can be used either with user ID alone or with user ID – channel number combination. This option has the following format:

```
syscfg /d user <User ID> [<Channel ID>]
```

Examples

This example displays the current user settings for the user ID 1.

```
syscfg /d user 1
```

The next example displays the user configuration for user 1 on channel 1.

```
syscfg /d user 1 1
```

Refer to Table 9 for sample display.

5.2.6.6 Display Power Configuration (`/d power`)

This option displays the current power settings in the system. This option has the following format:

```
syscfg /d power
```

Example

This example displays the current power settings present in the system.

```
syscfg /d power
```

Refer to Table 9 for sample display.

5.2.6.7 Display BIOS Settings (`/d biossettings`)

The following advanced option can be used to display an individual BIOS setting and the possible values it can take. This command can be used for all the possible BIOS settings, which can be configured through Intel® Server Configuration Utility. All the BIOS settings having spaces in between must be enclosed in double quotes (“”).

Settings that have duplicate names are not supported through this option. However, in such scenarios, the Intel® Server Configuration Utility displays the first occurrence.

```
syscfg /d biossettings <bios setting name>
```

Note: `biossettings` option is an advanced option to display the BIOS settings. The BIOS settings names must be identical to the names displayed by the BIOS setup utility. Refer to the platform-specific BIOS external product specification (EPS) for more information on the setup support.

5.2.6.8 Display EFI Secure Boot Status (`/d secureboot`)

This option displays the current EFI secure boot status. This option has the following format:

```
syscfg /d secureboot
```

Example

This example displays the current EFI secure boot status.

```
syscfg /d secureboot
```

5.3 BIOS Commands

This section lists the BIOS commands.

5.3.1 BIOS Administrator Password (/bap)

Usage

```
syscfg /bap {old_password | ""} [new_password | ""]
```

Description

Sets or clears the BIOS administrator password.

Table 10. BIOS Administrator Password (/bap) Options

Option	Description
old_password new_password	The password must have a length of 8–14 characters. The password can have alphanumeric characters (a-z, A-Z, 0–9) and the following special characters: ! @ # $ % ^ * ( ) – _ + = ? ' Use two double quotes ("") to represent a null password.

- To set or clear the BIOS administrator password, enter the old password (if one is set).
- If the administrator password is not set, enter a null string (for the new password) to clear the password. The administrator password controls access to all BIOS setup fields, including the ability to clear the user password.
- If only one password (administrator or user) is set, then enter the BIOS Setup screen for the password.
- Change any other BIOS option using Intel® Server Configuration Utility by providing the administrator password.
- Combining the `/bap` and `/bup` commands sets both the BIOS administrator and user passwords at the same time.

Note: For more information on BIOS setup options, refer to the corresponding Intel® server board's technical product specification (TPS).

Examples

```
syscfg /bap "" admin@123
syscfg /bap admin@123 superuser@123
```

Notes:

- The Set BIOS User Password (`/bup`) option (see Section 5.3.2) can be used only if a valid system administrator password is set.
- Clearing the BIOS administrator password also clears the user password.
- This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.3.2 BIOS User Password (/bup)

Usage

```
syscfg /bup {admin_password | ""}  } {old_user_password | ""}
[new_user_password | ""]
```

Description

Sets or clears the BIOS user password. See Table 11.

Table 11. BIOS User Password (/bup) Options

Option	Description
admin_password	• Enter the BIOS administrator password if the password is set. • Enter the null string if the password is not set.
old_user_password, new_user_password	The password must have a length of 8–14 characters. The password can have alphanumeric characters (a-z, A-Z, 0–9) and the following special characters: ! @ # $ % ^ * ( ) - _ + = ? ' Use two double quotes ("") to represent a null password.

- To set or clear the BIOS administrator password, enter the old password (if it has been set).
- If the administrator password is not set, enter a null string (for the new password) to clear the password.
- If only one password (administrator or user) is set, then enter the BIOS Setup screen for the password.
- Change the user password by providing the administrator password as explained in the following Examples.
- The user password controls access that allows to modify the following BIOS Setup fields: time, date, language, and user password.

Note: For more information on BIOS setup options, refer to the corresponding Intel® server board's TPS.

Examples

```
syscfg /bup superuser@123 "" user@123
syscfg /bup superuser@123 user@123 newuser@123 ""
syscfg /bup superuser@123 newuser@123
syscfg /bup "" "" user?123 in this example the admin password is "" (not set)
```

Notes:

- The /bup option can be used only if the system has a valid administrator password set. Clearing the administrator password also clears the user password.
- The user password cannot be the same as the administrator password.
- This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.3.3 System Boot Order (/bbosys)

Usage

```
syscfg /bbosys [device_number [device_number […] ] ]
```

Description

Changes the boot order of the system devices. See Table 12.

Table 12. System Boot Order (/bbosys) Options

Option	Description
device_number	The current ordinal number of the system boot device. `1` is the first device, `2` is the second device, etc. To change the order, specify an order for the device numbers. For example, if `2 1 4 3` is specified, then the second boot device is the first boot device after the command is executed.

Note: For more information on BIOS setup options, refer to the corresponding Intel® server board's TPS.

Examples

```
syscfg /bbosys

 1: PS-SONY CD-ROM CDU5221
 2: 1st floppy drive
 3: PM-WDC WD400BB-23FRA0
 4: EFI Boot Manager
```

- How to set the BIOS boot order:

```
syscfg /bbosys admin@123 2 1 3 4
```

- If the BIOS administrator password is not set, use:

```
syscfg /bbosys "" 2 1 3 4
```

5.3.4 System Boot Order in Detail (/bbo)

Description

Displays complete information for all boot devices in the system under different groups or classifications.

Examples

```
syscfg /bbo
Number of boot devices = 7
============================
Boot Device Priority
--------------------
:: Local Hard Disk Boot Devices (HDD) ::
=======================================
1: KingstonDataTraveler 2.01.00
2: Secondary Master Hard Disk
3: JetFlashTranscend 8GB   8.07
:: CD/DVD Boot Devices (DVD) ::
================================
1: Primary Master CD-ROM
:: Network Boot Devices (NW) ::
===============================
1: IBA GE Slot 0100 v1327
2: IBA GE Slot 0101 v1327
:: EFI Boot Devices (EFI) ::
============================
1: Internal EFI Shell
```

Examples

- How to set the detailed system boot order:

```
syscfg /bbo "admin@123" EFI NW DVD HDD
syscfg /bbo "admin@123" NW 2 1
```

- If the administrator password is not set, use:

```
syscfg /bbo "" EFI NW DVD HDD
syscfg /bbo "" NW 2 1
```

Notes:

- Reordering boot devices using `/bbo` must be followed by a system reset as per the *Intelligent Platform Management Interface Specification 2.0*. Otherwise, an immediate display command using the `/bbo` switch may not display the correct boot device order.
- The `/bbo` command cannot be cascaded.
- For example, the following commands are valid:

```
syscfg /bbo HDD 3 2 1
syscfg /bbo NW 2 1
```

- The following command is not valid:

```
syscfg /bbo HDD 3 2 1 NW 2 1
```

- The `/bbo` command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.3.5 Configure BIOS Settings (/bcs)

Usage

```
syscfg /bcs [admin_password] BIOS_Setting_Name Value [BIOS_Setting_Name Value
[…] ]
```

Description

Sets the values of individual BIOS settings. See Table 13.

Table 13. Configure BIOS Settings (/bcs) Options

Option	Description
admin_password	• Enter the BIOS administrator password if the password is set. • Enter the null string if the password is not set.
BIOS_Setting_Name	The name of the BIOS settings on the BIOS Setup screen. Refer to the corresponding Intel® server board's TPS to consult how to use the BIOS setup utility for setting names.
Value	The value for the BIOS settings.

Notes:

- The Intel® Server Configuration Utility does not support the switches `/bcs` or `/d biossettings` to configure the BMC configuration under the BIOS Server Management screen settings.
- `bcs` is an advanced option to change the BIOS settings. The BIOS setting name must be identical to the name displayed by the BIOS setup or as indicated in the BIOS EPS.
- `bcs` switch can be used for setting the rapid boot path on the platforms where the rapid boot is supported in the BIOS. The variable for the Intel® Rapid BIOS Boot is defined as "Intel Rapid Boot". Caution must be taken before setting this variable, since this command switches the normal boot path to a rapid boot path and vice versa. Once set to rapid boot path, the prompt console cannot be seen.
- Most of the settings under Intel® Server Management are saved in the BMC. After a reboot, for some settings under Intel® Server Management, the values from the BMC override the values set through the `bcs` switch.
- The users must be completely aware of the purpose of the BIOS setting they are going to change by using the `bcs` switch. Failure on the same can result in system malfunction.
- Intel® Server Configuration Utility does not support using the switches `/bcs` and `/d biossettings` to configure the BMC configuration under BIOS Server Management screen settings.
- The BIOS administrator password must be installed before any set operation to `biossettings`.
- The `bcs` switch can be used only after the Runtime Variable Access item (`AMISetupNVLock`) is set successfully.
- For more information on BIOS setup options, refer to the corresponding Intel® server board's TPS.

Examples

- Configure BIOS settings:

```
syscfg /bcs "admin@123" "Quiet Boot" 0
syscfg /bcs "admin@123" "Quiet Boot" 0 "POST Error Pause" 1
syscfg /bcs "admin@123" "Set throttling mode" 2 "Altitude" 900 "Set fan
profile" 2
```

- When the BIOS administrator is not set, use:

```
syscfg /bcs "" "Quiet Boot" 0
syscfg /bcs "" "Quiet Boot" 0 "POST Error Pause" 1
syscfg /bcs "" "Set throttling mode" 2 "Altitude" 900 "Set fan profile" 2
```

- Use the `syscfg /d biossettings` command to show possible values for the BIOS settings:

```
syscfg /d biossettings "Main" "Quiet Boot"
```

5.3.6 BIOS Load Default Factory Settings (`/bldfs`)

Usage

```
syscfg /bldfs [admin_password ]
```

Description

Loads the default factory BIOS settings. See Table 14.

Table 14. BIOS Load Default Factory Settings (`/bldfs`) Options

Option	Description
`admin_password`	• Enter the BIOS administrator password if the password is set. • Enter the null string if the password is not set.

- The `/bldfs` option requires a reboot to reset the default settings.

Note: For more information on BIOS setup default settings, refer to the corresponding Intel® server board's TPS.

Examples

```
syscfg /bldfs admin@123
```

- When the BIOS administrator is not set, use:

```
syscfg /bldfs ""
```

5.3.7 BIOS Variable (/bvar)

Usage

```
syscfg /bvar [Option][admin_password]
```

Description

Creates, modifies, or deletes a new EFI variable. This switch is supported in Linux*, Windows*, and UEFI platforms. See Table 15.

Table 15. BIOS Variable (/bvar) Options

Option	Description
admin_password	Enter the BIOS administrator password if one is set. Enter the null string if the password is not set.
/bvar create	This command creates an EFI variable. The following parameters create this command: • Name: Name of the EFI variable that to be created. • GUID: GUID of the EFI variables. • Data: Data for the variable. • Attributes: Attribute is optional while creating. If not provided, it takes an attribute value of 7. The command is successful when the command is executed successfully and the variable is created. However, if a variable with the same name and GUID exists, the utility provides an appropriate message.
/bvar overwrite	This command overwrites the data value of an existing EFI variable. The following parameters are passed to this command: • Name: Name of the existing variable. • GUID: Optional. However, if the name is not unique, the utility provides a message for providing GUID as an additional parameter. • Data: Data to be overwritten.
/bvar delete	This command deletes an existing EFI variable. The following parameters are passed to this command: • Name: Name of the variable. • GUID: Optional and needed if the name is not unique.

Notes:

- Take caution before deleting any EFI variable or rewriting the data of an existing variable. Otherwise, this deletion may lead to an unstable system.
- The supported attributes are 3 and 7. The attributes 0, 1, 2, 4, 5, and 6 are not supported with this switch.

Table 16. BIOS Variable (/bvar) Supported Attributes

Attributes	Description
3	Non-Volatile(NV) + Boot Service Access(BS)
7	Non-Volatile(NV) + Boot Service Access(BS) + Real Time(RT)

Examples

```
syscfg /bvar "admin@123" create testvar 33838512-0BC7-4ba4-98C0-0219C2B61BF9
testvardata
syscfg /bvar "admin@123" create testvar 33838512-0BC7-4ba4-98C0-0219C2B61BF9
testvardata 3
syscfg /bvar "admin@123" overwrite testvar testvarnewdata
syscfg /bvar "admin@123" delete testvar
```

- When the BIOS administrator is not set:

```
syscfg /bvar "" create testvar 33838512-0BC7-4ba4-98C0-0219C2B61BF9
testvardata
syscfg /bvar "" create testvar 33838512-0BC7-4ba4-98C0-0219C2B61BF9
testvardata 3
syscfg /bvar "" overwrite testvar testvarnewdata
syscfg /bvar "" delete testvar
```

5.3.8 BIOS EFI Secure Boot Settings (/secureboot)

Usage

```
syscfg /secureboot [admin_password] [enable/disable]
```

Description

Sets the EFI Secure Boot status.

Examples

- To set EFI Secure Boot status to "Disable":

```
syscfg /secureboot "admin@123" disable
```

- To set EFI Secure Boot status to "Enable":

```
syscfg /secureboot "admin@123" enable
```

Note: This command does not apply for the Intel® Server System M70KLP and Intel® Server M20NTP.

5.3.9 BIOS EFI Secure Boot Key Settings (/securebootkey)

Usage

```
syscfg /securebootkey [admin_password] overwrite [key_name] [key_data_file]
```

Description

Overwrites or appends the EFI Secure Boot key settings. The following parameters are passed to this command:

- `Key_name`: Name of the key user to be updated, such as `PK`, `KEK`, `db`, and `dbx`.
- `Key_data_file`: File path of key data file.

Examples

- Use this command if the BIOS administrator password is not set.

```
syscfg /securebootkey "" overwrite PK key_data_file
```

Note: This command does not apply for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.3.10 Runtime Variable Access – AMISetupNVLock

The AMISetupNVLock command is an essential command that must be set before any BIOS settings. By providing the BIOS administrator password, AMISetupNVLock allows the user to unlock boot services accessible variables for runtime access.

```
syscfg /bsnvlock "BIOS Admin password"
```

It returns 0xF for EFI_ACCESS_DENIED on invalid password input. If the system does not have an administrator password set, it returns 0x6 for EFI_NOT_READY. After three failed attempts, the unlock interface gets locked until the next system reboot. Once unlocked, writing the same variable with an invalid or empty password re-locks AMISetupNVLock.

Example

The example enables the runtime variable access in a system with administrator password set to admin@123:

```
syscfg /bsnvlock "admin@123"
```

Note: This command does not apply for Intel® server platforms based on 1st or 2nd Gen Intel® Xeon® Scalable processor families. Neither does this command apply for Intel® server platforms based on the 3rd Gen Intel® Xeon® Scalable processor family.

5.4 Firmware Commands

Firmware commands are described in this section.

5.4.1 Channels (/c)

The /channel, or /c, option is used to configure or display IPMI channel settings. These options have the following formats.

Usage

```
syscfg {/c | /channel} [channel_ID { 1 {straight | MD5} | 2 {straight | MD5 }
| 3 {straight | MD5 } | 4 {straight | MD5 } | 5 {enable | disable} | 6
{enable | disable} | 7 {disabled | preboot | always | shared} | 8 {user |
operator | admin} | 9 {enable | disable} } ]
```

Description

Configures the BMC channels. Use this command to change a single parameter (select number 1–9 as shown in Table 17).

Table 17. Channels (/c) Options

Option	Description
`Channel_ID`	BMC channel ID number.
1	Selects the authentication types for callback privilege level.
2	Selects the authentication types for user privilege level.
3	Selects the authentication types for operator privilege level.
4	Selects the authentication types for administrator privilege level.
5	Selects the per-message authentication.
6	Selects User Level Authentication Enable.
7	Selects the Access Mode. Values of preboot and shared are only valid for serial channels.
8	Selects the privilege level limit for the channel.
9	Selects Enable PEF on the specified channel.
straight | MD5	Authentication method for callback, user, operator, and administrator privilege levels. Enable multiple authentication methods by separating the possible values with the plus sign.
disabled | preboot | always | shared	Access Mode. Values of preboot and shared are only valid for serial channels.
user | operator | admin	Privilege Level.
enable | disable	Enable or disable: Per Message Authentication, User Level Authentication, and PEF.

Examples

```
syscfg /c
syscfg /c 1 1 straight+MD5
syscfg /c 1 7 always /c 1 8 admin
```

Notes:

- In the Intel® Server Board S1200V3RPS, the Intel® Server Configuration Utility does not support serial channel configuration.
- This command is not applicable for the Intel® Server M20NTP Family.

5.4.2 Clear SEL (/csel)

Usage

```
syscfg {/csel | /clearSEL}
```

Description

Clears the system event log (SEL).

Examples

```
syscfg /csel
syscfg /clearSEL
```

5.4.3 Date and Time (/dt)

Usage

```
syscfg {/dt | /timeofday} [admin_password ] hh:mm:ss mm/dd/yyyy
```

Description

Sets the time of day stored in the real-time clock (RTC) using the BIOS. See Table 18.

Table 18. Date and Time (/dt) Options

Option	Description
admin_password	Enter the BIOS administrative password if one is set. Enter the null string if the password is not set.
hh:mm:ss	Hours (24-hour clock), minutes, and seconds.
mm/dd/yyyy	Month, day, and year.

Examples

```
syscfg /dt "admin@123" 18:45:00 08/15/2011
```

- When the BIOS administrator is not set:

```
syscfg /dt "" 18:45:00 08/15/2011
```

5.4.4 Email Alert Configure (/eac)

Usage

```
syscfg {/eac | /emailalertconf} SMTP_Configurtion_Index {0|1|2|
3|4|5|6|7|8|9} ASCII_String Channel number
```

Description

Configures email alert settings. See Table 19.

Table 19. Email Alerts Configure (/eac) Options

Option	Description
SMTP_Configuration_Index	1–*n*. An index into the SMTP configuration table in firmware. The maximum number *n* depends on the firmware in the Intel® server board (refer to the server documentation for details).
{0|1 | 2 | 3|4|5|6|7|8|9}	0 = SMTP enable/disable 1 = From address 2 = To address 3 = Subject 4 = SMTP username 5 = User password (only set, no get) 6 = Server address 7 = Message content 8 = Port number 9 = Authentication and encryption method
ASCII_String	This option is the value for the selected parameter. Use double quotes ("") to enclose strings that include space characters.
Channel number	Valid LAN channel number.

Example

```
syscfg /eac 1 1 server2@companyyx.com 1
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.5 Email Alert Enable (/eae)

Usage

```
syscfg {/eae | /emailalertenable} Sender_Name Channel _Number
```

Description

Sets the sender machine name for SMTP email alerts from the current server. See Table 20.

Table 20. Email Alerts Enable (/eae) Options

Option	Description
Sender_Name	Sender machine name. This string identifies the managed server to the SMTP server.
Channel_Number	Valid LAN channel number.

Example

```
syscfg /eae dupont01 3
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.6 Help (/h)

The /h and /? options display help for the utility. Pressing the <Esc> key exits from help and returns to a command-line. Pressing <Esc> key also exits from any help component being displayed and returns to a command-line.

Usage

```
syscfg {/h | /?} {lan | user | pef | sol | power | channel | system |
fwadvcfg | bios}
```

Description

Displays help on the Intel® Server Configuration Utility.

Examples

- Displays help in the specified area. See Table 21.

Table 21. Help (/h) Example Options

Option	Description
lan | user | pef | sol | power | channel | system | fwadvcfg | bios	Displays help in the specified area.

- Displays help for the LAN and power configurations:

```
syscfg /h lan
syscfg /? power
```

Notes:

- In Intel® Server Board S1200V3RPS, the sol option is not supported by the utility.
- In Linux*, to use the /? option, enclose it in double quotes (“”).
- Help is displayed in text format, one page at a time. The <Enter> key can be pressed to display the next help page and <Esc> key can be pressed to exit.

5.4.7 LAN Alert Configuration (/lac)

Usage

```
syscfg {/lac | /lanalertconf} Channel_Id Alert_Destination_Index
Alert_Destination_IP_Address {Alert_ID_MAC_Address | "resolve"} {enable |
disable } {enable | disable} {1..7} {1..255} {SNMP | SMTP}
```

Description

Configures the LAN alert destinations for a channel. See Table 22.

Table 22. LAN Alert Configuration (/lac) Options

Option	Description
Channel_ID	IPMI channel number.
Alert_Destination_Index	Index into the Alert Destination table.
Alert_Destination_IP_Address	IP address of the alert destination, in the dot-separated decimal value format: n.n.n.n. Where *n* is a number from 0 through 255.
Alert_ID_MAC_Address	MAC address of the alert destination in the hexadecimal format separated by hyphens: hh-hh-hh-hh-hh-hh. Where *h* is a hexadecimal value from 0 to F, or "resolve" to automatically resolve the MAC address.
enable | disable	Backup gateway state.
enable | disable	Alert acknowledge state.
1..7	Retry count.
1..255	Retry interval in seconds.
SNMP | SMTP	Alert destination type: SNMP (Simple Network Management Protocol) or SMTP (Simple Mail Transport Protocol). The default is SNMP.

See the *Intelligent Platform Management Interface Specification 2.0* for more information.

Example

```
syscfg /lac 1 1 10.78.211.40 03-FE-02-41-F3 disable 0 1 SNMP
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.8 LAN Alert Enable (/lae)

Usage

```
syscfg {/lae | /lanalertenable} Channel_ID Gateway_IP_Address
{Gateway_MAC_Address | "resolve"} SNMP_Community_String [Backup_Gateway_IP_
Address {Backup_Gateway_MAC_Address | "resolve"}
```

Description

Enables LAN alerting on the specified channel. See Table 23.

Table 23. LAN Alerts Enable (/lae) Options

Option	Description
Channel_ID	IPMI channel ID.
Gateway_IP_Address	Gateway IP address for the specified LAN channel.
Gateway_MAC_Address	Gateway MAC address for the specified LAN channel or "resolve" to automatically resolve the MAC address.
SNMP_Community_String	Enter the SNMP community string, or the null string ("").
Backup_Gateway_IP_ Address	Gateway IP address for the specified LAN channel.
Backup_Gateway_MAC_Address	Gateway MAC address for the specified LAN channel or "resolve".

Notes:

- The `Gateway_MAC_Address` and `Backup_Gateway_MAC_Address` may optionally be set to `resolve`. If set to `resolve`, Intel® Server Configuration Utility attempts to resolve the MAC address before writing any values to the firmware. If the MAC address resolution fails, Intel® Server Configuration Utility quits, without writing, and prints an error message.
- The `resolve` option is not supported across different subnets. Use of the `resolve` command is not encouraged.

See the *Intelligent Platform Management Interface Specification 2.0* for more information.

Examples

```
syscfg /lae 2 10.110.40.3 03-FE-02-41-F3 public
syscfg /lae 2 10.110.40.3 03-fe-02-41-f3 "" 10.110.40.4 0f-7e-42-4a-33
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.9 LAN Configuration (/lc)

Usage

```
syscfg {/lc | /lanconf} Channel_ID {2a {straight | MD5} | 2b {straight | MD5}
| 2c {straight | MD5} | 2d {straight | MD5} | 3 IP_Address | 4 {static |
DHCP} | 6 IP_Address | 12 IP_Address | 13 MAC_Address | 14 IP_Address | 15
MAC_Address | 16 SNMP_Community_String | C5 IP_Address | C7 IP_Address | 102
{Enable | Disable} | 103 {STATIC | DHCPV6 | AUTO} | 104 IPv6_Address | 105
0…128 | 106 IP_Address }
```

Description

Configures the LAN settings on a specific channel. This option is similar to `/lac` but it is used to configure only one parameter at a time. Select the parameter by choosing one of the parameter numbers listed in Table 24 (2a, 2b, ..., 16), followed by a value.

Table 24. Channel ID Options

Option	Description
`Channel_ID`	IPMI channel ID (LAN channel).
2a	Selects authentication type for callback privilege level. Multiple privilege levels may be specified by using the plus sign (see the following examples).
2b	Selects authentication type for user privilege level. Multiple privilege levels may be specified by using the plus sign (see the following examples).
2c	Selects authentication type for operator privilege level. Multiple privilege levels may be specified by using the plus sign (see the following examples).
2d	Selects authentication type for administrator privilege level. Multiple privilege levels may be specified by using the plus sign (see the following examples).
3	Selects IP address for the specified LAN channel. This option is not valid when the source is set to DHCP.
4	Selects source for IP address
6	Selects subnet mask. This option is not valid when the source is set to DHCP.
12	Selects gateway IP address. This option is not valid when the source is set to DHCP.
13	Selects gateway MAC address.
14	Selects backup gateway IP address.
15	Selects backup gateway MAC address.
16	Selects community string.
C5	Selects IPv4 or Ipv6 IP address for DNS primary server. Format can be xxx.xxx.xxx.xxx (IPv4) or xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx (IPv6).
C6	Selects IPv4 or Ipv6 IP address for DNS secondary server. The format can be xxx.xxx.xxx.xxx (IPv4) or xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx (IPv6).
C7	Up to a 64-byte ASCII string (printable characters in the range `0x21` to `0x7e`) DHCP host name string.
102	IPv6 Enable. Use `Enable` or `Disable` to enable/disable the parameter: `IPv6 Enable`.
103	Selects source for IPv6 IP address. Values to be used are `STATIC`, `DHCPV6`, and `AUTO`.
104	Selects IPv6 IP address for the specified LAN channel. This option is not valid when the IPv6 IP source is set to `DHCPV6` or `AUTO`. The format is `xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx`
105	Selects the IPv6 prefix length. This option is not valid when the IPv6 IP source is set to `DHCPV6` or `AUTO`. Prefix length must be 0–128, as per the IPv6 specification.
106	Selects the IPv6 default gateway IP. This option is not valid when the IPv6 IP source is set to `DHCPV6` or `AUTO`. The format is `xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx.xxxx`

See the *Intelligent Platform Management Interface Specification 2.0* for more information.

Notes:

- The host IP, subnet mask, and default gateway IP cannot be set when DHCP is enabled for the LAN channel.
- The host MAC address cannot be set for any LAN channel in the BMC's Intel® 631xESB/632xESB I/O Controller Hub.
- The DHCP host name is common for all LAN channels.
- The set DHCP host name is used on the next DHCP lease renewal or at the current lease expiration.

Examples

```
syscfg /lc 1 2b straight+md5
syscfg /lc 1 C7 TestDHCPHostName
syscfg /lc 1 102 ENABLE
syscfg /lc 1 103 AUTO
```

5.4.10 LAN Enable (/le)

Usage

```
syscfg {/le | /lanenable} Channel_ID {dhcp | {static IP_Address Subnet_Mask}}
```

Description

Configures the LAN channel used by the BMC on the specified channel.

Table 25. LAN Enable (/le) Options

Option	Description
Channel_ID	BMC LAN channel ID.
static | dhcp	IP address source.
IP_Address	IP address.
Subnet_Mask	Subnet mask.

See the *Intelligent Platform Management Interface Specification 2.0 Specification* for more information.

Examples

```
syscfg /le 1 dhcp
syscfg /le 1 static 10.30.240.21 255.255.255.0
```

5.4.11 LAN Failover Mode (/lfo)

Usage

```
syscfg {/lfo | /lanfailover} {enable | disable} {enable | disable} {enable |
disable} {enable | disable} {1..3}
```

Description

The BMC firmware provides a LAN failover capability. When a failure of the system hardware associated with one LAN link occurs, this feature reroutes the traffic to an alternate link.

LAN Failover Mode (/lfo) Options

Option	Description
ENABLE | DISABLE	Enables or disables LAN failover.
ENABLE | DISABLE	If NIC1 is bonded for LAN failover. Optional, needs the BMC to support LAN failover on a specific NIC.
ENABLE | DISABLE	If NIC2 is bonded for LAN failover. Optional, needs the BMC to support LAN failover on a specific NIC.
ENABLE | DISABLE	If NIC3 is bonded for LAN failover. Optional, needs the BMC to support LAN failover on a specific NIC.
1..3	Primary NIC. Optional, needs the BMC to support LAN failover on a specific NIC.

Note: This command is not applicable for the Intel® Server M20NTP Family.

5.4.12 PEF Configure (/pefc)

Usage

```
syscfg {/pefc | /pefconfig} {enable | disable} {none | alert | pdown | reset
| pcycle | diagint}
```

Description

Globally enables or disables the PEF used by the BMC. See Table 26.

Table 26. PEF Configure (/pefc) Options

Option	Description
enable | disable	Global PEF enablement.
none | alert | pdown | reset | pcycle | diagint	PEF action. Enable multiple actions by using a plus sign (+) to concatenate the values. None may not be combined with other options: • `pdown` means power down. • `pcycle` means power cycle. • `diagint` means diagnostic interrupt.

See the *Intelligent Platform Management Interface Specification 2.0*, Chapter 17, for more information on platform event filtering.

Example

```
syscfg /pefc enable alert+pdown+reset+pcycle
```

Note: The Intel® Server Configuration Utility does not support the `diagint` option in the Intel® Server Board S1200V3RPS.

5.4.13 PEF Filter (/peff)

Usage

```
syscfg {{/peff | /peffilter} Filter_table_index {enable | disable} {none |
alert | pdown | reset | pcycle | diagint} {1..15}}
```

Description

Configures the platform event filters used by the BMC on the specified channel. See Table 27.

Table 27. PEF Filter (/peff) Options

Option	Description
Filter_table_index	Index for particular filters in the PEF filter table.
enable | disable	Enables specified filter.
none | alert | pdown | reset | pcycle	PEF action. Enables multiple actions by using a plus sign to concatenate the values. None may not be combined with other options. • `pdown` means power down. • `pcycle` means power cycle.
1...15	Policy number. This number maps to the Alert Policy table. See also the `/pefp` option in Section 5.4.14.

See the *Intelligent Platform Management Interface Specification 2.0*, Chapter 17, for more information on platform event filtering.

Example

```
syscfg /peff 3 enable pdown 1 /peff 4 enable pdown 1
```

5.4.14 PEF Policy (/pefp)

Usage

```
syscfg {/pefp | /pefpolicy} Policy_table_index {enable | disable} {1..15}
{ALWAYS | NEXT_E | STOP | NEXT_C | NEXT_T} Channel_ID Destination_table_index
```

Description

Configures the Platform Event Filter Policy table used by the BMC on the specified channel. See Table 28.

Table 28. PEF Policy (/pefp) Options

Option	Description
Policy_table_index	Policy Table Index.
enable | disable	Enable the policy.
1..15	Policy number.
ALWAYS | NEXT_E | STOP | NEXT_C | NEXT_T	Alert Policy: • ALWAYS = Always send an alert to the destination indicated in the policy table entry specified by argument 1. • NEXT_E = If an alert was successfully sent to the previous destination attempted, do not send an alert to the destination indicated in the policy table entry specified in argument 1. Instead, go to the next policy table entry with the same policy number. • STOP = If an alert was successfully sent to the previous destination attempted, do not send an alert to the destination indicated in the policy table entry specified in argument 1. Also, do not process any more policy table entries. • NEXT_C = If an alert was successfully sent to the previous destination attempted, do not send an alert to the destination indicated in the policy table entry specified in argument 1. Instead, go to the next policy table entry with the same policy number but on a different channel. • NEXT_T = If an alert was successfully sent to the previous destination attempted, do not send an alert to the destination indicated in the policy table entry specified in argument 1. Instead, go to the next policy table entry with the same policy number but with a different destination type.
Channel_ID	IPMI channel ID for a BMC channel.
Destination_table_index	Destination Table Index.

See the *Intelligent Platform Management Interface Specification 2.0*, Chapter 17, for more information on platform event filtering.

Example

```
syscfg /pefp 3 enable 1 always 2 3
```

5.4.15 Power Restore Policy (/prp)

Usage

```
syscfg /prp {off | on | restore}
```

Description

Sets the power restore policy. See Table 29.

Table 29. Power Restore Policy (/prp) Options

Option	Description
off | on | restore	The power restore policy can be turned on/off or restored.

See the *Intelligent Platform Management Interface Specification 2.0*, Section 28.8, for more information on the IPMI command `Set Power Restore Policy`.

Example

```
syscfg /prp off
```

5.4.16 Configure Power Supply Cold Redundancy Setting (/cr)

Usage

```
syscfg {/cr | /coldredundancy} {<Argument 1> <Argument 2>}
```

Description

Configures cold redundancy settings in the Intel® Server Management firmware. Arguments for this command are described in Table 30.

Table 30. Cold Redundancy Configuration Command-Line Arguments

Argument #	Possible Values	Description
1	Enable | Disable	Enables/disables the cold redundancy feature. Refer to Example 1.
1 **2**	**Rotation** Enable | Disable	Enables/disables the cold redundancy rotation. Refer to Example 2.
1 **2**	**Timeout** Timeout value in number of days	Sets the timeout value for the cold redundancy rotation feature. Refer to Example 3. Valid values are between 1–180 days (up to 6 months).
1 **2**	**Rank** Rank Value	Sets the rank order of power supplies. Refer to Example 4. When the user sets the rank order of power supplies, Intel® Server Configuration Utility internally sets the rank type to `USER_SPECIFIC`. The rank order must be only for the maximum number of power supplies supported by the system.

Examples

1. Enables the cold redundancy feature:

   ```
   syscfg /cr enable
   ```

2. Enables the cold redundancy rotation feature:

   ```
   syscfg /cr rotation enable
   ```

3. Sets the rotation timeout to 10 days:

   ```
   syscfg /cr timeout 10
   ```

4. Sets the rank order to 2, 1:

   ```
   syscfg /cr rank "2 1"
   ```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.17 Reset the BMC (/rbmc)

Usage

```
syscfg {/rbmc | resetBMC}
```

Description

Resets the baseboard management controller.

Examples

```
syscfg /rbmc
```

Note: Do not issue any `syscfg` commands until the BMC initializes (approximately 50 s).

5.4.18 Restore Firmware Settings (/rfs)

Usage

```
syscfg {/rfs | restorefirmwaresettings}
```

Description

Restores the factory default BMC settings.

Examples

```
syscfg /rfs
```

Note: This command must be followed only by `Reset BMC` or `AC Power Cycle`. However, do not issue either of the commands until the BMC initializes (approximately 50 s). Unpredictable operations may occur if the BMC is not reset after this command.

5.4.19 Reset Intel® Node Manager (/rnm)

Usage

```
syscfg {/rnm | resetnodemanager}
```

Description

Resets the Intel® Node Manager (Intel® NM).

Intel® NM provides a mechanism for the customer to configure multiple power policies on a platform. These policies can have a defined action to `shut down` the platform. If the user configures a power policy that performs a shutdown and the power threshold is set too low, the platform does not boot to the operating system if it is an ACPI-aware operating system. A utility that runs in the EFI environment (which is not ACPI-aware) allows for an in-band recovery mechanism.

Examples

```
syscfg /rnm or syscfg /resetnodemanager
```

5.4.20 Serial-over-LAN (/sole)

Usage

```
syscfg {/sole | /soleenable} Channel_ID {enable | disable} {user | operator |
admin} {9600 | 19200 | 38400 | 115200} {0..7} {0..2550}
```

Description

Enables serial-over-LAN (SOL) on the specified LAN channel. See Table 31.

Table 31: Serial-over-LAN (/sole) Options

Option	Description
`Channel_ID`	IPMI channel ID.
enable | disable	SOL enablement.
user | operator | admin	Privilege level limit.
9600 | 19200 | 38400 | 115200	Baud rate.
0..7	Retry count.
0..2550	Retry interval in milliseconds, rounded to the nearest 10 ms.

See the *Intelligent Platform Management Interface Specification 2.0*, Chapter 26, for more information on IPMI SOL commands.

Note: Serial baud rate is not supported.

Example

```
syscfg /sole 1 Enable Operator 6 200
```

5.4.21 Save BMC Debug Log (/sbmcdl)

Usage

```
syscfg {/sbmcdl | /savebmcdebuglog} [ Public ] [filename]
```

Description

Saves the BMC debug log to a `.zip` file for system diagnostics purposes. See Table 32.

Table 32. Save BMC Debug Log Options (/sbmcdl)

Option	Description
Public	Regular system diagnostics.
Filename	Name of the file in which the BMC diagnostics data is saved. The extension must be `.zip` or `.ZIP`.

5.4.22 Save BMC SOL Log (/bmcsol)

Usage

```
syscfg {/bmcsol} [filename]
```

Description

Saves the BMC SOL log to a `.zip` file (system serial output). See Table 33.

Table 33. BMC SOL Log Option (/bmcsol)

Option	Description
Filename	Name of the file in which the BMC SOL data is saved. File extension must be `.zip` or `.ZIP`.

Note: This feature is only supported in the Intel® Server Board S1200V3RPS.

5.4.23 Users (/u)

Usage

```
syscfg {/u | /user} User_ID User_name Password
```

Description

Sets the user's name and password for the specified BMC user. See Table 34.

Table 34. Users (/u) Options

Option	Description
User_ID	User ID. Use a decimal integer in the range [1...*n*]. The maximum value for *n* is 5. That is, only five users are supported, irrespective of the platforms. User ID 1 is usually the anonymous user.
User_name	BMC username consisting of up to 16 ASCII characters in the range 0x21–0x7e, except "[" and "]". Use "" to leave username as anonymous.
Password	User BMC password. ASCII string of up to 20 characters.

See the *Intelligent Platform Management Interface Specification 2.0* for more information on user passwords.

Notes:

- The usernames for User 1 (NULL) and User 2 (Root) cannot be changed.
- Duplicate usernames are not supported.

Examples

```
syscfg /u 3 BobT gofps
syscfg /u 2 "" ""
```

5.4.24 User Enable (/ue)

Usage

```
syscfg {/ue | /userenable} User_ID {enable | disable} Channel_ID
```

Description

Enables or disables the BMC user on the specified BMC channel. See Table 35.

Table 35. User Enable (/ue) Options

Option	Description
User_ID	User ID. Use a decimal integer in the range [1...*n*], where *n* is the number of users supported by the BMC platform. User ID 1 is usually the anonymous user.
enable | disable	Enable or disable the specified user.
Channel_ID	IPMI channel ID.

See the *Intelligent Platform Management Interface Specification 2.0* for more information on user configuration settings.

Example

```
syscfg /ue 3 enable 1
```

5.4.25 User Privilege (/up)

Usage

```
syscfg {/up | /userprivilege} User_ID Channel_ID {callback | user | operator
| admin | none} [SOL | Disable]
```

Description

Enables or disables the BMC user on the specified BMC channel. See Table 36.

Table 36: User Privilege (/up) Options

Options	Description
User_ID	BMC user ID.
Channel_ID	BMC channel number.
callback | user | operator | admin | none	IPMI privilege level.
SOL | Disable	Specifies the type of payload: serial-over-LAN or disabled.

See the *Intelligent Platform Management Interface Specification 2.0* for more information on user privilege levels.

Notes:

- User 2 (Root) privileges cannot be changed.
- Privilege level none is not supported.
- A maximum five users are supported by Intel® Server Configuration Utility, irrespective of the number of users supported in the firmware.

Examples

```
syscfg /up 1 1 admin
syscfg /up 1 1 admin sol
```

5.4.26 Shutdown Policy Interface (/sdp)

Usage

```
syscfg /sdp {enable | disable}
```

Description

Use this command to configure shutdown policy in the Intel® Server Management firmware.

Example

Enables shutdown policy so the server shuts down on a power supply overcurrent (OC) event or a power supply over temperature (OT) event.

```
syscfg /sdp enable
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.27 Fan Settings (/fan)

Usage

```
syscfg /fan {1 | 2 | 3 | 4} value
```

Description

Use this command to change fans settings like pulse width modulation (PWM) offset, upper clipping curve (UCC), airflow limit, and exit air temperature. See Table 37.

Table 37. Fan Settings (/fan) Options

Options	Description
1	`Fan PWM Offset : Valid Offset 0-100`. This number is added to the calculated PWM value to increase the fan speed.
2	`Fan UCC : Max domain PWM`. BIOS valid range is 70–100. This option sets the absolute maximum fan PWM for the domain.
3	`Air Flow Limit : System CFM Limit`. BIOS valid range is 60–100. This option sets the maximum allowable system CFM under normal operating conditions. This value is ignored during error conditions such as a fan failure or a critical temperature event. The value in this item is a percentage of the maximum CFM. The resolution is 1%.
4	`Exit Air Temp : Exit Air temperature`. BIOS valid range is 50–70. This measure is to give the maximum exit air temperature to BMC.
Value	The value to be set for the fan setting options selected.

Examples

Change fan PWM offset to 20:

```
syscfg /fan 1 20
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

5.4.28 Graceful Power Cycle (/gpc)

Usage

```
syscfg /gpc
```

Description

Use this command to do a graceful power cycle.

Examples

```
syscfg /gpc
```

Note: This command is not applicable for the Intel® Server System M70KLP Family and Intel® Server M20NTP Family.

Appendix A. IPMI Channel Assignments

Table 38 lists the IPMI channel assignments.

Table 38. IPMI Channel Assignments

IPMI Channel ID	Assignments
Channel 1	Baseboard LAN Channel
Channel 2	Baseboard LAN Channel
Channel 3	Optional Intel® RMM4 NIC

Appendix B. Saved Firmware Settings

This section describes firmware settings that are saved and restored with Intel® Server Configuration Utility in binary and INI formats.

A.1. Binary Format

Table 39 lists the firmware settings that are saved and restored with Intel® Server Configuration Utility in binary formats.

Table 39. Saved Firmware Settings

Component	Setting
Power Configuration Setting	Power Restore Policy
LAN Channel Settings	Alert Enable
	Per Message Authentication
	User Level Authentication Enable
	Access Mode
	Privilege Level Limit
	Community String
	Gratuitous ARP Enable
	ARP Interval
	Authentication Types
	DHCP Enable
	DHCP Host Name
	Subnet Mask
	Gateway IP
	Gateway MAC
	Backup Gateway IP
	Backup Gateway MAC
	BMC ARP Response Enable
Note: Save and Restore of Host IP, Subnet Mask, Default Gateway IP, and Backup Gateway IP are not supported.	
LAN Alert Settings	Alert Acknowledge Enabled
	Alert IP
	Alert MAC
	Gateway Selector
	Retry Count
	Retry Interval
User Settings	Username
	User Password
	Privilege Level Limit
	Callback Status
	Link Authentication Enable
	IPMI Messaging Enable
	User Payload

Component	Setting
Platform Event Filter Settings†	PEF Enable
	Event Message for PEF Action
	Startup Delay
	Alert Startup Delay
	Global Control Actions
	Event Filters
	Alert Policies
Serial-over-LAN Settings	SOL Enable
	SOL Privilege Level
	SOL Retry Count
	SOL Retry Interval
	SOL Baud Rate*
	SOL Authentication Enable
SMTP Alert Settings	Enable/Disable SMTP
	Sender Machine Name
	From Address
	To Address
	Subject Line
	Username
	User Password
	Server Address
	Message Content
	LAN Alert Destination/SNMP Alert Index Mapping

Note: SOL Baud Rate setting is not supported.

A.2. Sample <filename>.ini File

The following information is for reference purposes only. The content and settings of the .ini file for different server systems may differ from the ones shown in the following list.

Instructions for editing the INI file:

- Section Header – Must not be edited, because this action could lead unpredictable behavior.
- Un-editable fields have specific instructions.
- Options for the fields are clearly called out. No other options are allowed.
- Not all IPMI/BIOS settings under a section are available. Only the ones that are required for the user to configure are available.
- The section headers are generated automatically depending on the platform and a few sections and fields may not be available depending on the platform firmware and BIOS.

```
; Warning!!! Warning!!! Warning!!!
; --------------------------------
; This file has been generated in a system with the BIOS/Firmware
; specifications as mentioned under [SYSTEM] section. Please do not
; modify or edit any information in this section. Attempt to restore
; these information in incompatible systems could cause serious
; problems to the systems and could lead the system non-functional.
; Note: The file is best seen using wordpad.

[SYSTEM]
BIOSVersion=SE5C600.86B.99.99.x032.072520111118       ; This field should not be edited
FWBootVersion=4                                  ; This field should not be edited
FWOpcodeVersion=21                                    ; This field should not be edited
PIAVersion=6                                          ; This field should not be edited

[POWER]
PowerRestorePolicy=ON                                 ; Options: On, Off or Restore

[USERS]
NumberOfUsers=5                                  ; This field should not be edited

[USERS::USER1]
UserName=                                             ; This field should not be edited
GlobalUserStatus=DISABLE                              ; Options: Enable or Disable
PrivilegeCh11=ADMIN                                   ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                                 ; Options: Enable or Disable
SOLEnableCh1=ENABLE                                   ; Options: Enable or Disable
PrivilegeCh12=ADMIN                                   ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                                 ; Options: Enable or Disable
SOLEnableCh2=ENABLE                                   ; Options: Enable or Disable
PrivilegeCh13=ADMIN                                   ; Options: User, Operator, Admin, NoAccess
UserAccessCh3=DISABLE                                 ; Options: Enable or Disable
SOLEnableCh3=ENABLE                                   ; Options: Enable or Disable

[USERS::USER2]
UserName=root                                         ; This field should not be edited
GlobalUserStatus=DISABLE                              ; Options: Enable or Disable
PrivilegeCh11=ADMIN                                   ; This field should not be edited
UserAccessCh1=ENABLE                                  ; This field should not be edited
SOLEnableCh1=ENABLE                                   ; This field should not be edited
PrivilegeCh12=ADMIN                                   ; This field should not be edited
UserAccessCh2=ENABLE                                  ; This field should not be edited
SOLEnableCh2=ENABLE                                   ; This field should not be edited
PrivilegeCh13=ADMIN                                   ; This field should not be edited
UserAccessCh3=ENABLE                                  ; This field should not be edited
SOLEnableCh3=ENABLE                                   ; This field should not be edited

[USERS::USER3]
UserName=test1                                        ; ASCII printable characters in the range of
0x21 to 0x7E. Max length 16 bytes
GlobalUserStatus=DISABLE                              ; Options: Enable or Disable
PrivilegeCh11=ADMIN                                   ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                                 ; Options: Enable or Disable
```

```
SOLEnableCh1=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh12=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh2=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh13=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh3=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh3=ENABLE                                    ; Options: Enable or Disable

[USERS::USER4]
UserName=test2                                         ; ASCII printable characters in the range of 0x21 to
0x7E. Max length 16 bytes
GlobalUserStatus=DISABLE                               ; Options: Enable or Disable
PrivilegeCh11=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh1=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh12=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh2=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh13=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh3=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh3=ENABLE                                    ; Options: Enable or Disable

[USERS::USER5]
UserName=test3                                         ; ASCII printable characters in the range of 0x21 to
0x7E. Max length 16 bytes
GlobalUserStatus=DISABLE                               ; Options: Enable or Disable
PrivilegeCh11=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh1=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh12=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh2=ENABLE                                    ; Options: Enable or Disable
PrivilegeCh13=ADMIN                                    ; Options: User, Operator, Admin, NoAccess
UserAccessCh3=DISABLE                                  ; Options: Enable or Disable
SOLEnableCh3=ENABLE                                    ; Options: Enable or Disable

[PEF]
PEFEnable=ENABLE                                       ; Options: Enable, Disable

[PEF::FILTERS]
Filter1=DISABLE                                        ; Options: Enable, Disable
Filter2=DISABLE                                        ; Options: Enable, Disable
Filter3=DISABLE                                        ; Options: Enable, Disable
Filter4=DISABLE                                        ; Options: Enable, Disable
Filter5=DISABLE                                        ; Options: Enable, Disable
Filter6=DISABLE                                        ; Options: Enable, Disable
Filter7=DISABLE                                        ; Options: Enable, Disable
Filter8=DISABLE                                        ; Options: Enable, Disable
Filter9=DISABLE                                        ; Options: Enable, Disable
Filter10=DISABLE                                       ; Options: Enable, Disable
Filter11=DISABLE                                       ; Options: Enable, Disable
Filter12=DISABLE                                       ; Options: Enable, Disable

[LANCHANNELS]
NumberOfLANChannels=3                                  ; This field should not be edited
DHCPHostName=DCMI001E670DD158                          ; ASCII printable characters in the range of 0x21 to
0x7E. Max length 64 bytes
LANFailOver=DISABLE                                    ; Options: Enable or Disable

[CHANNEL::LAN1]
AlertEnable=ENABLE                                     ; Options: Enable, Disable
PerMessageAuthentication=ENABLE                        ; Options: Enable, Disable
UserLevelAuthentication=ENABLE                         ; Options: Enable, Disable
AccessMode=ALWAYS                                      ; Options:Disable, Always, shared
PrivilegeLevelLimit=ADMIN                              ; Options: User, Operator, Admin
CommunityString=public                                 ; Upto 16 bytes, no space allowed
ARPEnable=DISABLE                                      ; Options: Enable, Disable
ARPResponse=ENABLE                                     ; Options: Enable, Disable
ARPInterval=0                                          ; Decimal value between 0 & 255. This value is in
milliseconds. Input value rounded down to the nearest 500ms value
DHCPEnable=DISABLE                                     ; Options: Enable or Disable. If 'Disable' static IP
will be used
```

```
HostIP=0.0.0.0                                  ; This field should not be edited
SubnetMask=0.0.0.0                              ; This field should not be edited
GatewayIP=0.0.0.0                               ; This field should not be edited
GatewayMAC=00-00-00-00-00-00                    ; This field should not be edited
BackupGatewayIP=0.0.0.0                         ; This field should not be edited
BackupGatewayMAC=00-00-00-00-00-00              ; This field should not be edited
IPV6Status=DISABLE                              ; Options: Enable or Disable
AlertIP0=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC0=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form
AlertIP1=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC1=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form

[CHANNEL::LAN2]
AlertEnable=ENABLE                              ; Options: Enable, Disable
PerMessageAuthentication=ENABLE                 ; Options: Enable, Disable
UserLevelAuthentication=ENABLE                  ; Options: Enable, Disable
AccessMode=ALWAYS                               ; Options:Disable, Always, shared
PrivilegeLevelLimit=ADMIN                       ; Options: User, Operator, Admin
CommunityString=public                          ; Upto 16 bytes, no space allowed
ARPEnable=DISABLE                               ; Options: Enable, Disable
ARPResponse=ENABLE                              ; Options: Enable, Disable
ARPInterval=0                                   ; Decimal value between 0 & 255. This value is in
milliseconds. Input value rounded down to the nearest 500ms value
DHCPEnable=DISABLE                              ; Options: Enable or Disable. If 'Disable' static IP
will be used
HostIP=0.0.0.0                                  ; This field should not be edited
SubnetMask=0.0.0.0                              ; This field should not be edited
GatewayIP=0.0.0.0                               ; This field should not be edited
GatewayMAC=00-00-00-00-00-00                    ; This field should not be edited
BackupGatewayIP=0.0.0.0                         ; This field should not be edited
BackupGatewayMAC=00-00-00-00-00-00              ; This field should not be edited
IPV6Status=DISABLE                              ; Options: Enable or Disable
AlertIP0=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC0=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form
AlertIP1=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC1=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form

[CHANNEL::LAN3]
AlertEnable=ENABLE                              ; Options: Enable, Disable
PerMessageAuthentication=ENABLE                 ; Options: Enable, Disable
UserLevelAuthentication=ENABLE                  ; Options: Enable, Disable
AccessMode=ALWAYS                               ; Options:Disable, Always, shared
PrivilegeLevelLimit=ADMIN                       ; Options: User, Operator, Admin
CommunityString=public                          ; Upto 16 bytes, no space allowed
ARPEnable=DISABLE                               ; Options: Enable, Disable
ARPResponse=ENABLE                              ; Options: Enable, Disable
ARPInterval=0                                   ; Decimal value between 0 & 255. This value is in
milliseconds. Input value rounded down to the nearest 500ms value
DHCPEnable=DISABLE                              ; Options: Enable or Disable. If 'Disable' static IP
will be used
HostIP=0.0.0.0                                  ; This field should not be edited
SubnetMask=0.0.0.0                              ; This field should not be edited
GatewayIP=0.0.0.0                               ; This field should not be edited
GatewayMAC=00-00-00-00-00-00                    ; This field should not be edited
BackupGatewayIP=0.0.0.0                         ; This field should not be edited
BackupGatewayMAC=00-00-00-00-00-00              ; This field should not be edited
IPV6Status=DISABLE                              ; Options: Enable or Disable
AlertIP0=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC0=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form
AlertIP1=0.0.0.0                                ; In xxx.xxx.xxx.xxx form
AlertMAC1=00-00-00-00-00-00                     ; In xx-xx-xx-xx-xx-xx form

[CHANNEL::LAN1::SOL]
SOLEnable=ENABLE                                ; Options: Enable, Disable
PrivilegeLevelLimit=USER                        ; Options: Admin, User, Operator
SolNumberOfRetries=7                            ; Decimal value in the range 0-7
SolRetryInterval=500                            ; Decimal value in the range of 0-2559 rounded down
to the nearest unit of 10. In milliseconds
SolBaudRate=38400                               ; Options: 9600, 19200, 38400, 57600, 115200. Refer
respective platform FW specifications for the supported Baud rates

[CHANNEL::LAN2::SOL]
```

```
SOLEnable=ENABLE                                    ; Options: Enable, Disable
PrivilegeLevelLimit=USER                            ; Options: Admin, User, Operator
SolNumberOfRetries=7                                ; Decimal value in the range 0-7
SolRetryInterval=500                                ; Decimal value in the range of 0-2559 rounded down
to the nearest unit of 10. In milliseconds
SolBaudRate=38400                                   ; Options: 9600, 19200, 38400, 57600, 115200. Refer
respective platform FW specifications for the supported Baud rates

[CHANNEL::LAN3::SOL]
SOLEnable=ENABLE                                    ; Options: Enable, Disable
PrivilegeLevelLimit=USER                            ; Options: Admin, User, Operator
SolNumberOfRetries=7                                ; Decimal value in the range 0-7
SolRetryInterval=500                                ; Decimal value in the range of 0-2559 rounded down
to the nearest unit of 10. In milliseconds
SolBaudRate=38400                                   ; Options: 9600, 19200, 38400, 57600, 115200. Refer
respective platform FW specifications for the supported Baud rates

[EMAILCONFIG]
NumberOfEmailConfig=45                              ; This field should not be edited

[EMAILCONFIG::CHANNEL1::INFO]
SenderName=                                         ; ASCII printable character max upto 32 bytes
FromAddress=                                        ; ASCII printable character max upto 32 bytes
ToAddress=                                          ; ASCII printable character max upto 64 bytes
Subject=                                            ; ASCII printable character max upto 32 bytes
SMTPUserName=                                       ; ASCII printable character max upto 16 bytes
Message=                                            ; ASCII printable character max upto 64 bytes
ServerAddress=0.0.0.0                               ; In xxx.xxx.xxx.xxx form

[EMAILCONFIG::CHANNEL2::INFO]
SenderName=                                         ; ASCII printable character max upto 32 bytes
FromAddress=                                        ; ASCII printable character max upto 32 bytes
ToAddress=                                          ; ASCII printable character max upto 64 bytes
Subject=                                            ; ASCII printable character max upto 32 bytes
SMTPUserName=                                       ; ASCII printable character max upto 16 bytes
Message=                                            ; ASCII printable character max upto 64 bytes
ServerAddress=0.0.0.0                               ; In xxx.xxx.xxx.xxx form

[EMAILCONFIG::CHANNEL3::INFO]
SenderName=                                         ; ASCII printable character max upto 32 bytes
FromAddress=                                        ; ASCII printable character max upto 32 bytes
ToAddress=                                          ; ASCII printable character max upto 64 bytes
Subject=                                            ; ASCII printable character max upto 32 bytes
SMTPUserName=                                       ; ASCII printable character max upto 16 bytes
Message=                                            ; ASCII printable character max upto 64 bytes
ServerAddress=0.0.0.0                               ; In xxx.xxx.xxx.xxx form

[BIOS]

[BIOS::Main]
Quiet Boot=1                                        ;Options: 0=Disabled: 1=Enabled
POST Error Pause=0                                  ;Options: 0=Disabled: 1=Enabled

[BIOS::Processor Configuration]
Intel(R) Turbo Boost Technology=1                   ;Options: 0=Disabled: 1=Enabled
Enhanced Intel SpeedStep(R) Tech=1                  ;Options: 0=Disabled: 1=Enabled
Processor C3=0                                      ;Options: 0=Disabled: 1=Enabled
Processor C6=1                                      ;Options: 0=Disabled: 1=Enabled
Intel(R) Hyper-Threading Tech=1                     ;Options: 0=Disabled: 1=Enabled
Active Processor Cores[1]=0                         ;Options: 1=1: 2=2: 3=3: 4=4: 5=5: 6=6: 7=7: 0=All
Execute Disable Bit=1                               ;Options: 0=Disabled: 1=Enabled
Intel(R) Virtualization Technology=0                ;Options: 0=Disabled: 1=Enabled
Intel(R) VT for Directed I/O=0                      ;Options: 0=Disabled: 1=Enabled
MLC Streamer=0                                      ;Options: 1=Disabled: 0=Enabled
MLC Spatial Prefetcher=0                            ;Options: 1=Disabled: 0=Enabled
DCU Data Prefetcher=0                               ;Options: 1=Disabled: 0=Enabled
DCU Instruction Prefetcher=0                        ;Options: 1=Disabled: 0=Enabled
Direct Cache Access (DCA)=1                         ;Options: 0=Disabled: 1=Enabled
Software Error Recover=0                            ;Options: 0=Disabled: 1=Enabled

[BIOS::Memory Configuration]
Memory Operating Speed Selection=0                  ;Options: 2=1067: 3=1333: 1=800: 0=Auto
```

```
Phase Shedding=1                                    ;Options: 1=Auto: 0=Disabled: 1=Enabled
Multi-Threaded MRC=1                                ;Options: 0=Disabled: 1=Enabled
Memory Type=2                                       ;Options: 0=RDIMMs only: 2=UDIMMs and RDIMMs:
1=UDIMMs only
MPST Support=0                                      ;Options: 0=Disabled: 1=Enabled
PCCT Support=0                                      ;Options: 0=Disabled: 1=Enabled
ECC Support=1                                       ;Options: 0=Disabled: 1=Enabled
Rank Multiplication=0                               ;Options: 0=Auto: 1=Enabled
LRDIMM Module Delay=1                               ;Options: 0=Auto: 1=Disabled
MemTest=1                                           ;Options: 0=Disabled: 1=Enabled
SW MemTest=0                                        ;Options: 0=Disabled: 1=Enabled
MemTest On Fast Boot=0                              ;Options: 0=Disabled: 1=Enabled
Attempt Fast Boot=0                                 ;Options: 0=Disabled: 1=Enabled
Scrambling Seed High=54165                          ;Options: 65535=Max: 0=Min: 0=Step
Battery Back Ch 2=0                                 ;Options: 0=Disabled: 1=Enabled
Battery Back Ch 3=1                                 ;Options: 0=Disabled: 1=Enabled
Check PCH_PM_STS=0                                  ;Options: 0=Disabled: 1=Enabled
Check PlatformDetectADR=1                           ;Options: 0=Disabled: 1=Enabled
Patrol Scrub=1                                      ;Options: 0=Disabled: 1=Enabled
Demand Scrub=1                                      ;Options: 0=Disabled: 1=Enabled
Correctable Error Threshold[1]=10                   ;Options: 10=10: 20=20: 5=5
Correctable Error Threshold[2]=10                   ;Options: 10=10: 20=20: 5=5: 1=ALL: 0=None

[BIOS::Memory RAS and Performance Configuration]

[BIOS::Mass Storage Controller Configuration]

[BIOS::PCI Configuration]
Maximize Memory below 4GB=0                         ;Options: 0=Disabled: 1=Enabled
Memory Mapped I/O above 4GB=0                       ;Options: 0=Disabled: 1=Enabled
Onboard Video=1                                     ;Options: 0=Disabled: 1=Enabled
Dual Monitor Video=0                                ;Options: 0=Disabled: 1=Enabled
Primary Display=1                                   ;Options: 3=Auto: 0=IGFX: 2=PCI Bus: 1=PEG

[BIOS::Serial Port Configuration]
Serial A Enable=1                                   ;Options: 0=Disabled: 1=Enabled
Address=1                                           ;Options: 4=2E8h: 2=2F8h: 3=3E8h: 1=3F8h
IRQ=0                                               ;Options: 4=3: 0=4
Serial B Enable=1                                   ;Options: 0=Disabled: 1=Enabled
Address=2                                           ;Options: 4=2E8h: 2=2F8h: 3=3E8h: 1=3F8h
IRQ=4                                               ;Options: 4=3: 0=4

[BIOS::USB Configuration]
USB Controller=1                                    ;Options: 0=Disabled: 1=Enabled
Legacy USB Support=0                                ;Options: 2=Auto: 1=Disable d: 0=Enabled
Port 60/64 Emulation=1                              ;Options: 0=Disabled: 1=Enabled
Make USB Devices Non-Bootable=0                     ;Options: 0=Disabled: 1=Enabled
Device Reset timeout=1                              ;Options: 0=10 sec: 1=20 sec: 2=30 sec: 3=40 sec
HP v190w 3000=0                                     ;Options: 0=Auto: 4=CD-ROM: 1=Floppy: 2=Forced FDD:
3=Hard Disk

[BIOS::System Acoustic and Performance Configuration]
Set Throttling Mode=0                               ;Options: 0=Auto: 6=DCLTT: 2=OLTT: 3=SCLTT
Altitude=900                                        ;Options: 300=300m or less: 900=301m - 900m:
1500=901m - 1500m: 3000=Higher than 1500m
Set Fan Profile=1                                   ;Options: 2=Acoustic: 1=Performance
Fan PWM Offset=0                                    ;Options: 100=Max: 0=Min: 0=Step

[BIOS::Serial Port Console Redirection]
Console Redirection[2]=1                            ;Options: 0=Disabled: 1=Enabled
Console Redirection[4]=0                            ;Options: 0=Disabled: 1=Enabled
Out-of-Band Mgmt Port=1                             ;Options: 1=COM0: 2=COM1: 3=COM2 (Disabled): 4=COM3
(Disabled)

[BIOS::Security]
Front Panel Lockout=0                               ;Options: 0=Disabled: 1=Enabled

[BIOS::Server Management]
Assert NMI on SERR=1                                ;Options: 0=Disabled: 1=Enabled
Assert NMI on PERR=1                                ;Options: 0=Disabled: 1=Enabled
Reset on CATERR=1                                   ;Options: 0=Disabled: 1=Enabled
Reset on ERR2=1                                     ;Options: 0=Disabled: 1=Enabled
```

```
Resume on AC Power Loss=2                    ;Options: 1=Last State: 2=Power On: 0=Stay Off
Clear System Event Log=0                     ;Options: 0=Disabled: 1=Enabled
FRB-2 Enable=1                               ;Options: 0=Disabled: 1=Enabled
OS Boot Watchdog Timer=0                     ;Options: 0=Disabled: 1=Enabled
Plug & Play BMC Detection=0                  ;Options: 0=Disabled: 1=Enabled
EuP LOT6 Off-Mode=0                          ;Options: 0=Disabled: 1=Enabled

[BIOS::Console Redirection]
Console Redirection[1]=0                     ;Options: 0=Disabled: 1=Serial Port A: 2=Serial Port
B
Console Redirection[3]=0                     ;Options: 0=Disabled: 1=Serial Port A
Console Redirection[4]=0                     ;Options: 0=Disabled: 1=Serial Port A
Console Redirection[5]=0                     ;Options: 0=Disabled: 2=Serial Port B

[BIOS::BootOrder]
Hard Drive=1
Network Card=2
Internal EFI Shell=3
```

Appendix C. Glossary

Term	Definition
ACPI	Advanced Configuration and Power Interface.
ARP	Address Resolution Protocol.
BMC	Baseboard management controller.
CLTT	Closed-loop thermal throttling (memory throttling mode).
DHCP	Dynamic Host Configuration Protocol.
FRB	Fault resilient booting.
FRU	Field replaceable unit.
I^2C	Inter-integrated circuit bus.
IPMI	Intelligent Platform Management Interface.
LAN	Local area network.
LTS	Long term support.
MD5	Message Digest 5. A hashing algorithm that provides higher security than MD2.
NIC	Network interface card.
NMI	Non-maskable interrupt.
OC	Overcurrent.
OLTT	Open-loop thermal throttling (memory throttling mode).
OT	Overtemperature.
PCI	Peripheral Component Interconnect.
PEF	Platform event filtering.
PIA	Platform information area.
POST	Power-on self-test.
PWM	Pulse width modulation. The mechanism used to control the speed of system fans.
RAS	Reliability, availability, and serviceability.
RHEL*	Red Hat Enterprise Linux*
Intel® RMM4	Intel® Remote Management Module 4.
RTC	Real-time clock.
SEL	System event log.
SLES*	SUSE Linux Enterprise Server*
SNMP	Simple Network Management Protocol.
SOL	Serial-over-LAN.
UCC	Upper clipping curve.
Intel® VT-d	Intel® Virtualization Technology for Directed I/O.