Intel® Server Configuration Utility

User Guide

A reference document describing the use of the Intel® Server Configuration Utility version 16.x.x and later

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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.
February 2022	1.2	• Added KCS policy control modes section.
July 2022	1.3	• Added installation step for public key during the utility installation.
August 2022	1.4	• Added RHEL* 8.6 and 9 to the table about supported operating systems.
November 2022	1.5	• Added UBUNTU* 22.04, Windows 2022*, and removed RHEL 7 from the supported operating systems
November 2022	1.6 NDA	• Added support for: Intel® Server M50FCP Family and Intel® Server D50DNP Family – NDA
December 2022	1.6.1	• Added support for: Intel® Server M50FCP Family and Intel® Server D50DNP Family – Public

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Table of Contents

List of Tables

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 *User Guide* describes the features and provides instructions on the use of all commands supported by revision 16.x.x and later of the utility. Different from the previous platform-specific document versions, this user guide combines support for all Intel server products that support the Intel® Server Configuration Utility.

Revision 16.x.x and later of the Intel® Server Configuration Utility is 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 S9200WK Family
- Intel® Server D50TNP Family
- Intel® Server M50CYP Family
- Intel® Server D40AMP Family
- Intel® Server M70KLP Family
- Intel® Server M20NTP2SB Family
- Intel® Server M50FCP Family
- Intel® Server D50DNP Family

The Intel® Server Configuration Utility is not intended for nor should it be used on 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 *BIOS Setup User Guide* and/or the *Technical Product Specification (TPS)* of the Intel server product 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 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 server systems integrated with an Intel server board.

1.3 Operating Systems Supported

The Intel® Server Configuration Utility version 16.x.x and later supports the operating system versions listed in the following table.

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 S9200WK Family • Intel® Server D50TNP Family • Intel® Server M50CYP Family • Intel® Server D40AMP Family • Intel® Server M70KLP Family • Intel® Server M20NTP2SB Family • Intel® Server M50FCP Family • Intel® Server D50DNP Family	• UEFI Shell. • Windows Server* 2019 and 2022. • Windows 10*. • RHEL* 8.x and 9 (64 bit). • SLES* 12 and 15 –64 bit. • Ubuntu* 20.04 LTS and Ubuntu* 22.04 LTS.

1.4 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.

1.4.1 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.

1.4.2 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 commands directed to the authenticated network interfaces of the BMC.

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

When the KCS policy control mode is set to Restricted, one of the following two messages will be displayed if a command is issued over the KCS interface that is not supported in this control mode:

- `KCS Policy Control Mode is 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 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.`

1.4.3 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 commands directed to the authenticated network interfaces of the BMC.

In this mode no commands are executable.

When the KCS policy control mode is set to Deny All, one of the following two messages will be displayed if a command is issued over the KCS interface that is not supported in this control mode:

- `KCS Policy Control Mode is 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.`

1.5 Reference Documents

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

- *IPMI – Intelligent Platform Management Interface Specification 2.0.*
- BIOS setup options – *Intel BIOS Setup User Guide* and/or Intel server product *Technical Product Specifications*

1.6 Prerequisites

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

For the following operating systems:

- 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:
  - "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`.

- There may be a driver conflict between the internal driver and the kernel. If so, start the OpenIPMI driver and verify that the /dev/ipmi0 device exists.

For RHEL*:

- Run the following command and verify the /dev/ipmi0 device exists:
  - `#modprobe ipmi_devintf or #modprobe ipmi_si`

For SLES*

- Run the following command and verify the /dev/ipmi0 device exists:
  - `#service ipmi start`

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

- 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 AMI* BIOS and exclusively applies for the Intel® Server System M70KLP Family.

2. Utility Installation and Removal

This chapter provides instructions for the installation and removal of the Intel® Server Configuration Utility.

2.1 Prerequisites

- Download the latest Server Configuration Utility package, `Syscfg_Vx.x.x_AllOS.zip`. For the latest package, go to https://downloadcenter.intel.com/ and initiate a search for "Intel Server Configuration Utility".
- Read the provided release notes to confirm compatibility with the specific Intel server product and desired operating system.
- Intel® Server Configuration Utility requires Windows* administrative or Linux* root permissions.

2.2 UEFI: Utility Installation and Removal

2.2.1 Utility Installation on the embedded UEFI Operating Environment

This section provides instructions for the installation of the Intel® Server Configuration Utility on to the embedded UEFI based operating environment.

1. Download the latest Server Configuration Utility package
2. Boot the system to the embedded UEFI operating environment
3. Create a directory (for example, `fs0:\syscfg`) and copy the `Syscfg_Vx.x.x_AllOS.zip` file into it
4. Unzip the `Syscfg_Vx.x.x_AllOS.zip` file
5. Go to the UEFI_x64 directory
6. Under the UEFI Shell, run `syscfg.efi` with chosen command line options (See Chapter 4).

2.2.2 Utility Removal from the embedded UEFI Operating Environment

This section provides instructions for the removal of the Intel® Server Configuration Utility from the embedded UEFI based operating environment.

1. Boot the system to the UEFI operating environment
2. Locate and delete the directory created in Step 3 of section 2.2.1.

2.3 Windows*: Utility Installation and Removal

2.3.1 Utility Installation on Windows*

This section provides instructions for the installation of the Intel® Server Configuration Utility on to a Microsoft Windows* based operating environment.

1. Download the latest Server Configuration Utility package
2. Boot the system to Windows*
3. Create a directory (for example, C:\syscfg) and copy the `Syscfg_Vx.x.x_AllOS.zip` file into it.
4. Unzip the `Syscfg_Vx.x.x_AllOS.zip` file into the chosen directory
5. Go to the Win_x64\Drivers directory and run `install.cmd` to install the SMI driver.
6. Open the CMD terminal as an administrator.
7. Go to the Win_x64 directory and run `syscfg.exe` with chosen command line options (See Chapter 4).

2.3.2 Utility Removal from Windows*

This section provides instructions for the removal of the Intel® Server Configuration Utility from a Microsoft Windows* based operating environment.

1. Boot the system to Windows.
2. Locate and go to the directory created in Step 3 of section 2.3.1
3. Go to the Win_x64\Drivers directory
4. To remove the drivers, run the `uninstall.cmd`
5. Delete the Win_x64 folder
6. Reboot the system for the changes to take effect.

2.4 Linux*: Utility Installation and Removal

2.4.1 Prerequisites in Linux*

The following prerequisites are needed to install and use the utility within a Linux based environment:

- Boot the system to the Linux based operating environment: Red Hat Enterprise Linux* (RHEL*), SUSE Linux Enterprise Server* (SLES*), or the CentOS* system.
- On Red Hat*, CentOS*, SUSE*, UEFI-aware Linux*, there may be a driver conflict between an internal driver and the kernel. Start the `OpenIPMI` driver and verify that the /dev/ipmi0 device exists.
- On Red Hat*, CentOS*, SUSE*, UEFI-aware Linux*, make sure that the **Public** key is installed. If the Public key is not installed, then unzip the `Syscfg_Vx.x.x_AllOS.zip file`, go to the Linux_x64 directory, and execute the following command: `rpm --import pubKey.asc`

2.4.2 Utility Installation on Linux*

This section provides instructions for the installation of the Intel® Server Configuration Utility on to a Linux* based operating environment.

2.4.2.1 Installation on Linux* Using Script

1. Download the latest Server Configuration Utility package
2. Boot the system to Linux*
3. Create a directory and copy the `Syscfg_Vx.x.x_AllOS.zip` file into it
4. Unzip the `Syscfg_Vx.x.x_AllOS.zip` in the chosen directory
5. Go to the Linux_x64 directory.

If another version was previously installed, remove that version before installing the new version, by running `uninstall.sh`

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6. Install the utility by running `install.sh`

2.4.2.2 Installation on Linux* Using RPM

1. Download the latest Server Configuration Utility package
2. Boot the system to Linux*
3. Create a directory and copy the `Syscfg_Vx.x.x_AllOS.zip` file into it
4. Unzip the package Syscfg_Vx.x.x_AllOS.zip to a chosen directory.
5. Go to the Linux_x64 directory.
6. Copy the appropriate rpm for the Intel® Server Configuration Utility from the corresponding folder to a local folder.
    a) For RHEL* older than 9.0, copy from Linux_x64\RHEL\RHEL8
    b) For RHEL* 9.0 and above, copy from Linux_x64\RHEL\RHEL9
    c) For SLES* older than 15, copy from Linux_x64\SLES\SLES12

d) For SLES*15 and above, copy from Linux_x64\SLES\SLES15

If another version has been previously installed, remove that version before installing the new version. Run `rpm -e syscfg`.

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7. Install the utility. Run rpm -ivh syscfgxx.rpm. This step installs the utility in /usr/bin/syscfg/.
8. On RHEL*/SLES*, after installing the rpm, close the terminal from which rpm was installed, then execute the utility from a new terminal.

2.4.2.3 Installation on Linux* Using DEB

1. Download the latest Server Configuration Utility package
2. Boot the system to Linux*
3. Create a directory and copy the Syscfg_Vx.x.x_AllOS.zip file into it
4. Unzip the package Syscfg_Vx.x.x_AllOS.zip to a chosen directory.
5. Go to Linux_x64/UBUNTU/UBUNTUXX directory, XX – or 22
6. Run dpkg -i xxxx.deb

2.4.3 Utility Removal from Linux*

This section provides instructions for the removal of the Intel® Server Configuration Utility from a Linux* based operating environment.

2.4.3.1 Removal using scriptRun

1. Locate and go to the folder where the Intel® Server Configuration Utility files were copied
2. Run `uninstall.sh` from the Linux_x64 directory

2.4.3.2 RPM removal

1. Locate and go to the folder where the Intel® Server Configuration Utility files were copied
2. Run `rpm -e syscfg`

2.4.3.3 DEB removal

1. Locate and go to the folder where the Intel® Server Configuration Utility files were copied
2. Run `dpkg -r syscfg`

3. Use of Intel® Server Configuration Utility

The 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. It 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 all limitations.

The general command line syntax is:

```
syscfg [{/|-}option [arguments]] [...next_option [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.

The following list explains the general characters usage:

-, /	Options must be preceded 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 if 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.

If an error occurs during a data write operation to either BIOS or firmware, command processing stops at that point, and an error message is displayed. This measure makes it 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. The **-bbo, -help**, and **-display** options are intended to be used as stand-alone options and should not be included in the command line with other options.

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.
- The 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 in step 1 to restore those settings to the target system.
3. Run the 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 proper firmware functionality.

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

3.1 String Input

Some Intel® Server Configuration Utility options require argument inputs 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.

3.2 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.

3.3 Command Consistency

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

3.4 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.

3.5 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 to Intel server platforms that support 1st, 2nd, or 3rd Gen Intel® Xeon® Scalable processor families.

3.6 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 using the `/r` command (See section 3.7).

3.7 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. Copy the saved `.ini` configuration file to 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:

- When installing or restoring a configuration from a .ini file, the non-editable fields, section name headers, and key names must not be edited or deleted. If any of these fields are 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 a `syscfg.INI` file only once 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.

3.8 Save / Restore Configuration Command-Line Options and Arguments

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> [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.

3.9 Display Intel® Server Configuration Utility Help

To display Intel® Server Configuration Utility help, type:

```
syscfg /h
```

3.10 Display Current BIOS and Firmware Versions

To display the current BIOS and Firmware settings, type:

```
syscfg /i
```

4. Command Line Options

The Intel® Serve Configuration Utility uses command line options to perform specific operations. This chapter identifies and describes all supported options and provides usage examples for each.

All supported command line options are grouped by their usage: Generic, BIOS, Firmware, and Miscellaneous.

Table 3 provides a quick reference for all supported command line options.

Table 3. Intel® Server Configuration Utility Command Line Options – Quick Reference

Generic Options/Switches		BIOS Related Options	
/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 Related Options

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 Options

/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

4.1 Generic Options/Switches

4.1.1 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]

Examples

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

4.1.2 Quiet (/q)

The /q option suppresses all messages.

Usage

syscfg options /q

Table 4. 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.

4.1.3 Restore (/r)

The /r option Restores the BIOS and Firmware settings from an .ini file.

Usage

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

Table 5. 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.

4.1.4 Save (/s)

The /s option saves the BIOS and Firmware settings to an `.ini` file.

Usage

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

Table 6. 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.

4.1.5 Upload INI Files (/fsc)

The /fsc option uploads specified .ini files. 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`.

Usage

syscfg /fsc [filename.ini]

Table 7. 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.

4.1.6 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 }

Table 8. 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.

Option	Description
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, also 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.

4.1.7 Display Channel Configuration (`/d channel`)

This option displays the IPMI channel settings for a particular channel.

Usage

syscfg /d channel <channel ID>

Example

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

```
syscfg /d channel 1
```

4.1.8 Display LAN Configuration (`/d lan`)

This option displays the current settings for a particular LAN channel.

Usage

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
```

4.1.9 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.

Usage

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
```

4.1.10 Display SOL Configuration (`/d sol`)

This option displays the SOL configuration for a particular LAN channel.

Usage

syscfg /d sol <channel ID>

Example

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

```
syscfg /d sol 1
```

4.1.11 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.

Usage

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
```

4.1.12 Display Power Configuration (`/d power`)

This option displays the current power settings in the system.

Usage

syscfg /d power

Example

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

```
syscfg /d power
```

4.1.13 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 BIOS settings that can be configured through the 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.

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

This option displays the current EFI secure boot status.

Usage

syscfg /d secureboot

Example

This example displays the current EFI secure boot status.

```
syscfg /d secureboot
```

4.2 BIOS Related Options

This section identifies command line options related to BIOS.

4.2.1 BIOS Administrator Password (`/bap`)

This option sets or clears the BIOS administrator password.

Usage

syscfg /bap {old_password | “”} [new_password | “”]

Table 9. 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 BIOS Setup Utility User Guide for the specified Intel server product.

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.

4.2.2 BIOS User Password (/bup)

This option sets or clears the BIOS user password.

Usage

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

Table 10. 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.

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.

4.2.3 System Boot Order (/bbosys)

This option Changes the boot order of the system devices.

Usage

syscfg /bbosys [device_number [device_number [...]]]

Table 11. 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.

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
```

4.2.4 System Boot Order in Detail (/bbo)

This option 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.

4.2.5 Configure BIOS Settings (/bcs)

This option sets the values of individual BIOS settings.

Usage

syscfg /bcs [admin_password] BIOS_Setting_Name Value [BIOS_Setting_Name Value [...]]

Table 12. 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 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 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"
```

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

This option loads the default factory BIOS settings

Usage

syscfg /bldfs [admin_password]

Table 13. 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.

Examples

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

- When the BIOS administrator is not set, use:

```
syscfg /bldfs ""
```

4.2.7 BIOS Variable (/bvar)

This option creates, modifies, or deletes a new EFI variable. This switch is supported in Linux*, Windows*, and UEFI platforms.

Usage

syscfg /bvar [Option][admin_password]

Table 14. 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 15. 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
```

4.2.8 BIOS EFI Secure Boot Settings (/secureboot)

This option sets the EFI Secure Boot status.

Usage

syscfg /secureboot [admin_password] [enable/disable]

Examples

- Setting EFI Secure Boot status to “Disable”:

```
syscfg /secureboot “admin@123” disable
```

- Setting EFI Secure Boot status to “Enable”:

```
syscfg /secureboot “admin@123” enable
```

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

4.2.9 BIOS EFI Secure Boot Key Settings (/securebootkey)

This option 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.

Usage

syscfg /securebootkey [admin_password] overwrite [key_name] [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.

4.2.10 Runtime Variable Access – AMISetupNVLock (for 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.

Usage

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 to Intel server products that support 1st, 2nd , or 3rd Gen Intel® Xeon® Scalable processors families

4.3 Firmware Related Options

This section identifies command line options related to Firmware.

4.3.1 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} }]

Table 16. 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, M50FCP, and D50DNP Families.

4.3.2 Clear SEL (/csel)

This option clears the system event log (SEL).

Usage

syscfg {/csel | /clearSEL}

Examples

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

4.3.3 Date and Time (/dt)

This option sets the time of day stored in the real-time clock (RTC) using the BIOS

Usage

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

Table 17. 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
```

4.3.4 Email Alert Configure (/eac)

This option configures email alert settings.

Usage

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

Table 18. 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.

4.3.5 Email Alert Enable (/eae)

This option sets the sender machine name for SMTP email alerts from the current server.

Usage

syscfg {/eae | /emailalertenable} Sender_Name Channel _Number

Table 19. 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, M50FCP, and D50DNP Families.

4.3.6 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}

Examples

Table 20. 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.

4.3.7 LAN Alert Configuration (/lac)

This option configures the LAN alert destinations for a channel.

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}

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

Table 21. 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.

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, M50FCP, and D50DNP Families.

4.3.8 LAN Alert Enable (/lae)

This option enables LAN alerting on the specified channel.

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"}

Table 22. 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, M50FCP, and D50DNP Families.

4.3.9 LAN Configuration (/lc)

This option configures the LAN settings on a specific channel. It is similar to `/lac` but is used to configure only one parameter at a time. Select the parameter by choosing one of the parameter numbers listed in Table 23 (2a, 2b, ..., 16), followed by a value.

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 }

Table 23. 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`

Option	Description
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
```

4.3.10 LAN Enable (/le)

This option configures the LAN channel used by the BMC on the specified channel.

Usage

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

Table 24. 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
```

4.3.11 LAN Failover Mode (/lfo)

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.

Usage

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

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, M50FCP, and D50DNP Families.

4.3.12 PEF Configure (/pefc)

This option globally enables or disables the PEF used by the BMC. See Table 25.

Usage

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

Table 25. 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.

4.3.13 PEF Filter (/peff)

This option configures the platform event filters used by the BMC on the specified channel. See Table 26.

Usage

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

Table 26. PEF Filter (`/peff`) Options

Option	Description
`Filter_table_index`	Index for particular filters in the PEF filter table.
enable | disable	Enables specified filter.

Option	Description
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
```

4.3.14 PEF Policy (/pefp)

This option configures the Platform Event Filter Policy table used by the BMC on the specified channel. See Table 27.

Usage

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

Table 27. 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
```

4.3.15 Power Restore Policy (/prp)

This option sets the power restore policy. See Table 28.

Usage

syscfg /prp {off | on | restore}

Table 28. 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
```

4.3.16 Configure Power Supply Cold Redundancy Setting (/cr)

Configures cold redundancy settings in the Intel® Server Management firmware. Arguments for this command are described in Table 29.

Usage

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

Table 29. 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.

4.3.17 Reset the BMC (/rbmc)

This option resets the baseboard management controller.

Usage

syscfg {/rbmc | resetBMC}

Examples

```
syscfg /rbmc
```

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

4.3.18 Restore Firmware Settings (/rfs)

This option restores the factory default BMC settings.

Usage

syscfg {/rfs | restorefirmwaresettings}

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.

4.3.19 Reset Intel® Node Manager (/rnm)

This option 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.

Usage

syscfg {/rnm | resetnodemanager}

Examples

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

4.3.20 Serial-over-LAN (/sole)

This option enables serial-over-LAN (SOL) on the specified LAN channel. See Table 30.

Usage

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

Table 30. 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
```

4.3.21 Save BMC Debug Log (/sbmcdl)

This option saves the BMC debug log to a `.zip` file for system diagnostics purposes. See Table 31.

Usage

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

Table 31. 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`.

4.3.22 Save BMC SOL Log (/bmcsol)

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

Usage

syscfg {/bmcsol} *[filename]*

Table 32. 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 with the Intel® Server Board S1200V3RPS.

4.3.23 Users (/u)

This option sets the user's name and password for the specified BMC user. See Table 33.

Usage

syscfg {/u | /user} User_ID User_name Password

Table 33. 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 "" ""
```

4.3.24 User Enable (/ue)

This option enables or disables the BMC user on the specified BMC channel. See Table 34.

Usage

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

Table 34. 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
```

4.3.25 User Privilege (/up)

This option enables or disables the BMC user on the specified BMC channel. See Table 35.

Usage

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

Table 35. 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
```

4.3.26 Shutdown Policy Interface (`/sdp`)

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

Usage

syscfg /sdp {enable | disable}

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 option is not supported on the Intel® Server System M70KLP Family or Intel® Server M20NTP Family.

4.3.27 Fan Settings (`/fan`)

Use this command to change the following fans settings: pulse width modulation (PWM) offset, upper clipping curve (UCC), airflow limit, and exit air temperature. See Table 36.

Usage

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

Table 36. 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.

4.3.28 Graceful Power Cycle (/gpc)

Use this command to perform a graceful power cycle.

Usage

syscfg /gpc

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 37. 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 the Intel® Server Configuration Utility in binary and INI formats.

Binary Format

Table 38 lists the firmware settings that are saved and restored with Intel® Server Configuration Utility in binary formats.

Table 38. 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.

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. Attempts to restore
; this information in incompatible systems could cause serious
; problems to the systems and could leave 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
PrivilegeChl1=ADMIN                                        ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                                      ; Options: Enable or Disable
SOLEnableCh1=ENABLE                                        ; Options: Enable or Disable
PrivilegeChl2=ADMIN                                        ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                                      ; Options: Enable or Disable
SOLEnableCh2=ENABLE                                        ; Options: Enable or Disable
PrivilegeChl3=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
PrivilegeChl1=ADMIN                                        ; This field should not be edited
UserAccessCh1=ENABLE                                       ; This field should not be edited
SOLEnableCh1=ENABLE                                        ; This field should not be edited
PrivilegeChl2=ADMIN                                        ; This field should not be edited
UserAccessCh2=ENABLE                                       ; This field should not be edited
SOLEnableCh2=ENABLE                                        ; This field should not be edited
PrivilegeChl3=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
PrivilegeChl1=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                   ; Options: Enable or Disable
SOLEnableCh1=ENABLE                     ; Options: Enable or Disable
PrivilegeChl2=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                   ; Options: Enable or Disable
SOLEnableCh2=ENABLE                     ; Options: Enable or Disable
PrivilegeChl3=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
PrivilegeChl1=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                   ; Options: Enable or Disable
SOLEnableCh1=ENABLE                     ; Options: Enable or Disable
PrivilegeChl2=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                   ; Options: Enable or Disable
SOLEnableCh2=ENABLE                     ; Options: Enable or Disable
PrivilegeChl3=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
PrivilegeChl1=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh1=DISABLE                   ; Options: Enable or Disable
SOLEnableCh1=ENABLE                     ; Options: Enable or Disable
PrivilegeChl2=ADMIN                     ; Options: User, Operator, Admin, NoAccess
UserAccessCh2=DISABLE                   ; Options: Enable or Disable
SOLEnableCh2=ENABLE                     ; Options: Enable or Disable
PrivilegeChl3=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                                 ; Up to 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                                 ; Up to 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                                 ; Up to 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 up to 32 bytes
FromAddress=                                        ; ASCII printable character max up to 32 bytes
ToAddress=                                          ; ASCII printable character max up to 64 bytes
Subject=                                            ; ASCII printable character max up to 32 bytes
SMTPUserName=                                       ; ASCII printable character max up to 16 bytes
Message=                                                ; ASCII printable character max up to 64 bytes
ServerAddress=0.0.0.0                               ; In xxx.xxx.xxx.xxx form

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

```
[EMAILCONFIG::CHANNEL3::INFO]
SenderName=                                     ; ASCII printable character max up to 32 bytes
FromAddress=                                    ; ASCII printable character max up to 32 bytes
ToAddress=                                      ; ASCII printable character max up to 64 bytes
Subject=                                        ; ASCII printable character max up to 32 bytes
SMTPUserName=                                   ; ASCII printable character max up to 16 bytes
Message=                                                ; ASCII printable character max up to 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.
I²C	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.