Intel® Server Firmware Update Utility

User Guide

A reference document describing the use of the Intel® Server Firmware Update Utility revision 16.x.x and later.

Rev. 1.6.3

September 2023

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Document Revision History

Date	Revision	Changes
November 2021	1.0	• Initial release. First version of the single build user guide for all platforms that support the Intel® Server Firmware Update Utility.
January 2022	1.1	• Intel® Server Firmware Update Utility release to add support for updating customized BIOS logo, support for Intel® Server Platforms M70KLP and M20NTP, and bug fixes. • Minor updates throughout the document to improve clarity and style.
February 2022	1.2	• Added KCS policy control modes section. • Added an appendix for Intel® Server Firmware Update Utility and iFlash32* utility command compatibility.
July 2022	1.3	• Added installation step for public key during the utility installation.
August 2022	1.4	• Added RHEL* 9 & 8.6 to the table about supported operating systems.
November 2022	1.5	• Updated the supported operating list with the following changes: added UBUNTU* 22.04, Windows 2022*, and removed RHEL* 7
November 2022	1.6	• Added support for: Intel® Server M50FCP Family, Intel® Server D50DNP Family - NDA
December 2022	1.6.1	• Added support for: Intel® Server M50FCP Family, Intel® Server D50DNP Family - Public
March 2023	1.6.2	• Added support for BIOS admin Password during update • Added template for updating using cfg file • Updated the Platforms supported • Updated the OS Supported
September 2023	1.6.3	• Updated Chapter 3.9 -ccs -rd usage information.

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1. Introduction

The Intel® Server Firmware Update Utility is used to update the system firmware of supported Intel server boards and systems. The utility is available with versions to support different operating systems including: UEFI, Windows*, and Linux* (See Table 1).

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

Revision 16.x.x and later of the Intel® Server Firmware Update Utility is only supported on the following Intel server products:

- **Intel® Server Board S2600WT/S2600WTR***
- **Intel® Server Board S2600KP/S2600KPR***
- **Intel® Server Board S2600TP/S2600TPR***
- **Intel® Server Board S2600CW/S2600CWR***
- **Intel® Server Board S2600WF/S2600WFR**
- **Intel® Server Board S2600ST/S2600STR**
- **Intel® Server Board S2600BP/S2600BPR**
- **Intel® Server System S9200WK Family***
- **Intel® Server System D50TNP Family**
- **Intel® Server System M50CYP Family**
- **Intel® Server System D40AMP Family***
- **Intel® Server System M70KLP Family**
- **Intel® Server Board M20NTP2SB**
- **Intel® Server System M50FCP Family**
- **Intel® Server System D50DNP Family**

Disclaimer: The Intel® Server Firmware Update Utility is not intended for and should not be used on any non-Intel server products.

* These products have been discontinued, and any issues arising from using these tools on discontinued products requiring code changes to resolve will be unlikely to be addressed. Please see Intel's new server-supporting tools and interfaces for the latest supported options to interact with Intel® Server products

1.1 Features

The Intel® Server Firmware Update Utility can be used to perform the following:

- **BIOS update** – Updates the Intel® Platform Firmware Resilience (Intel® PFR) in the Basic Input/Output System (BIOS). The utility transfers the specified *.bin* file to the BIOS. The system must be rebooted to load the new BIOS.
- **BMC update** – Updates the Intel® Server Management firmware of the baseboard management controller (BMC). The BMC must be reset to load the new firmware.
- **CPLD update** – Complex Programmable Logic Device (CPLD) firmware update.
- **FRUSDR update** – Updates the Field Replaceable Unit information (FRU) in the system's NVRAM and Sensor Data Records (SDR) in the BMC staging area.
- Modify specific FRU fields.
- Display system software stack information for: BIOS, BMC, server board, system, FRUs, SDRs, system management BIOS (SMBIOS), and the Intel® Management Engine (Intel® ME).
- Restore BIOS default settings.
- Clear BIOS customized settings.
- Update the Intel default or OEM specific logo file embedded within the BIOS.

Note: Not supported on all Intel server products. Some Intel server products may require using the Intel® Integrator Toolkit to add a logo to a customized BIOS file.

1.2 Target Audience

This user guide is intended for original equipment manufacturers and for persons responsible for updating the system BIOS and management firmware on server systems integrated with an Intel server board.

1.3 Supported Operating Systems

The Intel® Server Firmware Update Utility revision 16.x.x is available with versions to support different operating systems. Table 1 summarizes the operating systems and Intel server products supported by this revision.

Table 1. Supported Operating Systems

Platforms	Operating Systems/Preboot Environment Supported
• Intel® Server Board S2600WT/S2600WTR Family* • Intel® Server Board S2600KP/S2600KPR Family* • Intel® Server Board S2600TP/S2600TPR Family* • Intel® Server Board S2600CW/S2600CWR Family* • Intel® Server Board S2600WF/S2600WFR Family • Intel® Server Board S2600ST/S2600STR Family • Intel® Server Board S2600BP/S2600BPR Family • Intel® Server System S9200WK* • Intel® Server System M70KLP Family • Intel® Server System D50TNP Family • Intel® Server System M50CYP Family • Intel® Server System D40AMP* Family • Intel® Server Board M20NTP2SB • Intel® Server System M50FCP Family • Intel® Server System D50DNP Family * These products have been discontinued, and any issues arising from using these tools on discontinued products requiring code changes to resolve will be unlikely to be addressed. Please see Intel's new server-supporting tools and interfaces for the latest supported options to interact with Intel® Server products	• UEFI shell • Windows Server* 2019 and 2022 • Windows* 10 • Red Hat Enterprise Linux* (RHEL*) 8.x and 9.x-64 bit • SUSE Linux Enterprise Server* (SLES*) 15, 12 service pack 3-64 bit • Ubuntu* 20.04 and 22.04 Note : Users who want to use Utilities on Older versions of OS will have to use the previous version of the Utility which have the appropriate OS Support.

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 Host 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 Whitelist". 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 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 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.`

2. Utility Installation and Removal Procedures

This chapter provides instructions for the installation and removal of the Intel® Server Firmware Update Utility for all supported operating environments.

2.1 Prerequisites

- Download the latest Intel® Server Firmware Update Utility package. For the latest package, go to: https://www.intel.com/content/www/us/en/download/19791/
- Read the provided Release Notes for the latest utility information
- Installation of the utility requires Windows* administrative rights or Linux* root permissions.

2.2 Utility Installation and Removal for UEFI

This section provides instructions for the installation and removal of the Intel® Server Firmware Update Utility when using the embedded UEFI based operating environment

2.2.1 Utility Installation on UEFI

1. Download the latest Intel® Server Firmware Update Utility package
2. Boot the server system to the embedded UEFI operating environment
3. Create a local directory. (For example> `fs0: \sysfwupdt)`
4. Copy the utility .zip file to the defined directory
5. Unzip the utility .zip file
6. Go to the *UEFI* directory
7. To run the utility, type `sysfwupdt.efi` with chosen command line options. See Chapter 3 for all supported command-line options.

2.2.2 Utility Removal from UEFI

1. Boot the server system to the embedded UEFI operating environment
2. Locate and delete all files and directories from the local directory created in Step 3 of section 2.2.1.

2.3 Utility Installation and Removal for Windows*

This section provides instructions for the installation and removal of the Intel® Server Firmware Update Utility using a Microsoft Windows* based operating environment.

2.3.1 Utility Installation with Windows*

1. Download the latest Intel® Server Firmware Update Utility package
2. Bootup the server to Windows
3. Create a local directory for the utility files. (For example, C:\sysfwupdt).
4. Copy the compressed utility .zip file into the defined directory
5. Unzip the compressed utility .zip file
6. Within the new directory, open the *`Drivers`* directory, and run the `install.cmd` file to install the system management interrupt (SMI) driver.
7. Navigate to the *`Win_x64`* directory as an administrator and run `sysfwupdt.exe`. See Chapter 3 for all supported command-line options.

2.3.2 Utility Removal from Windows*

1. Locate the directory created in section 2.3.1, then go to the `Drivers\win\x64` directory.
2. Run the `uninstall.cmd file` (for uninstalling Intel® Server Firmware Update Utility).
3. Reboot the system for the changes to take effect.

2.4 Utility Installation and Removal for Linux*

This section provides instructions for the installation and removal of the Intel® Server Firmware Update Utility using a Linux* based operating environment.

2.4.1 Prerequisites Using Linux*

The following prerequisites are needed to install and use the Intel® Server Firmware Update Utility:

- With Red Hat*, CentOS*, SUSE*, UEFI-aware Linux*, there might exist a driver conflict between an internal driver and the kernel. Start the `OpenIPMI` driver and ensure that the `/dev/ipmi0` device exists.
- With 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 package `Sysfwupdt_Vx.x.x_AllOS.zip`, go to the `Linux_x64` directory, and execute the following command:
  - `rpm --import pubKey.asc`

2.4.2 Utility Installation with Linux*

2.4.2.1 Installation Using a Red Hat* Package Manager (RPM) or Debian Package Manager

1. Download the latest Intel® Server Firmware Update Utility package
2. Boot the system to Red Hat* Enterprise Linux* (RHEL), SUSE Linux Enterprise Server* (SLES*), or CentOS*.
3. Unzip the utility package Sysfwupdt_Vx.x.x_AllOS.zip into a local directory
4. Copy the `sysfwupdt.rpm` package file from the appropriate Linux OS folder to a local folder.
   - For RHEL 8.0 and above, copy from Linux_x64\RHEL\RHEL8
   - For RHEL 9.0, copy from Linux x64\RHEL\RHEL9
   - For SLES older than 15, copy from Linux_x64\SLES\SLES12
   - For SLES15 and above, copy from Linux_x64\SLES\SLES15

NOTE: If another version was previously installed, uninstall that version before installing the new one.

5. Install the Intel® Server Firmware Update Utility to `/usr/bin/sysfwupdt/` by using `RPM command: rpm -ivh sysfwupdtxx.rpm`
6. DEB command installation: `dpkg -i xxxx.deb`
7. **With RHEL**, the utility can now be run from any terminal (for example, `# sysfwupdt -i`). See Chapter 3 for all supported command-line options.
8. **With SLES**, after installing the RPM, close the terminal from which the RPM was installed, then run the utility from a new terminal (for example: `# sysfwupdt -i`). See Chapter 3 for all supported command-line options.

2.4.2.2 Installation Using a Script File

1. Download the latest Intel® Server Firmware Update Utility package
2. Unzip the package `Sysfwupdt_Vx.x.x_AllOS.zip` into a local directory
3. Go to the `Linux_x64` directory.
4. NOTE: If another version was previously installed, uninstall that version before installing the new one. (Run `uninstall.sh`).
5. Install the Intel® Server Firmware Update Utility by running `install.sh`.
6. Run the utility from a new terminal (for example: `# sysfwupdt -i`). See Chapter 3 for all supported command-line options

2.4.3 Utility Removal from Linux*

This section provides options to uninstall the Intel® Server Firmware Update Utility from a Linux operating environment. Select the appropriate option for the given operating environment.

1. To uninstall the Intel® Server Firmware Update Utility, remove the entire folder structure.
2. For removal using package managers:
    - RPM Removal: `rpm -e sysfwupdt`.
    - DEB removal: `dpkg -r sysfwupdt`.
3. Removal using script.
    - Run `uninstall.sh` from the `Linux_x64` directory.

3. Utility Usage

This chapter provides usage instructions for the Intel® Server Firmware Update Utility.

3.1 Command-line interface

The Intel® Server Firmware Update Utility utilizes a command-line interface. With the addition of command-line options, it can be configured to perform various supported operations. When run, the utility analyzes the command-line arguments and sets internal flags to control operation.

An invalid parameter results with the display of a "usage" message followed by the program exiting with an error code (see Table 7).

To run the utility from a command prompt, type in the executable file name of the utility "sysfwupdt" followed by selected options and other required inputs.

Examples of acceptable command-line syntax formats are as follows:

```
sysfwupdt [Option(s)]
sysfwupdt [Option(s)] [FileName]
sysfwupdt [Option(s)][FileName][Update Option(s)]
```

Note:

The brackets "[ ]" used in the previous examples and throughout this document are used to display the individual inputs that define the utility command-line. They are provided as examples only. To run the utility with selected options, no brackets should be used when typing in the command-line. Each component of the utility command line is separated by a single space. An example format of an actual utility command-line is as follows:

```
>: sysfwupdt -u FileName.bin UpdateNvram
```

To Update with BIOS Administrator Password , add [Password="BIOS_Admin_password"] for BIOS, FD, and ME Update.

```
>: sysfwupdt -u FileName.bin [Password="BIOS_Admin_password"]
```

- Note : For Linux environment, enclose the Password in single quote (') due to predefined bash symbols.

```
>: sysfwupdt -u FileName.bin [Password='BIOS_Admin_password']
```

Table 2 defines each component used within the utility command-line syntax.

Table 2. Command-Line Components

Component	Description
sysfwupdt	Executable file name. Note: Linux* is case sensitive.
Option(s)	A command-line option instructs the utility to perform specific functions. See Table 3. One or more command-line options are typed into the command line after the "sysfwupdt" command. Each selected command-line option must be preceded by a dash "-" or a slash "/". Both are recognized equally by the utility and support the same purpose. Multiple command-line options are separated by a single space.

Component	Description
FileName	Name of the file used for an update. A file path can be specified with the filename. The utility will accept any filename or file extension. The filename must be preceded by either the "/u" or the "/i" options. See table 3.
Update Option(s)	Update options are optional and tell the utility to perform an additional operation beyond the specified update. See Table 4. Multiple update options can be included in the command line. Multiple options should be concatenated with a "+" character as in the following example: UpdateNvram+ImmReset Update Options should be added at the end of command line. For detailed BIOS update options, refer to the BIOS release package release notes.

Table 3. Command-line Options

Options	Description
/h **or** /?	Displays command-line help information. When either of these options are used, all other options on the command line are ignored.
-i	This option displays BIOS/ME/BMC/SDR/baseboard information. If binary files are specified with this option, this option displays the corresponding version contained in the binary files. This option is not valid with any other options. The syntax is: `sysfwupdt -i <FileName>`. This option can also be used with the `-u` option to display version information contained in the `.cfg` file. The syntax is: `sysfwupdt -i -u <xxx.cfg>`.
-kcs	Transfers data by KCS interface. This parameter should be used with `-u <BMC|cpld>`. Note: -kcs is only valid when doing BMC and CPLD updates. This parameter is not valid in case of `-u <BIOS>`.
-recovery	This option updates the active and the recovery firmware versions. This parameter should be used with the `-u`.
-u	Updates system BIOS/BMC/CPLD. At least one binary file name must be specified with this option. An update option is optional (See Table 4) The syntax is: `sysfwupdt -u [FileName]` `sysfwupdt -u [FileName] <Update Option>` To Update with BIOS Administrator Password , add a switch [Password="BIOS_Admin_password"] for BIOS, FD and ME Update.
-d	Displays FRU/SDR/SMBIOS information. The syntax is: `sysfwupdt -d [fru|sdr|smb]`.
/cfg xxx.cfg </nac>	Uses a custom `cfg` file to update FRU, SDR, BIOS, BMC and ME. When updating with a `cfg` file, SDR data is, by default, automatically configured and updated in the BMC, which does not need further user interactions. The user can disable the default mode and use legacy SDR update process with the `/nac` option.
-fru [xxx.fru]	Forces an update for FRU.
-sdr [xxx.sdr]	Forces an update for SDR.

Options	Description
-rd [BIOSadminpassword]	Restores the default BIOS settings. A message is displayed stating that a system reset must be done by the user for the update to take effect. If an administrator password is not set, then no administrator password needs to be supplied, as follows: `/rd ""` Notes: On Intel® Server Boards M70KLP and M20NTP2SB, before running this command, first set a BIOS administrator password from the BIOS Setup page and run `syscfg/bsnvlock "admin_password"`. Run `-rd` with a BIOS administrator password on Intel® Server Boards M70KLP and M20NTP2SB.
-set	Sets different FRU area by typing: `sysfwupdt /set "area name" "FRUFIELD" "value"` Where "area name" can be "product", "chassis", or "board". The area name depends on the FRU area to be modified.
-ccs	Clears BIOS customized settings.
-rmec	Restores the Intel® Management Engine (Intel® ME) configuration on Intel server systems that support it.

Table 4. Command-Line Update Options

Update Options	Description
UpdateNvram	This option clears NVRAM area of BIOS or BMC
ImmReset	This option resets host or BMC automatically after update
UpdateNvram+ImmReset	This option clears NVRAM area and resets host or BMC accordingly after update
-recovery	This option updates the active and the recovery firmware versions. This parameter should be used with the -u.
-kcs	Transfers data by KCS interface. This parameter should be used with `-u <bmc|cpld>`. Note: -kcs is only valid for BMC and CPLD updates.

Table 5. Supported Options for Specific Intel® Server Families

Update Options	Intel® Server Systems based on 1st or 2nd Gen Intel® Xeon® Scalable Processor Families (Non-PFR)			Intel® Server Board M70KLP			Intel® Server Board M20NTP2SB (Non-PFR)		
	BIOS	**BMC**	**CPLD**	**BIOS**	**BMC**	**CPLD**	**BIOS**	**BMC**	**CPLD**
UpdateNvram	N	N	NA	Y	Y	N	N	N	NA
ImmReset	Y	N	NA	Y	Y	Y	Y	N	NA
UpdateNvram+ImmReset	N	N	NA	Y	Y	N	N	N	NA
/recovery	Y	Y	NA	Y	Y	Y	N	Y	NA
/kcs	N	Y	NA	N	Y	Y	N	Y	NA

Notes:

- Y means the image of the `FileType` can be updated for the platform.
- N means the image of the `FileType` cannot be updated for the platform.
- NA means the image for the `FileType` is not present for that platform.
- Combination of recovery switch and `UpdateNvram` is not executable for any platform with any `FileType`.
- The `-kcs` option is not applicable for the Intel® Server M50FCP and D50DNP Families.

3.2 System BIOS, ME and FD Firmware Updates

Command Line Syntax:

```
sysfwupdt -u [FileName]/[FileName] [UpdateOptions]
```

A file path can be specified with each filename.

Note: ME/FD firmware are applicable to systems that support 1st or 2nd Gen Intel® Xeon® Scalable processor families only.

3.2.1 Updating the System BIOS, ME Firmware, and FD Firmware – Reboot Required

The following command lines can be used to update the system BIOS and/or ME and FD firmware using specified command line options and file names on the command line.

Single component update only:

```
sysfwupdt -u BIOSfilename
sysfwupdt -u MEfilename
sysfwupdt -u FDfilename
```

Multi-component update:

```
sysfwupdt -u BIOSfilename/MEfilename/FDfilename
```

Following the update operation(s), the system must be manually rebooted for the update(s) to take effect.

To Update with BIOS Administrator Password , add [Password="BIOS_Admin_password"] for BIOS, FD, and ME Update.

```
>: sysfwupdt -u
   BIOSfilename/MEfilename/FDfilename[Password="BIOS_Admin_password
   "]
```

3.2.2 Updating the System BIOS, ME Firmware, and FD Firmware with Automatic Reboot

The following command lines can be used to update the BIOS, and/or ME and FD firmware and reboots the system automatically once the update operations have completed. The updated versions are applied after the system reboot.

Single component update only:

```
sysfwupdt -u BIOSfilename ImmReset
sysfwupdt -u MEfilename ImmReset
sysfwupdt -u FDfilename ImmReset
```

Multi-component update:

```
sysfwupdt -u BIOSfilename/MEfilename/FDFilename ImmReset
```

3.2.3 Update Recovery System BIOS – Reboot Required

The following command line updates the active and recovery BIOS images programmed on the server board. A system reboot is required to apply the new BIOS version.

```
sysfwupdt -u BiosFileName -recovery
```

Note: This command is **not** valid for systems that support 1st or 2nd Gen Intel® Xeon® Scalable processors families or the Intel® Server Platform M20NTP2SB.

3.2.4 Update Recovery System BIOS with Automatic Reboot

The following command line updates the active and recovery BIOS images programmed on the server board and reboots the system automatically once the update operations have completed. The new versions are applied after the system reboot.

```
sysfwupdt -u BiosFileName -recovery ImmReset
```

Note: This command is **not** valid for systems that support 1st or 2nd Gen Intel® Xeon® Scalable processors families or the Intel® Server Platform M20NTP2SB.

3.2.5 Force Update BIOS NVRAM Region

The following command line updates the system BIOS and forces an update in the NVRAM region. A manual system reboot is needed to apply the new BIOS version.

```
sysfwupdt -u BiosFileName UpdateNvram
```

Notes:

- This command is not valid for systems that support 1st or 2nd Gen Intel® Xeon® Scalable processors families.
- Caution: This command will restore the BIOS to default settings.
- For the Intel® Server Platform M20NTP2SB, if a BIOS administrator password is set, first use the **syscfg** utility and run the command `syscfg /bsnvlock "admin_password"`, before updating the BIOS

3.2.6 Force Update BIOS NVRAM Region with Immediate Reboot

The following command line updates the system BIOS and forces an update in the NVRAM region. Once the update operation has completed, the system will automatically reboot. The new BIOS version is applied after the system reboot.

```
sysfwupdt -u BiosFileName UpdateNvram+ImmReset
```

Notes:

- No option can be inserted between `-u` and `[Filename]`. When using `-u` to update BIOS, multiple BIOS strings can be concatenated with "+" character.

- This command is not valid for on systems that support 1st or 2nd Gen Intel® Xeon® Scalable processor families or the Intel® Server Platform M20NTP2SB.
- Caution: This command will restore the BIOS to default settings.

3.3 System BMC and CPLD Firmware Updates

The following command line is used to update the BMC firmware and / or the CPLD firmware using specified .bin file names and options on the command line.

Command Line Syntax:

```
sysfwupdt -u[FileName]/[Filename] [UpdateOptions]
```

A file path can be specified with the filename.

Note: A CPLD update is only valid for Intel server systems that support the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Platform M70KLP.

3.3.1 System BMC Firmware Update

On systems that support 1st or 2nd Gen Intel® Xeon® Scalable processor families and for the Intel® Server Platform M20NTP2SB, the following command line updates the active BMC firmware and automatically restarts the BMC to apply the new firmware when the update operation is complete. A system reboot is not necessary.

```
sysfwupdt -u BMCfilename
```

For all other Intel server systems, the same command line is used. However, to apply the new BMC firmware the system must be rebooted manually. As an alternate option, adding the ImmReset option to the command line will automatically restart the BMC and apply the new BMC firmware.

```
sysfwupdt -u BMCfilename ImmReset
```

3.3.2 System CPLD Firmware Update – Reboot Required

The following command updates the CPLD firmware.

```
sysfwupdt -u CPLDfilename
```

Upon completion of the firmware update operation, the system must be rebooted to apply the new CPLD firmware.

Note: A CPLD update is only valid for Intel server systems that support the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Platform M70KLP.

3.3.3 System CPLD Firmware Update with an Automatic Reboot

The following command line updates the CPLD firmware. When the update operation has completed, the system will reboot automatically. The new CPLD firmware is applied after the system is rebooted.

```
sysfwupdt -u CPLDfilename ImmReset
```

Note: A CPLD update is only valid for Intel server systems that support the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Platform M70KLP.

3.3.4 System BMC and CPLD Firmware Update with an Automatic Reboot

The following command line can be used to update both the BMC firmware and the CPLD firmware using a single command-line.

```
sysfwupdt -u BMCfilename/CPLDfilename ImmReset
```

Upon completion of the firmware update operations, the system will restart the BMC then automatically reboot the system. The new firmware update revisions are applied after the system reboot.

Note: A CPLD update is only valid for Intel server systems that support the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Platform M70KLP.

3.3.5 Update Recovery System BMC

The following command line updates the active and recovery BMC firmware images on the server board.

```
sysfwupdt -u BMCfilename -recovery
```

On server systems that support 1st or 2nd Gen Intel® Xeon® Scalable processor families and for the Intel® Server Platform M20NTP2SB, when the update operation has completed, the BMC is automatically restarted with the new BMC firmware revision. A system reboot is not necessary.

For all other Intel server systems, upon completion of the firmware update operation, the system must be manually rebooted to apply the new BMC firmware. As an alternate option, adding the ImmReset option to the command line will automatically restart the BMC and apply the new BMC firmware:

```
sysfwupdt -u BMCfilename -recovery ImmReset
```

3.3.6 Force Update BMC NVRAM Region

The following command line updates the active BMC firmware and updates the NVRAM region. This command clears all BMC settings.

```
sysfwupdt -u BMCFileName UpdateNvram
```

On the Intel® Server Platform M20NTP2SB, when the update operation has completed, the BMC is automatically restarted with the new BMC firmware revision. A system reboot is not necessary.

On Intel server systems that support the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Board M70KLP, upon completion of the firmware update operation, the system must be manually rebooted to apply the new BMC firmware revision.

Note: This command line is not valid for Intel server system that support 1st or 2nd Gen Intel® Xeon® Scalable processor families.

3.3.7 Force Update BMC NVRAM Region with Immediate Restart

The following command line updates the active BMC firmware and updates the NVRAM region. When the update operation has completed, the BMC restarts automatically with the new BMC revision.

```
sysfwupdt -u BMCFileName UpdateNvram+ImmReset
```

Caution: This command line clears all previously configured BMC settings.

Notes:

- No option is allowed to be inserted between `-u` and `[Filename]`. And when using `-u` to update the BMC, multiple BMC strings can be concatenated with "+" character.
- This command line is not valid for server systems that support the 1st or 2nd Gen Intel® Xeon® Scalable processor families.

3.4 Restore Intel® Management Engine Configuration

The following command line restores the Intel® Management Engine (Intel® ME) configuration.

```
sysfwupdt -rmec
```

Note: Restoration of the Intel® ME configuration is only valid for Intel server system that support the 1st or 2nd Gen Intel® Xeon® Scalable processors families.

3.5 Update Customized BIOS Logo

The following command line updates the customized BIOS logo programmed in the system BIOS. A system reboot is needed to apply the new BIOS version.

Command Line Syntax:

```
sysfwupdt -u <Logo FileName> <update option>
```

Note: This command is valid only for the Intel® Server Boards M20NTP2SB and M70KLP.

3.5.1 Update Customized BIOS Logo on Intel® Server Board M20NTP2SB

```
sysfwupdt -u LogoFileName Logo
```

3.5.2 Update Customized BIOS Logo in Intel® Server Board M70KLP

```
sysfwupdt -u LogoFileName
```

3.6 Display Version Information

The following command lines displays the BIOS/ME/BMC/SDR/Baseboard information of the system. Use it to display the FRUSDR version information contained in update package files. Use it to display the active BIOS/BMC file version.

```
sysfwupdt -i
sysfwupdt -i -u xxx.cfg
sysfwupdt -i [BIOSfilename|BMCfilename]
```

Notes: The CPLD version is only displayed for the Intel® Server Board M70KLP.

3.7 Update FRU and SDR

This section identifies command lines that can be used to update the Field Replaceable Unit (FRU) and Sensor Data Record (SDR) information programmed on the server board. Files necessary to update the FRU and SDR data include:

- master.cfg
- SDR_Filename.sdr
- FRU_Filename.sdr.

The supported command line options used are: `-cfg`, `-sdr`, and `-fru`.

3.7.1 Update FRU and SDR Using a .CFG File

The following command loads the specified `.cfg` file. The utility uses the entries in the configuration file to probe the hardware and to select the proper SDR and FRU data to be programmed. If the argument `-cfg` is used without a filename, then the default file `MASTER.CFG` is used, if it exists.

```
sysfwupdt -cfg xxx.cfg
```

By default, the command line utilizes an SDR auto configuration feature. This feature can be disabled by adding a **`/nac`** (No auto-configure) option to the command line.

```
sysfwupdt -cfg xxx.cfg /nac
```

With this feature disabled, the utility will switch to a legacy SDR update process instead.

Note: This command line is not supported on the Intel® Server Board M20NTP2SB and Intel® Server Board M70KLP.

3.7.2 Force Update FRU and SDR

The following command forces an update to either the FRU or SDR data programmed on the server board.

```
sysfwupdt -fru xxx.fru
sysfwupdt -sdr xxx.sdr
```

Note: Not for Intel factory use to program first time FRU and SDR data

3.7.3 Modify Specified FRU Field through Command Line

The following command line modifies FRU data fields for chassis and product areas without using a `.cfg` file.

```
sysfwupdt -set "Area Name" "FRU Field" "Value"
```

Where Area Name can be “product”, “chassis”, or “board” depending on the FRU area to be modified.

The following are the FRU Field parameter options:

Table 6. FRU Field Parameters

FRU Field Parameter	Description
CT	Chassis type
MN	Manufacturer name
PN	Product name
Pnum	Part number
Snum	Serial number
Pver	Product version
AT	Asset tag
ID	Manufacturer ID
MD	Manufacturer date and time
AMx	Additional manufacturer field

The Value field is OEM defined and can support a maximum of 32 characters.

3.7.4 Display FRU, SDR, and SMBIOS Data

The following command line displays the specified FRU, SDR, and/or SMBIOS data programmed on the server board.

```
sysfwupdt /d [FRU|SDR|SMB]
```

If the given display function fails because of an inability to parse the data present or because of a hardware failure, the utility displays an error message. For example, if the sensor data record area is empty, the utility displays an error message saying: “No Sensor Data Records found on the server”.

3.8 Restore BIOS Defaults

The following command restores the default BIOS settings.

```
sysfwupdt –rd [biosadminpassword]
```

If a BIOS administrator password is not set, use a null string as BIOS administrator password.

```
sysfwupdt –rd “”
```

Notes:

- To support this command line on an Intel® Server Board M70KLP or Intel® Server Board M20NTP2SB, an administrator password must be set. Set a BIOS administrator password from the BIOS Setup Utility, then using the **syscfg** utility, run `syscfg /bsnvlock “admin_password”`.
- If a customized BIOS is flashed on to the system, then this command line will restore the system to customized BIOS setting defaults.

3.9 Clear BIOS Customized Settings from System

If a customized BIOS is flashed on to the system, then the following command line will clear the customized BIOS and restore the system to the standard Intel BIOS.

```
sysfwupdt -ccs
```

Caution: After running this command, the BIOS settings of the cleared customized BIOS will still be configured on the newly enabled standard Intel BIOS. To clear the customized BIOS settings and configure the system to the default settings of the standard Intel BIOS, please run -rd command subsequently:

```
sysfwupdt -rd
```

Once the operation is complete, manually reboot the system for the change to take effect.

Notes: This command is not valid on Intel® Server Board M70KLP or Intel® Server Board M20NTP2SB.

3.10 Configuration (.CFG) File Description

The `.cfg` file is an ASCII text file that consists of commands and data fields that enable this utility to gather information about the target. The `.cfg` file identifies all the boards, subassemblies, and components of the product to achieve the information gathering. The *Configuration File Format External Product Specification* contains a full description of this file.

The FRUSDR package contains a `master.cfg` file that can be used by the Intel® Server Firmware Update Utility as an input configuration file. This file allows the user to update and modify the FRU and SDR information only.

- The main configuration file `master.cfg` used by the Intel® Server Firmware Update Utility is based on the *Configuration File Specification*. For more information on configuration commands supported by the Intel® Server Firmware Update Utility and its syntax, refer to the *Configuration File Format External Product Specification*.

CFG File can be used to update BMC, BIOS and ME Firmware images also.

4. Exit Error Codes

The following error codes are useful when executing the Intel® Server Firmware Update Utility from a script. The error messages displayed provide more information as to the cause of the error.

The `ERRORLEVEL` command in the configuration file overrides the error codes described in Table 7. The `ERRORLEVEL` command, described in the *Configuration File Format External Product Specification*, causes the utility to exit immediately and return the error code specified.

Table 7. Exit Error Codes

Value	Interpretation	Suggested Actions
0	Successful termination.	
1	Invalid invocation or unknown command-line argument.	Check whether the command-line arguments are correct. Refer to Table 3 for valid command-line arguments.
2	File was not found.	Check whether all the required update package files are present in the correct path. If not, place the files in the proper location and execute.
3	Unable to read a file	Verify file has correct Read permissions
4	A file in the update package is mismatched with the target system.	Check whether the updated package files used for update belong to the target system. If not, provide the files compatible with the target system.
5	A file in the update package is invalid or its format is not supported by this version of the utility.	Check whether the file is corrupt or has an invalid format / file extension. If corrupted, re-load valid files.
6	BIOS interface failed. This error can occur while reading or writing to the BIOS	Check whether the flashud driver is installed and running properly. Reinstall the driver if necessary.
7	FW interface failed. This error can occur when: Reading or writing to the BMC. Setting the update notification. Or updating any of the firmware components (BMC, FRU, SDR).	Check whether the BMC hardware is functioning properly. Check whether the BMC/SDR versions are displayed correctly in the BIOS setup.
8	User has no administrator or root rights.	Check whether the user that has logged in has root/administrator privilege. If not, log in using account with elevated permission rights
9	Utility is already running in another process.	Check whether another instance of the utility is already running. If so, wait for the instance to finish and then start again.
10	Memory allocation failed.	Confirm memory status, then rerun the utility after a system reboot.
11	Password mismatched.	The administrator password provided does not match the current system administrator password.
12	Failed to access I/O port.	Check UEFI secure boot status and ensure that the UEFI secure boot is disabled in the BIOS Setup. If the utility runs on Debian* and SLES* 15 operating system, the user needs to add `iomem=relaxed` to the grub boot option to enable the I/O memory map.

Appendix A. iFlash32* Compatibility

The Intel® Server Firmware Update Utility can be used instead of the iFlash32* utility. Table 8 shows the command compatibility for these two utilities.

Table 8. Intel® Server Firmware Update Utility and iFlash32* Command Compatibility

iFlash32*	Intel® Server Firmware Update Utility
`iflash32 -u [File Name]` `iflash32 -u [File Name] -ni`	`sysfwupdt -u [File Name]`
`iflash32 -i [File Name]`	`sysfwupdt -i [File Name]`
`iflash32 -i`	`sysfwupdt -i`
`iflash32 -rd [biosadminpassword]`	`sysfwupdt -rd [biosadminpassword]`
`iflash32 -rmec` `iflash32 -rmeconfig`	`sysfwupdt -rmec` `Sysfwupdt -rmeconfig`
`iflash32 -u [File Name] UpdateBackupBios -ni`	`sysfwupdt -u [File Name] -recovery`
`iflash32 -u [File Name] UpdateNvram -ni`	`sysfwupdt -u [File Name] UpdateNvram`
`iflash32 -ccs`	`sysfwupdt -ccs`
`iflash32 -u [File Name] CustomerID=[ID] -ni`	Not supported.
`iflash32 -u [File Name] -saveoemdata`	Not supported.

Appendix B. Glossary

Term	Definition
BCD	Binary coded decimal.
BIOS	Basic input/output system.
BMC	Baseboard management controller. The primary microcontroller that controls the operation of the Intel® Server Management subsystem.
CentOS	Community Enterprise Operating System. A Linux distribution based on RHEL
CFG	Configuration (file).
CPLD	Complex programmable logic device.
DEB	Debian Package Manager package format
EAS	External architecture specification.
EPS	External product specification.
FRU	Field replaceable unit.
FW	Firmware.
HW	Hardware.
ID	Identification.
IPS	Internal product specification.
IPMB	Intelligent Platform Management Bus. Name for the architecture, protocol, and implementation of a special bus that interconnects the baseboard and chassis electronics and provides a communications media for system platform management information.
IPMI	Intelligent Platform Management Interface.
Intel® ME	Intel® Management Engine.
OEM	Original equipment manufacturer.
Intel® PFR	Intel® Platform Firmware Resilience.
Intel® ITK	Intel® Integrator Tool Kit (ITK) – Intel utility software used to create a customized BIOS image
RPM	Red Hat Package Manager.
SDR	Sensor data record.
SLES*	SUSE Linux Enterprise Server*

Appendix C. CFG File descriptor format

```
//   To Update with BIOS Administrator Password , add Password=" BIOS_Admin_password" for BIOS, FD
and ME Update.


IMENAME    "ME_Firmware_File"
BIOSNAME   "BIOS_Firmware_File"
BIOSNAME   "FD_Firmware_File"
CFGNAME    "master.cfg"
FWDNAME    "BMC_Firmware_File"

// End of configuration file
```