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Intel® Server Firmware Update Utility

User Guide

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

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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.
March 2022	1.2	• Added KCS policy control modes section. • Added an appendix for Intel® Server Firmware Update Utility and iFlash32* utility command compatibility.

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1. Introduction

Described in this user guide are the Intel® Server Firmware Update Utility features, use of the utility, requirements for operating systems and installation procedures.

The Intel® Server Firmware Update Utility is used for updating the system firmware. The utility is available in versions for different operating systems, for example, UEFI, Windows*, and Linux*.

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

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

- Intel® Server Board S2600WT/S2600WTR
- Intel® Server Board S2600KP/S2600KPR
- Intel® Server Board S2600TP/S2600TPR
- Intel® Server Board S2600CW/S2600CWR
- Intel® Server Board S2600WF/S2600WFR
- Intel® Server Board S2600ST/S2600STR
- Intel® Server Board S2600BP/S2600BPR

- Intel® Server Board S9200WK
- Intel® Server Board D50TNP
- Intel® Server Board M50CYP
- Intel® Server Board D40AMP
- Intel® Server Board M70KLP
- Intel® Server Board M20NTP2SB

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

1.1 Features

The Intel® Server Firmware Update Utility supports the following features:

- BIOS update – Updates the Intel® Platform Firmware Resilience (Intel® PFR) in the basic input/output system (BIOS). The utility described in this document transfers the bin file to the BIOS and the real update starts on the next reboot by default sensors.
- BMC update – Updates the Intel® Server Management firmware in the baseboard management controller (BMC). On the next BMC reset, the new firmware is loaded to the BMC.
- Complex programmable logic device (CPLD) update.
- Intel® Integrator Toolkit update.
- Non-volatile RAM (NVRAM) update.
- Recovery update.
- FRUSDR update – Updates the field replaceable units (FRUs) in the system's NVRAM and sensor data records (SDR) in the BMC staging area.
- Modify specific FRU field.
- Displays information on: BIOS, BMC, base board, system, FRU, SDR, system management BIOS (SMBIOS), and/or Intel® Management Engine (Intel® ME).
- Restores the BIOS default settings.
- Clears BIOS customized settings.
- Logo update – Updates the BIOS with logo change in the system.

1.2   Operating Systems Supported

The Intel® Server Firmware Update Utility is available in versions for different platforms. For example, UEFI, Windows*, and Linux*. Table 1 summarizes the operating systems and platforms that each utility revision supports.

Table 1. Operating System Supported

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

1.3   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.

1.3.1   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.

1.3.2   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 the authenticated network interfaces to the BMC.

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

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

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

1.3.3   Deny All/Provisioned Host Disabled

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

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

In this mode none, of the commands are executable.

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

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

1.4 Support Information

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

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

2. Intel® Server Firmware Update Utility Installation and Removal

This chapter provides instructions to install and uninstall the Intel® Server Firmware Update Utility.

2.1 Prerequisites

The installation of the Intel® Server Firmware Update Utility can only be done with the following prerequisite:

- Download the latest Intel® Server Firmware Update Utility package.

For the latest package, go to https://downloadcenter.intel.com/.Sysfwupdt. The tool installation requires Windows* administrative or Linux* root permissions.

2.2 UEFI: Installation and Removal of Intel® Server Firmware Update Utility

2.2.1 Intel® Server Firmware Update Utility Installation on UEFI

This section provides instructions to install the Intel® Server Firmware Update Utility:

1. Copy the uncompressed `.zip` file into a local directory (for example, `fs0: \sysfwupdt`).
2. Go to the `UEFI` folder.
3. Run `sysfwupdt.efi` with command lines under UEFI Shell.

2.2.2 Intel® Server Firmware Update Utility Removal from UEFI

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

2.3 Windows*: Installation and Removal of Intel® Server Firmware Update Utility

2.3.1 Intel® Server Firmware Update Utility Installation on Windows*

This section provides instructions to install the Intel® Server Firmware Update Utility:

1. Copy the compressed `.zip` file into a local directory (for example, `C:\sysfwupdt`).
2. Unzip the file.
3. Install the driver. According to the operating system architecture, go to the `Drivers\win` folder, choose `x64` and run `install.cmd` to install the Intelligent Platform Management Interface (IPMI), system management interrupt (SMI), and memory map drivers.
4. Go to the `Win_x64` folder as administrator and run `sysfwupdt.exe`.

2.3.2 Intel® Server Firmware Update Utility Removal from Windows*

1. Go to the `Drivers\win\x64` folder.
2. Run `uninstall.cmd` (for uninstalling Intel® Server Firmware Update Utility).
3. Reboot the system, for the changes to take effect.

2.4 Linux*: Installation and Removal of Intel® Server Firmware Update Utility

2.4.1 Prerequisites in Linux*

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

- Boot to Red Hat* Enterprise Linux*, SUSE Linux Enterprise Server* (SLES*), or the CentOS* system.
- On Red Hat*, CentOS*, SUSE*, UEFI-aware Linux*, might exist a driver conflicting between an internal driver and the kernel. Start the `OpenIPMI` driver and ensure that the `/dev/ipmi0` device exists.

2.4.2 Intel® Server Firmware Update Utility Installation on Linux*

This section provides instructions to install the Intel® Server Firmware Update Utility.

2.4.2.1 Installation Using RPM

1. Copy `sysfwupdt.rpm` from the corresponding folder to a local folder.
   - For RHEL older than 8.0, copy from `Linux_x64\RHEL7`.
   - For RHEL8.0 and above, copy from `Linux_x64\RHEL\RHEL8`.
   - For SLES older than 15, copy from `Linux_x64\SLES12`.
   - For SLES15 and above, copy from `Linux_x64\SLES\SLES15`.
2. If another version was previously installed, uninstall that version first before installing the new one.
3. Install the Intel® Server Firmware Update Utility by using `rpm -ivh sysfwupdtxx.rpm`. This command installs the utility in `/usr/bin/sysfwupdt/`.
4. Command DEB installation: `dpkg -i xxxx.deb`.
5. On RHEL, the utility can now be executed from any terminal (for example, `# sysfwupdt -i`).
6. On SLES, after installing the RPM, close the terminal from which the RPM was installed.
   - Then, execute the utility from a new terminal (for example: `# sysfwupdt -i`).

2.4.2.2 Installation Using Script

1. Unzip the package `Sysfwupdt_Vx.x.x_AllOS.zip` in a directory
2. Go to `Linux_x64` directory.
3. If another version is already installed, uninstall that version first before installing the new one (run `uninstall.sh`).
4. Install the Intel® Server Firmware Update Utility by running `install.sh`.

2.4.2.3 Execute Intel® Server Firmware Update Utility without Installation

1. Unzip the package that matches the Linux* operating system version to use.
2. Go to the directory `Linux_x64\XXX\XXX` based on distro. For example, for RHEL8, go to `Linux_x64/RHEL/RHEL8/`.
3. Unzip `sysfwupdt.zip`.
4. Run the executable, `/sysfwupdt -h`.

2.4.3 Intel® Server Firmware Update Utility Removal from Linux*

This section provides instructions to uninstall the Intel® Server Firmware Update Utility.

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

3. Intel® Server Firmware Update Utility Usage

This chapter provides instructions to use the Intel® Server Firmware Update Utility under different operating systems.

3.1 Command-Line Interface

This utility parses the command-line arguments and sets internal flags to control operation. Any invalid parameter leads to the display of a "usage" message and then the program exits with an error code (see Table 3).

The command-line switches are listed in Table 2 and they are accessed with a dash "-" or a slash "/".

The basic command-line format is:

```
sysfwupdt [Options][FileName][Update Option]
```

Table 2. Command-Line Switches

Parameter	Description
sysfwupdt	The name of the utility. **Note:** Linux* is case sensitive.
Options	u, i, set, fru, sdr, ccs, rd, h, ?. **Note:** Options are accessed with a dash "-" or a slash "/".
[FileName]	Name of the binary file used for the update. The file path can be specified with the filename. No default filename or file extension is predetermined by default. Either the "/u" or the "/i" option must always precede the filename.
[Update Option]	Optional update option such as `ImmReset, UpdateNvram, Password=xxx`. Multiple strings should be concatenated with "+" character like `UpdateNvram+ImmReset`. `-kcs` is only valid when doing BMC and CPLD updates. `Update Option` should be at the end of command line. For detailed BIOS update options, refer to BIOS release.
/h or /?	Displays command-line help information. When this option is used, any other options on the command line are ignored.
-i	This option displays BIOS/ME/BMC/SDR/baseboard information in the system. If binary files are specified with this option, this option displays the corresponding version in 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:** This parameter is not valid in case of `-u <bios>`.
-recovery	This option update firmware to the recovery area as well. This parameter should be used with the `-u`.
-u	Updates system BIOS/BMC/CPLD/ITK. At least one binary filename must be specified with this option. An update option is optional. The syntax is: `sysfwupdt -u [FileName]` 　　　　　`sysfwupdt -u [FileName] <Update Option>`
-d	Displays FRU/SDR/SMBIOS information. The syntax is: `sysfwupdt -d [fru|sdr|smb]`.

Parameter	Description
/cfg xxx.cfg </nac>	Uses a custom `cfg` file to update FRU and SDR. 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.
-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 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", and "board". The area name depends on the FRU area to be modified.
-ccs	Clears BIOS customized settings.

Table 3. Command-Line Switch Options

Switches	Intel® Server Systems based on 1st or 2nd Gen Intel® Xeon® Scalable Processor Families (Non-PFR)			Intel® Server Systems based on 3rd Gen Intel® Xeon® Scalable Processor Family / Intel® Server Board D40AMP			Intel® Server Board M70KLP			Intel® Server Board M20NTP2SB (Non-PFR)		
	BIOS	**BMC**	**CPLD**	**BIOS**	**BMC**	**CPLD**	**BIOS**	**BMC**	**CPLD**	**BIOS**	**BMC**	**CPLD**
UpdateNvram	N	N	NA	Y	Y	N	Y	Y	N	N	N	NA
ImmReset	Y	N	NA	Y	Y	Y	Y	Y	Y	Y	N	NA
UpdateNvram+ImmReset	N	N	NA	Y	Y	N	Y	Y	N	N	N	NA
/recovery	Y	Y	NA	Y	Y	Y	Y	Y	Y	N	Y	NA
/kcs	N	Y	NA	N	Y	Y	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`.

3.1.1 Update System BIOS/ME/FD

The following command updates the BIOS/ME/FD from the bin files. Both single and multiple input files are supported. Following the update, the user must manually reset the machine for the update to take effect.

```
sysfwupdt –u[FileName][UpdateOptions]
```

Note: ME/FD are valid for the 1st or 2nd Gen Intel® Xeon® Scalable processor families only.

3.1.1.1 Update System BIOS/ME/FD without Reboot

Description:

This command updates the active BIOS/ME/CPLD version. A host reboot is needed to apply the new BIOS/ME version.

Usage:

```
sysfwupdt –u BIOSfilename/MEfilename/FDFilename
```

3.1.1.2 Update System BIOS/ME/FD with Immediate Restart

Description

This command updates the BIOS/ME/FD version and the host is restarted automatically. The new BIOS/ME/FD version is applied after booting.

Usage

```
sysfwupdt –u BIOSfilename/MEfilename/FDfilename ImmReset
```

3.1.1.3 Update Recovery System BIOS

Description

This command updates the active and the recovery BIOS versions. A host reboot is needed to apply the new BIOS version.

Usage

```
sysfwupdt –u BiosFileName –recovery
```

Note: This command is not valid for neither the 1st or 2nd Gen Intel® Xeon® Scalable processor families nor the Intel® Server Platform M20NTP2SB.

3.1.1.4 To Force Update BIOS NVRAM Region

Description

This command forces an update in the NVRAM region. A host reboot is needed to apply the new BIOS version.

Usage

```
sysfwupdt -u BiosFileName UpdateNvram
```

Notes:
- This command is not valid for 1st or 2nd Gen Intel® Xeon® Scalable processor families.
- Use this command carefully since it removes all the BIOS settings.
- For Intel® Server Platform M20NTP2SB, if a BIOS administrator password is set, then, for BIOS update, first run the command `syscfg /bsnvlock "admin_password"`.

3.1.1.5 To Force Update BIOS NVRAM Region with Immediate Reboot

Description

This command forces an update in the NVRAM region and restarts the host automatically. The new version is applied after booting.

Usage

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

Notes:
- No option can be inserted between `-u` and `[Filename]`. And when using `-u` to update BIOS, multiple BIOS strings can be concatenated with "+" character.
- This command is not valid neither for the 1st or 2nd Gen Intel® Xeon® Scalable processor families nor the Intel® Server Platform M20NTP2SB.
- Use this command carefully since it removes all the BIOS settings.

3.1.2 Update System BMC and CPLD Firmwares

The following command updates the BMC and CPLD firmwares from the bin files. Both single and multiple input files are supported.

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

Note: CPLD is valid for Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Platform M70KLP.

3.1.2.1　　　Update System BMC and CPLD Firmwares

Description

This command updates the active BMC version. The BMC is reset automatically for 1st or 2nd Gen Intel® Xeon® Scalable processor families and for the Intel® Server Platform M20NTP2SB; then the new version is applied. But a BMC reset is deferred for the Intel® Server Board M70KLP and the Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family. A BMC reboot is needed to apply the new BMC version.

Usage

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

3.1.2.2　　　Update System BMC/CPLD with Immediate Restart

Description

This command updates the BMC/CPLD version and the BMC is restarted automatically. The new version is applied after booting.

Usage

```
sysfwupdt -u BMC/CPLDfilename ImmReset
```

Note: `CPLD` command is not valid neither for the 1st or 2nd Gen Intel® Xeon® Scalable processor families nor for the Intel® Server Platform M20NTP2SB.

3.1.2.3　　　Update Recovery System BMC

This command updates the active and the recovery BMC versions. The BMC is reset automatically for the 1st or 2nd Gen Intel® Xeon® Scalable processor families and for the Intel® Server Platform M20NTP2SB; then the new version is applied. But a BMC reset is deferred for the Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Board M70KLP; a BMC reboot is needed to apply the new BMC version.

This command updates the active BMC version. The BMC is reset automatically for the 1st or 2nd Gen Intel® Xeon® Scalable processor families and for the Intel® Server Platform M20NTP2SB. But the BMC reset is deferred for the Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Board M70KLP; a BMC reboot is needed to apply the new BMC version.

Usage

```
sysfwupdt -u BMCFileName/CPLDFileName -recovery
```

Note: `CPLD` is not valid neither for the 1st or 2nd Gen Intel® Xeon® Scalable processor families nor the Intel® Server Platform M20NTP2SB.

3.1.2.4   To Force Update BMC NVRAM Region

Description

This command updates the active BMC version, also updates the NVRAM region. The BMC is automatically reset for the Intel® Server Platform M20NTP2SB. But the BMC reset is deferred for Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family and for the Intel® Server Board M70KLP. A BMC reboot is needed to apply the new BMC version. This command clears all BMC settings.

Usage

```
sysfwupdt -u BMCFileName UpdateNvram
```

Notes:

- This command is not valid for 1st or 2nd Gen Intel® Xeon® Scalable processor families.
- Use this command carefully since it removes BMC settings.

3.1.2.5   To Force Update NVRAM Region with Immediate Restart

Description

This command updates the BMC version and clears the NVRAM region. The BMC resets automatically and the new version is applied.

Usage

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

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 is not valid for the 1st or 2nd Gen Intel® Xeon® Scalable processor families.

3.1.3   To Restore Intel® Management Engine Configuration

Description

This command restores Intel® Management Engine (Intel® ME) configuration.

Usage

```
sysfwupdt -rmec
```

Note: Restoration of the Intel® ME configuration is only valid for the 1st or 2nd Gen Intel® Xeon® Scalable processor families.

3.1.4 To Update Intel® Integrator Toolkit

Description

This command updates the active BIOS version using the `ITK Cap File`. A host reboot is needed to apply the new BIOS version.

Usage

```
sysfwupdt -u ITKfilename.cap [Password=xxx]
```

Notes:
- A password is only needed when system administrator password is set.
- An Intel® Integrator Tool update is only valid for Intel® server systems based on 3rd Gen Intel® Xeon® Scalable processor family.

3.1.5 To Update Customized BIOS Logo

Description

This command updates the customized BIOS logo. A host reboot is needed to apply the new BIOS version.

Usage

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

3.1.5.1 To Update Customized BIOS Logo in Intel® Server Board M20NTP2SB

```
sysfwupdt -u LogoFileName Logo
```

3.1.5.2 To Update Customized BIOS Logo in Intel® Server Board M70KLP

```
sysfwupdt -u LogoFileName
```

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

3.1.6   Display Version Information

Description

The following command 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 BIOS/BMC/ITK file version.

Usage

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

Notes:

- The CPLD version is displayed for the Intel® Server Board M70KLP only.
- The Intel® Integrator Toolkit version is valid for Intel® server systems based on the 3rd Gen Intel® Xeon® Scalable processor family only.

3.1.7   Update FRU and SDR

This section contains the commands used to update the FRU and SDR in different ways. The used files are `master.cfg`, `SDR_Filename_.sdr`, and `FRU_Filename.sdr`. The options used are: `-cfg`, `-sdr`, and `-fru`.

3.1.7.1   Update FRU and SDR by `cfg` File

Description

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

Usage

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

With the `/nac` option, the user can disable SDR auto configuration feature (which is by default enabled) and switch to a legacy SDR update process.

Note: This command is not valid for the Intel® Server Boards M20NTP2SB and M70KLP.

3.1.7.2   Force Update FRU and SDR

Description

The following command forces an update for FRU or SDR. The first time, a FRU file should be programmed in manufacturing. The utility does not support first time programming of FRU areas.

Usage

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

3.1.7.3   Modify Specified FRU Field through Command Line

Description

This command modifies the FRU fields of chassis and product areas without using a `cfg` file.

Usage

```
sysfwupdt –set "area name" "FRUFIELD" "value"
```

Where area names can be "product", "chassis" or "board" depending on the FRU area to be modified. The following are the FRU field parameters:

Table 4. FRU Field Parameters

FRU Field Parameter	Description
CT	Chassis type.
MN	Manufacturer name.
PN	Product name.
P#	Part number.
"S#	Serial number.
PV	Product version.
AT	Asset tag.
ID	Manufacturer ID.
MD	Manufacturer date and time.
AMx	Additional manufacturer field.

3.1.7.4   Displays Given Area of FRUSDR and SMBIOS

Description

This command displays the indicated area given by an argument. If the given display function fails because of an inability to parse the data present or 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".

Usage

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

3.1.8   Restore BIOS Defaults

Description

The following command restores the BIOS default settings.

Usage

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

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

```
sysfwupdt –rd ""
```

Notes:
- On the Intel® Server Board M70KLP and Intel® Server Board M20NTP2SB, before running this command, first set a BIOS administrator password from the Setup page and run `syscfg /bsnvlock "admin_password"`.
- Run `–rd` with a BIOS administrator password on the Intel® Server Boards M70KLP and M20NTP2SB.

3.1.9   Clear BIOS Customized Settings

Description

The following command clears BIOS customized settings.

Usage

```
sysfwupdt –ccs
```

Note: This command is not valid for the Intel® Server Boards M70KLP and M20NTP2SB.

3.2   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*.

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 5. 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 5. 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	
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 platform. 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 got invalid format / file extension. If corrupted, then use proper files.
6	BIOS interface failed. This error can occur while reading or writing to the BIOS	Check whether the SMBIOS is populated correctly.
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. If not, contact the hardware vendor.
8	User has no administrator or root rights.	Check whether the user that has logged in has root/administrator privilege. If not, log in as administrator or root.
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.	Memory allocation failed. Investigation required.
11	Password mismatched.	The administrator password provided by the user is mismatched to the current system administrator password.
11	Failed to access I/O port.	Check UEFI secure boot status and ensure that the UEFI secure boot is disabled in BIOS F2 menu. 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 6 shows the command compatibility for these two utilities.

Table 6. 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.
CFG	Configuration (file).
CHAFF2L	Copy HTTP and FTP files to local. Program used by the One-Boot Flash Update Utility to download files from http and ftp servers.
CPLD	Complex programmable logic device.
EAS	External architecture specification.
EPS	External product specification.
FRU	Field replaceable unit.
FUD	Flash update driver.
FW	Firmware.
HW	Hardware.
IA	Intel® Architecture
ID	Identification.
IMB	Intelligent management bus.
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.
LCD	Local control display.
Intel® ME	Intel® Management Engine.
OEM	Original equipment manufacturer.
Op Code	Operational code.
Intel® PFR	Intel® Platform Firmware Resilience.
PIA	Platform information area.
POST	Power on self-test.
RMM3	Remote management module.
RPM	Red Hat Package Manager.
SDR	Sensor data record.
SEL	System event log.
SLES*	SUSE Linux Enterprise Server*
Intel® SM	Intel® Server Management.
SMS	Server management software.
URL	Universal resource locator.