Intel® One Boot Flash Update Utility

User Guide

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Legal Statements

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Introduction

The Intel® One-Boot Flash Update Utility (Intel® OFU) is used to update the BIOS and firmware on the Intel server boards while the operating system is running. The utility may be launched from a command prompt in either the Windows®* or Linux* Operating Systems. This utility can also be executed remotely through a secure network connection using a Telnet Client and Terminal Services in Windows* or using a Telnet Client and Remote Shell under Linux*.

Intel server boards may also be updated using the Intel® Deployment Assistant. This utility is shipped with each Intel® Server Board and provides an easy to use graphical user interface that may be used to update the BIOS and firmware and configure key BIOS and firmware settings.

Other language versions of this user guide are available on the Intel® System Management Software CD or DVD. This user guide is currently translated into German, Korean, Simplified and Traditional Chinese, French, Spanish, Russian, Italian, Japanese, and Portuguese. The Intel® OFU application is available in English only.

Supported Firmware Components

The Intel® OFU Utility, with the update package for your platform, can be used to update the following firmware components:

- System BIOS (All supported platforms)

- Baseboard Management Controller (BMC) firmware (All supported platforms with a BMC or integrated BMC)

- Hot-swap Controller (HSC) firmware, except on expander HSC backplanes (Refer to platform documentation for support information)

- Field Replaceable Unit (FRU) firmware (All supported platforms with a BMC)

- Sensor Data Record (SDR) firmware (All supported platforms with a BMC)

- Intel® Local Control Panel (Intel® LCP) firmware (All supported platforms, if the Intel® LCP is present)

- Intel® Remote Management Module 3 (Intel® RMM3) firmware (Supported on S5500/S5520 server families if the Intel® RMM3 module is installed)

- Management Engine (ME) firmware (Supported on S5500/S5520 server families)

Firmware Update Package (for IDA, OFU, WinPE* & EFI) is available from http://support.intel.com under each platform.

When Updates Take Effect

When the firmware update takes effect depends on whether or not the firmware is contained in one or two firmware blocks.

If a firmware component has two blocks, the Intel® OFU utility will update the secondary area while the server continues to operate normally using the firmware in the primary area. In this case, the firmware will switch to the secondary bank on the next reboot.

If the firmware component in contained in a single block, the Intel® OFU utility will update the firmware block and firmware will immediately switch to the updated firmware.

The BMC boot block, Intel® Local Control Panel, HSC, and FRU updates only have one firmware area so the updates will take effect immediately when the utility executes. On some systems, the System BIOS, BMC Op Code, SDR, and BMC Platform Information Area (PIA) updates are programmed into their respective secondary flash areas and the utility sets an internal flag in the BIOS and BMC to indicate that the update occurred. After a system reset, the newer version of the System BIOS, BMC, and SDRs are validated and then activated. Refer to the following table to determine when the firmware update takes effect for each Intel® Server Board.

Table 1. When Firmware Updates Take Effect by Platform

Firmware Component	Intel® Server Board							S3420GP
	S7000FC4UR	S3000AH, S3000PT	S3000AH, S3000PT	S3200SH and X38MLST	S5400SF,	S5000PAL, S5000PSL, S5000VCL, S5000XAL, S5000XSL, SC5400RA	S5520UR, S5500BC, S5520HC, S5500HCV, S5500SC, S5520WB12V, S5520WB,	
BIOS	Next Reboot	Immediately	Immediately	Immediately	Next Reboot	Next Reboot	Immediately	Immediately
BMC	Next Reboot	Not supported	Not supported	Immediately	Next Reboot	Next Reboot	Immediately	Immediately
SDR	Next Reboot	Not supported	Not supported	Immediately	Next Reboot	Next Reboot	Immediately	Immediately
FRU	Immediately	Not supported	Not supported	Immediately	Immediately	Immediately	Immediately	Immediately
HSC[†]	Immediately	Not supported	Not supported	Not supported	Immediately	Immediately	Immediately	Immediately
Intel® LCP[†]	Immediately	Not supported	Not supported	Not supported	Not supported	Immediately	Immediately	Immediately
Intel® RMM[†]	Not supported	Not supported	Not supported	Not supported	Not supported	Immediately	Not Supported	Not Supported
Intel® RMM2[‡]	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
Intel® RMM3	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Immediately	Immediately
ME Firmware Update	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Immediately	Not supported

[†]Some components are optional or configuration dependent and may not be present on all systems. HSC updates are not supported on expander HSC backplanes.

[‡]Intel® RMM2 firmware is updated using update utilities provided with the Intel® RMM2 firmware updates.

Supported Operating Systems

The Intel® OFU utility runs on the Microsoft Windows®*, Red Hat* Enterprise Linux, and SuSE Linux* Enterprise Server operating systems unless otherwise noted in the *Intel® OFU Release Notes* or the *Supported Operating System List* for your specific Intel server platform. Both IA-32 and Intel® 64 Architecture versions are supported for the operating systems listed below. The following list shows the supported operating systems and platforms when this document was published.

Table 2. Supported Operating Systems

Operating System	Supported Platforms
Windows* Server® 2003 Enterprise Edition SP2	All Platforms (See Page 10)
Windows* Server® 2003 R2 Enterprise Edition	All Platforms (See Page 10)
Windows* Server® 2008	All Platforms (See Page 10)
Windows* XP Professional Edition SP2	Intel® Workstation Board S5000XVN
SuSE* Linux Enterprise Server 9 SP3	All Platforms (See Page 10)
SuSE* Linux Enterprise Server 10 SP1	All Platforms (See Page 10)
Red Hat* Enterprise Linux 4 Update 4	All Platforms (See Page 10)
Red Hat* Enterprise Linux 4 Update 6	All Platforms (See Page 10)
Red Hat* Enterprise Linux 5.0/5.1/5.2	All Platforms (See Page 10)
Red Hat* Enterprise Linux 5.3	S5500 and S5520 platform series(See Page 10)
Windows Vista*	Intel® Workstation Board S5520SC

Installation and Uninstallation

Installing Intel® OFU

Install Intel® OFU on the Intel server that you want to install the BIOS and firmware updates on.

To install Intel® OFU from the Intel® System Management Software 2.0 DVD or CD set, follow the installation instructions found in the *Intel® Utilities Installation Instructions* located on the DVD or CD for the Intel Utilities.

If you downloaded the Intel® OFU package from the Intel support website, use one of the following procedures:

On Windows®* Operating System

1. Open a Command Window.

2. Unzip the Intel® OFU package. Locate the directory containing Setup_Win.exe.

3. Run the Setup_Win.exe installation script.

4. Press "Y" to accept Intel's End User Software License Agreement, or any other key to decline the license and abort the installation.

5. The installation script will copy the files to %ProgramFiles%\Intel\Flashupdt.

On Red Hat* Enterprise Linux* or SuSE* Enterprise Server Linux* Operating Systems

1. Verify that the w3c-libwww and kernel source packages are installed before running the installation script. Intel® OFU will verify that the required libraries are present and alert you if the required libraries are not present.

2. Open a command shell.

3. Unzip the package containing the Intel® OFU utility.

4. Change to the directory containing the installation script setup_linux.

5. Run ./setup_linux.

6. Press Y to accept Intel's End User Software License Agreement, or any other key to decline the license and abort the installation.

7. The installation script will copy the files to /usr/local/flashupdt directory.

To run Intel® OFU (Flashupdt is the executable), set the working directory to /usr/local/flashupdt.

Installing OFU in user specified path.

OFU can be installed in user specified path, other than /usr/local. Use –p option supported by setup_linux. If the path doesn't exist, OFU tries to create it and installs.

For example, /setup_linux –p=/mnt/ will install OFU binaries in /mnt/flashupdt directory.

Uninstalling Intel® OFU

In the Windows®* Operating System, go to the %ProgramFiles%\Intel\Flashupdt directory and run Setup_Win.exe /u.

In the Linux* Operating System, go to the /usr/local/flashupdt directory and run ./setup_linux /u.

Running the Intel® One Boot Flash Update

The Intel® OFU utility is run by executing the flashupdt command from a command prompt.

NOTES

In order to run this utility, you must first set the working directory to the directory where the utility is installed. This is required because the utility depends on certain files that are expected to be located in the working directory.

Intel® OFU requires Windows* administrative or Linux* root permissions.

Command Line Syntax

Syntax:

`flashupdt [-i] [-u <URL or path>] [-c] [-h|?]`

Description:

Updates the System BIOS or firmware on the local server with the System BIOS or firmware specified in the Intel® OFU configuration file provided with the update package.

Options:

[-i]	Displays the version information for the currently running System BIOS, BMC, and SDR. If the –i option is specified with the –u option, the utility displays the version information of the update package files.
[-u]	Performs the System BIOS and firmware update. The *<URL or path>* parameter specifies the location where the files required for the update are located. The value of *<URL or path>* can be a local file system path, an FTP server, or an HTTP server. Examples of using the –u option:
	–u Specifies the current local directory.
	–u http://<IP address or URL>/<path> Specifies an HTTP server.
	–u ftp://<login:password>@ Specifies an FTP server. <server name or IP address>/<path>
	If –u is used in conjunction with –i, no update is performed. Only the package information is displayed.
[-c]	Cancels all pending Intel OFU update operations of the BIOS, BMC and SDR. The utility resets the internal flags in the BIOS, BMC and SDR to cancel the update operation (whether there is one or not). FRU updates take effect immediately and cannot be cancelled. This option is not supported on platforms with the integrated BMC (Intel® Server Boards X38ML and S3200SH).
[-h|?]	Displays command line help information.

Syntax examples:

```
flashupdt –u ftp://ftp.example.com/UpdatePkg/ServerName/flashupdt.cfg

flashupdt –u ftp://Kevin:87w09@ftp.example.com/UpdatePkg/ServerName/flashupdt.cfg

For Windows:

flashupdt –u flashupdt.cfg

For Linux:

flashupdt –u /flashupdt.cfg
```

Note: flashupdt.cfg can be found from Firmware Update Package for IDA, OFU, WinPE* & EFI under http://support.intel.com for each platform.

Updating the Server from a Remote Client

This utility can be executed remotely via a secure network connection using a Telnet Client and Terminal Services in Windows, or using a Telnet Client and Remote Shell under Linux. See your operating system documentation for further information on remotely logging-in and executing commands.

Once you have logged-in remotely, you can use the syntax described above. This process can be scripted to allow remote updates of multiple servers.

Error Exit Codes

The following error codes may be used when the Intel® OFU utility is run from a script.

Note: the update configuration file (.cfg) may use the ERRORLEVEL command to override these values.

Value	Description
0	Successful termination
1	Invalid invocation or unknown command line argument
2	File was not found
3	Unable to read a file
4	The file update package is incompatible with the target server
5	A file in the update package is invalid or unsupported
6	Firmware interface failure (an error occurred when reading or writing to the BMC, setting the update notification, or updating the BMC, FRU, HSC, Intel® Local Control Panel, or SDR)
7	BIOS interface failure (an error occurred when reading the BIOS ID, setting the update notification, or updating the System BIOS)
8	Insufficient rights (the user must have Administrator or root rights)
9	Utility is already running in another process
10	Utility initialization failed
11	Unknown error

Supported Intel® Server Boards

This version of the Intel® OFU utility supports the Intel® Server Boards listed below. (Intel® Server Systems based on the Intel® Server Boards listed below are also supported unless otherwise noted in the product documentation for the Intel® Server System.)

Multi-Core Intel® Xeon® Processor 3000 Sequence-based Servers:

- Intel® Server Board S3000AH
- Intel® Server Board S3000PT
- Intel® Server Board S3200SH
- Intel® Server Board X38ML
- Intel® Server Board S3420GP

Multi-Core Intel® Xeon® Processor 5000 Sequence-based Servers:

- Intel® Server Board S5000PAL
- Intel® Server Board S5000PSL
- Intel® Server Board S5000VCL
- Intel® Server Board S5000VSA
- Intel® Server Board S5000XAL
- Intel® Server Board S5000XSL
- Intel® Server Board S5400SF
- Intel® Server System SC5400RA
- Intel® Workstation Board S5000XVN

Multi-Core Intel® Xeon® Processor 5500 Sequence-based Servers:

- Intel® Server Board S5500UR
- Intel® Server Board S5500BC
- Intel® Server Board S5500HC
- Intel® Workstation Board S5520SC
- Intel® Server Board S5500HCV
- Intel® Server Board S5520WB12V
- Intel® Server Board S5520WB

Multi-Core Intel® Xeon® Processor MP 7000 Sequence-based Servers:

- Intel® Server Board S7000FC4UR

To find the latest Intel® OFU update package for your server, refer to
http://support.intel.com/motherboards/server/.

Glossary

The following abbreviations are used in this document:

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 Intel® One-Boot Flash Update utility to download files from http and ftp servers.
EAS	External Architecture Specification
EPS	External Product Specification
FRU	Field Replaceable Unit
FUD	Flash Update Driver
FW	Firmware
HSC	Hot-Swap Controller
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
LCP	Local Control Panel
ME	Management Engine
OEM	Original Equipment Manufacturer
Op Code	Operational Code
PIA	Platform Information Area
POST	Power On Self Test
RPM	Red Hat* Package Manager
SDR	Sensor Data Record
SEL	System Event Log
SM	Server Management
SMS	Server Management Software
URL	Universal Resource Locator