



# Intel® One Boot Flash Update Utility

User Guide

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# Introduction

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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.

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) integrated firmware (S1200BT, S1400, S1600, S2400, S2600, and S4600 platforms with an integrated BMC)
- Field Replaceable Unit (FRU) firmware ( S1200BT, S1400, S1600, S2400, S2600, and S4600 platforms with an integrated BMC)
- Sensor Data Record (SDR) firmware (All supported platforms with a BMC)
- Intel® Remote Management Module 4 (Intel® RMM4) firmware (Supported on S1200BT, S1400, S1600, S2400, S2600, and S4600 server families if the Intel® RMM4 module is installed)
- Management Engine (ME) firmware (Supported on S1200BT, S1400, S1600, S2400, S2600, and S4600 server families)

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

## When Updates Take Effect

Starting with S1200BT, S1400, S1600, S2400, S2600, and S4600 platforms, the Intel® OFU utility updates the FW and BIOS images passively via BMC controller or BIOS. The utility hands off the required image files to BMC Controller or to BIOS. After verification of the images (signature verification and/or authenticity verification), the Base Board Management Controller FW or BIOS, would update the images by their own. After firmware update the firmware will immediately switch to updated firmware; while the effect of the BIOS update would be seen in the next reboot.

FRU updates only have one firmware area so the updates will take effect immediately when the utility executes. In some cases, the System BIOS, BMC FW, SDR 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.

Table 1. When Firmware Updates Take Effect by Platform

Firmware Component	Intel® Server Board
	Intel® S1200BT, S1400, S1600, S2400, S2600, and S4600
<b>BIOS</b>	Immediate
<b>BMC</b>	Immediate
<b>SDR</b>	Immediate
<b>FRU</b>	Immediate
<b>HSC/PSoc<sup>†</sup></b>	Depending on platform; mostly next boot
<b>Intel® RMM4</b>	Depending on platform; mostly next boot
<b>ME Firmware Update</b>	Depending on platform

## 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 2008 R2 SP1* x64	S1200BT, S1400, S1600, S2400, S2600, and S4600
Windows Server 2008 SP2* x64 and x32	S1200BT, S1400, S1600, S2400, S2600, and S4600
Windows 7* x64 and x32	S1200BT, S1400, S1600, S2400, S2600, and S4600 Workstation Server platforms
SuSE* Linux Enterprise Server 11 SP1	S1200BT, S1400, S1600, S2400, S2600, and S4600
SuSE* Linux Enterprise Server 11 SP2	S1200BT, S1400, S1600, S2400, S2600, and S4600
Red Hat* Enterprise Linux 6 update 1 x64 and x32	S1200BT, S1400, S1600, S2400, S2600, and S4600
Red Hat* Enterprise Linux 6 update 2 x64 and x32	S1200BT, S1400, S1600, S2400, S2600, and S4600

# Installation and Uninstallation

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## Pre-request before Install Intel® OFU

1. Boot to Windows 2008\* (R2/SP1) or Red Hat 6\* or SuSE\* 11 Operating System.
2. In order to use the Microsoft IPMI\* driver or Open IPMI driver for OFU to update BIOS/BMC/FRUSDR, user needs to Enable "Plug and Play BMC Detection" setting under "Server Management" in the BIOS F2 screen.
3. Install all the development and optional packages during RHEL\* and SuSE\* Operating system installation.
4. In Red Hat 6\* OS
  - a. If the utility fails with error message  
"error while loading shared libraries: libncurses.so.5: cannot open shared object file:  
No such file or directory"  
Then install libstdc++-4.4.4-13.el6.i686.rpm and ncurses-libs-5.7-3.20090208.el6.i686.rpm from the OS CD itself using the below commands.  

```
#rpm -ivh libstdc++-4.4.4-13.el6.i686.rpm  
#rpm -ivh ncurses-libs-5.7-3.20090208.el6.i686.rpm
```

  
Example: `rpm -ivh media\Packages\libstdc++-4.4.4-13.el6.i686.rpm`  
where CD/DVD is mounted to "media" directory.
  - b. If the utility fails with error message  
"Error: /lib/ld-linux.so.2: Bad ELF interpreter: No such file or directory"  
This indicates development and optional packages are not installed, please install the necessary packages accordingly.
5. Windows Server 2008\* OSes  
The utility will error out if the "Plug and Play BMC Detection" setting is disabled, User needs to install Intel IPMI driver manually using  
Example: `Devicesetup.exe -v install imbdrv.inf *IMBDRV` from the drivers folder.

## Installing Intel® OFU

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

### On Windows\* Operating Systems

1. Copy the OFU zip package to local folder.
2. Unzip to local folder(example: .\flashupdt). Go to flashupdt folder (cd Flashupdt).
3. Go to the Drivers\Win folder, choose x86 or x64 (depending on the operating system).
4. Run "install.cmd ." to install the drivers.
5. Go to Win\_x86 folder to execute flashupdt utility, the binaries are common for both x86 and x64 versions of Windows\* Operating system.
6. Now you can run command with options (example: "flashupdt -u /tmp/flashupdt.cfg").

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

1. Copy the OFU zip package (for RHEL or SLES) to local folder.
2. Unzip to local folder(example: .\flashupdt). Go to flashupdt folder (cd flashupdt).
3. # chmod 755 install.sh.
4. Install the utility using the command: "#./install.sh".
5. Go to the RHEL or SLES directory (based on operating system).
6. # chmod 755 chaff2l.sh.
7. Unzip the file flashupdt.zip to get flashupdt executable for Linux\* OS.
8. Now you can run command with options (example: "# ./flashupdt -u /tmp/flashupdt.cfg").



## Uninstalling Intel® OFU

### In Windows\* -

1. Run `uninstall.cmd` to uninstall all the drivers.
2. Remove the `flashupdt` folder structure.

### In Linux\* -

Remove the `flashupdt` folder structure.



### 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
```

```
flashupdt -set product Pn intelco
```

```
flashupdt -set product At xx123456
```

```
flashupdt -set chassis Mn intelco
```

**Note:** flashupdt.cfg can be found from Firmware Update Package for IDA, OFU, WinPE\* and 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.

#### Note to Users:

- After performing CFG based update using flashupdt utility, it is highly recommended to perform a power cycle. Continuous updates through CFG file without power cycle/reboot in between could cause system instability.
- Starting from S1200BT, S1400, S1600, S2400, S2600, and S4600 platforms the flashupdt utility or otherwise known as OFU utility supports preserving OEM data through CFG file based update. For details of usage and command please refer to the white paper "Supporting OEM Activation 2.x on Intel® Server Boards".
- For CFG based update it is assumed that the HTTP/FTP server does not require any user name password. In order to access password protected servers, please change the chaff2l.sh or the batch file and include the username/password.

The default in the .sh file -

```
./curl $1 -o $2 -s
```

For password protected server please change the above as below -

```
./curl $1 --user admin:pwd -o $2 -s
```

where admin and pwd are the username and password respectively.

## Error Exit Codes

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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	A file in the 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	Instance of another utility already running. If so, wait for the instance to finish and then start again.
10	Unknown error

## Supported Intel® Server Boards

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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.)

- Intel® Server Board S1200BT
- Intel® Server Board S1400
- Intel® Server Board S1600
- Intel® Server Board S2400
- Intel® Server Board S2600
- Intel® Server Board S4600

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

# Glossary

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The following abbreviations are used in this document:

<b>Term</b>	<b>Definition</b>
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.
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
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
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