

Cisco IMC Firmware Management

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Overview of Firmware

C-Series servers use Cisco-certified firmware that is specific to the C-Series server model that you are using. You can download new releases of the firmware for all supported server models from Cisco.com.



Note

If you choose to update the firmware of individual components, **you must first update and activate the CMC firmware** to the version that you want to update the individual component.



Caution

When you install the new BIOS firmware, it must be from the same software release as the firmware that is running on the server. Do not install the new BIOS firmware until after you have activated the matching firmware or the server will not boot.

To avoid potential problems, we strongly recommend that you use the Cisco Host Upgrade Utility (HUU), which upgrades the BIOS, , and other firmware to compatible levels. For detailed information about this utility, see the *Cisco Host Upgrade Utility Guide* for the version of the HUU that goes with the software release that you want to install. The HUU guides are available at the following URL: http://www.cisco.com/en/US/products/ps10493/products user guide list.html.

If you want to update the firmware manually, you must update the firmware first. The firmware update process is divided into the following stages to minimize the amount of time that the server is offline:

- Installation—During this stage, installs the selected firmware in the nonactive, or backup, slot on the server.
- Activation—During this stage, sets the nonactive firmware version as active, causing a disruption in service. When the server reboots, the firmware in the new active slot becomes the running version.

After you activate the firmware, you can update the BIOS firmware.



Note

- You can either upgrade an older firmware version to a newer one, or downgrade a newer firmware version to an older one.
- This procedure only applies to the Cisco UCS C-Series server running on Stand-Alone mode. Contact Cisco Technical Assistance Center to upgrade firmware for UCS C-Series running on Cisco UCS Manager integrated mode.

Obtaining Firmware from Cisco

Procedure

- Step 1 Navigate to http://www.cisco.com.
- Step 2 If you are not already logged in, click **Log In** at the top right-hand edge of the page and log in using your Cisco.com credentials.
- **Step 3** In the menu bar at the top, click **Support**.
- Step 4 Click All Downloads in the roll down menu.
- Step 5 If your server model is listed in the **Recently Used Products** list, click the server name. Otherwise, do the following:
 - a) In the left-hand box, click **Products**.
 - b) In the center box, click **Unified Computing and Servers**.
 - c) In the right-hand box, click Cisco UCS C-Series Rack-Mount Standalone Server Software.
 - d) In the right-hand box, click the server model whose software you want to download.
- Step 6 Click the Unified Computing System (UCS) Server Firmware link.
- **Step 7** (Optional) Select a prior release from the menu bar on the left-hand side of the page.
- **Step 8** Click the **Download** button associated with the Cisco Host Upgrade Utility ISO for the selected release.
- Step 9 Click Accept License Agreement.
- **Step 10** Save the ISO file to a local drive.

We recommend you upgrade the and BIOS firmware on your server using this ISO file, which contains the Cisco Host Upgrade Utility. For detailed information about this utility, see the *Cisco Host Upgrade Utility Guide* for the version of the HUU that goes with the software release that you want to install. The HUU guides are available at the following URL:

http://www.cisco.com/en/US/products/ps10493/products user guide list.html.

Step 11 (Optional) If you plan to upgrade the and BIOS firmware manually, do the following:

Beginning with Release 3.0, the BIOS and Cisco IMC firmware files are no longer embedded inside the HUU as a standalone .zip file. BIOS and Cisco IMC firmware must now be extracted using the **getfw** utility, which is available in the GETFW folder of the HUU. Perform the following steps to extract the BIOS or Cisco IMC firmware files:

Note To perform this:

- Openssl must be installed in the target system.
- Squashfs kernel module must be loaded in the target system.

Viewing the GETFW help menu:

```
[root@RHEL65-**** tmp] # cd GETFW/
[root@RHEL65-**** GETFW]# ./getfw -h
Help:
  Usage: getfw {-b -c -C -H -S -V -h} [-s SRC] [-d DEST]
          : Get BIOS Firmware
    -c
           : Get CIMC Firmware
          : Get CMC Firmware
    -C
    -H
           : Get HDD Firmware
    -s
           : Get SAS Firmware
    -\nabla
           : Get VIC Firmware
   -h
           : Display Help
   -s SRC : Source of HUU ISO image
    -d DEST : Destination to keep Firmware/s
  Note: Default BIOS & CIMC get extracted
```

Extracting the BIOS firmware:

```
[root@RHEL65-***** GETFW]# ./getfw -s /root/Desktop/HUU/ucs-c2xxx-huu-3.0.1c.iso -d /tmp/HUU
FW/s available at '/tmp/HUUucs-c2xxx-huu-3.0.1c'
[root@RHEL65-***** GETFW]# cd /tmp/HUU/
[root@RHEL65-***** HUU]# cd ucs-c2xxx-huu-3.0.1c/
[root@RHEL65-***** ucs-c2xxx-huu-3.0.1c]# ls
bios cimc
[root@RHEL65-***** ucs-c2xxx-huu-3.0.1c]# cd bios/
[root@RHEL65-***** bios]# ls
bios.cap
[root@RHEL65-***** bios]#
```

Extracting the CIMC firmware:

```
[root@RHEL65-***** GETFW]# ./getfw -s /root/Desktop/HUU/ucs-c2xxx-huu-3.0.1c.iso -d /tmp/HUU
FW/s available at '/tmp/HUUucs-c2xxx-huu-3.0.1c'
[root@RHEL65-***** GETFW]# cd /tmp/HUU/
[root@RHEL65-***** HUU]# cd ucs-c2xxx-huu-3.0.1c/
[root@RHEL65-***** ucs-c2xxx-huu-3.0.1c]# ls
bios cimc
[root@RHEL65-***** ucs-c2xxx-huu-3.0.1c]# cd cimc/
[root@RHEL65-***** cimc]# ls
cimc.cap
[root@RHEL65-***** cimc]#
```

Step 12 (Optional) If you plan to install the firmware from a remote server, copy the BIOS installation CAP file and the installation BIN file to the remote server you want to use.

The remote server can be one of the following:

• TFTP

- FTP
- SFTP
- SCP
- HTTP

The server must have read permission for the destination folder on the remote server.

Note

The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SCP or SFTP as the remote server type.

If you chose SCP or SFTP as the remote server type while performing this action, a prompt with the message Server (RSA) key fingerprint is <server_finger_print_ID> Do you wish to continue? Click y or n depending on the authenticity of the server fingerprint.

The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.

What to do next

Use the Cisco Host Upgrade Utility to upgrade all firmware on the server or manually install the firmware on the server.

Installing Cisco IMC Firmware from a Remote Server

Before you begin

- Log in to the Cisco IMC as a user with admin privileges.
- Activate the Cisco IMC firmware that goes with the BIOS version you want to install, as described in the Activating Installed Cisco IMC Firmware section.
- Power off the server.



Note

You must not initiate a Cisco IMC update when another Cisco IMC update is already in progress.

-	Command or Action	Purpose	
Step 1	Server /server # scope server {1 2}	Enters server command mode of server 1 or 2.	
Step 2	server /server # scope bmc	Enters bmc command mode.	
Step 3	server /server/bmc # scope firmware	Enters the firmware command mode.	

	Command or Action	Purpose
Step 4	server/server/bmc/firmware # update protocol IP Address path	Specifies the protocol, IP address of the remoserver, and the file path to the firmware file the server. The protocol can be one of the following:
		• TFTP
		• FTP
		• SFTP
		• SCP
		• HTTP
		Note The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SC or SFTP as the remote server typ
		If you chose SCP or SFTP as the remote server type while performing this action, a promp with the message Server (RSA) key fingerprint is <server_finger_print_id>Do you wish to continue? Click y or not depending on the authenticity of the server fingerprint.</server_finger_print_id>
		The fingerprint is based on the host's public key and helps you identify or verify the host you a connecting to.
Step 5	(Optional) server/server/bmc/firmware # show detail	Displays the progress of the firmware updat

This example shows how to update the firmware:

```
server# scope server 1
server /server # scope bmc
server /server/bmc # scope firmware
server /server/bmc/firmware # update ftp 192.0.20.34 //test/dnld-ucs-k9-bundle.1.0.2h.bin
Firmware update has started.
Please check the status using "show detail"
server /server/bmc/firmware # show detail
Firmware Image Information:
```

```
Update Stage: NONE
Update Progress: 5
Current FW Version: 2.0(6.56)
FW Image 1 Version: 2.0(6.56)
FW Image 1 State: RUNNING ACTIVATED
FW Image 2 Version: 2.0(6.55)
FW Image 2 State: BACKUP INACTIVATED
Boot-loader Version: 2.0(6.56).36
Secure Boot: ENABLED

server /server/bmc/firmware #
```

What to do next

Activate the new firmware.

Activating Installed Firmware

Before you begin

Install the firmware on the server.



Important

p

While the activation is in progress, do not:

- Reset, power off, or shut down the server.
- Reboot or reset Cisco IMC.
- Activate any other firmware.
- Export technical support or configuration data.

	Command or Action	Purpose	
Step 1	Server /server # scope server {1 2}	Enters server command mode of server 1 or 2.	
Step 2	server /server # scope bmc	Enters bmc command mode.	
Step 3	server/server/bmc # scope firmware	Enters the firmware command mode.	
Step 4	Server /server/bmc/firmware # show detail	Displays the available firmware images and statuses.	
Step 5	Server /server/bmc/firmware # activate	Activates the selected image. If no image number is specified, the server activates the currently inactive image.	

	Command or Action	Purpose
Step 6	At the prompt, enter y to activate the selected firmware image.	The BMC reboots, terminating all CLI and GUI sessions until the reboot completes.
Step 7	(Optional) Log back into the CLI and repeat steps 1–4 to verify the activation.	

This example activates firmware image 2 and then verifies the activation after the BMC reboots:

```
Server# scope server 1
Server/server# scope bmc
Server /server/bmc # scope firmware
Server /server/bmc/firmware # show detail
Firmware Image Information:
    Update Stage: NONE
   Update Progress: 100
   Current FW Version: 2.0(6.55)
    FW Image 1 Version: 2.0(6.56)
   FW Image 1 State: BACKUP INACTIVATED
   FW Image 2 Version: 2.0(6.55)
   FW Image 2 State: RUNNING ACTIVATED
   Boot-loader Version: 2.0(6.55).36
    Secure Boot: ENABLED
Server /server/bmc/firmware # activate
This operation will activate firmware 1 and reboot the BMC.
Continue?[y|N]y
 -- BMC reboot --
-- Log into CLI as Admin --
Server# scope server 1
Server/server# scope bmc
Server /server/bmc # scope firmware
Server /server/bmc/firmware # show detail
Firmware Image Information:
   Update Stage: NONE
   Update Progress: 100
   Current FW Version: 2.0(6.55)
   FW Image 1 Version: 2.0(6.56)
   FW Image 1 State: RUNNING ACTIVATED
    FW Image 2 Version: 2.0(6.55)
    FW Image 2 State: BACKUP INACTIVATED
    Boot-loader Version: 2.0(6.55).36
   Secure Boot: ENABLED
Server /server/bmc/firmware #
```

Installing BIOS Firmware from a Remote Server

Before you begin

- Log in to the Cisco IMC as a user with admin privileges.
- Activate the Cisco IMC firmware that goes with the BIOS version you want to install, as described in the **Activating Installed BIOS Firmware** section.
- Power off the server.



Note

You must not initiate a BIOS update while another BIOS update is already in progress.

	Command or Action	Purpose
Step 1	Server /server # scope server {1 2}	Enters server command mode of server 1 or 2.
Step 2	server /server # scope bios	Enters BIOS command mode.
Step 3	server/server/bios # update protocol IP Address pathrecovery	Specifies the protocol, IP address of the remote server, and the file path to the firmware file on the server. The protocol can be one of the following: • TFTP • FTP • SFTP • SCP • HTTP

	Command or Action	Purpose	
		Note	The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SCP or SFTP as the remote server type.
			If you chose SCP or SFTP as the remote server type while performing this action, a prompt with the message Server (RSA) key fingerprint is <server_finger_print_id> Do you wish to continue? Click y or n depending on the authenticity of the server fingerprint.</server_finger_print_id>
			The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.
Step 4	(Optional) server/server/bios # show detail	il Displays	s the progress of the firmware update.

This example updates the BIOS firmware to software release 2.0(7c):

```
Server# scope server 1
Server /server# scope bios
Server /server/bios# show detail
BIOS:
   BIOS Version: server-name.2.0.7c.0.071620151216
   Backup BIOS Version: server-name.2.0.7c.0.071620151216
   Boot Order: (none)
   Boot Override Priority:
   FW Update/Recovery Status: None, OK
   UEFI Secure Boot: disabled
   Configured Boot Mode: Legacy
   Actual Boot Mode: Legacy
   Last Configured Boot Order Source: CIMC
Server /server/bios # update ftp 192.0.20.34 //upgrade_bios_files/C3620-BIOS-2-0-7c-0.CAP
<CR> Press Enter key
Firmware update has started.
Check the status using "show detail"
Server /bios #
```

Activating Installed BIOS Firmware

Before you begin

- Install the BIOS firmware on the server.
- Power off the host.



Important

While the activation is in progress, do not:

- Reset, power off, or shut down the server.
- Reboot or reset Cisco IMC.
- Activate any other firmware.
- Export technical support or configuration data.

Procedure

	Command or Action	Purpose
Step 1	Server /server # scope server {1 2}	Enters server command mode of server 1 or 2.
Step 2	server /server # scope bios	Enters BIOS command mode.
Step 3	Server/server/bios # activate	Activates the currently inactive image.
Step 4	At the prompt, enter y to activate the selected firmware image.	Initiates the activation.

Example

This example activates firmware and then verifies the activation:

```
Server# scope server 1
Server /server# scope bios
Server /server/bios# show detail
BIOS:
   BIOS Version: server-name.2.0.7c.0.071620151216
   Backup BIOS Version: server-name.2.0.7c.0.071620151216
   Boot Order: (none)
   Boot Override Priority:
   FW Update/Recovery Status: None, OK
   UEFI Secure Boot: disabled
   Configured Boot Mode: Legacy
   Actual Boot Mode: Legacy
   Last Configured Boot Order Source: CIMC
Server /server/bios # activate
This operation will activate "C240M4.2.0.2.66.071820142034" after next host power off
Continue?[y|N]
```

```
Server# scope server 1
Server /server# scope bios
Server /server/bios# show detail
BIOS:

BIOS Version: server-name.2.0.7c.0.071620151216
Backup BIOS Version: server-name.2.0.7c.0.071620151216
Boot Order: (none)
Boot Override Priority:
FW Update/Recovery Status: None, OK
UEFI Secure Boot: disabled
Configured Boot Mode: Legacy
Actual Boot Mode: Legacy
Last Configured Boot Order Source: CIMC
```

Canceling a Pending BIOS Activation

Before you begin

BIOS firmware must be in pending state.

Procedure

	Command or Action Server# scope bios	Purpose	
Step 1		1 Server# scope bios Enters the BIOS command mode.	
Step 2	Server /bios # show detail	Displays the available firmware images and status.	
Step 3	Server /bios # cancel-activate	Note BIOS firmware must be in pending state.	
		Cancel the BIOS activation that is pending.	
Step 4	At the prompt, enter y to cancel activation.		

Example

This example cancels a pending BIOS firmware activation:

```
Server# scope bios
Server /bios # show detail
BIOS:

BIOS Version: Cxxx.4.0.0.19.0528180450
Backup BIOS Version: Cxxx.4.0.0.23.0612180433
Boot Order: (none)
FW Update Status: Done, Activation pending
UEFI Secure Boot: disabled
Actual Boot Mode: Uefi
Last Configured Boot Order Source: BIOS
One time boot device: (none)
Server /bios # cancel-activate
This will cancel Pending BIOS activation[y|N]y
```

```
Server /bios # show detail
BIOS:

BIOS Version: Cxxx.4.0.0.19.0528180450
Backup BIOS Version: Cxxx.4.0.0.23.0612180433
Boot Order: (none)
FW Update Status: None, OK
UEFI Secure Boot: disabled
Actual Boot Mode: Uefi
Last Configured Boot Order Source: BIOS
One time boot device: (none)
Server /bios #
```

Installing CMC Firmware from a Remote Server



Note

You must not initiate a CMC update while another CMC update is already in progress.

Before you begin

- Log in to the as a user with admin privileges.
- Obtain the Cisco Host Upgrade Utility ISO file from Cisco.com and extract the firmware installation files as described in Obtaining Firmware from Cisco, on page 2.

	Command or Action	Purpose
Step 1	server # scope chassis	Enters chassis command mode.
Step 2	server /chassis # scope cmc 1 2	Enters CMC on the chosen SIOC controller command mode.
Step 3	server /chassis/cmc # update protocol IP Address path	Specifies the protocol, IP address of the remote server, and the file path to the firmware file on the server. The protocol can be one of the following: • TFTP • FTP • SFTP • SCP • HTTP

	Command or Action	Purpose	
		now su confirr you up remote availab	sco UCS C-Series server apports fingerprint mation of the server when date firmware through a server. This option is ble only if you choose SCP P as the remote server type.
		remote perfort with the key fin <served wish to depende</served 	chose SCP or SFTP as the eserver type while ming this action, a prompt the message Server (RSA) agerprint is r_finger_print_ID> Do you to continue? Click y or n ding on the authenticity of ver fingerprint.
		host's p identif	ngerprint is based on the public key and helps you to by or verify the host you are eting to.
Step 4	(Optional) server /chassis/cmc # show detail	Displays the progre	ess of the firmware update.

This example shows how to update the CMC firmware:

What to do next

Activate the new firmware.

Activating Installed CMC Firmware



Note

CMCs are configured to have one in an active state while other acts as a backup, when you activate the backup CMC the previously active CMC changes to backup CMC activating the other.

Before you begin

Install the CMC firmware on the server.



Important

While the activation is in progress, do not:

- Reset, power off, or shut down the server.
- Reboot or reset .
- Activate any other firmware.
- Export technical support or configuration data.
- CMC-1 activation interrupts network connectivity.

Procedure

	Command or Action	Purpose
Step 1	server # scope chassis	Enters chassis command mode.
Step 2	Server# scope cmc1 2	Enters the CMC of the chosen SIOC slot command mode.
Step 3	Server /cmc # activate	Activates the selected image for the chosen CMC.
Step 4	At the prompt, enter y to activate the selected firmware image.	The CMC-1 reboots, terminating all CLI and GUI sessions until the reboot completes, but CMC-2 reboot will not affect any active sessions.

Example

This example activates CMC firmware on the SIOC slot 1:

```
Server \# scope chassis Server /chassis \# scope cmc 1 Server /chassis/cmc \# activate Warning: The CMC will be rebooted immediately to complete the activation. The network may go down temporarily till CMC boots up again Continue?[y|N]y
```

Managing SAS Expander and HDD Firmware

Updating and Activating SAS Expander Firmware

	Command or Action	Purpose	
Step 1	Server # scope chassis	Enters chas	sis command mode.
Step 2	Server /chassis # scope sas-expandersas expander ID	Enters SAS expander mode.	
Step 3	Server/chassis/sas-expander # update protocol IP Address path	protocol, IP the file path	The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SCP or SFTP as the remote server type. If you chose SCP or SFTP as the remote server type while performing this action, a prompt with the message Server (RSA) key fingerprint is <server_finger_print_id> Do you wish to continue? Click y or n depending on the authenticity of the server fingerprint. The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.</server_finger_print_id>

	Command or Action	Purpose
Step 4	(Optional) Server/chassis/sas-expander # show detail	Displays the status of the firmware upgrade.

This example shows how to update and activate the SAS expander firmware:

```
Server# scope chassis
Server /chassis # scope sas-expander 1
Updating the firmware
Server /chassis/sas-expander# update tftp 10.10.10.10 /tftpboot/skasargo/<firmware file>
updating the firmware.
Checking the status of the upgrade
Server /chassis/sas-expander# show detail
Firmware Image Information:
   ID: 1
   Name: SASEXP1
   Update Stage: In Progress
   Update Progress: 25
   Current FW Version: 04.08.01_B056
   FW Image 1 Version: 04.08.01 B056
   FW Image 1 State: RUNNING ACTIVATED
   FW Image 2 Version: 04.08.01 B056
   FW Image 2 State: BACKUP INACTIVATED
Activating the firmware
svbu-huu-sanity-col2-1-vcmc /chassis/sas-expander # activate
This operation will activate backup firmware and reboot the SAS-Expander.
Continue?[y|N]y
Server /chassis/sas-expander #
```

Updating HDD Firmware

	Command or Action	Purpose
Step 1	Server # scope chassis	Enters chassis command mode.
Step 2	Server /chassis/dynamic-storage # scope dynamic-storage	Enters dynamic storage command mode.
Step 3	Server /chassis/dynamic-storage # update-drive protocol IP Address path HDD slot-ids	Specifies the protocol, IP address of the remote server, and the file path to the firmware file on the server. The protocol can be one of the following: • TFTP • FTP • SFTP • SCP

	Command or Action	Purpose	Purpose		
		• HTTP			
		Note	The Cisco UCS C-Series server now supports fingerprint confirmation of the server when you update firmware through a remote server. This option is available only if you choose SCP or SFTP as the remote server type.		
			If you chose SCP or SFTP as the remote server type while performing this action, a prompt with the message Server (RSA) key fingerprint is <server_finger_print_id>Do you wish to continue? Click y or n depending on the authenticity of the server fingerprint.</server_finger_print_id>		
			The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.		
		Note	You can update firmware for multiple servers from the same vendor.		
Step 4	(Optional) Server /chassis/dynamic-storage # show physical-drive-fw	Displays the status of the firmware upgrade.			

This example provides steps to update the HDD firmware:

```
Server# scope chassis
```

Server /chassis # scope dynamic-storage

Updating for a single HDD

Server /chassis/dynamic-storage #update-drive tftp 10.10.10 /tftpboot/skasargo/sg4.lod 14

updating FW for slot 1 HDD

Updating for Multiple HDD

Server /chassis/dynamic-storage#update-drive tftp 10.10.10.10 /tftpboot/skasargo/sg4.lod 1-14

updating fw for multiple HDDs

Viewing the Status of the Upgrade

Server /chassis/dynamic-storage# show physical-drive-fw

Slot	Vendor	Product ID	Current_FW	Update Stage	Update Progress
1	TOSHIBA	MG03SCA400	5702	Progress	25
2	TOSHIBA	MG03SCA400	5702	NONE	0

	3	TOSHIBA	MG03SCA400	5702	NONE	0
	4	TOSHIBA	MG03SCA400	5702	NONE	0
	5	TOSHIBA	MG03SCA400	5702	NONE	0
	6	TOSHIBA	MG03SCA400	5702	NONE	0
	7	TOSHIBA	MG03SCA400	5702	NONE	0
	8	TOSHIBA	MG03SCA400	5702	NONE	0
	9	TOSHIBA	MG03SCA400	5702	NONE	0
	10	TOSHIBA	MG03SCA400	5702	NONE	0
	11	TOSHIBA	MG03SCA400	5702	NONE	0
	12	TOSHIBA	MG03SCA400	5702	NONE	0
	13	TOSHIBA	MG03SCA400	5702	NONE	0
	14	TOSHIBA	MG03SCA400	5702	NONE	0
Server /chassis/dynamic-storage #						