

Troubleshoot and Recover 6400 Series Fabric Interconnects Stuck at Loader Prompt

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Introduction

This document describes how to recover a 6400 Series Fabric Interconnect (FI) from the loader prompt when you have non-usable images on the FI.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Unified Computing System Manager (UCSM)
- 6400 Series Fabric Interconnects
- Command Line Interface (CLI)

Components Used

The information in this document is based on 6400 Series Fabric Interconnects.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

- You can perform these steps when both or any fabric interconnect goes down during firmware upgrade, gets rebooted, and is stuck at the loader prompt, and you do not have working images on the fabric interconnect.
- The solution in this document requires a Universal Serial Bus (USB) drive loaded with the necessary files or a file transfer protocol, such as Trivial File Transfer Protocol (TFTP). Both solutions also

require a console cable to the FI, if using TFTP, it also requires a cable to the management port of the FI.

- The USB must be formatted with the File Allocation Table (FAT) filesystem.
- An extraction tool such as 7-Zip or WinRAR is necessary to extract the binaries from the UCS Infrastructure files.

Problem: 6400 Series Fabric Interconnect Reboots and is Stuck at the Loader Prompt

This is most commonly seen when the FI goes down during a firmware upgrade, gets rebooted, and is stuck at the loader prompt. Some other scenarios you can encounter the loader prompt are when unexpected power outages occur or severe filesystem issues are present.

Solution

Restore the 6400 FI filesystem with the images on a USB or TFTP, a console connection is required. If TFTP is used a cable to the FI management port is also required. Transfer and activate the newly installed files on the FI, configure the FI as necessary and, confirm it no longer boots to the loader prompt.

⚠ Caution: This article must be used only when the FI is not recoverable any other way and cannot be booted. Please contact Cisco TAC if you are unsure for any reason.

Restore the Fabric Interconnect via USB

Step 1. Launch a browser and navigate to the software section on the Cisco website. Download the proper UCS Infrastructure Software Bundle version for 6400 Series FI. In the example shown in the image, version 4.2(2c) A bundle is used.

The screenshot shows the Cisco Software Download page for UCS Infrastructure and UCS Manager Software, Release 4.2(2c). The page is viewed in a browser window with the URL [https://software.cisco.com/download/home/283612660/type/283655658/release/4.2\(2c\)](https://software.cisco.com/download/home/283612660/type/283655658/release/4.2(2c)). The page title is "Software Download" and the breadcrumb trail is "Downloads Home / Servers - Unified Computing / UCS Infrastructure and UCS Manager Software / Unified Computing System (UCS) Infrastructure Software Bundle - 4.2(2c)".


The page displays a search bar, "Expand All" and "Collapse All" buttons, and a "Suggested Release" dropdown menu. The "Suggested Release" dropdown is open, showing a list of releases: 4.2(2c) (highlighted in red), 4.1(3j), 4.0(4n), 4.2(2d), 4.1(3j), 4.0(4n), and 3.2(3p). The "Latest Release" dropdown is also open, showing the same list of releases.

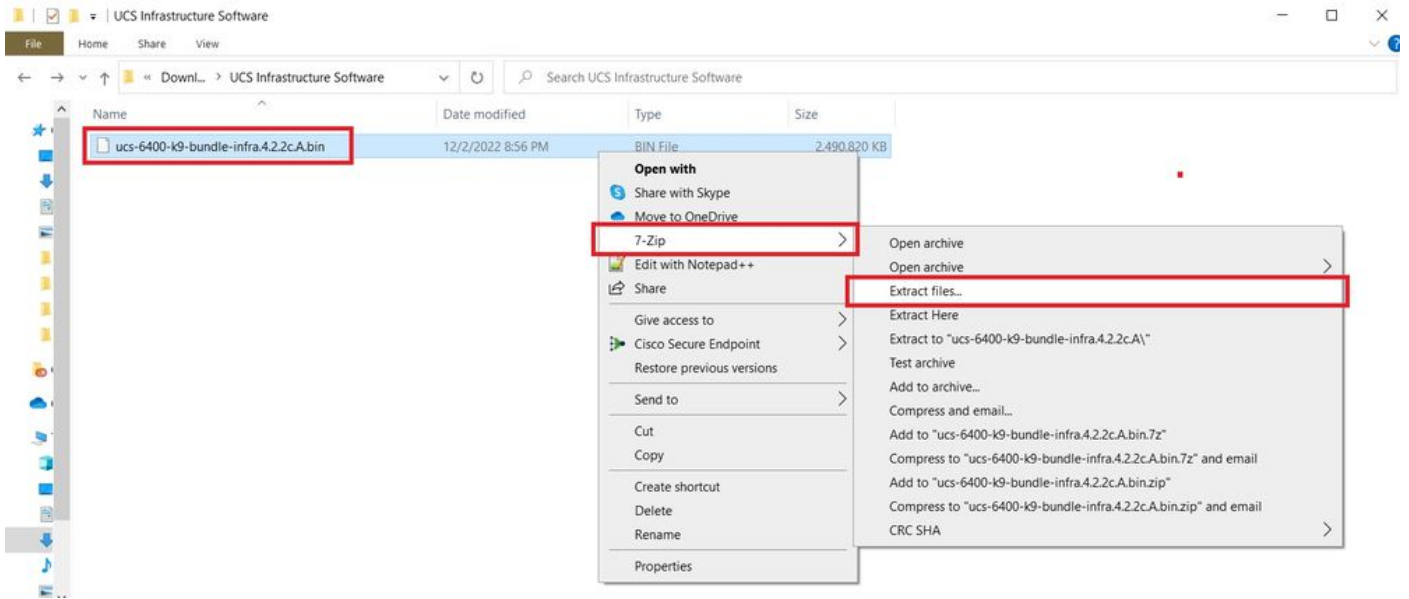
The main content area is titled "UCS Infrastructure and UCS Manager Software" and shows "Release 4.2(2c)". It includes a "My Notifications" button and a "Related Links and Documentation" section with a link to "Release Note for 4.2(2c)".

The "File Information" table lists two bundles:

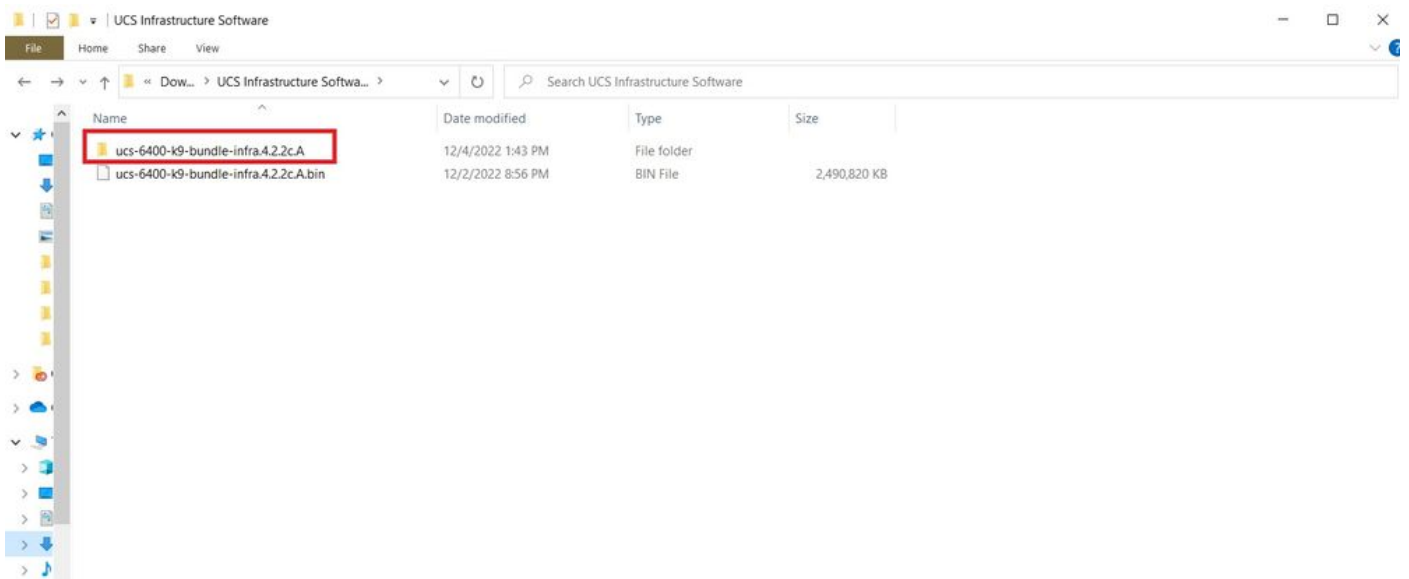
File Information	Release Date	Size	Actions
The UCS Infrastructure Software Bundle contains: - NX-OS software for the UCS 6332 Fabric Interconnects - Firmware for the fabric extenders and I/O modules - UCS Manager - Chassis Management Controller - UCSM Capability Catalog. ucs-6300-k9-bundle-infra.4.2.2c.A.bin	19-Sep-2022	1329.38 MB	Download, Add to Cart, Add to Favorites
The UCS Infrastructure Software Bundle contains: - NX-OS software for the UCS 6454 Fabric Interconnects - Firmware for the fabric extenders and I/O modules - UCS Manager - Chassis Management Controller - UCSM Capability Catalog. ucs-6400-k9-bundle-infra.4.2.2c.A.bin	19-Sep-2022	2432.44 MB	Download, Add to Cart, Add to Favorites

Step 2. Right-click on the UCS Infrastructure Software Bundle file and select Extract Files.

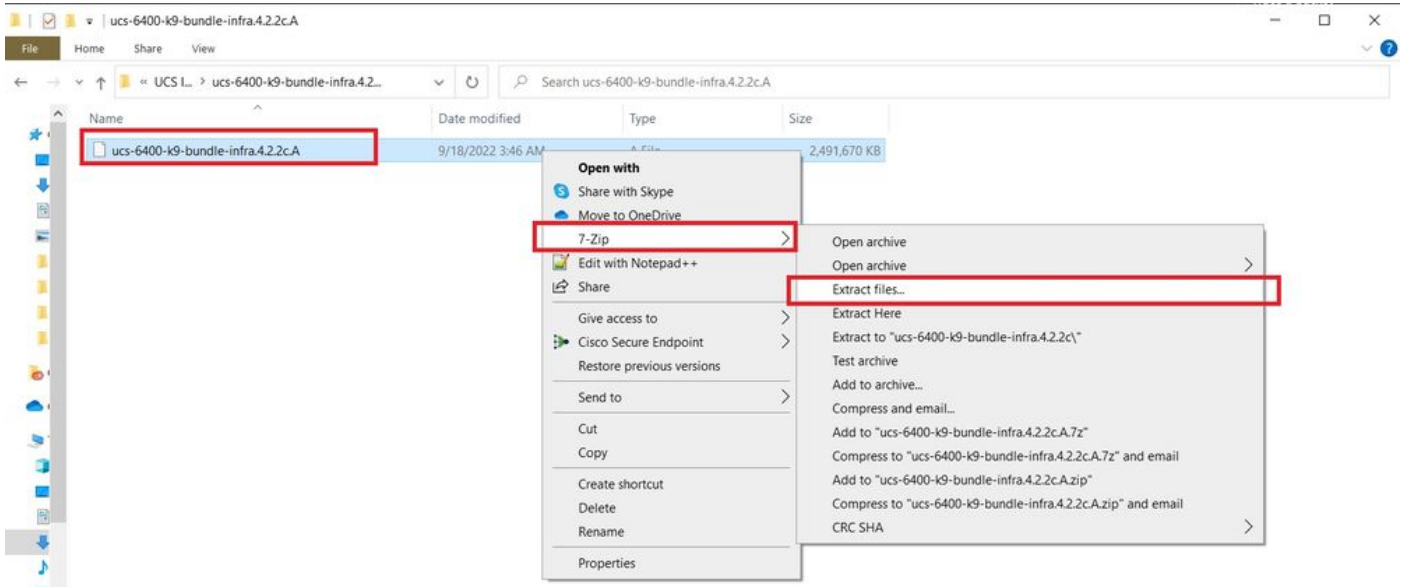
 **Note:** This step requires you to have an extraction tool such as 7-Zip, WinRAR, and so on.



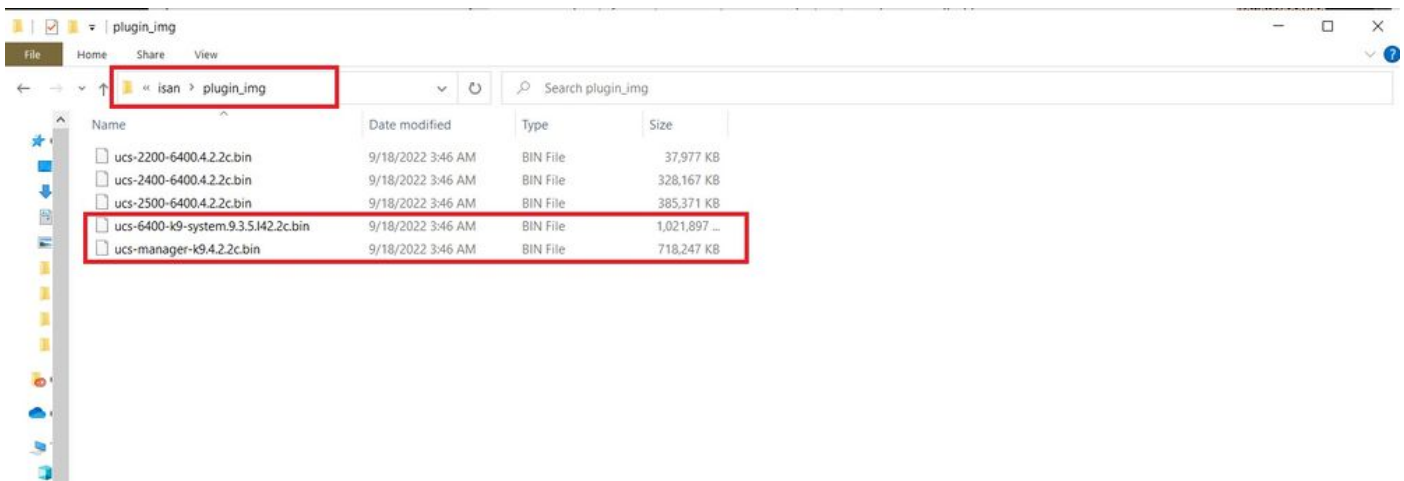
Step 3. Double-click on the newly extracted UCS Infrastructure Software Bundle folder.



Step 4. Right-click on the UCS Infrastructure Software Bundle inside the folder and select Extract Files.



Step 5. Double-click on the newly extracted folder. Navigate to **isan > plugin_img** and copy the system and manager files to your USB.



Step 6. Directly connect a console cable and insert the USB to the FI. Open a terminal emulator and reboot the switch, as it begins to power on continue to press **Ctrl-C** to break into the loader prompt.



Tip: If you see any sort of image attempting to load or the FI is hung you have likely missed the loader. Power cycle the FI and continuously press **Ctrl-C** immediately after powering it on.



Step 7. Run the command `cmdline recoverymode=1` to enter recovery mode at the loader prompt.

```
<#root>  
loader >  
cmdline recoverymode=1
```


Step 8. Boot the system image from the physically inserted USB.

```
<#root>  
loader>  
boot usb1:ucs-6400-k9-system.9.3.5.I42.2c.bin
```

Step 9. Run the command `start` to enter bash and then `mount | egrep "sda|mtdblock"` to display the partitions.

```
<#root>  
switch(boot)#  
start  
  
bash-4.2#  
mount | egrep "sda|mtdblock"
```

```
/dev/sda8 on /opt type ext4
/dev/sda9 on /workspace type ext4
/dev/sda10 on /spare type ext4
/dev/sda5 on /mnt/cfg/0 type ext3
/dev/sda6 on /mnt/cfg/1 type ext3
/dev/sda3 on /mnt/pss type ext3
/dev/sda4 on /bootflash type ext3
/dev/sda7 on /logflash type ext3
/dev/mtdblock4 on /opt/db/nvram type ext2
```

 **Note:** In some situations, you can see mtdblock0 instead of mtdblock4, if so, be sure to unmount mtdblock0 in Step 10.

Step 10. Run the command unmount for all the present partitions individually.

```
<#root>
```

```
bash-4.2#
```

```
umount /dev/sda3
```

```
bash-4.2#
```

```
umount /dev/sda4
```

```
bash-4.2#
```

```
umount /dev/sda5
```

```
bash-4.2#
```

```
umount /dev/sda6
```

```
bash-4.2#
```

```
umount /dev/sda7
```

```
bash-4.2#
```

```
umount /dev/sda8
```

```
bash-4.2#
```

```
umount /dev/sda9
```

```
bash-4.2#
```

```
umount /dev/sda10
```

```
bash-4.2#
```

```
umount /dev/mtdblock4
```



Note: If any of the umount commands return target is busy, move on to the next partition to be unmounted and try to unmount the busy partition last.

Step 11. Run a filesystem check on all the unmounted partitions individually.

```
<#root>
bash-4.2#
  e2fsck -y /dev/sda3

bash-4.2#
e2fsck -y /dev/sda4

bash-4.2#
e2fsck -y /dev/sda5

bash-4.2#
e2fsck -y /dev/sda6

bash-4.2#
e2fsck -y /dev/sda7

bash-4.2#
e2fsck -y /dev/sda8

bash-4.2#
  e2fsck -y /dev/sda9

bash-4.2#
e2fsck -y /dev/sda10

bash-4.2#
e2fsck -y /dev/mtdblock4
```

Step 12. Initialize the system flash and wait for completion.

```
<#root>
bash-4.2#
init-system

Initializing the system ...
```

```
Checking flash ...
Erasing Flash ...
Partitioning ...
UCSM Partition size:10485760
Wipe all partitions
Reinitializing NVRAM contents ...Initialization completed.
```

Step 13. Mount the bootflash and USB. Copy the system and manager file from the USB to the bootflash and create a symlink.

```
<#root>

bash-4.2#

mount /dev/sda4 /bootflash

bash-4.2#

mount /dev/sdb1 /mnt/usbslot1

bash-4.2#

cp /mnt/usbslot1/ucs-6400-k9-system.9.3.5.I42.2c.bin /bootflash

bash-4.2#

cp /mnt/usbslot1/ucs-manager-k9.4.2.2c.bin /bootflash

bash-4.2#

ln -sf /bootflash/ucs-manager-k9.4.2.2c.bin /bootflash/nuova-sim-mgmt-nsg.0.1.0.001.bin

bash-4.2#

reboot
```

Step 14. The switch reboots and returns at the loader prompt, this is expected behavior. Boot the system image off of the bootflash.

```
<#root>

loader >

boot bootflash:ucs-6400-k9-system.9.3.5.I42.2c.bin

Booting bootflash:ucs-6400-k9-system.9.3.5.I42.2c.bin
```

Step 15. After the switch completely boots, the **Basic System Configuration Dialog** is displayed. Configure the FI per your environment.

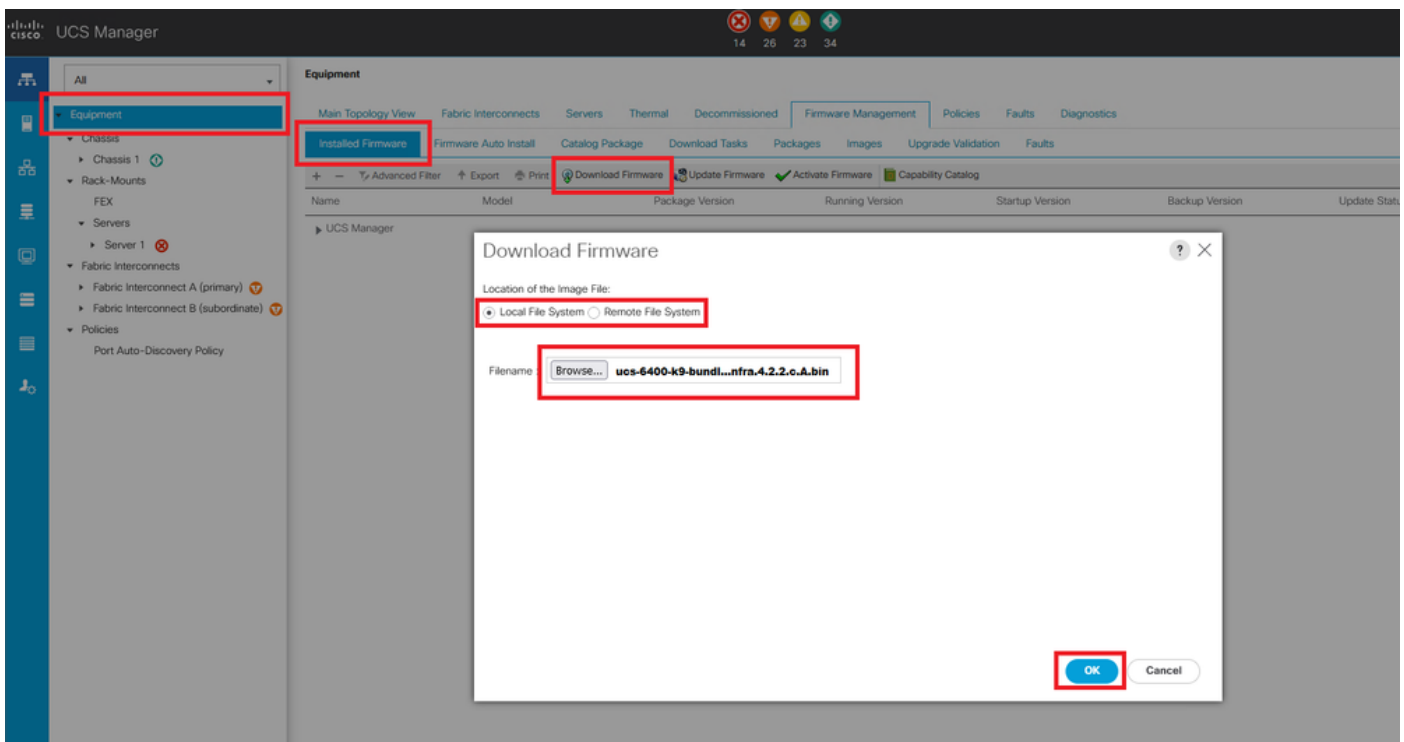

```
----- Basic System Configuration Dialog -----

This setup utility will guide you through the basic configuration of
the system. Only minimal configuration including IP connectivity to
the Fabric interconnect and its clustering mode is performed through these steps.

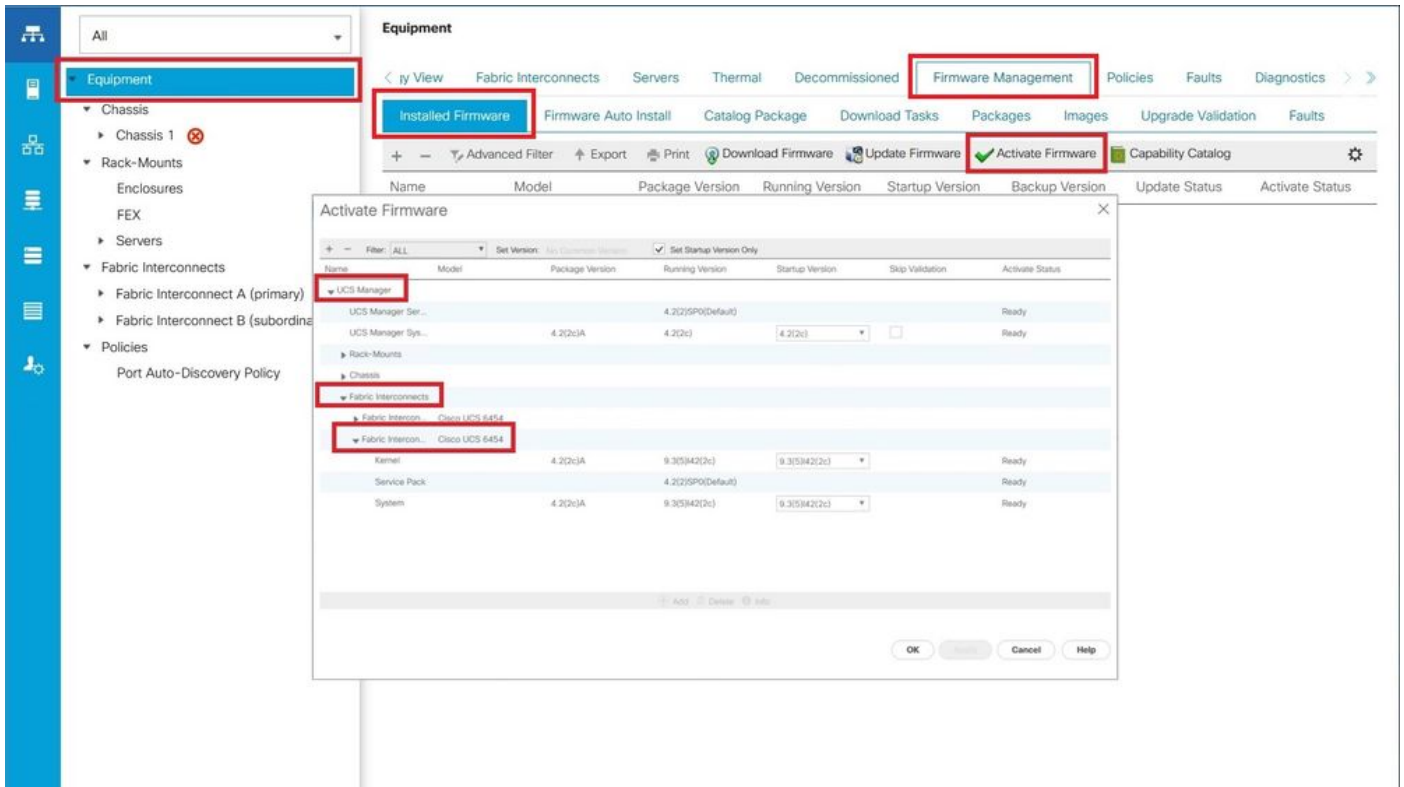
Type Ctrl-C at any time to abort configuration and reboot system.
To back track or make modifications to already entered values,
complete input till end of section and answer no when prompted
to apply configuration.

Enter the configuration method. (console/gui) ?
```

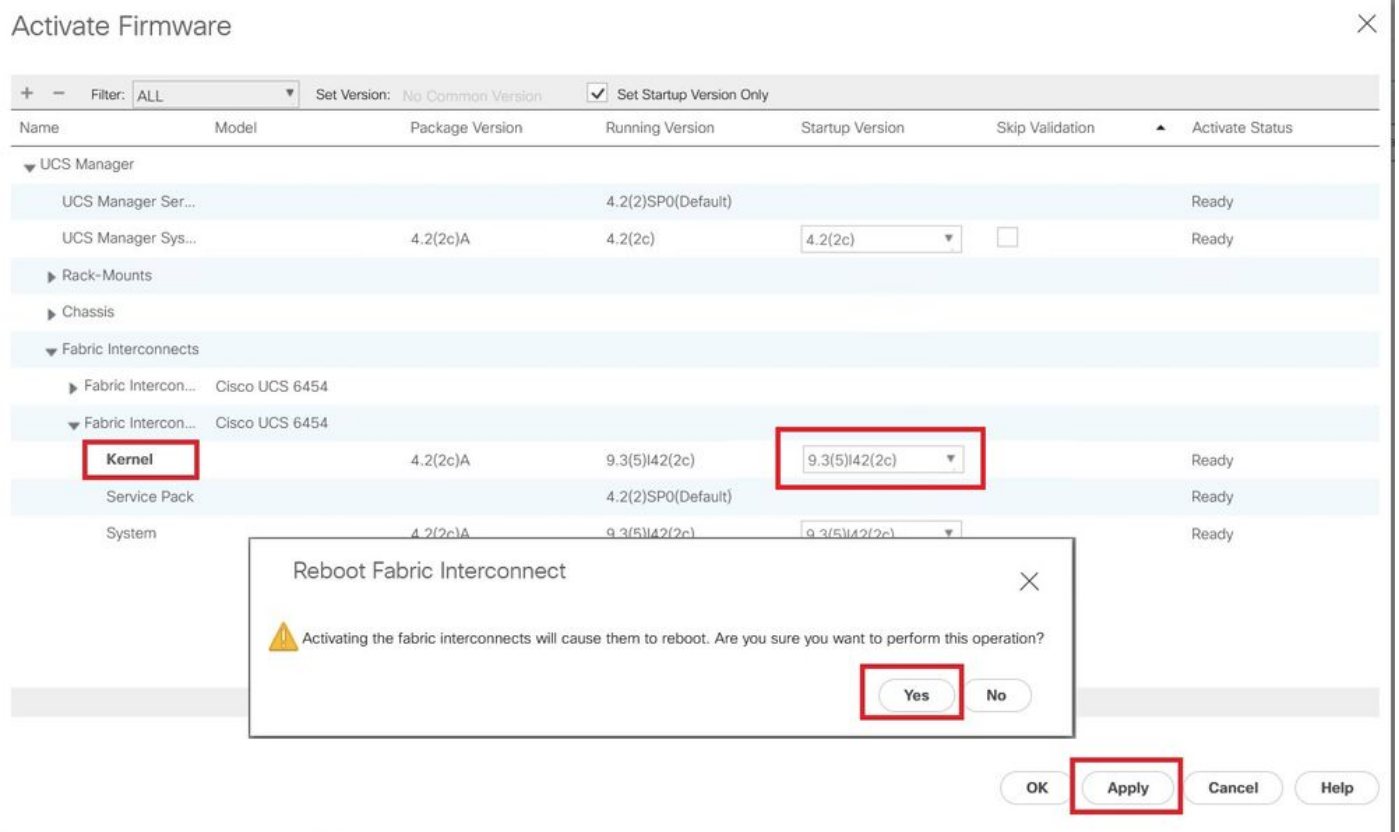
Step 16. Once the switch is configured, log into the Graphical User Interface (GUI). Navigate to **Equipment > Installed Firmware > Download Firmware**. In this step, you must use the UCS infrastructure A file that you previously downloaded, not the extracted files. Select **Local File System** or **Remote File System > Browse**. Choose the infrastructure file, then select **Ok**.



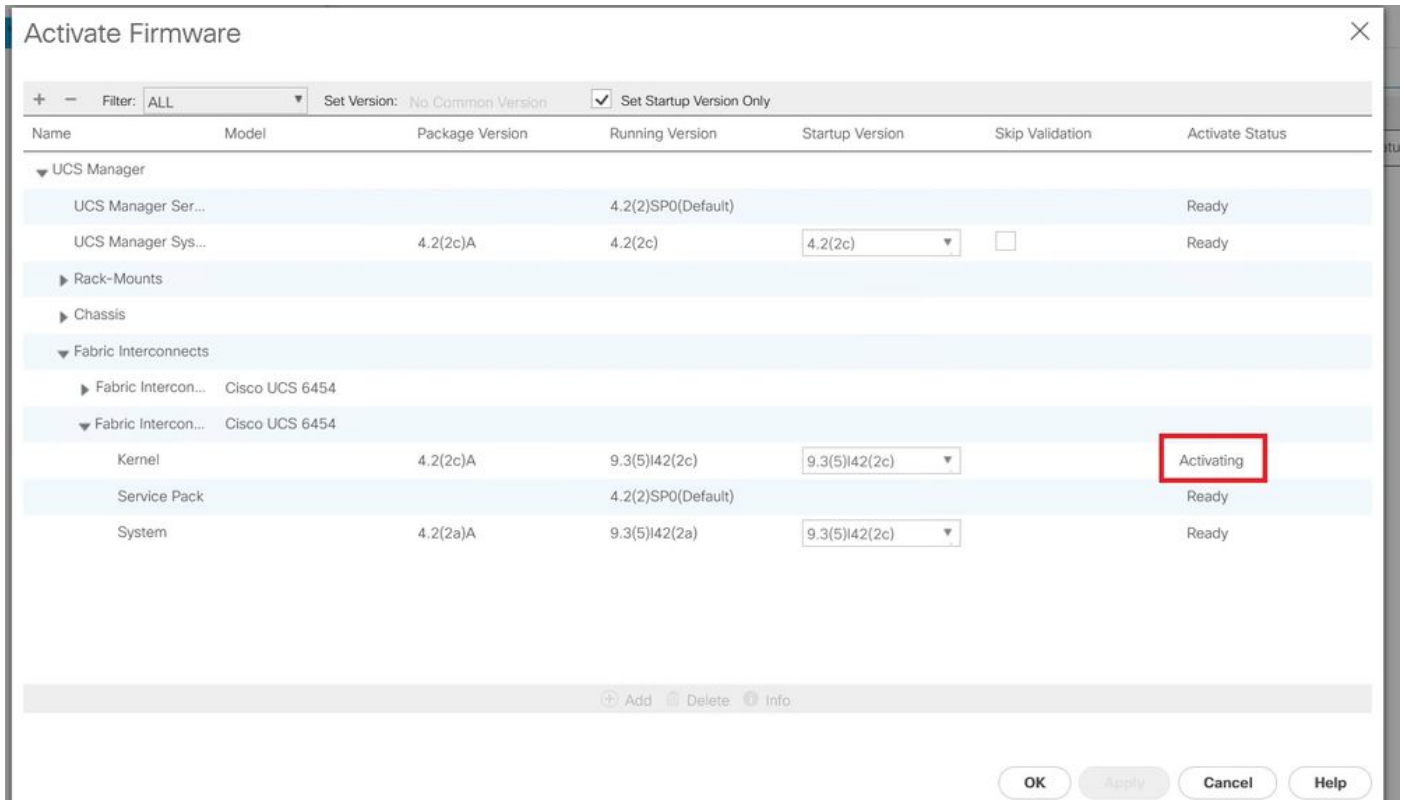
Step 17. Navigate to **Equipment > Firmware Management > Installed Firmware > Activate Firmware > UCS Manager > Fabric Interconnects** and select the drop-down for the FI in question.



Step 18. Navigate to the kernel drop-down and choose the proper version. Select **Apply** > **Yes**.



Step 19. The kernel status is now **Activating**, allow 20 minutes or more for the status to be **Ready**.



Step 20. Once all the firmware is ready, verify your FI boots successfully through a manual reboot. Use connect local-mgmt x, where x represents the FI you have rebuilt. If your FI boots back to the loader prompt contact Cisco TAC.

```
<#root>
```

```
TAC-FI-REBUILD-A#
```

```
connect local-mgmt b
```

```
TAC-FI-REBUILD-B(local-mgmt)#
```

```
reboot
```

Before rebooting, please take a configuration backup.
Do you still want to reboot? (yes/no):

```
yes
```

Restore the Fabric Interconnect via TFTP

Step 1. Launch a browser and navigate to the software section on the Cisco website. Download the proper UCS Infrastructure Software Bundle version for 6400 Series FI. In the example shown in the image, version 4.2(2c) A bundle is used.

Software Download

Downloads Home / Servers - Unified Computing / UCS Infrastructure and UCS Manager Software / Unified Computing System (UCS) Infrastructure Software Bundle - 4.2(2c)

Search...

Expand All Collapse All

Suggested Release

4.2(2c)

4.1(3j)

4.0(4n)

Latest Release

4.2(2d)

4.1(3j)

4.0(4n)

3.2(3p)

UCS Infrastructure and UCS Manager Software

Release 4.2(2c)

My Notifications

Related Links and Documentation
[Release Note for 4.2\(2c\)](#)

File Information	Release Date	Size
The UCS Infrastructure Software Bundle contains: - NX-OS software for the UCS 6332 Fabric Interconnects - Firmware for the fabric extenders and I/O modules - UCS Manager - Chassis Management Controller - UCSM Capability Catalog. ucs-6300-k9-bundle-infra.4.2.2c.A.bin	19-Sep-2022	1329.38 MB
The UCS Infrastructure Software Bundle contains: - NX-OS software for the UCS 6454 Fabric Interconnects - Firmware for the fabric extenders and I/O modules - UCS Manager - Chassis Management Controller - UCSM Capability Catalog. ucs-6400-k9-bundle-infra.4.2.2c.A.bin	19-Sep-2022	2432.44 MB

Step 2. Right-click on the **UCS Infrastructure Software Bundle** file and select **Extract Files**.

Note: This step requires you to have an extraction tool such as 7-Zip, WinRAR, and so on.

UCS Infrastructure Software

File Home Share View

« Downl... » UCS Infrastructure Software

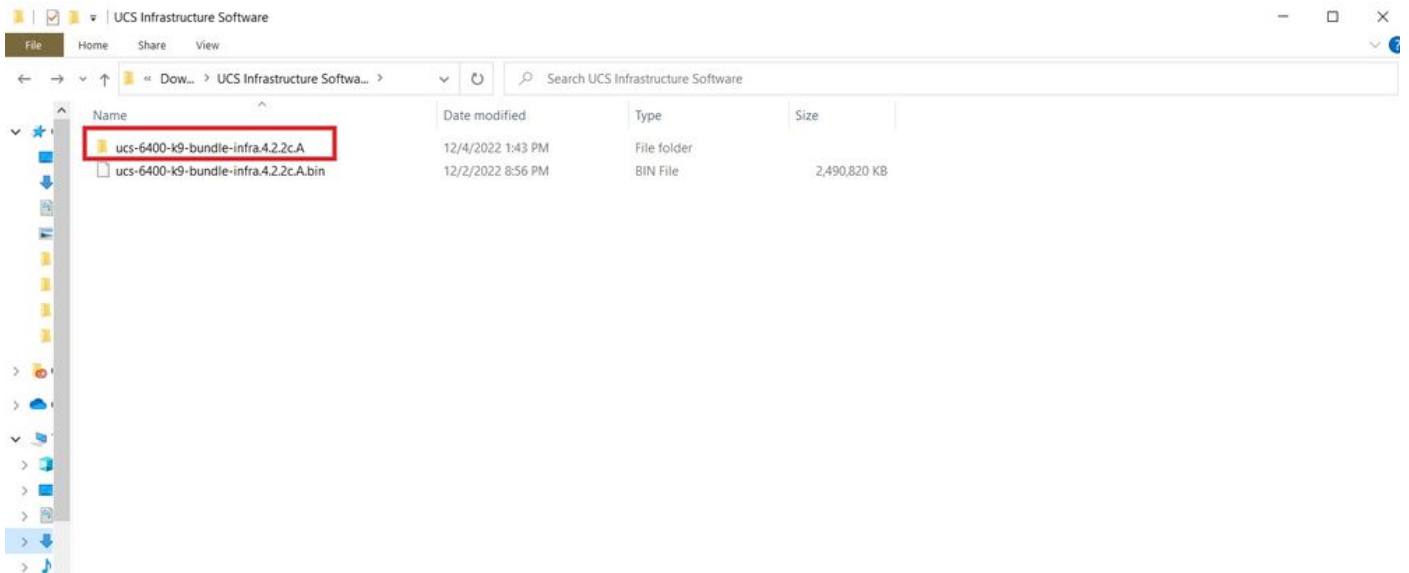
Search UCS Infrastructure Software

Name	Date modified	Type	Size
ucs-6400-k9-bundle-infra.4.2.2c.A.bin	12/2/2022 8:56 PM	BIN File	2,490,820 KB

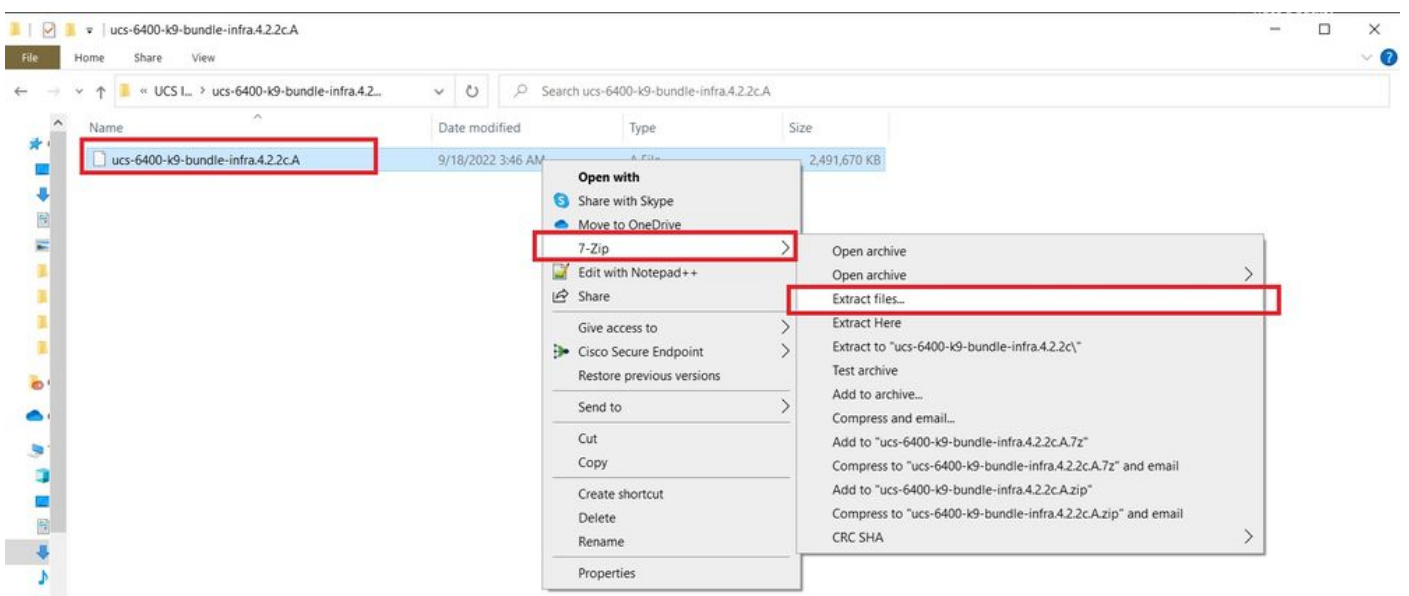
- Open with
- Share with Skype
- Move to OneDrive
- 7-Zip
- Edit with Notepad++
- Share
- Give access to
- Cisco Secure Endpoint
- Restore previous versions
- Send to
- Cut
- Copy
- Create shortcut
- Delete
- Rename
- Properties

- Open archive
- Open archive
- Extract files...
- Extract Here
- Extract to "ucs-6400-k9-bundle-infra.4.2.2c.A\"
- Test archive
- Add to archive...
- Compress and email...
- Add to "ucs-6400-k9-bundle-infra.4.2.2c.A.bin.7z"
- Compress to "ucs-6400-k9-bundle-infra.4.2.2c.A.bin.7z" and email
- Add to "ucs-6400-k9-bundle-infra.4.2.2c.A.bin.zip"
- Compress to "ucs-6400-k9-bundle-infra.4.2.2c.A.bin.zip" and email
- CRC SHA

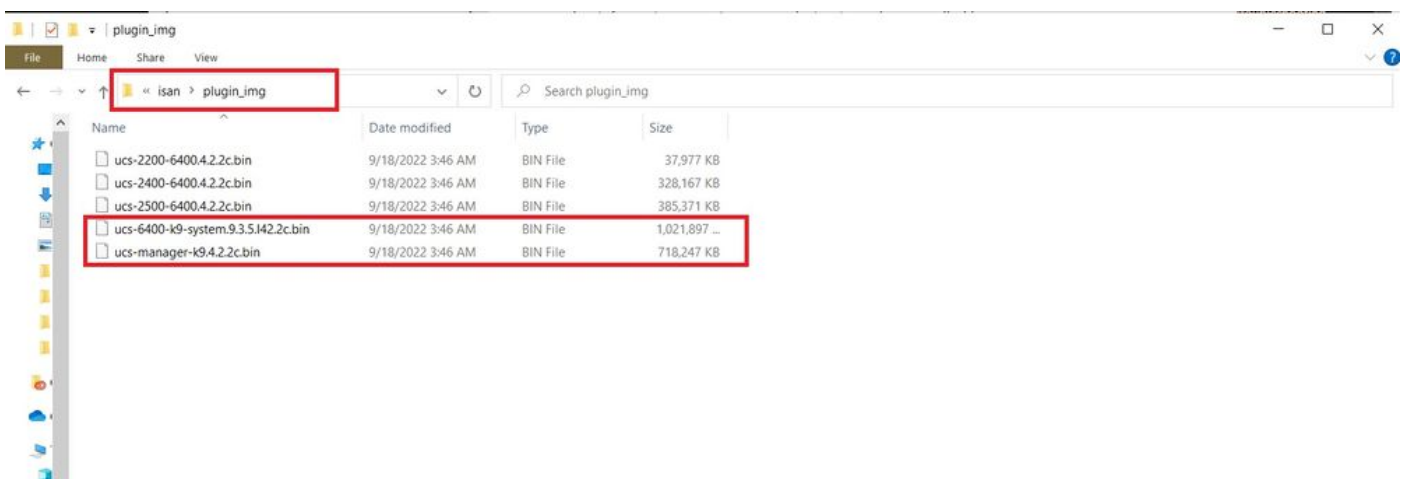
Step 3. Double-click on the newly extracted **UCS Infrastructure Software Bundle** folder.



Step 4. Right-click on the UCS Infrastructure Software Bundle inside the folder and select Extract Files.




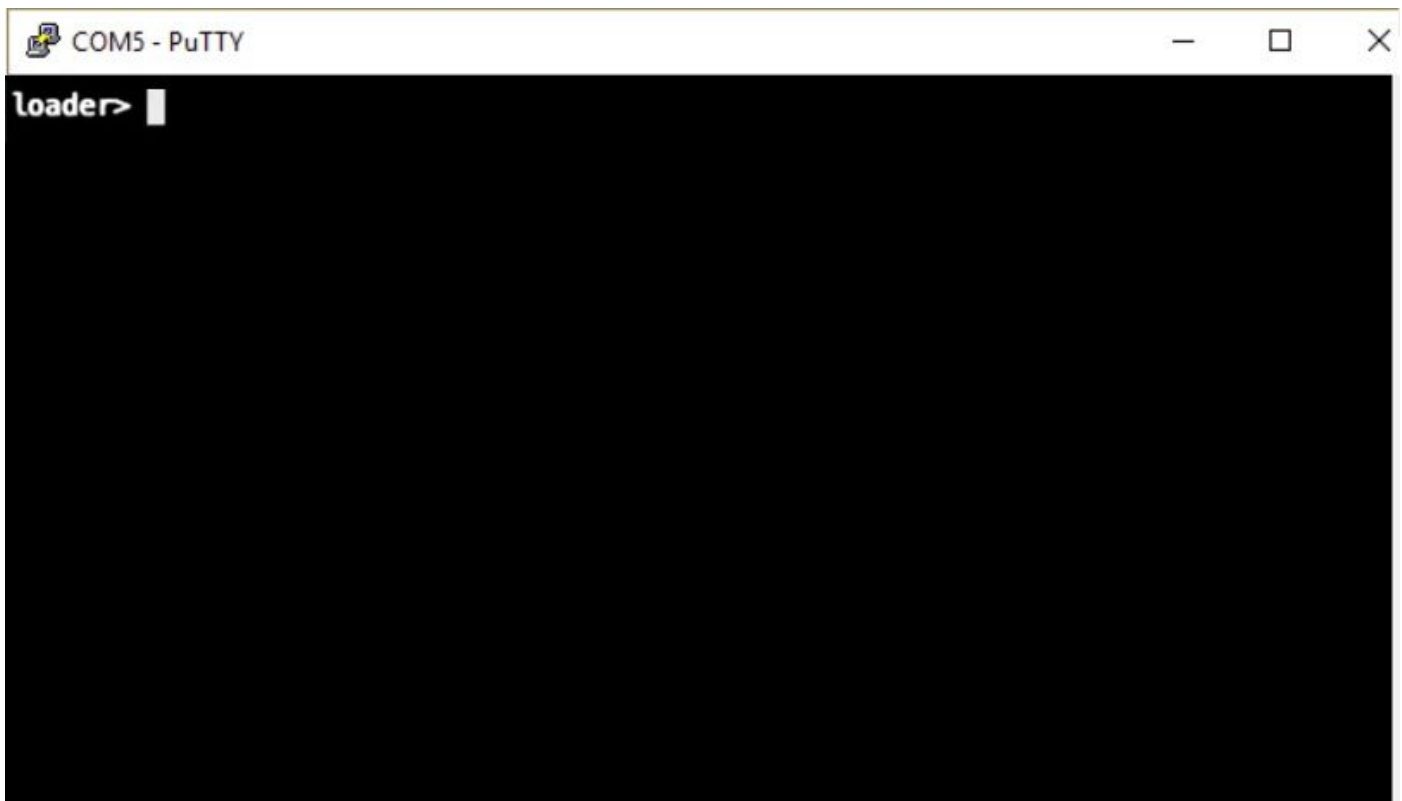
Step 5. Double-click on the newly extracted folder. Navigate to `isan > plugin_img` and copy the system and manager files to your TFTP server root directory.



Step 6. Connect a console and management cable to the FI. Open a terminal emulator and reboot the switch,

as it begins to power on continue to press **Ctrl-C** to break into the loader prompt.

 **Tip:** If you see any sort of image attempting to load or the FI is hung you have likely missed the loader. Power cycle the FI and continuously press **Ctrl-C** immediately after powering it on.



Step 7. Issue the command `cmdline recoverymode=1` to enter recovery mode and configure the management interface.

```
<#root>
```

```
loader >
```


```
cmdline recoverymode=1
```

```
loader >
```

```
set ip x.x.x.x y.y.y.y
```

```
loader >
```

```
set gw z.z.z.z
```

 **Note:** X represents the FI IP, Y represents the subnet mask, and Z represents the gateway.

Step 8. Boot the system image from the TFTP server.

```
<#root>
```

```
loader>
```

```
boot tftp://x.x.x.x/ucs-6400-k9-system.9.3.5.I42.2c.bin
```

 **Note:** X represents the TFTP server IP.

Step 9. Run the command `start` to enter bash and then `mount | egrep "sda|mtdblock"` to display the partitions.

```
<#root>
switch(boot)#
start

bash-4.2#
mount | egrep "sda|mtdblock"

/dev/sda8 on /opt type ext4
/dev/sda9 on /workspace type ext4
/dev/sda10 on /spare type ext4
/dev/sda5 on /mnt/cfg/0 type ext3
/dev/sda6 on /mnt/cfg/1 type ext3
/dev/sda3 on /mnt/pss type ext3
/dev/sda4 on /bootflash type ext3
/dev/sda7 on /logflash type ext3
/dev/mtdblock4 on /opt/db/nvram type ext2
```

 **Note:** In some situations, you can see `mtdblock0` instead of `mtdblock4`, if so, be sure to unmount `mtdblock0` in Step 10.

Step 10. Run the command `umount` for all the present partitions individually.

```
<#root>
bash-4.2#
umount /dev/sda3

bash-4.2#
umount /dev/sda4

bash-4.2#
umount /dev/sda5

bash-4.2#
umount /dev/sda6

bash-4.2#
```

```
umount /dev/sda7
```

```
bash-4.2#
```

```
umount /dev/sda8
```

```
bash-4.2#
```

```
umount /dev/sda9
```

```
bash-4.2#
```

```
umount /dev/sda10
```

```
bash-4.2#
```

```
umount /dev/mtdblock4
```



Note: If any of the umount commands return target is busy, move on to the next partition to be unmounted and try to unmount the busy partition last.

Step 11. Run a filesystem check on all the unmounted partitions individually.

```
<#root>
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda3
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda4
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda5
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda6
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda7
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda8
```

```
bash-4.2#
```

```
e2fsck -y /dev/sda9
```



```
bash-4.2#  
e2fsck -y /dev/sda10
```

```
bash-4.2#  
e2fsck -y /dev/mtdblock4
```

Step 12. Initialize the system flash and wait for completion.

```
<#root>  
bash-4.2#  
init-system  
  
Initializing the system ...  
Checking flash ...  
Erasing Flash ...  
Partitioning ...  
UCSM Partition size:10485760  
Wipe all partitions  
Reinitializing NVRAM contents ...Initialization completed.
```

Step 13. Exit from the bash shell and return to the switch boot prompt.

```
<#root>  
bash-4.2#  
exit  
switch(boot)#
```

Step 14. Configure the management interface from the switch boot prompt.

```
<#root>  
switch(boot)#  
config terminal  
  
switch(boot)(config)#  
interface mgmt 0  
  
switch(boot)(config-if)#  
ip address x.x.x.x y.y.y.
```

```
y
switch(boot)(config-if)#
    no shut

switch(boot)(config-if)#
exit

switch(boot)(config)#
ip default-gateway z.z.z.z
switch(boot)(config)#
exit
switch(boot)#
```



Note: X represents the FI IP, Y represents the subnet mask, and Z represents the gateway.

Step 15. Copy the manager and system files from TFTP to bootflash.

```
<#root>
switch(boot)#
copy tftp://x.x.x.x/ucs-manager-k9.4.2.2c.bin bootflash:

switch(boot)#
copy tftp://x.x.x.x/ucs-6400-k9-system.9.3.5.I42.2c.bin bootflash:
```

Step 16. Issue the command `start` to invoke the bash shell, create a symlink, and then reboot.

```
<#root>
bash-4.2#
start

bash-4.2#
ln -sf /bootflash/ucs-manager-k9.4.2.2c.bin /bootflash/nuova-sim-mgmt-nsg.0.1.0.001.bin

bash-4.2#
reboot
```

Step 17. The switch reboots and returns at the loader prompt, this is expected behavior. Boot the system

image off of the bootflash.

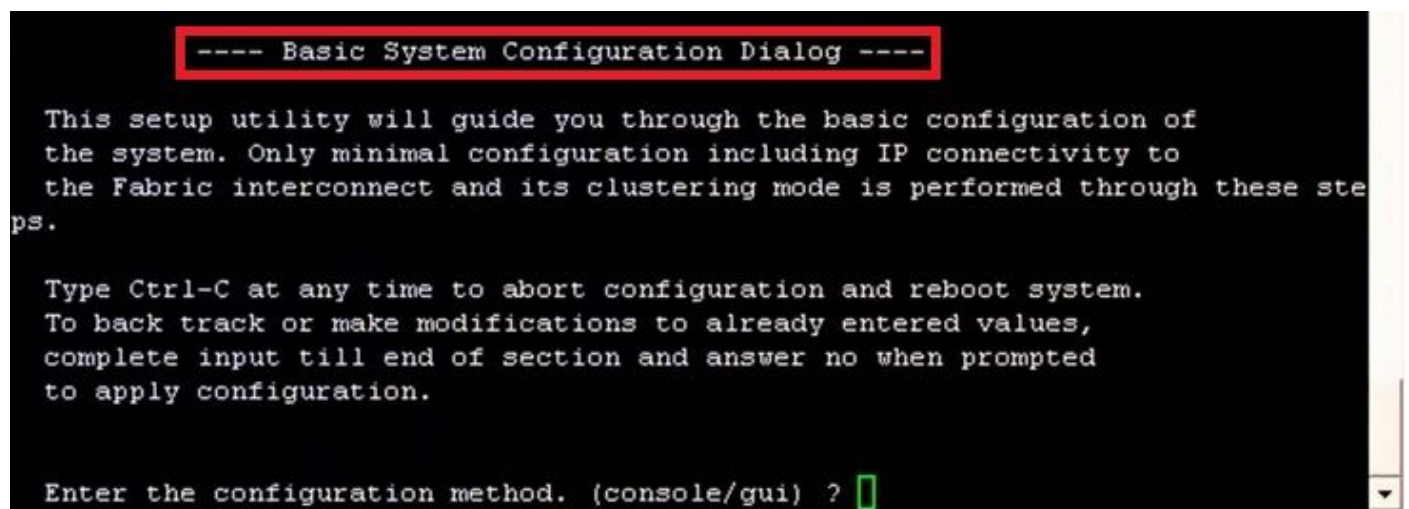
```
<#root>
```

```
loader >
```

```
boot bootflash:ucs-6400-k9-system.9.3.5.I42.2c.bin
```

```
Booting bootflash:ucs-6400-k9-system.9.3.5.I42.2c.bin
```

Step 18. After the switch completely boots, the **Basic System Configuration Dialog** is displayed. Configure the FI per your environment.



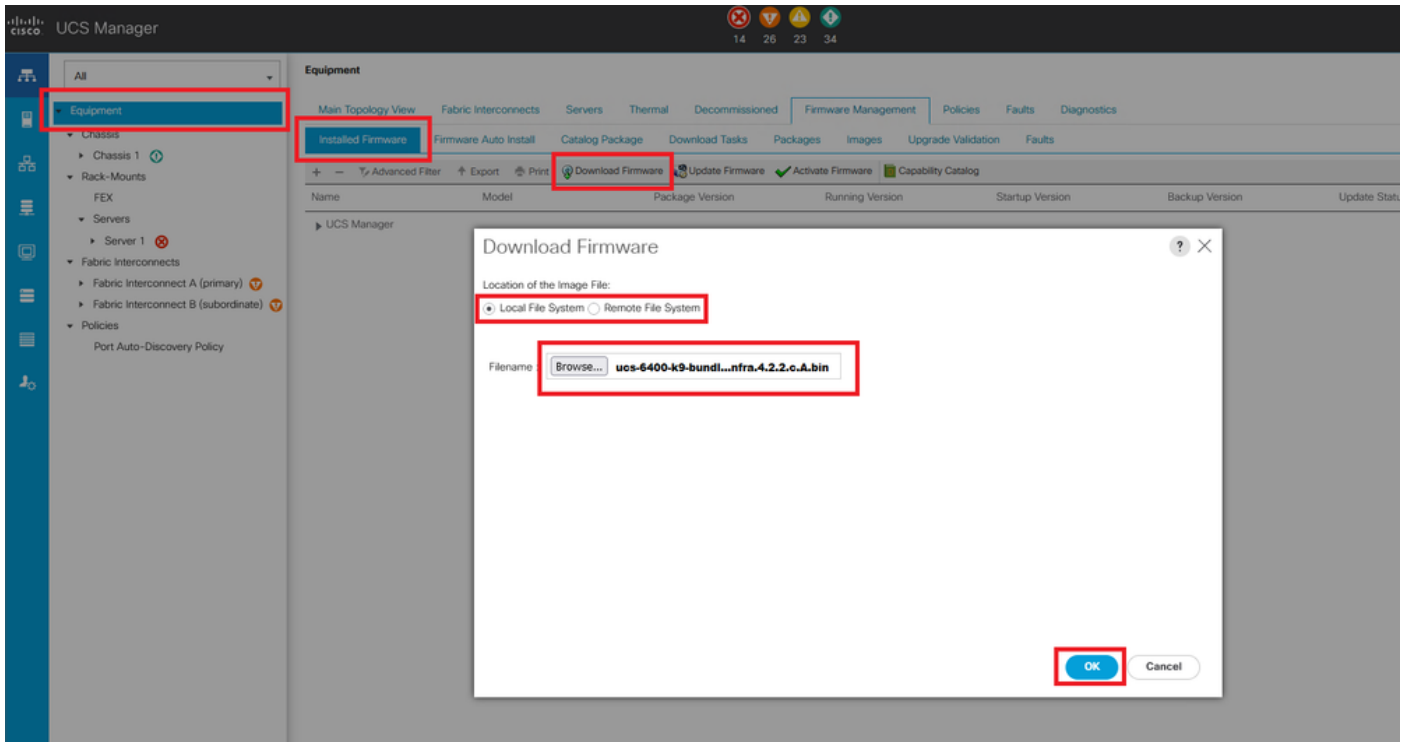
```
---- Basic System Configuration Dialog ----

This setup utility will guide you through the basic configuration of
the system. Only minimal configuration including IP connectivity to
the Fabric interconnect and its clustering mode is performed through these steps.

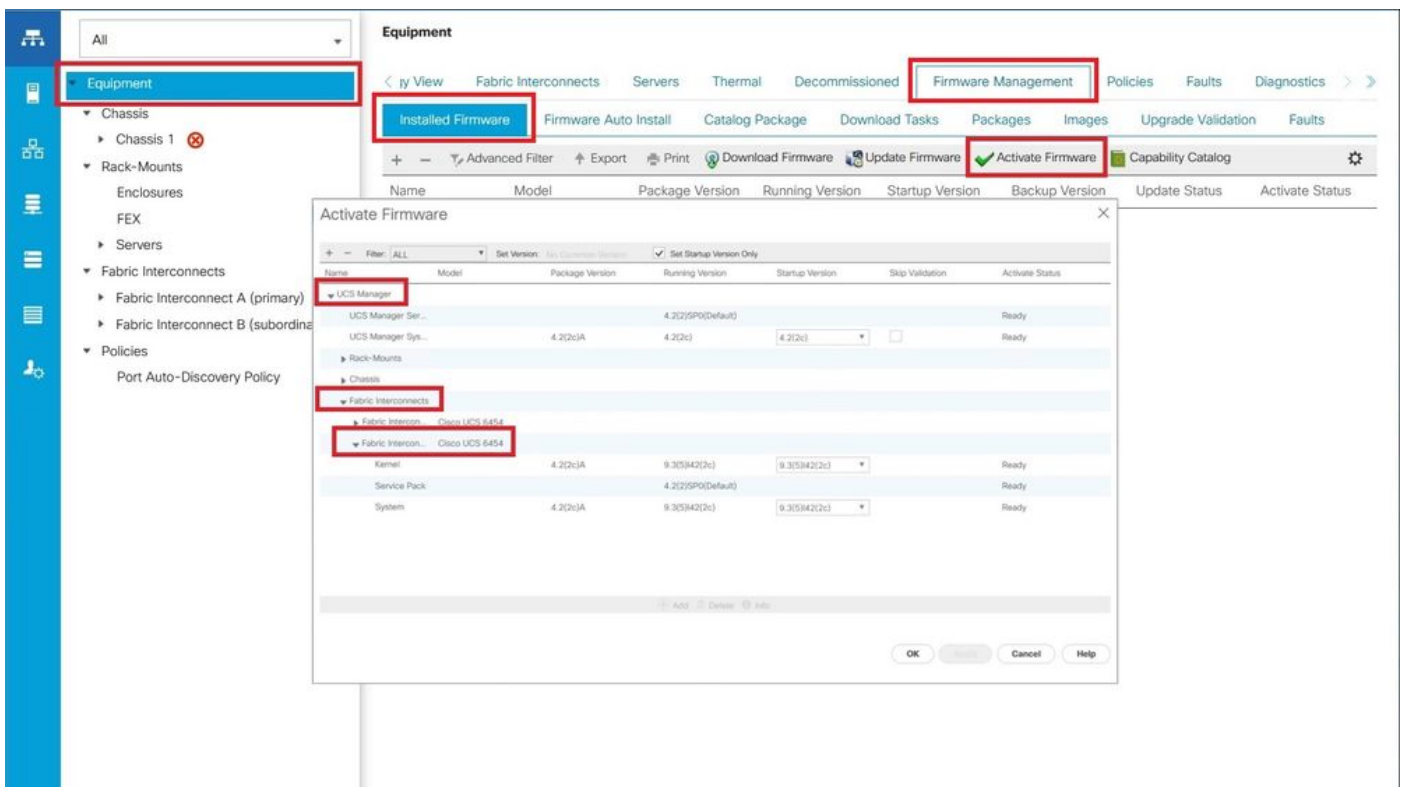
Type Ctrl-C at any time to abort configuration and reboot system.
To back track or make modifications to already entered values,
complete input till end of section and answer no when prompted
to apply configuration.

Enter the configuration method. (console/gui) ?
```

Step 19. Once the switch is configured, log into the Graphical User Interface (GUI). Navigate to **Equipment > Installed Firmware > Download Firmware**. In this step, you must use the UCS infrastructure A file that you previously downloaded, not the extracted files. Select **Local File System Or Remote File System > Browse**. Choose the infrastructure file, then select **Ok**.



Step 20. Navigate to **Equipment > Firmware Management > Installed Firmware > Activate Firmware > UCS Manager > Fabric Interconnects** and select the drop-down for the FI in question.



Step 21. Navigate to the kernel drop-down and choose the proper version. Select **Apply > Yes**.

Activate Firmware

The screenshot shows the 'Activate Firmware' dialog box with a table of components. A modal dialog titled 'Reboot Fabric Interconnect' is open, asking for confirmation to reboot. The 'Kernel' component in the table has its status set to 'Activating'.

Name	Model	Package Version	Running Version	Startup Version	Skip Validation	Activate Status
▼ UCS Manager						
UCS Manager Ser...			4.2(2)SP0(Default)			Ready
UCS Manager Sys...		4.2(2c)A	4.2(2c)	4.2(2c)	<input type="checkbox"/>	Ready
▶ Rack-Mounts						
▶ Chassis						
▼ Fabric Interconnects						
▶ Fabric Intercon... Cisco UCS 6454						
▼ Fabric Intercon... Cisco UCS 6454						
Kernel		4.2(2c)A	9.3(5)I42(2c)	9.3(5)I42(2c)		Ready
Service Pack			4.2(2)SP0(Default)			Ready
System		4.2(2c)A	9.3(5)I42(2c)	9.3(5)I42(2c)		Ready

Reboot Fabric Interconnect

⚠ Activating the fabric interconnects will cause them to reboot. Are you sure you want to perform this operation?

Yes No

OK Apply Cancel Help

Step 22. The kernel status is now **Activating**, allow 20 minutes or more for the status to be **Ready**.

The screenshot shows the 'Activate Firmware' dialog box with the 'Kernel' status updated to 'Activating'.

Name	Model	Package Version	Running Version	Startup Version	Skip Validation	Activate Status
▼ UCS Manager						
UCS Manager Ser...			4.2(2)SP0(Default)			Ready
UCS Manager Sys...		4.2(2c)A	4.2(2c)	4.2(2c)	<input type="checkbox"/>	Ready
▶ Rack-Mounts						
▶ Chassis						
▼ Fabric Interconnects						
▶ Fabric Intercon... Cisco UCS 6454						
▼ Fabric Intercon... Cisco UCS 6454						
Kernel		4.2(2c)A	9.3(5)I42(2c)	9.3(5)I42(2c)		Activating
Service Pack			4.2(2)SP0(Default)			Ready
System		4.2(2c)A	9.3(5)I42(2c)	9.3(5)I42(2c)		Ready

⊕ Add ⊖ Delete ⓘ Info

OK Apply Cancel Help

Step 23. Once all the firmware is ready, verify your FI boots successfully through a manual reboot. Use connect local-mgmt x, where x represents the FI you have rebuilt. If your FI boots back to the loader prompt contact Cisco TAC.

<#root>

TAC-FI-REBUILD-A#

```
connect local-mgmt b
```

TAC-FI-REBUILD-B(local-mgmt)#

```
reboot
```

Before rebooting, please take a configuration backup.
Do you still want to reboot? (yes/no):

```
yes
```

Related information

- [Cisco UCS Manager Troubleshooting Reference Guide](#)
- [Cisco UCS 6400 Series Fabric Interconnects Data Sheet](#)
- [Recovering 6200 & 6300 Fabric Interconnects From Loader Prompt](#)
- [Technical Support & Documentation - Cisco Systems](#)