



# Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Gibraltar 16.12.1x

This section contains the upgrade procedures for the Cisco cBR-8 Router System.

If you are using telnet to access the device, make sure the value of line vty transport is correct and save the configuration.

```
Router# show run | begin line vty
line vty 0 4
  exec-timeout 0 0
  privilege level 15
  password 7 104D081B094410055F
  exec prompt timestamp
  transport input all
line vty 5 98
  exec-timeout 0 0
  privilege level 15
  password 7 02050D480809
  transport input all
line vty 99
  transport input all
!
```

The following table encompasses all versions that customers are required to update to support Cisco IOS XE Gibraltar 16.12.1x. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Gibraltar 16.12.1x support. Use the commands in the tables to verify the firmware versions.

**Table 1: Firmware Versions**

Internal Name	Component Name	Required Minimum Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G CPLD	16052011/19071712	show platform
	CBR-CCAP-SUP-250G CPLD	170724E0/190717E1	show platform

Supervisor ROMMON	CBR-CCAP-SUP-160G Rommon and CBR-CCAP-SUP-250G Rommon	16.7(6r)S	<b>show platform</b>
Line Card CPLD	CBR-CCAP-LC-40G CPLD	00000026	<b>show platform diag</b>
Docsis 3.1 downstream module Micro	CBR-CCAP-LC-40G Gemin2 Micro	3.1A	<b>show platform diag</b>
Docsis 3.1 downstream module FPGA	CBR-CCAP-LC-40G Gemini2 Apollo	4.484F	<b>show platform diag</b>
DPIC Uboot and FPGA	CBR-DPIC-8X10G Firmware	00010001	<b>show platform diag</b>
DPIC 100G Uboot and FPGA	CBR-DPIC-2X100G Firmware	00020005	<b>show platform diag</b>



**Note** If the user wants to upgrade Supervisor CPLD to version 19071712 and 190717E1, the chassis must be running with Cisco IOS XE Gibraltar 16.12.1w or later releases.



**Note** Cisco recommends that operators upgrade their On-Premise SSM Satellite software versions to v7.x or later releases, to ensure the compatibility with cBR-8.

- [Verify max-carrier value, on page 2](#)
- [Upgrading from Cisco IOS XE 16.x to Cisco IOS XE Gibraltar 16.12.1x, on page 3](#)
- [Upgrading Supervisor CPLD Firmware, on page 13](#)

## Verify max-carrier value

Currently in Remote PHY system, max-carrier value can be configured in the downstream controller profile as well as in RPD configuration for Cisco Remote PHY Shelf 300/600/7200. This may lead to inconsistent max-carrier value configurations.

Starting from Cisco IOS XE Gibraltar 16.10.1f, max-carrier value configured in the **cable rpd** mode is removed and RPD will use the max-carrier value configured in the **controller-profile** mode for the power calculation.

Before upgrading to Cisco IOS XE Gibraltar 16.10.1f or later releases, verify if the max-carrier values configured in the RPD shelf configuration and downstream controller profile(s) associated to RPD downstream port are the same. If they are different, update the cBR-8 configuration prior to upgrade.

Below is an example of correct configuration before upgrade.

```
cable downstream controller-profile 1
  max-carrier 128
  max-ofdm-spectrum 384000000
  rf-chan 0 3
  type DOCSIS
  qam-profile 1
  frequency 381000000
  rf-output NORMAL
  docsis-channel-id 1

cable downstream controller-profile 2
  max-carrier 158
  max-ofdm-spectrum 384000000
  rf-chan 158
  docsis-channel-id 159
  ofdm channel-profile 20 start-frequency 579000000 width 48000000 plc 600000000

cable rpd test
  identifier 0001.0001.0001
  type shelf
  rpd-ds 0 max-carrier 128
  rpd-ds 0 base-power 33
  rpd-ds 1 max-carrier 158
  rpd-ds 1 base-power 25
  core-interface Te9/1/0
  rpd-ds 0 downstream-cable 9/0/3 profile 1
  rpd-ds 0 downstream-cable 9/0/4 profile 2
  rpd-us 0 upstream-cable 9/0/3 profile 1
  r-dti 1
  rpd-event profile 0
  rpd-55d1-us-event profile 0
```



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**Note** It is highly recommended to follow this example to check and update configuration if necessary because max-carrier value is used to compute the base power. Otherwise, after upgrade the expected base power value can be different which may affect cable modem coming online.

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**Note** If you upgrade from a version lower than Cisco IOS XE Fuji 16.9.1, base power range may be changed on the port with OFDM channel configured. So be aware of the potential base power change before and after the upgrade.

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## Upgrading from Cisco IOS XE 16.x to Cisco IOS XE Gibraltar 16.12.1x



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**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x and Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Gibraltar 16.12.1x, perform the following steps to upgrade SUP ROMMON manually. Otherwise, proceed with the IOS upgrade.

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1. Download hardware programmable devices upgrade package file **cbrsup-programmable\_firmware.16.12.01x.SPA.pkg** from the following Cisco.com Software Center URL: <https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>

2. Copy the package file to harddisk:

```
copy <location>/cbrsup-programmable_firmware.16.12.01x.SPA.pkg harddisk:
```

3. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

4. Upgrade SUP ROMMON.

```
Router#Upgrade rom-mon file harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg r0
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

```
Router#Upgrade rom-mon file harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg r1
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```




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**Note** To save time, we can combine reloading the SUP with the ISSU process.

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## Upgrading with ISSU

### Before you begin




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**Note** If you are upgrading from Cisco IOS XE Everest 16.7.x to Cisco IOS XE Gibraltar 16.12.1x, contact Cisco TAC for special procedures.

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**Note** Due to the new SUP250 WAN FPGA firmware included in the Cisco IOS XE Gibraltar 16.12.1 package, it is recommended to upgrade the cBR-8 system following the steps in [Upgrading using reload, on page 9](#), otherwise the new SUP250 WAN FPGA firmware will not take effect.

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**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x and Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Gibraltar 16.12.1x, complete [pre-upgrade steps 1 to 4](#) before proceed.

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Before upgrading the system, make sure the following requirements are met:

- The cBR-8 has two SUPs setup.

```
Router# show redundancy | include Location|state
      Active Location = slot 4
      Current Software state = ACTIVE
      Uptime in current state = 2 days, 21 hours, 37 minutes
      Standby Location = slot 5
      Current Software state = STANDBY HOT
      Uptime in current state = 2 days, 21 hours, 30 minutes
```

- Standby SUP must be in hot standby.

```
Router# show redundancy | include Location|state
      Active Location = slot 4
      Current Software state = ACTIVE
      Uptime in current state = 2 days, 21 hours, 37 minutes
      Standby Location = slot 5
      Current Software state = STANDBY HOT
      Uptime in current state = 2 days, 21 hours, 30 minutes
```

- Line card redundancy is in stable state with state Active and Stdby warm.

```
Router# show redundancy linecard all
Load for five secs: 14%/1%; one minute: 8%; five minutes: 8%
Time source is NTP, 15:23:26.697 PST Thu Jan 17 2019
```

Slot	Subslot	LC Group	My State	Peer State	Peer Slot	Peer Subslot	Role	Mode
1	-	0	Active	Stdby Warm	0	-	Active	Primary
2	-	0	Active	Stdby Warm	0	-	Active	Primary
3	-	0	Active	Stdby Warm	0	-	Active	Primary
6	-	0	Active	Stdby Warm	0	-	Active	Primary
0	-	0	-	-	Multiple	None	Standby	Secondary

- Auto-boot is enabled.

```
Router# show bootvar
Load for five secs: 14%/0%; one minute: 14%; five minutes: 10%
Time source is NTP, 15:46:59.837 PST Thu Jan 17 2019
```

```
BOOT variable = bootflash:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2
```

```
Standby BOOT variable = bootflash:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2
```

- Both SUPs are in the sub-package mode, running the same image from the same path.

```
Router# show bootvar
Load for five secs: 14%/0%; one minute: 14%; five minutes: 10%
Time source is NTP, 15:46:59.837 PST Thu Jan 17 2019
```

```
BOOT variable = bootflash:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2
```

```
Standby BOOT variable = bootflash:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2
```

- Target consolidated image cbrsup-universalk9.16.12.01x.SPA.bin is copied to active SUP in the same directory of the packages.conf file that the system is booted up with.
- Download two files from the following Cisco.com Software Center URL:  
<https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>
  - IOS XE Software Version 16.12.1x: **cbrsup-universalk9.16.12.01x.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 16.12.1x:  
**cbrsup-programmable\_firmware.16.12.01x.SPA.pkg**
- The free space on boot device on both SUPs must be greater than 1.8 GB.

```
Router# dir bootflash: | include bytes total

7804653568 bytes total (1311854592 bytes free)
```




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**Note** Do not power cycle the cBR-8 router during the firmware upgrade process. Power cycling the chassis may corrupt the ROMMON/Uboot image.

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**Step 1** Copy Cisco IOS XE Gibraltar 16.12.1x package to bootflash:

```
copy <location>/cbrsup-universalk9.16.12.01x.SPA.bin bootflash:<sub-pkg-dir>/
```

**Step 2** Verify Cisco IOS XE Gibraltar 16.12.1x package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:<sub-pkg-dir>/cbrsup-universalk9.16.12.01x.SPA.bin
```

**Step 3** Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.

```
copy <location>/cbrsup-programmable_firmware.16.12.01x.SPA.pkg harddisk:
```

**Step 4** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

**Step 5** Check system status prior to upgrade. Save the information to compare against the system status after upgrade. For the commands to use to check the status, see the **show** commands at the end of this section.

**Step 6** Check line card CPLD version via **show platform**. If it is not the latest version 00000026, upgrade line card CPLD following the sub steps below. Otherwise skip this step.

- a) Run the following pre-upgrade commands on the SUP IOS:

```
upgrade hw-programmable cable active_SUP daggit pre-upgrade slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit pre-upgrade slot 0
Daggits pre-upgrade successful
```

- b) Upgrade the line card CPLD firmware using the SUP IOS command.

**Note** Do not reboot the line card until the upgrade is complete. Upgrade takes approximately 15 minutes.

```
upgrade hw-programmable cable LC_slot_# daggit pkg_name firmware_pkg_location_path
```

Example:

```
Router# upgrade hw-programmable cable 0 daggit pkg_name
/harddisk/cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

- c) After the upgrade is complete (takes approximately 15 minutes), the line card moves to **unknown** state. Check the status of the line card using the **show platform** command. When the line card is in **unknown** state, run the following command to recover the line card:

```
upgrade hw-programmable cable active_SUP daggit lc-recovery slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit lc-recovery slot 0
```

- d) The line card moves from **booting** to **active** state. Check the version of the line card using the **show platform** command to make sure version is changed to 00000026.

Example:

```
cBR8#show platform
.....
Slot      CPLD Version      Rommon Version
-----
0         00000026         2011.03.18
...
```

- e) When the line card is in **active** state, run the following command to verify the upgrade.

```
upgrade hw-programmable cable active_SUP daggit post-active slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit post-active slot 0
SUCCESS: Daggit_ver-37 : Booted from upgradable Image-1
```

## Step 7 Upgrade Docsis 3.1 downstream modules in all slots.

**Note** Do not upgrade if they already have the correct FPGA/Micro firmware version as shown in [Table 1: Firmware Versions, on page 1](#), otherwise the line card will be in unknown state.

```
Upgrade hw-programmable cable <slot> dsphy all
pkg_name/harddisk/cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

**Step 8** Wait for the system log message asking the user to reload the line card that was upgraded.

```
001860: Jun 15 19:05:05.904 PDT: %IOSXE-5-PLATFORM: CLC0: cdman: Suggest reload the line card for
new FW to take effect using CLI: hw slot <slot-id> reload
```

**Step 9** Perform ISSU.

```
request platform software package install node file bootflash:cbrsup-universalk9.16.12.01x.SPA.bin
```

**Step 10** To monitor the ISSU progress, use the command below.

```
request platform software package install node attach
```

**Step 11** Use these CLI to check status after ISSU.

```
show version
show version r0 running
show version r1 running
show version r0 provisioned
show version r1 provisioned
```

**Note** If both Docsis 3.1 OFDM channels and downstream load balancing are configured, then Docsis 3.1 CMs will come up in a Docsis 3.0 bonding group after ISSU from Cisco IOS XE Everest 16.6.x. The workaround procedure is:

- a. Admin shut all OFDM channels. This can be done from a script, or from cut and paste of the CLI. There is no need to have a delay between successive shuts. For example:

```
configure terminal
  controller Integrated-Cable 2/0/0
    rf-chan 158
    shut
```

- b. Wait for 30 seconds.

- c. Admin perform no-shut on all OFDM channels. This may be done from a script, or from cut and paste of the CLI. There is no need to have a delay between successive no-shuts. For example:

```
configure terminal
  controller Integrated-Cable 2/0/0
    rf-chan 158
    no shut
```

- d. Reset all Docsis 31 CMs. For example:

```
clear cable modem d31-capable reset
```



### What to do next

Perform verification test to determine if the upgrade is successful, include:

- Verify the router is running the new IOS-XE release using **show version** command.
- Check facility alarms using **show facility-alarm status** command.
- Check the status of the power supplies using **show environment power** command.
- Check PS status using **show platform hardware slot P<0-5> mcu status** command.
- Complete trace routes to known good off-network IP address using the source address of customer CPE blocks to verify routing is working.
- Check logs for error messages using **show log** command.

These **show** commands may be useful in the verification test:

- **show redundancy**
- **show platform**
- **show platform diag**
- **show environment**
- **show redundancy linecard all**
- **show isis neighbors**
- **show ip ospf neighbor**
- **show ip route rip**
- **show ip mroute**
- **show cops servers**
- **show cable modem voice**
- **show cable calls**
- **show cable metering verbose**
- **show cable licenses all**
- **show inventory**

## Upgrading using reload

### Before you begin



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**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x and Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Gibraltar 16.12.1x, complete [pre-upgrade steps 1 to 4](#) before proceed.

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Before upgrading the system, make sure the following requirements are met:

- Download two files from the following Cisco.com Software Center URL:

<https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>

- IOS XE Software Version 16.12.1x: **cbrsup-universalk9.16.12.01x.SPA.bin**
- IOS XE Hardware Programmable Devices Version 16.12.1x:  
**cbrsup-programmable\_firmware.16.12.01x.SPA.pkg**

**Step 1** Copy Cisco IOS XE Gibraltar 16.12.1x package to bootflash: and stby-bootflash:.

```
copy <location>/cbrsup-universalk9.16.12.01x.SPA.bin bootflash:
copy <location>/cbrsup-universalk9.16.12.01x.SPA.bin stby-bootflash:
```

**Step 2** Verify Cisco IOS XE Gibraltar 16.12.1x package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:cbrsup-universalk9.16.12.01x.SPA.bin
verify /md5 stby-bootflash:cbrsup-universalk9.16.12.01x.SPA.bin
```

**Step 3** Copy the hardware programmable devices upgrade package to harddisk:.

```
copy <location>/cbrsup-programmable_firmware.16.12.01x.SPA.pkg harddisk:
```

**Step 4** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

**Step 5** Configure the chassis to boot the system with Cisco IOS XE Gibraltar 16.12.1x image.

```
Configure terminal
no boot system
boot system bootflash:cbrsup-universalk9.16.12.01x.SPA.bin
config-register 0x2
end
write mem
```

**Step 6** If you are upgrading from Cisco IOS XE Everest 16.6.x and Cisco IOS XE Fuji 16.7.x, and both SUP ROMMON versions are not 16.7(6r)S, upgrade SUP ROMMON.

```
Router#Upgrade rom-mon file harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg r0
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

```
Router#Upgrade rom-mon file harddisk:cbrsup-programmable_firmware.16.12.01x.SPA.pkg r1
Wait for the following output on the console:
ROMMON upgrade complete.
```

To make the new ROMMON permanent, you must restart the RP

### Step 7

Check line card CPLD version via **show platform**. If it is not the latest version 00000026, upgrade line card CPLD following the sub steps below. Otherwise skip this step.

- a) Run the following pre-upgrade commands on the SUP IOS:

```
upgrade hw-programmable cable active_SUP daggit pre-upgrade slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit pre-upgrade slot 0
Daggits pre-upgrade successful
```

- b) Upgrade the line card CPLD firmware using the SUP IOS command.

**Note** Do not reboot the line card until the upgrade is complete. Upgrade takes approximately 15 minutes.

```
upgrade hw-programmable cable LC_slot_# daggit pkg_name firmware_pkg_location_path
```

Example:

```
Router# upgrade hw-programmable cable 0 daggit pkg_name
/hddisk/cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

- c) After the upgrade is complete (takes approximately 15 minutes), the line card moves to **unknown** state. Check the status of the line card using the **show platform** command. When the line card is in **unknown** state, run the following command to recover the line card:

```
upgrade hw-programmable cable active_SUP daggit lc-recovery slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit lc-recovery slot 0
```

- d) The line card moves from **booting** to **active** state. Check the version of the line card using the **show platform** command to make sure version is changed to 00000026.

Example:

```
cBR8#show platform
.....
Slot      CPLD Version      Rommon Version
-----
0         00000026         2011.03.18
...
```

- e) When the line card is in **active** state, run the following command to verify the upgrade.

```
upgrade hw-programmable cable active_SUP daggit post-active slot LC_slot_#
```

Example:

```
Router# upgrade hw-programmable cable R0 daggit post-active slot 0
```

```
SUCCESS: Daggit_ver-37 : Booted from upgradable Image-1
```

**Step 8** Upgrade Docsis 3.1 downstream modules in all slots.

**Note** Do not upgrade if they already have the correct FPGA/Micro firmware version as shown in [Table 1: Firmware Versions, on page 1](#), otherwise the line card will be in unknown state.

```
Upgrade hw-programmable cable <slot> dsphy all
pkg_name/harddisk/cbrsup-programmable_firmware.16.12.01x.SPA.pkg
```

**Step 9** Wait for the system log message asking the user to reload the line card that was upgraded.

```
001860: Jun 15 19:05:05.904 PDT: %IOSXE-5-PLATFORM: C1C0: cdman: Suggest reload the line card for
new FW to take effect using CLI: hw slot <slot-id> reload
```

**Step 10** Reload the system.

```
Router#reload
```

**Step 11** If the system is running with SUP250, perform **no shut** on 100G interface after the system comes up for the first time.

### What to do next

Perform verification test to determine if the upgrade is successful, include:

- Verify the router is running the new IOS-XE release using **show version** command.
- Check facility alarms using **show facility-alarm status** command.
- Check the status of the power supplies using **show environment power** command.
- Check PS status using **show platform hardware slot P<0-5> mcu status** command.
- Complete trace routes to known good off-network IP address using the source address of customer CPE blocks to verify routing is working.
- Check logs for error messages using **show log** command.

These **show** commands may be useful in the verification test:

- **show redundancy**
- **show platform**
- **show platform diag**
- **show environment**
- **show redundancy linecard all**
- **show isis neighbors**
- **show ip ospf neighbor**
- **show ip route rip**

- **show ip mroute**
- **show cops servers**
- **show cable modem voice**
- **show cable calls**
- **show cable metering verbose**
- **show cable licenses all**
- **show inventory**

## Upgrading Supervisor CPLD Firmware



**Note** When upgrading SUP0, run the CLI with the R0 setting while controlling SUP0. And when upgrading SUP1, run the CLI with the R1 setting.



**Note** This guide assumes SUP0 is in active state and SUP1 is in standby hot state at the beginning.

Perform step 1 to 4 using console connection of active SUP0:

### Before you begin



**Note** If the supervisor SO CPLD version is lower than 1511\_1401 (SUP 160) or 15111401 (SUP 250), the supervisor SIO CPLD version is lower than 1511\_1301 (SUP 160) or 15111301 (SUP 250), physically power cycle the chassis when upgrading the supervisor FPGA.

Before upgrading the firmware, make sure the following requirements are met:

- Cisco cBR-8 router is running with Cisco IOS XE Gibraltar 16.12.1w or later releases.
- 2 supervisors are running in the Cisco cBR-8 router and the redundancy is enabled.
- Download the file from the following Cisco.com Software Center URL:

<https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>

- IOS XE Hardware Programmable Devices Version 16.12.1w:  
**cbrsup-programmable\_firmware.16.12.01w.SPA.pkg**
- Console access for both supervisors are required.
- Copy the new firmware package to the cBR-8 using FTP.

```
copy ftp://<location>/cbrsup-programmable_firmware.16.12.01w.SPA.pkg bootflash:
```

```
copy ftp://<location>/cbrsup-programmable_firmware.16.12.01w.SPA.pkg stby-bootflash:
```

### Step 1 Set the config register to 0.

```
configure terminal
config-register 0x0
end
write memory
```

### Step 2 Run the following command to prepare for R0 upgrade.

```
upgrade hw-programmable cable R0 viper pkg_name
/bootflash/cbrsup-programmable_firmware.16.12.01w.SPA.pkg
```

On SUP 250, you will see one of the following outputs:

- It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the upgrade.  
You are upgrading Viper firmware using bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg  
Using viper firmware /tmp/viper/mount/supve\_viper\_fpga\_psirt.bin  
Size of Viper Upgrade image: 16777216 bytes  
No.of parts: 65536  
Upgrading golden image...  
65536+0 records in  
65536+0 records out  
16777216 bytes (17 MB, 16 MiB) copied, 688.873 s, 24.4 kB/s  
Upgrading primary image...  
65536+0 records in  
65536+0 records out  
16777216 bytes (17 MB, 16 MiB) copied, 675.19 s, 24.8 kB/s  
Viper upgrade clean up 0  
Upgrade successfully. Please make sure Rommon version is matched.  
Please power cycle the chassis to let the new firmware take effect
- It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the upgrade.  
You are upgrading Viper firmware using bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg  
The golden viper is not compatible with assigned firmware  
/tmp/viper/mount/supve\_viper\_fpga\_psirt.bin, no upgrade will be performed  
Viper upgrade clean up 2

**Note** This output means the SUP already has the latest version it can support, skip the rest of the steps.

On SUP 160, you will see one of the following outputs:

- It takes about 10 minutes to upgrade. Console would hung. Please don't do any operation during the upgrade.  
You are upgrading Viper firmware using bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg image  
Upgrade from assigned pkg file /bootflash/cbrsup-programmable\_firmware.16.12.01w.SPA.pkg  
Using viper firmware /tmp/viper/mount/viper\_fpga.bin  
Size of Viper Upgrade image: 16777216 bytes  
No.of parts: 65536

```

65536+0 records in
65536+0 records out
Viper upgrade clean up 0
Upgrade successfully. Please make sure Rommon version is matched.
Please power cycle the chassis to let the new firmware take effect

```

- It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the upgrade.  
You are upgrading Viper firmware using `harddisk/cbrsup-programmable_firmware.16.12.01w.SPA.pkg` image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file `harddisk/cbrsup-programmable_firmware.16.12.01w.SPA.pkg`  
The golden viper is not compatible with assigned firmware  
`/tmp/viper/mount/supve_viper_fpga_psirt.bin`, no upgrade will be performed  
Viper upgrade clean up 2

**Note** This output means the SUP already has the latest version it can support, skip the rest of the steps.

**Note** Do not power cycle the chassis in this step.

**Step 3** Run the following command to prepare for R1 upgrade.

```

upgrade hw-programmable cable R1 viper pkg_name
/bootflash/cbrsup-programmable_firmware.16.12.01w.SPA.pkg

```

You will see the similar output as the one in Step 2.

**Note** Do not power cycle the chassis in this step.

**Step 4** If the supervisor SO CPLD version is 15111401 and the supervisor SIO CPLD version is 15111301 on both supervisors, follow step 5 - 11 to do the upgrade. Otherwise proceed to step 12.

```

Router#show platform diag
Load for five secs: 6%/1%; one minute: 7%; five minutes: 8%
Time source is NTP, 16:05:43.546 PST Thu Feb 8 2018
Chassis type: CBR-8-CCAP-CHASS
<SNIP>
Slot: SUP0, CBR-CCAP-SUP-160G
  Physical insert detect time : 00:01:58 (1d03h ago)
  CPLD version                : 16052011
  ViperSO CPLD version        : 15111401
  ViperSIO CPLD version       : 15111301
  Rommon version              : 16.7(1r)S
  Blackbird version           : 00000112
  Raptor ESI version          : 0001003b
  Raptor MAC version          : 00010031
  SUP-PIC CPLD version        : 14071504
  SUP-DC CPLD version         : 14072207
  DTI Client FPGA version     : 00000005
  DTI Firmware version        : 00000A03
  Cortina PHY version         : 201402061607
  SUP PSOC 0 version          : v4.0.9
  SUP PSOC 1 version          : v4.0.8
  SUP PSOC 2 version          : v4.1.0_IVB
  SUP PSOC 3 version          : v4.0.6
  SUP-DC PSOC 0 version       : v4.0.8
  SUP-DC PSOC 1 version       : v4.0.5
  SUP-PIC PSOC 0 version      : V2.0.6
  SUP-PIC PSOC 1 version      : V2.0.6
<SNIP>

```

```

Slot: SUP1, CBR-CCAP-SUP-160G
  Physical insert detect time : 00:02:26 (1d03h ago)
  CPLD version                 : 16052011
  ViperSO CPLD version         : 15111401
  ViperSIO CPLD version        : 15111301
  Rommon version               : 16.7(1r)S
  Blackbird version            : 00000112
  Raptor ESI version           : 0001003b
  Raptor MAC version           : 00010031
  SUP-PIC CPLD version         : 14071504
  SUP-DC CPLD version          : 14072207
  DTI Client FPGA version     : 00000005
  DTI Firmware version        : 00000A03
  Cortina PHY version          : 201402061607
  SUP PSOC 0 version           : v4.0.9
  SUP PSOC 1 version           : v4.0.8
  SUP PSOC 2 version           : v4.1.0_IVB
  SUP PSOC 3 version           : v4.0.6
  SUP-DC PSOC 0 version        : v4.0.9
  SUP-DC PSOC 1 version        : v4.0.5
  SUP-PIC PSOC 0 version       : V3.0.0
  SUP-PIC PSOC 1 version       : V3.0.0
<SNIP>

```

**Step 5** Set SUP0 to ROMMON using the following command.

```
redundancy force-switchover
```

Perform the following steps 6 to 7 using console connection of current active SUP1.

**Step 6** Power cycle the SUP0 to set it to ROMMON.

```
test platform hardware slot R0 oir power-cycle
```

This command will reset and re-initialize the ROMMON. The new version of the supervisor CPLD will now take effect. Verify if it matches the following new version.

SUP 160 new version: 0x19071712

SUP 250 new version: 0x190717E1

**Step 7** Boot SUP0 into IOS XE using SUP0 console connection.

```
dir bootflash:
boot bootflash:cbrsup-universalk9.16.12.01w.SPA.bin
```

Wait until SUP0 is in standby hot.

**Step 8** Set SUP1 to ROMMON using the following command.

```
redundancy force-switchover
```

Perform the following steps 9 to 11 using console connection of current active SUP0.

**Step 9** Power cycle the SUP1 to set it to ROMMON.

```
test platform hardware slot R1 oir power-cycle
```

This command will reset and re-initialize the ROMMON. The new version of the supervisor CPLD will now take effect. Verify if it matches the following new version.

SUP 160 new version: 0x19071712



SUP 250 new version: 0x190717E1

**Step 10** Boot SUP1 into IOS XE using SUP1 console connection.

```
dir bootflash:  
boot bootflash:cbrsup-universalk9.16.12.01w.SPA.bin
```

Wait until SUP1 is in standby hot.

**Step 11** Wait for the chassis to become SSO and settled down. Then go to step 16. If you skipped step 5 to 10, perform step 12 to 15.

**Note** You need physical access to the chassis to power cycle the chassis.

**Step 12** Reload the system by issuing **reload** command on the active SUP.

```
Router#reload
```

**Step 13** Power cycle both supervisors.

**Step 14** Verify if the new version matches the following on both SUPs.

SUP 160 new version: 0x19071712

SUP 250 new version: 0x190717E1

**Step 15** Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.

```
dir bootflash:  
boot bootflash:cbrsup-universalk9.16.12.01w.SPA.bin
```

Wait till SUP0 become standby hot.

**Step 16** Once the system is up and running, perform the following checks.

- Set config register to normal boot.

```
configure terminal  
config-register 0x2102  
end  
write memory
```

- Execute **show redundancy** command to ensure both SUPs are listed, one is active and the other is standby hot.
  - Execute **show proc CPU sorted | ex 0.00** command.
  - Execute **show platform diag** command.
-

