



## **Upgrading the Cisco cBR Series Converged Broadband Routers for Cisco IOS XE Cupertino 17.9**

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# CHAPTER 1

## Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Cupertino 17.9.1y1



**Note** Starting from Cisco IOS XE Bengaluru 17.6.1a, CBR-CCAP-LC-G2-R can only protect CBR-CCAP-LC-G2-R for linecard HA.



**Note** If you are using TACACS authentication, the TACACS configuration will be automatically updated to the new version after upgrading to Cisco IOS XE Cupertino 17.9.1y1. This is a fix to [CSCvu62273](#) and you do not need to take any action regarding the TACACS configuration in the cBR-8 prior to the upgrade.

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

By default, telnet is disabled on Cisco cBR-8. If you are going to use telnet to access the device, make sure the value of line **vtty transport** is correct and save the configuration in order to enable telnet.

```
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 Cupertino 17.9.1y1. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Cupertino 17.9.1y1 support. Use the commands in the tables to verify the firmware versions. If you need to upgrade firmware first, refer to the steps in [Upgrading the Cisco cBR-8 Router Firmware](#).



**Note** If you want to upgrade Supervisor CPLD firmware, refer to [Upgrading Supervisor CPLD Firmware, on page 48](#).

**Table 1: Firmware Versions**

Internal Name	Component Name	Required Minimum Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G CPLD	16052011/19071712	<b>show platform</b>
	CBR-CCAP-SUP-250G CPLD	170724E0/190717E1	<b>show platform</b>
Supervisor ROMMON	CBR-CCAP-SUP-160G ROMMON and CBR-CCAP-SUP-250G ROMMON	16.7(8r)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 Gemini2 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	00020006	<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.

- [Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1y1, on page 3](#)
- [Upgrading Supervisor CPLD Firmware, on page 11](#)
- [Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 16](#)

- [Upgrading Uboot For CBR-CCAP-LC-40G, on page 19](#)

# Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1y1

## Prerequisites

### Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1y1, perform the following steps to upgrade SUP ROMMON manually.

1. Download hardware programmable devices upgrade package file **cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg** from the following Cisco.com Software Center URL: <https://software.cisco.com/download/home/286283913/type>

2. Copy the package file to harddisk:

```
copy <location>/cbrsup-programmable_firmware.17.09.01y1.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.17.09.01y1.SPA.pkg
```

4. Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.09.01y1.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.17.09.01y1.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
```



---

**Note** Do not restart the SUPs currently, you can combine reloading the SUP with the IOS upgrade process.

---

### Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC)

If you are using cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, contact your local Cisco representative before upgrading to Cisco IOS XE Cupertino 17.9.1y1.

Starting with in Cisco IOS XE Cupertino 17.6.1, Cisco introduces a new feature on cBR-8 that provides initial support for 32 Video and 32 DOCSIS service groups per CBR-CCAP-LC-G2-R linecard. The implementation of this feature introduces new 8x10G DPIC port mapping constraints on existing 'Downstream-Cable' controllers. Cisco has prepared a python tool that can be used to determine if a cBR-8 running-configuration

includes non-compliant controller mappings, and, to update the running-configuration to be compliant with the latest Cisco IOS XE Cupertino 17.9.1y1. Once you have the python tool, perform the following steps in order to predict and avoid downtime:

**Before you begin:** Special considerations must be taken when using SmartPHY. Contact your local Cisco representative if your installation includes SmartPHY.

1. Collect the following information from the target cBR-8 to upgrade.

```
Router#show cable rpd sum
Router#show cable modem sum
Router#show cable video session all sum
```

2. Save the running configuration to the harddisk of the cBR-8.

```
Router#copy running-config harddisk:SavedConfig.txt
```

3. Copy the saved running configuration from harddisk: to an offline server for editing using SCP.

```
Router#copy harddisk:SavedConfig.txt scp:<path>
```

4. Run the python tool to modify the controllers in the saved configuration.

- Option 1 - Renumber Downstream-Cable controllers only

- a. Execute python script **kobol\_ph2\_controller\_migration.py**. This script is intended for customers who do not immediately intend to take advantage of the Downstream-Video controllers and expanded SG capacity on CBR-CCAP-LC-G2-R.

```
$ python kobol_ph2_controller_migration.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller** to the file name.

```
Output file name: SavedConfig.txt_remap_controller
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

- Option 2 - Renumber Downstream-Cable and utilize Downstream-Video controllers

- a. Execute python script **kobol\_ph2\_controller\_migration\_video.py**. This script is intended for customers who wish to utilize the new Downstream-Video controllers to free up existing Downstream-Cable controllers for expanded DOCSIS service groups.

```
$ python kobol_ph2_controller_migration_video.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller\_video** to the file name.

```
Output file name: SavedConfig.txt_remap_controller_video
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

5. **Modify the remapped configuration file to specify the Cisco IOS XE Cupertino 17.9.1y1 image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.09.01y1.SPA.bin
```

6. Copy the final remapped configuration file back to the cBR-8 harddisk.



```
Router#copy scp:<path>/SavedConfig.txt_remap_controller harddisk:
or
Router#copy scp:<path>/SavedConfig.txt_remap_controller_video harddisk:
```

### 7. Copy remapped configuration file to startup of the cBR-8.

```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
or
Router#copy harddisk:SavedConfig.txt_remap_controller_video startup-config
```

After performing the remapping procedure, monitor the chassis for any of the following errors after reload:

```
Mismatches TE interface. DS controller should be */*/0~7, configuration failed.
Mismatches TE interface. DS controller should be */*/8~15, configuration failed.
Mismatches TE interface. DS controller should be */*/16~23, configuration failed.
Mismatches TE interface. DS controller should be */*/24~31, configuration failed.
```

## Upgrading using reload

### Before you begin



**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1y1, perform [Manual ROMMON Upgrade](#) to upgrade SUP ROMMON manually before proceeding with IOS upgrading.

## Upgrading from 17.6.1y or Earlier Images

If upgrading from 17.6.1y or earlier, you must copy .pkg files individually to the cBR-8. The tarball below contains all 20 packages and the packages.conf file that are required for upgrading. Before upgrading the system, make sure the following requirements are met:

- Download the 17.9.1y1 tarball file from [Cisco.com](#) Software Center to a local server, using the following URL: <https://software.cisco.com/download/home/286283913/type>
  - IOS XE Software Version 17.09.01y1: cbrsup-universalk9.17.09.01y1.SPA.pkgs.tar.
- Untar the archive on the local server.

**Step 1** Create a new folder on the cBR-8: **harddisk:XE-179-1y**.

```
mkdir harddisk:XE-179-1y
```

**Step 2** Create a new folder on the cBR-8: **stby-harddisk:XE-179-1y**.

```
mkdir stby-harddisk:XE-179-1y
```

**Step 3** Copy the .pkg files and packages.conf individually to the cBR-8 from the local server.

```
copy <location>/cbrsup-cciomdsup.17.09.01y1.SPA.pkg harddisk:/
XE-179-1y/cbrsup-cciomdsup.17.09.01y1.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 4** Copy the .pkg files and packages conf individually from harddisk to stby-harddisk:

```
copy harddisk:/XE-179-1y/cbrsup-cciomdsup.17.09.01y1.SPA.pkg
stby-harddisk:/XE-179-1y/cbrsup-cciomdsup.17.09.01y1.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 5** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:/XE-179-1y/cbrsup-programmable_firmware.17.09.01y1.SPA.pkg
```

**Step 6** Configure the system to boot in sub-package mode.

```
conf t
no boot system
boot system harddisk:/XE-179-1y/packages.conf
end
```

**Step 7** Save the configuration

```
wr mem
```

**Step 8** Reload the system

```
reload
```

## Upgrading from 17.6.1z or Later Images

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/home/286283913/type>

- IOS XE Software Version 17.09.01y1. **cbrsup-universalk9.17.09.01y1.SPA.bin**
- IOS XE Hardware Programmable Devices Version 17.9.1y1. **cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg**

**Step 1** **Note** Ensure that you have Cisco IOS XE Bengaluru 17.6.1z or later installed before proceeding.

Copy the Cisco IOS XE Cupertino 17.9.1y1 IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.09.01y1.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.09.01y1.SPA.bin stby-harddisk:
```

**Step 2** Verify the Cisco IOS XE Cupertino 17.9.1y1 IOS image against the md5 hash as provided in the Cisco.com Software center. The md5 hash check may not support images greater than 2.3 GB in size.

```
verify /md5 harddisk:cbrsup-universalk9.17.09.01y1.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.09.01y1.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.17.09.01y1.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.17.09.01y1.SPA.pkg
```

**Step 5** Configure the system to boot with the Cisco IOS XE Cupertino 17.9.1y1 image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.09.01y1.SPA.bin
end
```

**Step 6** Save the configuration.

```
wr mem
```

**Step 7** Reload the system

```
reload
```

---

### 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 with ISSU for I-CCAP Systems

### Before you begin



#### Note

- ISSU is not supported for Remote PHY systems.
- ISSU to Cisco IOS XE Cupertino 17.9.1y1 is supported only from Cisco IOS XE Bengaluru 17.6.1z1 and later releases. If you are upgrading from Cisco IOS XE 17.6.1z or an earlier release, you must upgrade the cBR-8 system following the steps in [Upgrading using reload, on page 25](#).

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

- The cBR-8 has two SUPs installed.

```
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 state.

```
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 Stdbby 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 = harddisk:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2102

```

```

Standby BOOT variable = harddisk:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2102

```

- 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 = harddisk:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2102

```

```

Standby BOOT variable = harddisk:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2102

```

- The free space on boot device on both SUPs must be greater than 2.3GB.

```

Router# dir harddisk: | include bytes total

7804653568 bytes total (5691174912 bytes free)

```

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

<https://software.cisco.com/download/home/286283913/type>

- IOS XE Software Version 17.9.1y1: **cbrsup-universalk9.17.09.01y1.SPA.bin**
- IOS XE Hardware Programmable Devices Version 17.9.1y1: **cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.09.01y1.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

---

**Step 1** Copy Cisco IOS XE Cupertino 17.9.1y1 image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.09.01y1.SPA.bin harddisk:<sub-pkg-dir>/
```

- Step 2** Verify Cisco IOS XE Cupertino 17.9.1y1 image against the md5 hash as provided in the Cisco.com Software center.
- ```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.09.01y1.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.17.09.01y1.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.17.09.01y1.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** Perform ISSU.
- ```
request platform software package install node file harddisk:cbrsup-universalk9.17.09.01y1.SPA.bin
```
- Step 7** To monitor the ISSU progress, use the command below.
- ```
request platform software package install node attach
```
- Step 8** 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
```

---

### 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

### Before you begin



---

**Note** If the supervisor SO CPLD version is lower than 1511\_1401 (SUP 160) or 15111401 (SUP 250), or, if 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 CPLD.

---

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/home/286283913/type>
  - **IOS XE Hardware Programmable Devices Version 17.09.01y1:  
cbrsup-programmable\_firmware.17.09.01y1.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.17.09.01y1.SPA.pkg harddisk:
```

```
copy ftp://<location>/cbrsup-programmable_firmware.17.09.01y1.SPA.pkg stby-harddisk:
```



**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:

### Step 1 Set the config register.

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

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

```
upgrade hw-programmable cable R0 viper pkg_name
/harddisk/cbrsup-programmable_firmware.17.09.01y1.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 harddisk/cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01y1.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 harddisk/cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01y1.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 harddisk/cbrsup-programmable\_firmware.17.09.01y1.SPA.pkg image  
Upgrade from assigned pkg file /harddisk/cbrsup-programmable\_firmware.17.09.01y1.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.17.09.01y1.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01y1.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
/harddisk/cbrsup-programmable_firmware.17.09.01y1.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 ViperSO CPLD version is 15111401 and the supervisor ViperSIO 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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01y1.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 harddisk:  
boot harddisk:cbrsup-universalk9.17.09.01y1.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 harddisk:  
boot harddisk:cbrsup-universalk9.17.09.01y1.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.

## Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card

### Before you begin

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

- Make sure the latest available IOS XE version is active in Cisco cBR-8 router.
- There are at least 20MB free space on the harddisk.



**Note** To make use of the new features, it is recommended to upgrade the cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) to the latest version 1.1.

**Step 1** Boot up system, wait until IOS is ready.

**Step 2** Check current D-PIC version.

```
show hw-module subslot x/1 fpd
```

**Note** x/1 is D-PIC subslot number which needs upgrade.

### Example:

```
Router#show hw-module subslot 9/1 fpd
```

```
====
Slot Card Type                H/W   Field Programmable   Current   Min. Required
Ver.   Device: "ID-Name"     Version  Version
====
 9/1 CBR-DPIC-8X10G         1.0   46-CBR DIGI PIC     1.0      1.0
====
```

**Step 3** Upgrade D-PIC.

```
upgrade hw-module subslot x/1 fpd bundled reload
```

### Example:

```
Router#upgrade hw-module subslot 9/1 fpd bundled reload
```

% The following FPD will be upgraded for CBR-DPIC-8X10G (H/W ver = 1.0) in subslot 9/1:

```

=====
Field Programmable   Current   Upgrade   Estimated
Device: "ID-Name"   Version   Version   Upgrade Time
=====
46-CBR DIGI PIC     1.0      1.1      00:05:00
=====
    
```

% NOTES:

- Use 'show upgrade fpd progress' command to view the progress of the FPD upgrade.
- The target card will be automatically reloaded after the upgrade operation. This reload will interrupt normal operation of the card. If necessary, ensure that appropriate actions have been taken to redirect card traffic before starting the FPD upgrade.

% Are you sure that you want to perform this operation? [no]: yes

% Initiating the upgrade operation on the target card ...  
 (Use "show upgrade fpd progress" command to see upgrade progress)

**Step 4** Check if the upgrade process is finished. Upgrade progress will take about 1 to 2 minutes.

**show upgrade fpd progress**

**Example:**

Upgrade still ongoing:

Router#show upgrade fpd progress

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable   Approx.   Elapsed
Device : "ID-Name"     Time Needed         Time     State
=====
9/1 CBR-DPIC-8X10G     46-CBR DIGI PIC     00:05:00 00:00:13 Updating...
=====
    
```

Router# show upgrade fpd progress

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable   Approx.   Elapsed
Device : "ID-Name"     Time Needed         Time     State
=====
9/1 CBR-DPIC-8X10G     46-CBR DIGI PIC     00:05:00 00:00:26 Updating...
=====
    
```

Upgrade finished:

Router#show upgrade fpd progress

% There is no FPD image upgrade in progress.

**Step 5** Check if the D-PIC status is ready.

show platform

**Example:**

```
Router#show platform
Chassis type: CBR-8-CCAP-CHASS
```

Slot	Type	State	Insert time (ago)
2/1	CBR-RF-PROT-PIC	ok	00:08:48
3	CBR-CCAP-LC-40G	ok	00:12:46
3/1	CBR-RF-PIC	ok	00:08:48
8/1	CBR-DPIC-8X10G	ok	00:07:56
9	CBR-CCAP-LC-40G	ok	00:12:46
9/1	CBR-DPIC-8X10G	ok	00:07:54
SUP0	CBR-CCAP-SUP-160G	inserted	00:12:46
R0		ok, active	
F0		ok, active	
4		ok, active	
4/1	CBR-SUP-8X10G-PIC	ok	00:07:55
SUP1	CBR-CCAP-SUP-160G	inserted	00:12:22
R1		ok, standby	
F1		ok, standby	
5		ok, standby	
5/1	CBR-SUP-8X10G-PIC	ok	00:07:54
P0	PWR-3KW-AC-V2	ok	00:09:49
P1	PWR-3KW-AC-V2	ok	00:09:49
P2	PWR-3KW-AC-V2	ps, fail	00:09:49
P3	Unknown	N/A	never
P4	Unknown	N/A	never
P5	PWR-3KW-AC-V2	ok	00:09:49
P10	CBR-FAN-ASSEMBLY	ok	00:09:39
P11	CBR-FAN-ASSEMBLY	ok	00:09:39
P12	CBR-FAN-ASSEMBLY	ok	00:09:39
P13	CBR-FAN-ASSEMBLY	ok	00:09:39
P14	CBR-FAN-ASSEMBLY	ok	00:09:39

Slot	CPLD Version	Rommon Version
3	00000025	2011.03.18
9	00000025	2011.03.18
SUP0	16052011	16.7(3r)S
SUP1	16052011	16.7(3r)S

### Step 6 Check if the new version works.

```
show hw-module subslot x/1 fpd
```

#### Example:

```
Router#show hw-module subslot 9/1 fpd
```

```
==== =====
Slot Card Type          H/W   Field Programmable  Current  Min. Required
Ver.   Device: "ID-Name"   Version  Version
==== =====
9/1 CBR-DPIC-8X10G      1.0   46-CBR DIGI PIC     1.1     1.0
==== =====
```

# Upgrading Uboot For CBR-CCAP-LC-40G

**Step 1** Copy the package file (cbrsup-programmable\_firmware.17.09.0y1.SPA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.09.0y1.SPA.pkg harddisk:
```

**Step 2** Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.0y1.SSA.pkg
```

**Example:**

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.0y1.SSA.pkg
UBOOT:
  FILE      : /tmp/fpd/mount/uboot.bin.SPA
  VERSION   : U-Boot 2011.03.19
  BYTES     : 1441792
  Upgrade Field Region: SUCCESS! Please reload the card to let the new firmware take effect.
```

**Step 3** Reload Line Card using the following CLI command:

```
Router#hw-module slot <slot#> reload
```

**Step 4** Check the Uboot version after LC boot up using the following CLI command:

```
show platform diag
```

**Example:**

```
Router# show platform diag
...
Slot: 1, CBR-CCAP-LC-40G
  Running state           : ok
  Internal state          : online
  Internal operational state : ok
  Physical insert detect time : 00:03:11 (5d11h ago)
  Software declared up time  : 00:07:46 (5d11h ago)
  CPLD version            : 00000025
  Rommon version          : 2011.03.19
  Basestar version        : 00200057
  Raider version          : 02010019
  dsphy0_fpga version     : 4.484B
  dsphy0_micro version    : 3.1A
  dsphy0_psoc version     : 4.4
  dsphy0_cpld version     : 0.7
  dsphy1_fpga version     : 4.484B
  dsphy1_micro version    : 3.1A
  dsphy1_psoc version     : 4.4
  dsphy1_cpld version     : 0.7
  Caprica version         : 0002000a
  HA-PLL version          : N/A
  PSOC 0 version          : v4.6
  PSOC 1 version          : v4.6
...
```







## CHAPTER 2

# Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Cupertino 17.9.1y



**Note** Starting from Cisco IOS XE Bengaluru 17.6.1a, CBR-CCAP-LC-G2-R can only protect CBR-CCAP-LC-G2-R for linecard HA.



**Note** If you are using TACACS authentication, the TACACS configuration will be automatically updated to the new version after upgrading to Cisco IOS XE Cupertino 17.9.1y. This is a fix to [CSCvu62273](#) and you do not need to take any action regarding the TACACS configuration in the cBR-8 prior to the upgrade.

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

By default, telnet is disabled on Cisco cBR-8. If you are going to use telnet to access the device, make sure the value of line **vtty transport** is correct and save the configuration in order to enable telnet.

```
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 Cupertino 17.9.1y. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Cupertino 17.9.1y support. Use the commands in the tables to verify the firmware versions. If you need to upgrade firmware first, refer to the steps in [Upgrading the Cisco cBR-8 Router Firmware](#).



**Note** If you want to upgrade Supervisor CPLD firmware, refer to [Upgrading Supervisor CPLD Firmware, on page 48](#).

**Table 2: Firmware Versions**

Internal Name	Component Name	Required Minimum Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G CPLD	16052011/19071712	<b>show platform</b>
	CBR-CCAP-SUP-250G CPLD	170724E0/190717E1	<b>show platform</b>
Supervisor ROMMON	CBR-CCAP-SUP-160G ROMMON and CBR-CCAP-SUP-250G ROMMON	16.7(8r)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 Gemini2 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	00020006	<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.

- [Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1y, on page 23](#)
- [Upgrading Supervisor CPLD Firmware, on page 31](#)
- [Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 36](#)

- [Upgrading Uboot For CBR-CCAP-LC-40G, on page 39](#)

# Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1y

## Prerequisites

### Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1y, perform the following steps to upgrade SUP ROMMON manually.

1. Download hardware programmable devices upgrade package file **cbrsup-programmable\_firmware.17.09.01y.SPA.pkg** from the following Cisco.com Software Center URL: <https://software.cisco.com/download/home/286283913/type>

2. Copy the package file to harddisk:

```
copy <location>/cbrsup-programmable_firmware.17.09.01y.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.17.09.01y.SPA.pkg
```

4. Configure the system to boot in the sub-package mode.

```
For sub-package mode:  
conf t  
no boot system  
boot system harddisk:/XE-179-1y/packages.conf  
wr mem
```

```
For bin file mode:  
boot system harddisk:cbrsup-universalk9.17.09.01y1.SPA.bin
```

5. Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.09.01y.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.17.09.01y.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
```



---

**Note** Do not restart the SUPs currently, you can combine reloading the SUP with the IOS upgrade process.

---

### Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC)

If you are using cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, contact your local Cisco representative before upgrading to Cisco IOS XE Cupertino 17.9.1y.

Starting with in Cisco IOS XE Cupertino 17.6.1, Cisco introduces a new feature on cBR-8 that provides initial support for 32 Video and 32 DOCSIS service groups per CBR-CCAP-LC-G2-R linecard. The implementation of this feature introduces new 8x10G DPIC port mapping constraints on existing 'Downstream-Cable' controllers. Cisco has prepared a python tool that can be used to determine if a cBR-8 running-configuration includes non-compliant controller mappings, and, to update the running-configuration to be compliant with the latest Cisco IOS XE Cupertino 17.9.1y. Once you have the python tool, perform the following steps in order to predict and avoid downtime:

**Before you begin:** Special considerations must be taken when using SmartPHY. Contact your local Cisco representative if your installation includes SmartPHY.

1. Collect the following information from the target cBR-8 to upgrade.

```
Router#show cable rpd sum
Router#show cable modem sum
Router#show cable video session all sum
```

2. Save the running configuration to the harddisk of the cBR-8.

```
Router#copy running-config harddisk:SavedConfig.txt
```

3. Copy the saved running configuration from harddisk: to an offline server for editing using SCP.

```
Router#copy harddisk:SavedConfig.txt scp:<path>
```

4. Run the python tool to modify the controllers in the saved configuration.

- Option 1 - Renumber Downstream-Cable controllers only

- a. Execute python script **kobol\_ph2\_controller\_migration.py**. This script is intended for customers who do not immediately intend to take advantage of the Downstream-Video controllers and expanded SG capacity on CBR-CCAP-LC-G2-R.

```
$ python kobol_ph2_controller_migration.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller** to the file name.

```
Output file name: SavedConfig.txt_remap_controller
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

- Option 2 - Renumber Downstream-Cable and utilize Downstream-Video controllers

- a. Execute python script **kobol\_ph2\_controller\_migration\_video.py**. This script is intended for customers who wish to utilize the new Downstream-Video controllers to free up existing Downstream-Cable controllers for expanded DOCSIS service groups.

```
$ python kobol_ph2_controller_migration_video.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller\_video** to the file name.

```
Output file name: SavedConfig.txt_remap_controller_video
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.
5. Modify the remapped configuration file to specify the Cisco IOS XE Cupertino 17.9.1y image or the sub-package directory boot pointer, packages.conf file.

```
boot system harddisk:cbrsup-universalk9.17.09.01y.SPA.bin
or
boot system harddisk:/XE-179-1y/packages.conf
```

6. Copy the final remapped configuration file back to the cBR-8 harddisk.

```
Router#copy scp:<path>/SavedConfig.txt_remap_controller harddisk:
or
Router#copy scp:<path>/SavedConfig.txt_remap_controller_video harddisk:
```

7. Copy remapped configuration file to startup of the cBR-8.

```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
or
Router#copy harddisk:SavedConfig.txt_remap_controller_video startup-config
```

After performing the remapping procedure, monitor the chassis for any of the following errors after reload:

```
Mismatches TE interface. DS controller should be */*/0~7, configuration failed.
Mismatches TE interface. DS controller should be */*/8~15, configuration failed.
Mismatches TE interface. DS controller should be */*/16~23, configuration failed.
Mismatches TE interface. DS controller should be */*/24~31, configuration failed.
```

## Upgrading using reload

### Before you begin



**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1y, perform [Manual ROMMON Upgrade](#) to upgrade SUP ROMMON manually before proceeding with IOS upgrading.

## Upgrading from 17.6.1y or Earlier Images

If upgrading from 17.6.1y or earlier, you must copy .pkg files individually to the cBR-8 and boot the system via Sub-Package mode. The tarball below contains all 20 packages and the packages.conf file that are required for upgrading. Before upgrading the system, make sure the following requirements are met:

- Download the 17.9.1y tarball file from [Cisco.com](#) Software Center to a local server, using the following URL: <https://software.cisco.com/download/home/286283913/type>
  - IOS XE Software Version 17.09.01y: cbrsup-universalk9.17.09.01y.SPA.pkgs.tar.
- Untar the archive on the local server.

**Step 1** Create a new folder on the cBR-8: **harddisk:XE-179-1y**.

```
mkdir harddisk:XE-179-1y
```

**Step 2** Create a new folder on the cBR-8: **stby-harddisk:XE-179-1y**.

```
mkdir stby-harddisk:XE-179-1y
```

**Step 3** Copy the .pkg files and packages.conf individually to the cBR-8 from the local server.

```
copy <location>/cbrsup-cciomdsup.17.09.01y.SPA.pkg harddisk:/
XE-179-1y/cbrsup-cciomdsup.17.09.01y.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 4** Copy the .pkg files and packages.conf individually from harddisk to stby-harddisk:

```
copy harddisk:/XE-179-1y/cbrsup-cciomdsup.17.09.01y.SPA.pkg
stby-harddisk:/XE-179-1y/cbrsup-cciomdsup.17.09.01y.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 5** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:/XE-179-1y/cbrsup-programmable_firmware.17.09.01y.SPA.pkg
```

**Step 6** Configure the system to boot in sub-package mode.

```
conf t
no boot system
boot system harddisk:/XE-179-1y/packages.conf
end
```

**Step 7** If the Downstream-controller remapping is performed, proceed to step 8. Else save the configuration.

```
wr mem
```

**Step 8** Reload the system

```
reload
```

## Upgrading from 17.6.1z or Later Images

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/home/286283913/type>

- IOS XE Software Version 17.09.01y. **cbrsup-universalk9.17.09.01y.SPA.bin**
- IOS XE Hardware Programmable Devices Version 17.9.1y. **cbrsup-programmable\_firmware.17.09.01y.SPA.pkg**

**Step 1** **Note** Ensure that you have Cisco IOS XE Bengaluru 17.6.1z or later installed before proceeding.

Copy the Cisco IOS XE Cupertino 17.9.1y IOS image to harddisk: and stby-harddisk:

```
copy <location>/cbrsup-universalk9.17.09.01y.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.09.01y.SPA.bin stby-harddisk:
```

**Step 2** Verify the Cisco IOS XE Cupertino 17.9.1y IOS image against the md5 hash as provided in the Cisco.com Software center. The md5 hash check may not support images greater than 2.3 GB in size.

```
verify /md5 harddisk:cbrsup-universalk9.17.09.01y.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.09.01y.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.17.09.01y.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.17.09.01y.SPA.pkg
```

**Step 5** Configure the system to boot with the Cisco IOS XE Cupertino 17.9.1y image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.09.01y.SPA.bin
end
```

**Step 6** Save the configuration.

```
wr mem
```

**Step 7** Reload the system

```
reload
```

---

### 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 with ISSU for I-CCAP Systems

### Before you begin



#### Note

- ISSU is not supported for Remote PHY systems.
- ISSU to Cisco IOS XE Cupertino 17.9.1y is supported only from Cisco IOS XE Bengaluru 17.6.1z1 and later releases. If you are upgrading from Cisco IOS XE 17.6.1z or an earlier release, you must upgrade the cBR-8 system following the steps in [Upgrading using reload, on page 25](#).

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

- The cBR-8 has two SUPs installed.

```
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 state.

```
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 = harddisk:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2102
```

```
Standby BOOT variable = harddisk:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2102
```

- 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 = harddisk:IOSXE/packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2102
```

```
Standby BOOT variable = harddisk:IOSXE/packages.conf,12;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable does not exist
Standby Configuration register is 0x2102
```

- The free space on boot device on both SUPs must be greater than 2.3GB.

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

7804653568 bytes total (5691174912 bytes free)
```

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

<https://software.cisco.com/download/home/286283913/type>

- IOS XE Software Version 17.9.1y: **cbrsup-universalk9.17.09.01y.SPA.bin**

- IOS XE Hardware Programmable Devices Version 17.9.1y:  
**cbrsup-programmable\_firmware.17.09.01y.SPA.pkg**
- Copy the target consolidated image **cbrsup-universalk9.17.09.01y.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

- 
- Step 1** Copy Cisco IOS XE Cupertino 17.9.1y image to harddisk:
- ```
copy <location>/cbrsup-universalk9.17.09.01y.SPA.bin harddisk:<sub-pkg-dir>/
```
- Step 2** Verify Cisco IOS XE Cupertino 17.9.1y image against the md5 hash as provided in the Cisco.com Software center.
- ```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.09.01y.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.17.09.01y.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.17.09.01y.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** Perform ISSU.
- ```
request platform software package install node file harddisk:cbrsup-universalk9.17.09.01y.SPA.bin
```
- Step 7** To monitor the ISSU progress, use the command below.
- ```
request platform software package install node attach
```
- Step 8** 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
```
- 

### 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

### Before you begin



---

**Note** If the supervisor SO CPLD version is lower than 1511\_1401 (SUP 160) or 15111401 (SUP 250), or, if 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 CPLD.

---

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/home/286283913/type>
  - IOS XE Hardware Programmable Devices Version 17.09.01y:  
**cbrsup-programmable\_firmware.17.09.01y.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.17.09.01y.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.09.01y.SPA.pkg stby-harddisk:
```




---

**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:

---

**Step 1** Set the config register.

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

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

```
upgrade hw-programmable cable R0 viper pkg_name
/harddisk/cbrsup-programmable_firmware.17.09.01y.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 harddisk/cbrsup-programmable\_firmware.17.09.01y.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01y.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 `harddisk/cbrsup-programmable_firmware.17.09.01y.SPA.pkg` image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file `harddisk/cbrsup-programmable_firmware.17.09.01y.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 `harddisk/cbrsup-programmable_firmware.17.09.01y.SPA.pkg` image  
Upgrade from assigned pkg file `/harddisk/cbrsup-programmable_firmware.17.09.01y.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.17.09.01y.SPA.pkg` image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file `harddisk/cbrsup-programmable_firmware.17.09.01y.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
/harddisk/cbrsup-programmable_firmware.17.09.01y.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 ViperSO CPLD version is 15111401 and the supervisor ViperSIO 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 harddisk:  
boot harddisk:cbrsup-universalk9.17.09.01y.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 harddisk:  
boot harddisk:cbrsup-universalk9.17.09.01y.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 harddisk:
```

```
boot harddisk:cbrsup-universalk9.17.09.01y.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.

## Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card

### Before you begin

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

- Make sure the latest available IOS XE version is active in Cisco cBR-8 router.
- There are at least 20MB free space on the harddisk.



**Note** To make use of the new features, it is recommended to upgrade the cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) to the latest version 1.1.

**Step 1** Boot up system, wait until IOS is ready.

**Step 2** Check current D-PIC version.

```
show hw-module subslot x/1 fpd
```

**Note** x/1 is D-PIC subslot number which needs upgrade.

### Example:

```
Router#show hw-module subslot 9/1 fpd
```



```

=====
Slot Card Type                H/W   Field Programmable   Current   Min. Required
                             Ver.   Device: "ID-Name"   Version   Version
=====
 9/1 CBR-DPIC-8X10G          1.0   46-CBR DIGI PIC     1.0      1.0
=====
    
```

**Step 3** Upgrade D-PIC.

**upgrade hw-module subslot x/1 fpd bundled reload**

**Example:**

```

Router#upgrade hw-module subslot 9/1 fpd bundled reload

% The following FPD will be upgraded for CBR-DPIC-8X10G (H/W ver = 1.0) in subslot 9/1:

=====
Field Programmable   Current   Upgrade   Estimated
Device: "ID-Name"   Version   Version   Upgrade Time
=====
46-CBR DIGI PIC     1.0      1.1      00:05:00
=====

% NOTES:
- Use 'show upgrade fpd progress' command to view the progress of the FPD
  upgrade.
- The target card will be automatically reloaded after the upgrade
  operation. This reload will interrupt normal operation of the card. If
  necessary, ensure that appropriate actions have been taken to redirect
  card traffic before starting the FPD upgrade.

% Are you sure that you want to perform this operation? [no]: yes
% Initiating the upgrade operation on the target card ...
  (Use "show upgrade fpd progress" command to see upgrade progress)
    
```

**Step 4** Check if the upgrade process is finished. Upgrade progress will take about 1 to 2 minutes.

**show upgrade fpd progress**

**Example:**

Upgrade still ongoing:

```

Router#show upgrade fpd progress

FPD Image Upgrade Progress Table:

=====
Slot Card Type                Field Programmable   Approx.   Elapsed
                             Device : "ID-Name"   Time     Time     State
=====
 9/1 CBR-DPIC-8X10G          46-CBR DIGI PIC     00:05:00 00:00:13 Updating...
=====

Router# show upgrade fpd progress

FPD Image Upgrade Progress Table:

=====
    
```

Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card

| Slot | Card Type      | Field Programmable Device : "ID-Name" | Approx. Time Needed | Elapsed Time | State       |
|------|----------------|---------------------------------------|---------------------|--------------|-------------|
| 9/1  | CBR-DPIC-8X10G | 46-CBR DIGI PIC                       | 00:05:00            | 00:00:26     | Updating... |

Upgrade finished:

```
Router#show upgrade fpd progress
```

```
% There is no FPD image upgrade in progress.
```

**Step 5** Check if the D-PIC status is ready.

```
show platform
```

**Example:**

```
Router#show platform
Chassis type: CBR-8-CCAP-CHASS
```

| Slot | Type              | State       | Insert time (ago) |
|------|-------------------|-------------|-------------------|
| 2/1  | CBR-RF-PROT-PIC   | ok          | 00:08:48          |
| 3    | CBR-CCAP-LC-40G   | ok          | 00:12:46          |
| 3/1  | CBR-RF-PIC        | ok          | 00:08:48          |
| 8/1  | CBR-DPIC-8X10G    | ok          | 00:07:56          |
| 9    | CBR-CCAP-LC-40G   | ok          | 00:12:46          |
| 9/1  | CBR-DPIC-8X10G    | ok          | 00:07:54          |
| SUP0 | CBR-CCAP-SUP-160G | inserted    | 00:12:46          |
| R0   |                   | ok, active  |                   |
| F0   |                   | ok, active  |                   |
| 4    |                   | ok, active  |                   |
| 4/1  | CBR-SUP-8X10G-PIC | ok          | 00:07:55          |
| SUP1 | CBR-CCAP-SUP-160G | inserted    | 00:12:22          |
| R1   |                   | ok, standby |                   |
| F1   |                   | ok, standby |                   |
| 5    |                   | ok, standby |                   |
| 5/1  | CBR-SUP-8X10G-PIC | ok          | 00:07:54          |
| P0   | PWR-3KW-AC-V2     | ok          | 00:09:49          |
| P1   | PWR-3KW-AC-V2     | ok          | 00:09:49          |
| P2   | PWR-3KW-AC-V2     | ps, fail    | 00:09:49          |
| P3   | Unknown           | N/A         | never             |
| P4   | Unknown           | N/A         | never             |
| P5   | PWR-3KW-AC-V2     | ok          | 00:09:49          |
| P10  | CBR-FAN-ASSEMBLY  | ok          | 00:09:39          |
| P11  | CBR-FAN-ASSEMBLY  | ok          | 00:09:39          |
| P12  | CBR-FAN-ASSEMBLY  | ok          | 00:09:39          |
| P13  | CBR-FAN-ASSEMBLY  | ok          | 00:09:39          |
| P14  | CBR-FAN-ASSEMBLY  | ok          | 00:09:39          |

| Slot | CPLD Version | Rommon Version |
|------|--------------|----------------|
| 3    | 00000025     | 2011.03.18     |
| 9    | 00000025     | 2011.03.18     |
| SUP0 | 16052011     | 16.7(3r)S      |
| SUP1 | 16052011     | 16.7(3r)S      |

**Step 6** Check if the new version works.

```
show hw-module subslot x/1 fpd
```

**Example:**

```
Router#show hw-module subslot 9/1 fpd
```

```
==== =====
Slot Card Type                H/W  Field Programmable  Current  Min. Required
                               Ver.  Device: "ID-Name"   Version  Version
==== =====
 9/1 CBR-DPIC-8X10G           1.0  46-CBR DIGI PIC     1.1      1.0
==== =====
```

## Upgrading Uboot For CBR-CCAP-LC-40G

**Step 1** Copy the package file (cbrsup-programmable\_firmware.17.09.01y.SPA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.09.01y.SPA.pkg harddisk:
```

**Step 2** Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01y.SSA.pkg
```

**Example:**

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01y.SSA.pkg
```

UBOOT:

```
FILE      : /tmp/fpd/mount/uboot.bin.SPA
VERSION   : U-Boot 2011.03.19
BYTES     : 1441792
```

```
Upgrade Field Region: SUCCESS! Please reload the card to let the new firmware take effect.
```

**Step 3** Reload Line Card using the following CLI command:

```
Router#hw-module slot <slot#> reload
```

**Step 4** Check the Uboot version after LC boot up using the following CLI command:

```
show platform diag
```

**Example:**

```
Router# show platform diag
```

...

```
Slot: 1, CBR-CCAP-LC-40G
  Running state           : ok
  Internal state          : online
  Internal operational state : ok
  Physical insert detect time : 00:03:11 (5d11h ago)
  Software declared up time  : 00:07:46 (5d11h ago)
  CPLD version            : 00000025
  Rommon version          : 2011.03.19
  Basestar version        : 00200057
  Raider version          : 02010019
  dsphy0_fpga version     : 4.484B
  dsphy0_micro version    : 3.1A
  dsphy0_psoc version     : 4.4
  dsphy0_cpld version     : 0.7
  dsphyl_fpga version     : 4.484B
  dsphyl_micro version    : 3.1A
  dsphyl_psoc version     : 4.4
```

```
dsphyl_cpld version      : 0.7
Caprica version          : 0002000a
HA-PLL version           : N/A
PSOC 0 version           : v4.6
PSOC 1 version           : v4.6
...
```

---



## CHAPTER 3

# Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Cupertino 17.9.1x1



**Note** Starting from Cisco IOS XE Bengaluru 17.6.1a, CBR-CCAP-LC-G2-R can only protect CBR-CCAP-LC-G2-R for linecard HA.



**Note** If you are using TACACS authentication, the TACACS configuration will be automatically updated to the new version after upgrading to Cisco IOS XE Cupertino 17.9.1x1. This is a fix to [CSCvu62273](#) and you do not need to take any action regarding the TACACS configuration in the cBR-8 prior to the upgrade.

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

By default, telnet is disabled on Cisco cBR-8. If you are going to use telnet to access the device, make sure the value of line **vtty transport** is correct and save the configuration in order to enable telnet.

```
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 Cupertino 17.9.1x1. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Cupertino 17.9.1x1 support. Use the commands in the tables to verify the firmware versions. If you need to upgrade firmware first, refer to the steps in [Upgrading the Cisco cBR-8 Router Firmware](#).



**Note** If you want to upgrade Supervisor CPLD firmware, refer to [Upgrading Supervisor CPLD Firmware, on page 48](#).

**Table 3: Firmware Versions**

| Internal Name                      | Component Name                                        | Required Minimum Version | Command                   |
|------------------------------------|-------------------------------------------------------|--------------------------|---------------------------|
| Supervisor CPLD                    | CBR-CCAP-SUP-160G CPLD                                | 16052011/19071712        | <b>show platform</b>      |
|                                    | CBR-CCAP-SUP-250G CPLD                                | 170724E0/190717E1        | <b>show platform</b>      |
| Supervisor ROMMON                  | CBR-CCAP-SUP-160G ROMMON and CBR-CCAP-SUP-250G ROMMON | 16.7(8r)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 Gemini2 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                              | 00020006                 | <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.

- [Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1x1, on page 43](#)
- [Upgrading Supervisor CPLD Firmware, on page 48](#)
- [Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 53](#)

- [Upgrading Uboot For CBR-CCAP-LC-40G, on page 55](#)

# Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1x1

## Prerequisites

### Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1x1, perform the following steps to upgrade SUP ROMMON manually.

1. Download hardware programmable devices upgrade package file **cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg** from the following Cisco.com Software Center URL: <https://software.cisco.com/download/home/286283913/type>

2. Copy the package file to harddisk:

```
copy <location>/cbrsup-programmable_firmware.17.09.01x1.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.17.09.01x1.SPA.pkg
```

4. Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.09.01x1.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.17.09.01x1.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
```



---

**Note** Do not restart the SUPs currently, you can combine reloading the SUP with the IOS upgrade process.

---

### Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC)

If you are using cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, contact your local Cisco representative before upgrading to Cisco IOS XE Cupertino 17.9.1x1.

Starting with in Cisco IOS XE Cupertino 17.6.1, Cisco introduces a new feature on cBR-8 that provides initial support for 32 Video and 32 DOCSIS service groups per CBR-CCAP-LC-G2-R linecard. The implementation of this feature introduces new 8x10G DPIC port mapping constraints on existing 'Downstream-Cable' controllers. Cisco has prepared a python tool that can be used to determine if a cBR-8 running-configuration includes non-compliant controller mappings, and, to update the running-configuration to be compliant with

the latest Cisco IOS XE Cupertino 17.9.1x1. Once you have the python tool, perform the following steps in order to predict and avoid downtime:

**Before you begin:** Special considerations must be taken when using SmartPHY. Contact your local Cisco representative if your installation includes SmartPHY.

1. Collect the following information from the target cBR-8 to upgrade.

```
Router#show cable rpd sum
Router#show cable modem sum
Router#show cable video session all sum
```

2. Save the running configuration to the harddisk of the cBR-8.

```
Router#copy running-config harddisk:SavedConfig.txt
```

3. Copy the saved running configuration from harddisk: to an offline server for editing using SCP.

```
Router#copy harddisk:SavedConfig.txt scp:<path>
```

4. Run the python tool to modify the controllers in the saved configuration.

- Option 1 - Renumber Downstream-Cable controllers only

- a. Execute python script **kobol\_ph2\_controller\_migration.py**. This script is intended for customers who do not immediately intend to take advantage of the Downstream-Video controllers and expanded SG capacity on CBR-CCAP-LC-G2-R.

```
$ python kobol_ph2_controller_migration.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller** to the file name.

```
Output file name: SavedConfig.txt_remap_controller
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

- Option 2 - Renumber Downstream-Cable and utilize Downstream-Video controllers

- a. Execute python script **kobol\_ph2\_controller\_migration\_video.py**. This script is intended for customers who wish to utilize the new Downstream-Video controllers to free up existing Downstream-Cable controllers for expanded DOCSIS service groups.

```
$ python kobol_ph2_controller_migration_video.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller\_video** to the file name.

```
Output file name: SavedConfig.txt_remap_controller_video
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

5. **Modify the remapped configuration file to specify the Cisco IOS XE Cupertino 17.9.1x1 image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.09.01x1.SPA.bin
```

6. Copy the final remapped configuration file back to the cBR-8 harddisk.

```
Router#copy scp:<path>/SavedConfig.txt_remap_controller harddisk:
```



or

```
Router#copy scp:<path>/SavedConfig.txt_remap_controller_video harddisk:
```

### 7. Copy remapped configuration file to startup of the cBR-8.

```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

or

```
Router#copy harddisk:SavedConfig.txt_remap_controller_video startup-config
```

After performing the remapping procedure, monitor the chassis for any of the following errors after reload:

```
Mismatches TE interface. DS controller should be */*/0~7, configuration failed.
Mismatches TE interface. DS controller should be */*/8~15, configuration failed.
Mismatches TE interface. DS controller should be */*/16~23, configuration failed.
Mismatches TE interface. DS controller should be */*/24~31, configuration failed.
```

## Upgrading using reload

### Before you begin



**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1x1, perform [Manual ROMMON Upgrade](#) to upgrade SUP ROMMON manually before proceeding with IOS upgrading.

## Upgrading from 17.6.1y or Earlier Images

If upgrading from 17.6.1y or earlier, you must copy .pkg files individually to the cBR-8 and boot the system via Sub-Package mode. The tarball below contains all 20 packages and the packages.conf file that are required for upgrading. Before upgrading the system, make sure the following requirements are met:

- Download the 17.9.1x1 tarball file from [Cisco.com](#) Software Center to a local server, using the following URL: <https://software.cisco.com/download/home/286283913/type>
  - IOS XE Software Version 17.09.01x1: cbrsup-universalk9.17.09.01x1.SPA.pkgs.tar.
- Untar the archive on the local server.

**Step 1** Create a new folder on the cBR-8: **harddisk:XE-179-1x1**.

```
mkdir harddisk:XE-179-1x
```

**Step 2** Create a new folder on the cBR-8: **stby-harddisk:XE-179-1x1**.

```
mkdir stby-harddisk:XE-179-1x
```

**Step 3** Copy the .pkg files and packages.conf individually to the cBR-8 from the local server.

```
copy <location>/cbrsup-cciomdsup.17.09.01x1.SPA.pkg harddisk:/
XE-179-1x/cbrsup-cciomdsup.17.09.01x1.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 4** Copy the .pkg files and packages conf individually from harddisk to stby-harddisk:

```
copy harddisk:/XE-179-1x/cbrsup-cciomdsup.17.09.01x1.SPA.pkg
stby-harddisk:/XE-179-1x/cbrsup-cciomdsup.17.09.01x1.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 5** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:/XE-179-1x/cbrsup-programmable_firmware.17.09.01x1.SPA.pkg
```

**Step 6** Configure the system to boot in sub-package mode.

```
conf t
no boot system
boot system harddisk:/XE-179-1x/packages.conf
end
```

**Step 7** Save the configuration

```
wr mem
```

**Step 8** Reload the system

```
reload
```

## Upgrading from 17.6.1z or Later Images

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/home/286283913/type>

- IOS XE Software Version 17.09.01x1. **cbrsup-universalk9.17.09.01x1.SPA.bin**
- IOS XE Hardware Programmable Devices Version 17.9.1x1. **cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg**

**Step 1** **Note** Ensure that you have Cisco IOS XE Bengaluru 17.6.1z or later installed before proceeding.

Copy the Cisco IOS XE Cupertino 17.9.1x1 IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.09.01x1.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.09.01x1.SPA.bin stby-harddisk:
```

**Step 2** Verify the Cisco IOS XE Cupertino 17.9.1x1 IOS image against the md5 hash as provided in the Cisco.com Software center. The md5 hash check may not support images greater than 2 GB in size.

```
verify /md5 harddisk:cbrsup-universalk9.17.09.01x1.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.09.01x1.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.17.09.01x1.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.17.09.01x1.SPA.pkg
```

**Step 5** Configure the system to boot with the Cisco IOS XE Cupertino 17.9.1x1 image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.09.01x1.SPA.bin
end
```

**Step 6** Save the configuration.

```
wr mem
```

**Step 7** Reload the system

```
reload
```

---

### 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

### Before you begin



**Note** If the supervisor SO CPLD version is lower than 1511\_1401 (SUP 160) or 15111401 (SUP 250), or, if 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 CPLD.

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/home/286283913/type>

- IOS XE Hardware Programmable Devices Version 17.09.01x1:  
**cbrsup-programmable\_firmware.17.09.01x1.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.17.09.01x1.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.09.01x1.SPA.pkg stby-harddisk:
```



**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:

**Step 1** Set the config register.

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

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

```
upgrade hw-programmable cable R0 viper pkg_name
/harddisk/cbrsup-programmable_firmware.17.09.01x1.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 harddisk/cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01x1.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 harddisk/cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01x1.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 harddisk/cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg image  
Upgrade from assigned pkg file /harddisk/cbrsup-programmable\_firmware.17.09.01x1.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.17.09.01x1.SPA.pkg` image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file `harddisk/cbrsup-programmable_firmware.17.09.01x1.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
/harddisk/cbrsup-programmable_firmware.17.09.01x1.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 ViperSO CPLD version is 15111401 and the supervisor ViperSIO 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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01x1.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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01x1.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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01x1.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.



# Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card

## Before you begin

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

- Make sure the latest available IOS XE version is active in Cisco cBR-8 router.
- There are at least 20MB free space on the harddisk.



**Note** To make use of the new features, it is recommended to upgrade the cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) to the latest version 1.1.

**Step 1** Boot up system, wait until IOS is ready.

**Step 2** Check current D-PIC version.

```
show hw-module subslot x/1 fpd
```

**Note** x/1 is D-PIC subslot number which needs upgrade.

### Example:

```
Router#show hw-module subslot 9/1 fpd
```

```
==== =====
Slot Card Type                H/W  Field Programmable  Current  Min. Required
Ver.  Device: "ID-Name"   Version  Version
==== =====
9/1 CBR-DPIC-8X10G           1.0   46-CBR DIGI PIC    1.0     1.0
==== =====
```

**Step 3** Upgrade D-PIC.

```
upgrade hw-module subslot x/1 fpd bundled reload
```

### Example:

```
Router#upgrade hw-module subslot 9/1 fpd bundled reload
```

```
% The following FPD will be upgraded for CBR-DPIC-8X10G (H/W ver = 1.0) in subslot 9/1:
```

```
==== =====
Field Programmable  Current  Upgrade  Estimated
Device: "ID-Name"  Version  Version  Upgrade Time
==== =====
46-CBR DIGI PIC    1.0     1.1     00:05:00
```

```

=====
% NOTES:
- Use 'show upgrade fpd progress' command to view the progress of the FPD
  upgrade.
- The target card will be automatically reloaded after the upgrade
  operation. This reload will interrupt normal operation of the card. If
  necessary, ensure that appropriate actions have been taken to redirect
  card traffic before starting the FPD upgrade.

% Are you sure that you want to perform this operation? [no]: yes
% Initiating the upgrade operation on the target card ...
  (Use "show upgrade fpd progress" command to see upgrade progress)

```

**Step 4** Check if the upgrade process is finished. Upgrade progress will take about 1 to 2 minutes.

**show upgrade fpd progress**

**Example:**

Upgrade still ongoing:

```
Router#show upgrade fpd progress
```

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable      Approx.
                        Device : "ID-Name"      Time      Elapsed
                        =====      =====
                        9/1 CBR-DPIC-8X10G    46-CBR DIGI PIC    00:05:00    00:00:13    Updating...
=====

```

```
Router# show upgrade fpd progress
```

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable      Approx.
                        Device : "ID-Name"      Time      Elapsed
                        =====      =====
                        9/1 CBR-DPIC-8X10G    46-CBR DIGI PIC    00:05:00    00:00:26    Updating...
=====

```

Upgrade finished:

```
Router#show upgrade fpd progress
```

```
% There is no FPD image upgrade in progress.
```

**Step 5** Check if the D-PIC status is ready.

```
show platform
```

**Example:**

```
Router#show platform
```

```
Chassis type: CBR-8-CCAP-CHASS
```

```

Slot      Type              State              Insert time (ago)
-----
2/1      CBR-RF-PROT-PIC  ok                00:08:48

```

```

3          CBR-CCAP-LC-40G      ok          00:12:46
3/1        CBR-RF-PIC           ok          00:08:48
8/1        CBR-DPIC-8X10G       ok          00:07:56
9          CBR-CCAP-LC-40G      ok          00:12:46
9/1        CBR-DPIC-8X10G       ok          00:07:54
SUP0       CBR-CCAP-SUP-160G    inserted    00:12:46
R0         ok, active
F0         ok, active
4          ok, active
4/1        CBR-SUP-8X10G-PIC     ok          00:07:55
SUP1       CBR-CCAP-SUP-160G    inserted    00:12:22
R1         ok, standby
F1         ok, standby
5          ok, standby
5/1        CBR-SUP-8X10G-PIC     ok          00:07:54
P0         PWR-3KW-AC-V2              ok          00:09:49
P1         PWR-3KW-AC-V2              ok          00:09:49
P2         PWR-3KW-AC-V2              ps, fail    00:09:49
P3         Unknown                   N/A        never
P4         Unknown                   N/A        never
P5         PWR-3KW-AC-V2              ok          00:09:49
P10        CBR-FAN-ASSEMBLY           ok          00:09:39
P11        CBR-FAN-ASSEMBLY           ok          00:09:39
P12        CBR-FAN-ASSEMBLY           ok          00:09:39
P13        CBR-FAN-ASSEMBLY           ok          00:09:39
P14        CBR-FAN-ASSEMBLY           ok          00:09:39
    
```

```

Slot      CPLD Version      Rommon Version
-----
3          00000025              2011.03.18
9          00000025              2011.03.18
SUP0       16052011              16.7(3r)S
SUP1       16052011              16.7(3r)S
    
```

**Step 6** Check if the new version works.

```
show hw-module subslot x/1 fpd
```

**Example:**

```
Router#show hw-module subslot 9/1 fpd
```

```

=====
Slot Card Type              H/W Ver. Field Programmable Current Min. Required
=====
9/1 CBR-DPIC-8X10G          1.0 46-CBR DIGI PIC          1.1      1.0
=====
    
```

## Upgrading Uboot For CBR-CCAP-LC-40G

**Step 1** Copy the package file (cbrsup-programmable\_firmware.17.09.01x1.SPA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.09.01x1.SPA.pkg harddisk:
```

**Step 2** Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01x1.SSA.pkg
```

**Example:**

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01x1.SSA.pkg
UBOOT:
  FILE      : /tmp/fpd/mount/uboot.bin.SPA
  VERSION   : U-Boot 2011.03.19
  BYTES     : 1441792
  Upgrade Field Region: SUCCESS! Please reload the card to let the new firmware take effect.
```

**Step 3** Reload Line Card using the following CLI command:

```
Router#hw-module slot <slot#> reload
```

**Step 4** Check the Uboot version after LC boot up using the following CLI command:

```
show platform diag
```

**Example:**

```
Router# show platform diag
...
Slot: 1, CBR-CCAP-LC-40G
  Running state           : ok
  Internal state          : online
  Internal operational state : ok
  Physical insert detect time : 00:03:11 (5d11h ago)
  Software declared up time  : 00:07:46 (5d11h ago)
  CPLD version            : 00000025
  Rommon version          : 2011.03.19
  Basestar version        : 00200057
  Raider version          : 02010019
  dsphy0_fpga version     : 4.484B
  dsphy0_micro version    : 3.1A
  dsphy0_psoc version     : 4.4
  dsphy0_cpld version     : 0.7
  dsphy1_fpga version     : 4.484B
  dsphy1_micro version    : 3.1A
  dsphy1_psoc version     : 4.4
  dsphy1_cpld version     : 0.7
  Caprica version         : 0002000a
  HA-PLL version          : N/A
  PSOC 0 version          : v4.6
  PSOC 1 version          : v4.6
...
```



## CHAPTER 4

# Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Cupertino 17.9.1w



**Note** Starting from Cisco IOS XE Cupertino 17.6.1a, CBR-CCAP-LC-G2-R can only protect CBR-CCAP-LC-G2-R for linecard HA.



**Note** If you are using TACACS authentication, the TACACS configuration will be automatically updated to the new version after upgrading to Cisco IOS XE Cupertino 17.9.1w. This is a fix to [CSCvu62273](#) and you do not need to take any action regarding the TACACS configuration in the cBR-8 prior to the upgrade.

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

By default, telnet is disabled on Cisco cBR-8. If you are going to use telnet to access the device, make sure the value of line **vtty transport** is correct and save the configuration in order to enable telnet.

```
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 firmware versions that customers are required to update to support Cisco IOS XE Cupertino 17.9.1w. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Cupertino 17.9.1w support. Use the commands in the tables to verify the firmware versions. If you need to upgrade firmware first, refer to the steps in [Upgrading the Cisco cBR-8 Router Firmware](#).



**Note** If you want to upgrade Supervisor CPLD firmware, refer to [Upgrading Supervisor CPLD Firmware, on page 64](#).

**Table 4: Firmware Versions**

| Internal Name                      | Component Name                                        | Required Minimum Version | Command                   |
|------------------------------------|-------------------------------------------------------|--------------------------|---------------------------|
| Supervisor CPLD                    | CBR-CCAP-SUP-160G CPLD                                | 16052011/19071712        | <b>show platform</b>      |
|                                    | CBR-CCAP-SUP-250G CPLD                                | 170724E0/190717E1        | <b>show platform</b>      |
| Supervisor ROMMON                  | CBR-CCAP-SUP-160G ROMMON and CBR-CCAP-SUP-250G ROMMON | 16.7(8r)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 Gemini2 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                              | 00020006                 | <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.

- [Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1w, on page 59](#)
- [Upgrading Supervisor CPLD Firmware, on page 64](#)
- [Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 69](#)

- [Upgrading Uboot For CBR-CCAP-LC-40G, on page 71](#)

# Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Cupertino 17.9.1w

## Prerequisites

### Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Bengaluru 17.9.1w, perform the following steps to upgrade SUP ROMMON manually.

1. Download hardware programmable devices upgrade package file **cbrsup-programmable\_firmware.17.09.01w.SPA.pkg** from the following Cisco.com Software Center URL: <https://software.cisco.com/download/home/286283913/type>

2. Copy the package file to harddisk:

```
copy <location>/cbrsup-programmable_firmware.17.09.01w.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.17.09.01w.SPA.pkg
```

4. Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.09.01w.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.17.09.01w.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
```



---

**Note** Do not restart the SUPs currently, you can combine reloading the SUP with the IOS upgrade process.

---

### Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC)

If you are using cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, contact your local Cisco representative before upgrading to Cisco IOS XE Cupertino 17.9.1w.

Starting with in Cisco IOS XE Bengaluru 17.6.1, Cisco introduces a new feature on cBR-8 that provides initial support for 32 Video and 32 DOCSIS service groups per CBR-CCAP-LC-G2-R linecard. The implementation of this feature introduces new 8x10G DPIC port mapping constraints on existing 'Downstream-Cable' controllers. Cisco has prepared a python tool that can be used to determine if a cBR-8 running-configuration includes non-compliant controller mappings, and, to update the running-configuration to be compliant with

the latest Cisco IOS XE Cupertino 17.9.1w. Once you have the python tool, perform the following steps in order to predict and avoid downtime:

**Before you begin:** Special considerations must be taken when using SmartPHY. Contact your local Cisco representative if your installation includes SmartPHY.

1. Collect the following information from the target cBR-8 to upgrade.

```
Router#show cable rpd sum
Router#show cable modem sum
Router#show cable video session all sum
```

2. Save the running configuration to the harddisk of the cBR-8.

```
Router#copy running-config harddisk:SavedConfig.txt
```

3. Copy the saved running configuration from harddisk: to an offline server for editing using SCP.

```
Router#copy harddisk:SavedConfig.txt scp:<path>
```

4. Run the python tool to modify the controllers in the saved configuration.

- Option 1 - Renumber Downstream-Cable controllers only

- a. Execute python script **kobol\_ph2\_controller\_migration.py**. This script is intended for customers who do not immediately intend to take advantage of the Downstream-Video controllers and expanded SG capacity on CBR-CCAP-LC-G2-R.

```
$ python kobol_ph2_controller_migration.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller** to the file name.

```
Output file name: SavedConfig.txt_remap_controller
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

- Option 2 - Renumber Downstream-Cable and utilize Downstream-Video controllers

- a. Execute python script **kobol\_ph2\_controller\_migration\_video.py**. This script is intended for customers who wish to utilize the new Downstream-Video controllers to free up existing Downstream-Cable controllers for expanded DOCSIS service groups.

```
$ python kobol_ph2_controller_migration_video.py
Enter the name of the configuration file: SavedConfig.txt
```

- b. Output file appends **\_remap\_controller\_video** to the file name.

```
Output file name: SavedConfig.txt_remap_controller_video
```

- c. Check to ensure that the script completed successfully. If no output file is created or the size of the output file is 0 byte, then check script output for error messages.

5. **Modify the remapped configuration file to specify the Cisco IOS XE Bengaluru 17.9.1w image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.09.01w.SPA.bin
```

6. Copy the final remapped configuration file back to the cBR-8 harddisk.

```
Router#copy scp:<path>/SavedConfig.txt_remap_controller harddisk:
```



or

```
Router#copy scp:<path>/SavedConfig.txt_remap_controller_video harddisk:
```

### 7. Copy remapped configuration file to startup of the cBR-8.

```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

or

```
Router#copy harddisk:SavedConfig.txt_remap_controller_video startup-config
```

After performing the remapping procedure, monitor the chassis for any of the following errors after reload:

```
Mismatches TE interface. DS controller should be */*/0~7, configuration failed.
Mismatches TE interface. DS controller should be */*/8~15, configuration failed.
Mismatches TE interface. DS controller should be */*/16~23, configuration failed.
Mismatches TE interface. DS controller should be */*/24~31, configuration failed.
```

## Upgrading using reload

### Before you begin



**Note** If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Cupertino 17.9.1w, perform [Manual ROMMON Upgrade](#) to upgrade SUP ROMMON manually before proceeding with IOS upgrading.

## Upgrading from 17.6.1y or Earlier Images

If upgrading from 17.6.1y or earlier, you must copy .pkg files individually to the cBR-8 and boot the system via Sub-Package mode. The tarball below contains all 20 packages and the packages.conf file that are required for upgrading. Before upgrading the system, make sure the following requirements are met:

- Download the 17.9.1w tarball file from [Cisco.com](#) Software Center to a local server, using the following URL: <https://software.cisco.com/download/home/286283913/type>
  - IOS XE Software Version 17.09.01w: cbrsup-universalk9.17.09.01w.SPA.pkgs.tar.
- Untar the archive on the local server.

**Step 1** Create a new folder on the cBR-8: **harddisk:XE-179-1w**.

```
mkdir harddisk:XE-179-1w
```

**Step 2** Create a new folder on the cBR-8: **stby-harddisk:XE-179-1w**.

```
mkdir stby-harddisk:XE-179-1w
```

**Step 3** Copy the .pkg files and packages.conf individually to the cBR-8 from the local server.

```
copy <location>/cbrsup-cciomdsup.17.09.01w.SPA.pkg harddisk:/
XE-179-1w/cbrsup-cciomdsup.17.09.01w.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 4** Copy the .pkg files and packages.conf individually from harddisk to stby-harddisk:

```
copy harddisk:/XE-179-1w/cbrsup-cciomdsup.17.09.01w.SPA.pkg
stby-harddisk:/XE-179-1w/cbrsup-cciomdsup.17.09.01w.SPA.pkg
```

Repeat for all .pkg files and packages.conf. There should be 21 files in total.

**Step 5** Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:/XE-179-1w/cbrsup-programmable_firmware.17.09.01w.SPA.pkg
```

**Step 6** Configure the system to boot in sub-package mode.

```
conf t
no boot system
boot system harddisk:/XE-179-1w/packages.conf
end
```

**Step 7** Save the configuration

```
wr mem
```

**Step 8** Reload the system

```
reload
```

## Upgrading from 17.6.1z or Later Images

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/home/286283913/type>

- IOS XE Software Version 17.09.01w. **cbrsup-universalk9.17.09.01w.SPA.bin**
- IOS XE Hardware Programmable Devices Version 17.9.1w. **cbrsup-programmable\_firmware.17.09.01w.SPA.pkg**

**Step 1** **Note** **Note** Ensure that you have Cisco IOS XE Bengaluru 17.6.1z or later installed before proceeding

Copy the Cisco IOS XE Cupertino 17.9.1w IOS image to harddisk: and stby-harddisk:

```
copy <location>/cbrsup-universalk9.17.09.01w.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.09.01w.SPA.bin stby-harddisk:
```

**Step 2** Verify the Cisco IOS XE Cupertino 17.9.1w IOS image against the md5 hash as provided in the Cisco.com Software center. The md5 hash check may not support images greater than 2 GB in size.

```
verify /md5 harddisk:cbrsup-universalk9.17.09.01w.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.09.01w.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.17.09.01w.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.17.09.01w.SPA.pkg
```

**Step 5** Configure the system to boot with the Cisco IOS XE Cupertino 17.9.1w image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.09.01w.SPA.bin
end
```

**Step 6** Save the configuration.

```
wr mem
```

**Step 7** Reload the system

```
reload
```

---

### 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

### Before you begin




---

**Note** If the supervisor SO CPLD version is lower than 1511\_1401 (SUP 160) or 15111401 (SUP 250), or, if 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 CPLD.

---

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/home/286283913/type>

- IOS XE Hardware Programmable Devices Version 17.09.01w:  
**cbrsup-programmable\_firmware.17.09.01w.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.17.09.01w.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.09.01w.SPA.pkg stby-harddisk:
```




---

**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:

---

**Step 1** Set the config register.

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

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

```
upgrade hw-programmable cable R0 viper pkg_name
/harddisk/cbrsup-programmable_firmware.17.09.01w.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 harddisk/cbrsup-programmable\_firmware.17.09.01w.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01w.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 harddisk/cbrsup-programmable\_firmware.17.09.01w.SPA.pkg image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file harddisk/cbrsup-programmable\_firmware.17.09.01w.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 harddisk/cbrsup-programmable\_firmware.17.09.01w.SPA.pkg image  
Upgrade from assigned pkg file /harddisk/cbrsup-programmable\_firmware.17.09.01w.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.17.09.01w.SPA.pkg` image on SUP0, SUP0 is active.  
Upgrade from assigned pkg file `harddisk/cbrsup-programmable_firmware.17.09.01w.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
/harddisk/cbrsup-programmable_firmware.17.09.01w.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 ViperSO CPLD version is 15111401 and the supervisor ViperSIO 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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01w.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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01w.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 harddisk:
boot harddisk:cbrsup-universalk9.17.09.01w.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.



# Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card

## Before you begin

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

- Make sure the latest available IOS XE version is active in Cisco cBR-8 router.
- There are at least 20MB free space on the harddisk.



**Note** To make use of the new features, it is recommended to upgrade the cBR CCAP 8x10G Remote PHY Digital Physical Interface Card (D-PIC) to the latest version 1.1.

**Step 1** Boot up system, wait until IOS is ready.

**Step 2** Check current D-PIC version.

```
show hw-module subslot x/1 fpd
```

**Note** x/1 is D-PIC subslot number which needs upgrade.

### Example:

```
Router#show hw-module subslot 9/1 fpd
```

```
==== =====
Slot Card Type                H/W  Field Programmable  Current  Min. Required
Ver.  Device: "ID-Name"  Version  Version
==== =====
 9/1 CBR-DPIC-8X10G          1.0  46-CBR DIGI PIC    1.0     1.0
==== =====
```

**Step 3** Upgrade D-PIC.

```
upgrade hw-module subslot x/1 fpd bundled reload
```

### Example:

```
Router#upgrade hw-module subslot 9/1 fpd bundled reload
```

```
% The following FPD will be upgraded for CBR-DPIC-8X10G (H/W ver = 1.0) in subslot 9/1:
```

```
==== =====
Field Programmable  Current  Upgrade  Estimated
Device: "ID-Name"  Version  Version  Upgrade Time
==== =====
46-CBR DIGI PIC    1.0     1.1     00:05:00
```

```

=====
% NOTES:
- Use 'show upgrade fpd progress' command to view the progress of the FPD
  upgrade.
- The target card will be automatically reloaded after the upgrade
  operation. This reload will interrupt normal operation of the card. If
  necessary, ensure that appropriate actions have been taken to redirect
  card traffic before starting the FPD upgrade.

% Are you sure that you want to perform this operation? [no]: yes
% Initiating the upgrade operation on the target card ...
  (Use "show upgrade fpd progress" command to see upgrade progress)

```

**Step 4** Check if the upgrade process is finished. Upgrade progress will take about 1 to 2 minutes.

**show upgrade fpd progress**

**Example:**

Upgrade still ongoing:

```
Router#show upgrade fpd progress
```

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable      Approx.
                        Device : "ID-Name"      Time      Elapsed
                        =====      =====
                        9/1 CBR-DPIC-8X10G    46-CBR DIGI PIC    00:05:00    00:00:13    Updating...
=====

```

```
Router# show upgrade fpd progress
```

FPD Image Upgrade Progress Table:

```

=====
Slot Card Type          Field Programmable      Approx.
                        Device : "ID-Name"      Time      Elapsed
                        =====      =====
                        9/1 CBR-DPIC-8X10G    46-CBR DIGI PIC    00:05:00    00:00:26    Updating...
=====

```

Upgrade finished:

```
Router#show upgrade fpd progress
```

```
% There is no FPD image upgrade in progress.
```

**Step 5** Check if the D-PIC status is ready.

```
show platform
```

**Example:**

```
Router#show platform
```

```
Chassis type: CBR-8-CCAP-CHASS
```

```

Slot      Type              State              Insert time (ago)
-----
2/1      CBR-RF-PROT-PIC  ok                00:08:48

```

```

3          CBR-CCAP-LC-40G      ok          00:12:46
3/1       CBR-RF-PIC           ok          00:08:48
8/1       CBR-DPIC-8X10G       ok          00:07:56
9         CBR-CCAP-LC-40G      ok          00:12:46
9/1       CBR-DPIC-8X10G       ok          00:07:54
SUP0      CBR-CCAP-SUP-160G    inserted    00:12:46
R0        ok, active
F0        ok, active
4         ok, active
4/1       CBR-SUP-8X10G-PIC    ok          00:07:55
SUP1      CBR-CCAP-SUP-160G    inserted    00:12:22
R1        ok, standby
F1        ok, standby
5         ok, standby
5/1       CBR-SUP-8X10G-PIC    ok          00:07:54
P0        PWR-3KW-AC-V2         ok          00:09:49
P1        PWR-3KW-AC-V2         ok          00:09:49
P2        PWR-3KW-AC-V2         ps, fail    00:09:49
P3        Unknown              N/A        never
P4        Unknown              N/A        never
P5        PWR-3KW-AC-V2         ok          00:09:49
P10       CBR-FAN-ASSEMBLY      ok          00:09:39
P11       CBR-FAN-ASSEMBLY      ok          00:09:39
P12       CBR-FAN-ASSEMBLY      ok          00:09:39
P13       CBR-FAN-ASSEMBLY      ok          00:09:39
P14       CBR-FAN-ASSEMBLY      ok          00:09:39
    
```

```

Slot      CPLD Version      Rommon Version
-----
3          00000025              2011.03.18
9          00000025              2011.03.18
SUP0      16052011              16.7(3r)S
SUP1      16052011              16.7(3r)S
    
```

**Step 6** Check if the new version works.

```
show hw-module subslot x/1 fpd
```

**Example:**

```
Router#show hw-module subslot 9/1 fpd
```

```

=====
Slot Card Type              H/W Ver.  Field Programmable  Current  Min. Required
=====
9/1 CBR-DPIC-8X10G          1.0   46-CBR DIGI PIC     1.1     1.0
=====
    
```

## Upgrading Uboot For CBR-CCAP-LC-40G

**Step 1** Copy the package file (cbrsup-programmable\_firmware.17.9.1w.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.09.01w.SPA.pkg harddisk:
```

**Step 2** Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01w.SSA.pkg
```

**Example:**

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.09.01w.SSA.pkg
UBOOT:
  FILE      : /tmp/fpd/mount/uboot.bin.SPA
  VERSION   : U-Boot 2011.03.19
  BYTES     : 1441792
  Upgrade Field Region: SUCCESS! Please reload the card to let the new firmware take effect.
```

**Step 3** Reload Line Card using the following CLI command:

```
Router#hw-module slot <slot#> reload
```

**Step 4** Check the Uboot version after LC boot up using the following CLI command:

```
show platform diag
```

**Example:**

```
Router# show platform diag
...
Slot: 1, CBR-CCAP-LC-40G
  Running state           : ok
  Internal state          : online
  Internal operational state : ok
  Physical insert detect time : 00:03:11 (5d11h ago)
  Software declared up time  : 00:07:46 (5d11h ago)
  CPLD version            : 00000025
  Rommon version          : 2011.03.19
  Basestar version        : 00200057
  Raider version           : 02010019
  dsphy0_fpga version      : 4.484B
  dsphy0_micro version     : 3.1A
  dsphy0_psoc version      : 4.4
  dsphy0_cpld version      : 0.7
  dsphy1_fpga version      : 4.484B
  dsphy1_micro version     : 3.1A
  dsphy1_psoc version      : 4.4
  dsphy1_cpld version      : 0.7
  Caprica version         : 0002000a
  HA-PLL version           : N/A
  PSOC 0 version           : v4.6
  PSOC 1 version           : v4.6
...
```