Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Amsterdam 17.3.1w

Note

If you are using TACACS authentication, update the TACACS configuration in the cBR-8 to the new syntax prior to upgrading the cBR-8, because Cisco IOS XE Amsterdam 17.3.1w does not recognize the old syntax and you may not be able to authenticate via TACACS after the upgrade. The change in the TACACS configuration in the cBR-8 prior to Cisco IOS XE Amsterdam 17.3.1w is a workaround to the issue tracked as CSCvu62273.

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 **vty 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 Amsterdam 17.3.1w. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Amsterdam 17.3.1w 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 13.

Table 1: Firmware Versions

Internal Name	Component Name	Required Minimum Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G CPLD	16052011/19071712	**show platform**
	CBR-CCAP-SUP-250G CPLD	170724E0/190717E1	**show platform**
Supervisor ROMMON	CBR-CCAP-SUP-160G ROMMON and CBR-CCAP-SUP-250G ROMMON	16.7(6r)S	**show platform**
Line Card CPLD	CBR-CCAP-LC-40G CPLD	00000026	**show platform diag**
Docsis 3.1 downstream module Micro	CBR-CCAP-LC-40G Gemini2 Micro	3.1A	**show platform diag**
Docsis 3.1 downstream module FPGA	CBR-CCAP-LC-40G Gemini2 Apollo	4.484F	**show platform diag**
DPIC Uboot and FPGA	CBR-DPIC-8X10G Firmware	00010001	**show platform diag**
DPIC 100G Uboot and FPGA	CBR-DPIC-2X100G Firmware	00020005	**show platform diag**

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

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

Verify max-carrier value

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

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

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

Below is an example of correct configuration before upgrade.

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

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


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

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

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

Upgrading from Cisco IOS XE 16.x to Cisco IOS XE Amsterdam 17.3.1w

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Amsterdam 17.3.1w, perform the following steps to upgrade SUP ROMMON manually. Otherwise proceed with the IOS upgrade.

1. Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.03.01w.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842

2. Copy the package file to harddisk:.

   ```
   copy <location>/cbrsup-programmable_firmware.17.03.01w.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.17.03.01w.SPA.pkg
   ```

4. Upgrade SUP ROMMON.

   ```
   Router#Upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.03.01w.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.17.03.01w.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 at this time, you can combine reloading the SUP with the IOS upgrade process.

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 Amsterdam 17.3.1w, perform pre-upgrade steps 1 to 4 to upgrade SUP ROMMON manually before proceeding with IOS upgrading.

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 17.3.1w: **cbrsup-universalk9.17.03.01w.SPA.bin**

  - IOS XE Hardware Programmable Devices Version 17.3.1w: **cbrsup-programmable_firmware.17.03.01w.SPA.pkg**

Step 1   Copy Cisco IOS XE Amsterdam 17.3.1w package to bootflash: and stby-bootflash:.

```
copy <location>/cbrsup-universalk9.17.03.01w.SPA.bin bootflash:
copy <location>/cbrsup-universalk9.17.03.01w.SPA.bin stby-bootflash:
```

Step 2   Verify Cisco IOS XE Amsterdam 17.3.1w package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:cbrsup-universalk9.17.03.01w.SPA.bin
verify /md5 stby-bootflash:cbrsup-universalk9.17.03.01w.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.17.03.01w.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.17.03.01w.SPA.pkg
```

Step 5   Configure the chassis to boot the system with Cisco IOS XE Amsterdam 17.3.1w image.

```
Configure terminal
no boot system
boot system bootflash:cbrsup-universalk9.17.03.01w.SPA.bin
config-register 0x2102
end
```

```
write mem
```

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

> **Note**   To upgrade the line card CPLD to version 00000026, the cBR-8 must be running Cisco IOS XE Gibraltar 16.12.1 or later releases.
>
> This procedure will trigger a reload of the linecard and will cause an outage if the system is not backed up with LCHA.
>
> Do not power cycle the cBR-8 router during the firmware upgrade process. Power cycling the chassis may corrupt the ROMMON/Uboot image.

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

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

Example:

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

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

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

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

Example:

```
Router# upgrade hw-programmable cable 0 daggit pkg_name
/harddisk/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

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

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

Example:

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

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

Example:

```
Router#show platform
......
Slot      CPLD Version        Rommon Version
--------- ------------------- --------------------------------------

0         00000026            2011.03.18
…
```

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

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

Example:

```
Router# upgrade hw-programmable cable R0 daggit post-active slot 0
SUCCESS: Daggit_ver-38 : Booted from upgradable Image-1
```

Step 7   Check the firmware version of the Docsis 3.1 downstream modules in all slots, if it is different with the version listed in Table 1: Firmware Versions, on page 2, update the firmware using the following command. Otherwise skip this step.

upgrade hw-programmable cable *slot* **dsphy all pkg_name** *firmware_pkg_location_path*

Example:

```
Router# upgrade hw-programmable cable 0 dsphy all pkg_name
/harddisk/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

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

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

Step 9   Reload the system.

```
Router#reload
```

Step 10   If the system is running with SUP250, perform **no shut** on 100G interface after the system comes up for the first time.

What to do next

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

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

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

- **show redundancy**
- **show platform**

- **show platform diag**

- **show environment**

- **show redundancy linecard all**

- **show isis neighbors**

- **show ip ospf neighbor**

- **show ip route rip**

- **show ip mroute**

- **show cops servers**

- **show cable modem voice**

- **show cable calls**

- **show cable metering verbose**

- **show cable licenses all**

- **show inventory**

Upgrading with ISSU for I-CCAP Systems

Before you begin

Note   ISSU is not supported for Remote PHY systems.

Note   ISSU to Cisco IOS XE Amsterdam 17.3.1w is supported only from Cisco IOS XE Gibraltar 16.10.1c (system running SUP160)/16.10.1d (system running SUP250) and later releases. If you are upgrading from an earlier release, you must upgrade the cBR-8 system following the steps in Upgrading using reload, on page 5.

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

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

• Auto-boot is enabled.

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

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

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

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

• The free space on boot device on both SUPs must be greater than 2GB.

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

7804653568 bytes total (5691174912 bytes free)
```

• Copy the target consolidated image cbrsup-universalk9.17.03.01w.SPA.bin to the active SUP in the same directory of the packages.conf file that the system is booted up with.

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

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

  - IOS XE Software Version 17.3.1w: **cbrsup-universalk9.17.03.01w.SPA.bin**

  - IOS XE Hardware Programmable Devices Version 17.3.1w:
    cbrsup-programmable_firmware.17.03.01w.SPA.pkg

Step 1 Copy Cisco IOS XE Amsterdam 17.3.1w package to bootflash:.

```
copy <location>/cbrsup-universalk9.17.03.01w.SPA.bin bootflash:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Amsterdam 17.3.1w package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:<sub-pkg-dir>/cbrsup-universalk9.17.03.01w.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.17.03.01w.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.17.03.01w.SPA.pkg
```

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

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

Note To upgrade the line card CPLD to version 00000026, the cBR-8 must be running Cisco IOS XE Gibraltar 16.12.1 or later releases.

This procedure will trigger a reload of the linecard and will cause an outage if the system is not backed up with LCHA.

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

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

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

Example:

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

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

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

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

Example:

```
Router# upgrade hw-programmable cable 0 daggit pkg_name
/harddisk/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

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

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

Example:

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

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

Example:

```
cBR8#show platform
......
Slot      CPLD Version        Rommon Version
--------- ------------------- --------------------------------------

0         00000026            2011.03.18
...
```

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

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

Example:

```
Router# upgrade hw-programmable cable R0 daggit post-active slot 0
SUCCESS: Daggit_ver-38 : Booted from upgradable Image-1
```

Step 7   Check the firmware version of the Docsis 3.1 downstream modules in all slots, if it is different with the version listed in Table 1: Firmware Versions, on page 2, update the firmware using the following command. Otherwise skip this step.

upgrade hw-programmable cable *slot* **dsphy all pkg_name** *firmware_pkg_location_path*

Example:

```
Router# upgrade hw-programmable cable 0 dsphy all pkg_name
/harddisk/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

Step 8 Wait for the system log message asking the user to reload the line card that was upgraded. But do not reload the line card at this time.

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

Step 9 Perform ISSU.

```
request platform software package install node file bootflash:cbrsup-universalk9.17.03.01w.SPA.bin
```

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

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

Step 11 Use these CLI to check status after ISSU.

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

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 17.3.1w:
    cbrsup-programmable_firmware.17.03.01w.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.17.03.01w.SPA.pkg bootflash:
copy ftp://<location>/cbrsup-programmable_firmware.17.03.01w.SPA.pkg stby-bootflash:
```

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 to 0.

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

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

```
upgrade hw-programmable cable R0 viper pkg_name
/bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

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

- It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the
  upgrade.
  You are upgrading Viper firmware using bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
  Using viper firmware /tmp/viper/mount/supve_viper_fpga_psirt.bin
  Size of Viper Upgrade image: 16777216 bytes
  No.of parts: 65536
  Upgrading golden image...
  65536+0 records in
  65536+0 records out
  16777216 bytes (17 MB, 16 MiB) copied, 688.873 s, 24.4 kB/s
  Upgrading primary image...
  65536+0 records in
  65536+0 records out
  16777216 bytes (17 MB, 16 MiB) copied, 675.19 s, 24.8 kB/s
  Viper upgrade clean up 0
  Upgrade successfully. Please make sure Rommon version is matched.
  Please power cycle the chassis to let the new firmware take effect

- It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the
  upgrade.
  You are upgrading Viper firmware using bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
  The golden viper is not compatible with assigned firmware
  /tmp/viper/mount/supve_viper_fpga_psirt.bin, no upgrade will be performed
  Viper upgrade clean up 2

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

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

- It takes about 10 minutes to upgrade. Console would hung. Please don't do any operation during
  the upgrade.
  You are upgrading Viper firmware using bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
   image
  Upgrade from assigned pkg file /bootflash/cbrsup-programmable_firmware.17.03.01w.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.17.03.01w.SPA.pkg
 image on SUP0, SUP0 is active.
Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
The golden viper is not compatible with assigned firmware
/tmp/viper/mount/supve_viper_fpga_psirt.bin, no upgrade will be performed
Viper upgrade clean up 2
```

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

Note   Do not power cycle the chassis in this step.

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

```
upgrade hw-programmable cable R1 viper pkg_name
/bootflash/cbrsup-programmable_firmware.17.03.01w.SPA.pkg
```

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

Note   Do not power cycle the chassis in this step.

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

```
Router#show platform diag
Load for five secs: 6%/1%; one minute: 7%; five minutes: 8%
Time source is NTP, 16:05:43.546 PST Thu Feb 8 2018
Chassis type: CBR-8-CCAP-CHASS
<SNIP>
Slot: SUP0, CBR-CCAP-SUP-160G
        Physical insert detect time : 00:01:58 (1d03h ago)
        CPLD version              : 16052011
        ViperSO CPLD version      : 15111401
        ViperSIO CPLD version     : 15111301
        Rommon version            : 16.7(1r)S
        Blackbird version         : 00000112
        Raptor ESI version        : 0001003b
        Raptor MAC version        : 00010031
        SUP-PIC CPLD version      : 14071504
        SUP-DC CPLD version       : 14072207
        DTI Client FPGA version   : 00000005
        DTI Firmware version      : 00000A03
        Cortina PHY version       : 201402061607
        SUP PSOC 0 version        : v4.0.9
        SUP PSOC 1 version        : v4.0.8
        SUP PSOC 2 version        : v4.1.0_IVB
        SUP PSOC 3 version        : v4.0.6
        SUP-DC PSOC 0 version     : v4.0.8
        SUP-DC PSOC 1 version     : v4.0.5
        SUP-PIC PSOC 0 version    : V2.0.6
        SUP-PIC PSOC 1 version    : V2.0.6
<SNIP>
Slot: SUP1, CBR-CCAP-SUP-160G
        Physical insert detect time : 00:02:26 (1d03h ago)
```

```
      CPLD version                 : 16052011
      ViperSO CPLD version         : 15111401
      ViperSIO CPLD version        : 15111301
      Rommon version               : 16.7(1r)S
      Blackbird version            : 00000112
      Raptor ESI version           : 0001003b
      Raptor MAC version           : 00010031
      SUP-PIC CPLD version         : 14071504
      SUP-DC CPLD version          : 14072207
      DTI Client FPGA version      : 00000005
      DTI Firmware version         : 00000A03
      Cortina PHY version          : 201402061607
      SUP PSOC 0 version           : v4.0.9
      SUP PSOC 1 version           : v4.0.8
      SUP PSOC 2 version           : v4.1.0_IVB
      SUP PSOC 3 version           : v4.0.6
      SUP-DC PSOC 0 version        : v4.0.9
      SUP-DC PSOC 1 version        : v4.0.5
      SUP-PIC PSOC 0 version       : V3.0.0
      SUP-PIC PSOC 1 version       : V3.0.0
<SNIP>
```

Step 5   Set SUP0 to ROMMON using the following command.

```
redundancy force-switchover
```

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

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

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

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

SUP 160 new version: 0x19071712

SUP 250 new version: 0x190717E1

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

```
dir bootflash:
boot bootflash:cbrsup-universalk9.17.03.01w.SPA.bin
```

Wait utill SUP0 is in standby hot.

Step 8   Set SUP1 to ROMMON using the following command.

```
redundancy force-switchover
```

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

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

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

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

SUP 160 new version: 0x19071712

SUP 250 new version: 0x190717E1

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

```
dir bootflash:
boot bootflash:cbrsup-universalk9.17.03.01w.SPA.bin
```

Wait utill SUP1 is in standby hot.

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

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

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

```
Router#reload
```

Step 13 Power cycle both supervisors.

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

SUP 160 new version: 0x19071712

SUP 250 new version: 0x190717E1

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

```
dir bootflash:
boot bootflash:cbrsup-universalk9.17.03.01w.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 lease 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

==== ==================== ====== ============================================
                          H/W    Field Programmable   Current    Min. Required
Slot Card Type            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:

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

sj-104-cbr-13#show upgrade fpd progress

FPD Image Upgrade Progress Table:

 ==== ================== ======================================================
                                                  Approx.
                              Field Programmable   Time      Elapsed
 Slot Card Type              Device : "ID-Name"   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

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