Upgrading the Cisco cBR Series Converged Broadband Routers for Cisco IOS XE Dublin 17.12

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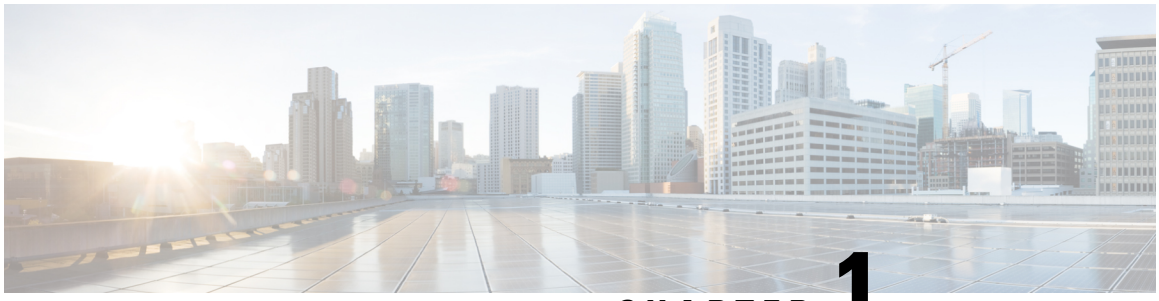


CHAPTER 1

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1

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 Dublin 17.12.1. 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 **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 Dublin 17.12.1. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1 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 10.

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(8r)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	00020006	**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.

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 20 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 20 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1.

Upgrading using reload

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 17.12.1 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 17.12.01: cbrsup-universalk9.17.12.01.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1**.

```
mkdir harddisk:XE-1712-1
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1**.

```
mkdir stby-harddisk:XE-1712-1
```

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

```
copy <location>/cbrsup-cciomdsup.17.12.01.SPA.pkg harddisk:/
XE-1712-1/cbrsup-cciomdsup.17.12.01.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-1712-1/cbrsup-cciomdsup.17.12.01.SPA.pkg
stby-harddisk:/XE-1712-1/cbrsup-cciomdsup.17.12.01.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-1712-1/cbrsup-programmable_firmware.17.12.01.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1/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 17.12.01. **cbrsup-universalk9.17.12.01.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1. **cbrsup-programmable_firmware.17.12.01.SPA.pkg**

Procedure

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 Dublin 17.12.1 IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.12.01.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1 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-universalk9.17.12.01.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.12.01.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.17.12.01.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.17.12.01.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1 image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.12.01.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 Dublin 17.12.1 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 3.

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 = 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 17.12.1: **cbrsup-universalk9.17.12.01.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1: **cbrsup-programmable_firmware.17.12.01.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.12.01.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1 image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1 image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1 image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1 image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.12.01.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.17.12.01.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.17.12.01.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-universalk9.17.12.01.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 17.12.01:
    cbrsup-programmable_firmware.17.12.01.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.17.12.01.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.17.12.01.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.17.12.01.SPA.pkg
  ```
  ```

```
image on SUP0, SUP0 is active.
Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01.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.17.12.01.SPA.pkg
  image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01.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.17.12.01.SPA.pkg
  image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware.17.12.01.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.17.12.01.SPA.pkg
  image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01.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.17.12.01.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-universalk9.17.12.01.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01.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.

SUMMARY STEPS

1. Boot up system, wait until IOS is ready.
2. Check current D-PIC version.
3. Upgrade D-PIC.
4. Check if the upgrade process is finished. Upgrade progress will take about 1 to 2 minutes.
5. Check if the D-PIC status is ready.
6. Check if the new version works.

DETAILED STEPS

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ==============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

SUMMARY STEPS

1. Copy the package file (cbrsup-programmable_firmware.17.12.01.SPA.pkg) to the active SUP's harddisk.
2. Upgrade Uboot using the following CLI command:
3. Reload Line Card using the following CLI command:
4. Check the Uboot version after LC boot up using the following CLI command:

DETAILED STEPS

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware.17.12.01.SPA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.12.01.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01.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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01.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.17.12.01.SPA.pkg r1
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

Step 4 Reload both the SUPs.

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

Before you begin

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 17.12.1.

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-confirguration to be compliant with the latest Cisco IOS XE Cupertino 17.12.1. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Cupertino 17.12.1 image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01.SPA.bin
```

Step 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:
```

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

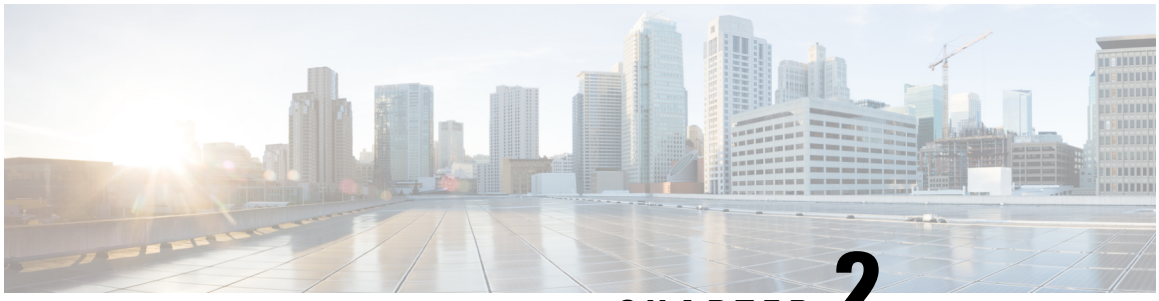
```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

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.
```



CHAPTER 2

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1w

Note Starting from Cisco IOS XE Dublin 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 Dublin 17.12.1w. 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 **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 firmware versions that customers are required to update to support Cisco IOS XE Dublin 17.12.1w. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1w 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 32.

Table 2: 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(9r)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	00020006	**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.

- Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1w, on page 25
- Upgrading Supervisor CPLD Firmware, on page 32
- Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 37

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1w

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1w, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 41 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 42 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1w.

Upgrading using reload

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 17.12.1w 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 17.12.01w: cbrsup-universalk9.17.12.01w.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1w**.

```
mkdir harddisk:XE-1712-1w
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1w**.

```
mkdir stby-harddisk:XE-1712-1w
```

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

```
copy <location>/cbrsup-cciomdsup.17.12.01w.SPA.pkg harddisk:/
XE-1712-1w/cbrsup-cciomdsup.17.12.01w.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-1712-1w/cbrsup-cciomdsup.17.12.01w.SPA.pkg
stby-harddisk:/XE-1712-1w/cbrsup-cciomdsup.17.12.01w.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-1712-1w/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1w/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 17.12.01w. **cbrsup-universalk9.17.12.01w.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1w. **cbrsup-programmable_firmware.17.12.01w.SPA.pkg**

Procedure

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 Dublin 17.12.1w IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01w.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.12.01w.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1w 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-universalk9.17.12.01w.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.12.01w.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.17.12.01w.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.17.12.01w.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1w image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.12.01w.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 with ISSU for I-CCAP Systems

Before you begin

Note

- ISSU is not supported for Remote PHY systems.
- ISSU to Cisco IOS XE Dublin 17.12.1w 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 3.

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 = 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 17.12.1w: **cbrsup-universalk9.17.12.01w.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1w: **cbrsup-programmable_firmware.17.12.01w.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.12.01w.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1w image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1w image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1w image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01w.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1w image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.12.01w.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.17.12.01w.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.17.12.01w.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 Perform ISSU.

```
request platform software package install node file harddisk:cbrsup-universalk9.17.12.01w.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 17.12.01w:
    cbrsup-programmable_firmware.17.12.01w.SPA.pkg

- Console access for both supervisors are required.
- Copy the new firmware package to the cBR-8 using FTP.

```
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01w.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01w.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.17.12.01w.SPA.pkg
```

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

- ```
  It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the
   upgrade.
  You are upgrading Viper firmware using harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
  ```
  ```

```
 image on SUP0, SUP0 is active.
Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
Using viper firmware /tmp/viper/mount/supve_viper_fpga_psirt.bin
Size of Viper Upgrade image: 16777216 bytes
No.of parts: 65536
Upgrading golden image...
65536+0 records in
65536+0 records out
16777216 bytes (17 MB, 16 MiB) copied, 688.873 s, 24.4 kB/s
Upgrading primary image...
65536+0 records in
65536+0 records out
16777216 bytes (17 MB, 16 MiB) copied, 675.19 s, 24.8 kB/s
Viper upgrade clean up 0
Upgrade successfully. Please make sure Rommon version is matched.
Please power cycle the chassis to let the new firmware take effect
```

- ```
  It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the
   upgrade.
  You are upgrading Viper firmware using harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
  The golden viper is not compatible with assigned firmware
  /tmp/viper/mount/supve_viper_fpga_psirt.bin, no upgrade will be performed
  Viper upgrade clean up 2
  ```

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

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

- ```
  It takes about 10 minutes to upgrade. Console would hung. Please don't do any operation during
   the upgrade.
  You are upgrading Viper firmware using harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
   image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
  Using viper firmware /tmp/viper/mount/viper_fpga.bin
  Size of Viper Upgrade image: 16777216 bytes
  No.of parts: 65536
  65536+0 records in
  65536+0 records out
  Viper upgrade clean up 0
  Upgrade successfully. Please make sure Rommon version is matched.
  Please power cycle the chassis to let the new firmware take effect
  ```

- ```
  It takes 10~20 minutes to upgrade. Console would hung. Please don't do any operation during the
   upgrade.
  You are upgrading Viper firmware using harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
  The golden viper is not compatible with assigned firmware
  /tmp/viper/mount/supve_viper_fpga_psirt.bin, no upgrade will be performed
  Viper upgrade clean up 2
  ```

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

Note
Do not power cycle the chassis in this step.

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

```
upgrade hw-programmable cable R1 viper pkg_name
/harddisk/cbrsup-programmable_firmware.17.12.01w.SPA.pkg
```

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

Note
Do not power cycle the chassis in this step.

Step 4 If the supervisor 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-universalk9.17.12.01w.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01w.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01w.SPA.bin
```

Wait till SUP0 become standby hot.

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

- Set config register to normal boot.

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

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

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.

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware.17.12.1w.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.12.01w.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01w.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01w.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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1w, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01w.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01w.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01w.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.17.12.01w.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
```

Step 4 Reload both the SUPs.

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

Before you begin

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 Dublin 17.12.1w.

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-confirguration to be compliant with the latest Cisco IOS XE Dublin 17.12.1w. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Dublin 17.12.1w image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01w.SPA.bin
```

Step 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:
```

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

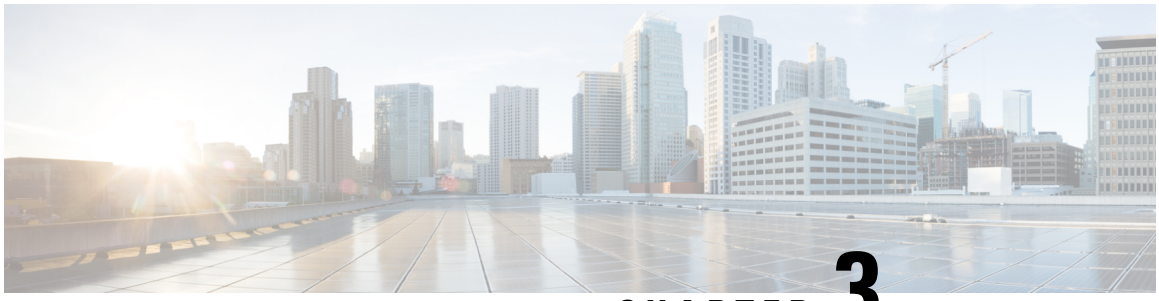
```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

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.
```



CHAPTER 3

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1x

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 Dublin 17.12.1x. 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 **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 Dublin 17.12.1x. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1x 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 10.

Table 3: 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(9r)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	00020006	**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.

- Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1x, on page 47
- Upgrading Supervisor CPLD Firmware, on page 54
- Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 59

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1x

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1x, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 63 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 64 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1x.

Upgrading using reload

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 17.12.1x 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 17.12.01x: cbrsup-universalk9.17.12.01x.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1x**.

```
mkdir harddisk:XE-1712-1x
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1x**.

```
mkdir stby-harddisk:XE-1712-1x
```

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

```
copy <location>/cbrsup-cciomdsup.17.12.01x.SPA.pkg harddisk:/
XE-1712-1x/cbrsup-cciomdsup.17.12.01x.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-1712-1x/cbrsup-cciomdsup.17.12.01x.SPA.pkg
stby-harddisk:/XE-1712-1x/cbrsup-cciomdsup.17.12.01x.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-1712-1x/cbrsup-programmable_firmware.17.12.01x.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1x/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 17.12.01x. **cbrsup-universalk9.17.12.01x.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1x. **cbrsup-programmable_firmware.17.12.01x.SPA.pkg**

Procedure

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 Dublin 17.12.1x IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01x.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.12.01x.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1x 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-universalk9.17.12.01x.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.12.01x.SPA.bin
```

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

```
copy <location>/cbrsup-programmable_firmware.17.12.01x.SPA.pkg harddisk:
```

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

```
verify /md5 harddisk:cbrsup-programmable_firmware.17.12.01x.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1x image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.12.01x.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 Dublin 17.12.1x 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 3.

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 = 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 17.12.1x: **cbrsup-universalk9.17.12.01x.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1x: **cbrsup-programmable_firmware.17.12.01x.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.12.01x.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1x image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1x image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1x image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01x.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1x image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.12.01x.SPA.bin
```

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

```
copy <location>/cbrsup-programmable_firmware.17.12.01x.SPA.pkg harddisk:
```

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

```
verify /md5 harddisk:cbrsup-programmable_firmware.17.12.01x.SPA.pkg
```

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

Step 6 Perform ISSU.

```
request platform software package install node file harddisk:cbrsup-universalk9.17.12.01x.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 17.12.01x:
    cbrsup-programmable_firmware.17.12.01x.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.17.12.01x.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01x.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.17.12.01x.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.17.12.01x.SPA.pkg
  ```
  ```

```
 image on SUP0, SUP0 is active.
Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01x.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.17.12.01x.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01x.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.17.12.01x.SPA.pkg
   image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware.17.12.01x.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.17.12.01x.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01x.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.17.12.01x.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-universalk9.17.12.01x.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01x.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01x.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.

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware.17.12.1x.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.12.01x.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01x.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01x.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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1x, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01x.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01x.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01x.SPA.pkg r0
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP

Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01x.SPA.pkg r1
Wait for the following output on the console:
```

```
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

Step 4 Reload both the SUPs.

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

Before you begin

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 Dublin 17.12.1x.

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-confirguration to be compliant with the latest Cisco IOS XE Dublin 17.12.1x. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Dublin 17.12.1x image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01x.SPA.bin
```

Step 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:
```

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

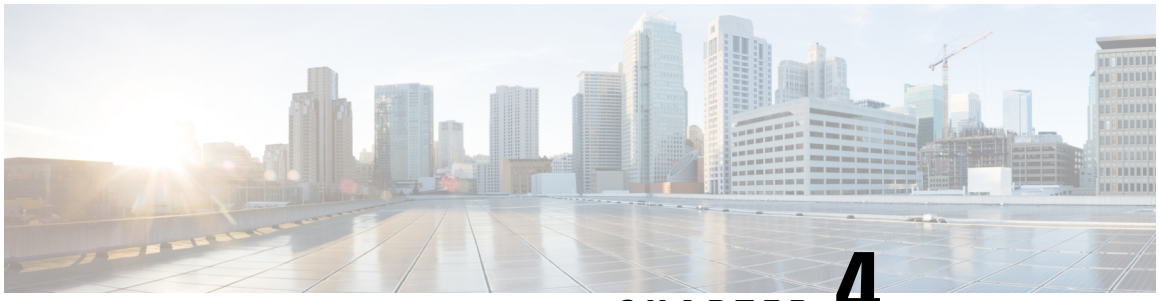
```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

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.
```



CHAPTER 4

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1y

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 is automatically updated to the new version after upgrading to Cisco IOS XE Dublin 17.12.1y. 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 **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 are required to update to support Cisco IOS XE Dublin 17.12.1y. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1y 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 10.

Table 4: 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(9r)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	00020006	**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.

- Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1y, on page 69
- Upgrading Supervisor CPLD Firmware, on page 76
- Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 81

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1y

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1y, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 85 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 86 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1y.

Upgrading using reload

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 17.12.1y 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 17.12.01y: cbrsup-universalk9. 17.12.01y.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1y**.

```
mkdir harddisk:XE-1712-1y
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1y**.

```
mkdir stby-harddisk:XE-1712-1y
```

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

```
copy <location>/cbrsup-cciomdsup. 17.12.01y.SPA.pkg harddisk:/
XE-1712-1x/cbrsup-cciomdsup. 17.12.01y.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-1712-1y/cbrsup-cciomdsup. 17.12.01y.SPA.pkg
stby-harddisk:/XE-1712-1y/cbrsup-cciomdsup. 17.12.01y.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-1712-1y/cbrsup-programmable_firmware. 17.12.01y.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1y/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 17.12.01y. **cbrsup-universalk9. 17.12.01y.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1y. **cbrsup-programmable_firmware. 17.12.01y.SPA.pkg**

Procedure

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 Dublin 17.12.1y IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9. 17.12.01y.SPA.bin harddisk:
copy <location>/cbrsup-universalk9. 17.12.01y.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1y 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 GB in size.

```
verify /md5 harddisk:cbrsup-universalk9. 17.12.01y.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9. 17.12.01y.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. 17.12.01y.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. 17.12.01y.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1y image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9. 17.12.01y.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.
- If you are upgrading from 17.6.1z1 to 17.12.1y with netconf enabled, the netconf-yang may not work after the upgrade. To resolve this, you need to re-configure the netconf-yang as below:

```
CBR8(config)#netconf-yang ssh server algorithm hostkey ssh-rsa
CBR8(config)#no netconf-yang
CBR8(config)#netconf-yang
CBR8(config)#end
```

- ISSU to Cisco IOS XE Dublin 17.12.1y 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 3.

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 = 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 17.12.1y: **cbrsup-universalk9. 17.12.01y.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1y: **cbrsup-programmable_firmware. 17.12.01y.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9. 17.12.01y.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1y image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1y image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1y image to harddisk:.

```
copy <location>/cbrsup-universalk9. 17.12.01y.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1y image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9. 17.12.01y.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. 17.12.01y.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. 17.12.01y.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. 17.12.01y.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 17.12.01y: **cbrsup-programmable_firmware.17.12.01y.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. 17.12.01y.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware. 17.12.01y.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.
```

```
17.12.01y.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. 17.12.01y.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware. 17.12.01y.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. 17.12.01y.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware. 17.12.01y.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. 17.12.01y.SPA.pkg
   image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware. 17.12.01y.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. 17.12.01y.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware. 17.12.01y.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.
17.12.01y.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. 17.12.01y.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 harddisk:
boot harddisk:cbrsup-universalk9. 17.12.01y.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 harddisk:
boot harddisk:cbrsup-universalk9. 17.12.01y.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 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.

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware. 17.12.1y.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware. 17.12.01y.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name harddisk/cbrsup-programmable_firmware.
17.12.01y.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name harddisk/cbrsup-programmable_firmware.
 17.12.01y.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
        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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1y, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01y.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01y.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01y.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.17.12.01y.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
```

Step 4 Reload both the SUPs.

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

Before you begin

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 Dublin 17.12.1y.

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-confirguration to be compliant with the latest Cisco IOS XE Dublin 17.12.1y. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Dublin 17.12.1y image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01y.SPA.bin
```

Step 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:
```

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

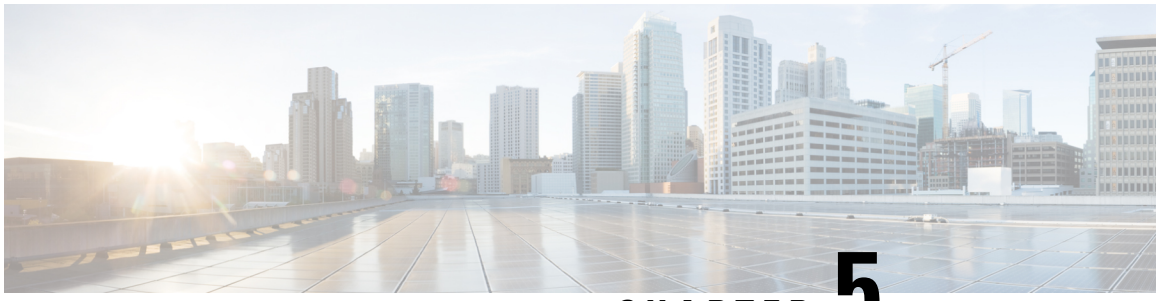
```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

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.
```



CHAPTER 5

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1z1

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 is automatically updated to the new version after upgrading to Cisco IOS XE Dublin 17.12.1z1. 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 **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 are required to update to support Cisco IOS XE Dublin 17.12.1z1. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1z1 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 10.

Table 5: 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(9r)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	00020006	**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.

- Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1z1, on page 91
- Upgrading Supervisor CPLD Firmware, on page 98
- Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 103

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1z1

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1z1, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 107 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 108 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1z1.

Upgrading using reload

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 17.12.1z1 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 17.12.01z1: cbrsup-universalk9.17.12.01z1.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1z1**.

```
mkdir harddisk:XE-1712-1z1
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1z1**.

```
mkdir stby-harddisk:XE-1712-1z1
```

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

```
copy <location>/cbrsup-cciomdsup.17.12.01z1.SPA.pkg harddisk:/
XE-1712-1x/cbrsup-cciomdsup.17.12.01z1.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-1712-1y/cbrsup-cciomdsup.17.12.01z1.SPA.pkg
stby-harddisk:/XE-1712-1y/cbrsup-cciomdsup. 17.12.01z1.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-1712-1y/cbrsup-programmable_firmware.17.12.01z1.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1y/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 17.12.01z1. **cbrsup-universalk9. 17.12.01z1.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1z1. **cbrsup-programmable_firmware. 17.12.01z1.SPA.pkg**

Procedure

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 Dublin 17.12.1z1 IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01z1.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.12.01z1.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1z1 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-universalk9.17.12.01z1.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.12.01z1.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.17.12.01z1.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.17.12.01z1.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1z1 image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.12.01z1.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.
- If you are upgrading from 17.6.1z1 to 17.12.1z1 with netconf enabled, the netconf-yang may not work after the upgrade. To resolve this, you need to re-configure the netconf-yang as below:

```
CBR8(config)#netconf-yang ssh server algorithm hostkey ssh-rsa
CBR8(config)#no netconf-yang
CBR8(config)#netconf-yang
CBR8(config)#end
```

- ISSU to Cisco IOS XE Dublin 17.12.1z1 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 3.

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 = 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 17.12.1z1: **cbrsup-universalk9.17.12.01z1.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1z1: **cbrsup-programmable_firmware.17.12.01z1.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.12.01z1.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1z1 image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1z1 image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1z1 image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01z1.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1z1 image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.12.01z1.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.17.12.01z1.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.17.12.01z1.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-universalk9.17.12.01z1.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 17.12.01z1: **cbrsup-programmable_firmware.17.12.01z1.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.17.12.01z1.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01z1.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.17.12.01z1.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.17.12.01z1.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z.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.17.12.01z1.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z1.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.17.12.01z1.SPA.pkg
   image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware.17.12.01z1.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.17.12.01z1.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z1.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.17.12.01z1.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-universalk9.17.12.01z1.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01z1.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01z1.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.

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware.17.12.1z1.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.12.01z1.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01z1.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01z1.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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1z1, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01z1.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01z1.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01z1.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.17.12.01z1.SPA.pkg r1
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

Step 4 Reload both the SUPs.

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

Before you begin

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 Dublin 17.12.1z1.

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-confirguration to be compliant with the latest Cisco IOS XE Dublin 17.12.1z1. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Dublin 17.12.1z1 image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01z1.SPA.bin
```

Step 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:
```

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

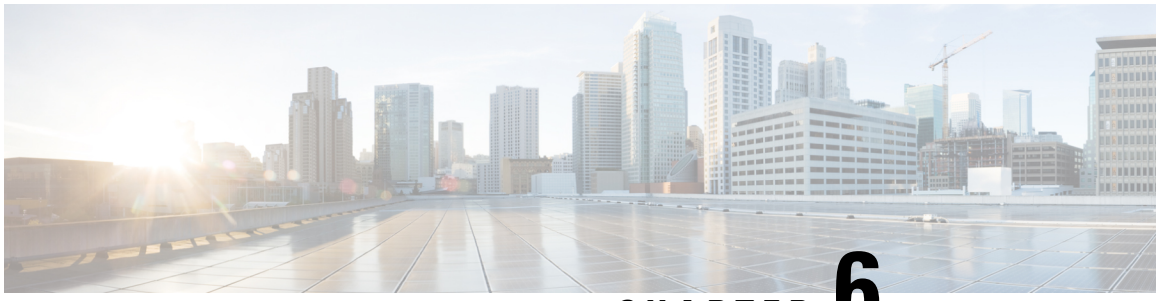
```
Router#copy harddisk:SavedConfig.txt_remap_controller startup-config
```

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.
```



CHAPTER 6

Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Dublin 17.12.1z2

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 is automatically updated to the new version after upgrading to Cisco IOS XE Dublin 17.12.1z2. 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 **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 are required to update to support Cisco IOS XE Dublin 17.12.1z2. All other firmware versions are either not upgradable by the customer, or not required to be upgraded for Cisco IOS XE Dublin 17.12.1z2 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 10.

Table 6: 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(9r)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	00020006	**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.

- Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1z2, on page 113
- Upgrading Supervisor CPLD Firmware, on page 120
- Upgrading cBR CCAP 8x10G Remote PHY Digital Physical Interface Card, on page 125

Upgrading from Cisco IOS XE 16.x and later releases to Cisco IOS XE Dublin 17.12.1z2

Prerequisites and Considerations

Manual ROMMON Upgrade

If you are upgrading from Cisco IOS XE Everest 16.8.1 or later, manual ROMMON upgrade is not required.

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1z2, manual ROMMON upgrade is necessary. Refer to the Section Manual ROMMON Upgrade, on page 129 for instructions.

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

Starting with Cisco IOS XE Bengaluru 17.6.1, Cisco introduced 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. However, there are specific configuration considerations when using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards.

If you are upgrading from Cisco IOS XE Amsterdam 17.3.1 or earlier, and you are using 8x10G Remote PHY Digital Physical Interface Card (D-PIC) with CBR-CCAP-LC-G2-R linecards, see the section entitled Downstream-Controller Remapping (CBR-CCAP-LC-G2-R with 8x10G DPIC), on page 130 below. Further, it is recommended that you contact your local Cisco representative for assistance before upgrading to Cisco IOS XE Dublin 17.12.1z2.

Upgrading using reload

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 17.12.1z2 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 17.12.01z2: cbrsup-universalk9.17.12.01z2.SPA.pkgs.tar.
- Untar the archive on the local server.

Procedure

Step 1 Create a new folder on the cBR-8: **harddisk:XE-1712-1z2**.

```
mkdir harddisk:XE-1712-1z2
```

Step 2 Create a new folder on the cBR-8: **stby-harddisk:XE-1712-1z2**.

```
mkdir stby-harddisk:XE-1712-1z2
```

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

```
copy <location>/cbrsup-cciomdsup.17.12.01z2.SPA.pkg harddisk:/
XE-1712-1x/cbrsup-cciomdsup.17.12.01z2.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-1712-1y/cbrsup-cciomdsup.17.12.01z2.SPA.pkg
stby-harddisk:/XE-1712-1y/cbrsup-cciomdsup. 17.12.01z2.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-1712-1y/cbrsup-programmable_firmware.17.12.01z2.SPA.pkg
```

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

```
conf t
no boot system
boot system harddisk:/XE-1712-1y/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 17.12.01z2. **cbrsup-universalk9. 17.12.01z2.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1z2. **cbrsup-programmable_firmware. 17.12.01z2.SPA.pkg**

Procedure

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 Dublin 17.12.1z2 IOS image to harddisk: and stby-harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01z2.SPA.bin harddisk:
copy <location>/cbrsup-universalk9.17.12.01z2.SPA.bin stby-harddisk:
```

Step 2 Verify the Cisco IOS XE Dublin 17.12.1z2 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-universalk9.17.12.01z2.SPA.bin
verify /md5 stby-harddisk:cbrsup-universalk9.17.12.01z2.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.17.12.01z2.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.17.12.01z2.SPA.pkg
```

Step 5 Configurethe system to boot with the Cisco IOS XE Dublin 17.12.1z2 image.

```
configure terminal
no boot system
boot system harddisk:cbrsup-universalk9.17.12.01z2.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.
- If you are upgrading from 17.6.1z1 to 17.12.1z2 with netconf enabled, the netconf-yang may not work after the upgrade. To resolve this, you need to re-configure the netconf-yang as below:

```
CBR8(config)#netconf-yang ssh server algorithm hostkey ssh-rsa
CBR8(config)#no netconf-yang
CBR8(config)#netconf-yang
CBR8(config)#end
```

- ISSU to Cisco IOS XE Dublin 17.12.1z2 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 3.

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 = 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 17.12.1z2: **cbrsup-universalk9.17.12.01z2.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 17.12.1z2: **cbrsup-programmable_firmware.17.12.01z2.SPA.pkg**

- Copy the target consolidated image **cbrsup-universalk9.17.12.01z2.SPA.bin** to the active SUP in the same directory of the **packages.conf** file that the system is booted up with.

SUMMARY STEPS

1. Copy Cisco IOS XE Dublin 17.12.1z2 image to harddisk:.
2. Verify Cisco IOS XE Dublin 17.12.1z2 image against the md5 hash as provided in the Cisco.com Software center.
3. Copy the hardware programmable devices upgrade package to harddisk: if the file has not been copied already.
4. Verify the hardware programmable devices upgrade package against the md5 hash as provided in the Cisco.com Software center.
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.
6. Perform ISSU.
7. To monitor the ISSU progress, use the command below.
8. Use these CLI to check status after ISSU.

DETAILED STEPS

Procedure

Step 1 Copy Cisco IOS XE Dublin 17.12.1z2 image to harddisk:.

```
copy <location>/cbrsup-universalk9.17.12.01z2.SPA.bin harddisk:<sub-pkg-dir>/
```

Step 2 Verify Cisco IOS XE Dublin 17.12.1z2 image against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 harddisk:<sub-pkg-dir>/cbrsup-universalk9.17.12.01z2.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.17.12.01z2.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.17.12.01z2.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-universalk9.17.12.01z2.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 17.12.01z2: **cbrsup-programmable_firmware.17.12.01z2.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.17.12.01z2.SPA.pkg harddisk:
copy ftp://<location>/cbrsup-programmable_firmware.17.12.01z2.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:

SUMMARY STEPS

1. Set the config register.
2. Run the following command to prepare for R0 upgrade.
3. Run the following command to prepare for R1 upgrade.
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.
5. Set SUP0 to ROMMON using the following command.
6. Power cycle the SUP0 to set it to ROMMON.
7. Boot SUP0 into IOS XE using SUP0 console connection.
8. Set SUP1 to ROMMON using the following command.
9. Power cycle the SUP1 to set it to ROMMON.
10. Boot SUP1 into IOS XE using SUP1 console connection.
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.
12. Reload the system by issuing **reload** command on the active SUP.
13. Power cycle both supervisors.
14. Verify if the new version matches the following on both SUPs.
15. Boot both SUP0 and SUP1 into IOS XE using SUP0 and SUP1 console.
16. Once the system is up and running, perform the following checks.

DETAILED STEPS

Procedure

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.17.12.01z2.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.17.12.01z2.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z.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.17.12.01z2.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z2.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.17.12.01z2.SPA.pkg
   image
  Upgrade from assigned pkg file /harddisk/cbrsup-programmable_firmware.17.12.01z2.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.17.12.01z2.SPA.pkg
   image on SUP0, SUP0 is active.
  Upgrade from assigned pkg file harddisk/cbrsup-programmable_firmware.17.12.01z2.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.17.12.01z2.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-universalk9.17.12.01z2.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01z2.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 harddisk:
boot harddisk:cbrsup-universalk9.17.12.01z2.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.

Procedure

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...
 ==== =================== ====================================================

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   00:00:26  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
==== ====================== ====== ============================================
```

Upgrading Uboot For CBR-CCAP-LC-40G

Procedure

Step 1 Copy the package file (cbrsup-programmable_firmware.17.12.1z2.SSA.pkg) to the active SUP's harddisk.

```
copy <location>/cbrsup-programmable_firmware.17.12.01z2.SPA.pkg harddisk:
```

Step 2 Upgrade Uboot using the following CLI command:

```
upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01z2.SSA.pkg
```

Example:

```
Router#upgrade hw-programmable cable <slot#> rommon pkg_name
harddisk/cbrsup-programmable_firmware.17.12.01z2.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
...
```

Manual ROMMON Upgrade

Before you begin

If you are upgrading from Cisco IOS XE Everest 16.6.x or Cisco IOS XE Fuji 16.7.x to Cisco IOS XE Dublin 17.12.1z2, perform the following steps to upgrade SUP ROMMON manually.

Procedure

Step 1 Download hardware programmable devices upgrade package file **cbrsup-programmable_firmware.17.12.01z2.SPA.pkg** from the following Cisco.com Software Center URL: https://software.cisco.com/download/home/286283913/type

Step 2 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.17.12.01z2.SPA.pkg
```

Step 3 Upgrade SUP ROMMON.

```
Router#upgrade rom-mon file harddisk:cbrsup-programmable_firmware.17.12.01z2.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.17.12.01z2.SPA.pkg r1
Wait for the following output on the console:
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP
```

Step 4 Reload both the SUPs.

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

Before you begin

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 Dublin 17.12.1z2.

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-confirguration to be compliant with the latest Cisco IOS XE Dublin 17.12.1z2. 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.

Procedure

Step 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
```

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

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

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

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

Step 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.

Step 5 **Modify the remapped configuration file to specify the Cisco IOS XE Dublin 17.12.1z2 image in the boot parameter.**

```
boot system harddisk:cbrsup-universalk9.17.12.01z2.SPA.bin
```

Step 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:
```

Step 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.
```