



# Upgrading the Cisco cBR-8 Router System to Cisco IOS XE Fuji 16.7.1b

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

- [Upgrading from Cisco IOS-XE 3.18.1aSP to Cisco IOS XE Fuji 16.7.1b, on page 1](#)
- [Upgrading from Cisco IOS XE Everest 16.x to Cisco IOS XE Fuji 16.7.1b, on page 9](#)
- [Upgrading from Cisco IOS XE Everest 16.6.1 to Cisco IOS XE Fuji 16.7.1b with ISSU, on page 15](#)

## Upgrading from Cisco IOS-XE 3.18.1aSP to Cisco IOS XE Fuji 16.7.1b

The correct firmware versions are listed in the tables below. Use the commands in the tables to verify the firmware versions.

**Table 1: Firmware Versions**

Internal Name	Component Name	Correct Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G Rommon CPLD	16052011	<b>show platform</b>
Supervisor ROMMON	CBR-CCAP-SUP-160G Rommon	16.6(1r)S	<b>show platform</b>
Linecard CPLD	CBR-CCAP-LC-40G CPLD	00000025	<b>show platform</b>
Linecard Uboot	CBR-CCAP-LC-40G Rommon	2011.03.18	<b>show platform</b>
Linecard PSOC	CBR-CCAP-LC-40G PSOC	4.6	<b>show platform diag</b>
Docsis 3.0 downstream module PSOC	CBR-CCAP-LC-40G Gemin1 PSOC	3.9	<b>show platform diag</b>

Docsis 3.0 downstream module CPLD	CBR-CCAP-LC-40G Gemini1 CPLD	0.7	<b>show platform diag</b>
Docsis 3.0 downstream module Micro	CBR-CCAP-LC-40G Gemini1 Micro	1.E	<b>show platform diag</b>
Docsis 3.0 downstream module FPGA	CBR-CCAP-LC-40G Gemini1 Apollo	2.F	<b>show platform diag</b>
Docsis 3.1 downstream module PSOC	CBR-CCAP-LC-40G Gemini2 PSOC	4.4	<b>show platform diag</b>
Docsis 3.1 downstream module CPLD	CBR-CCAP-LC-40G Gemini2 CPLD	0.7	<b>show platform diag</b>
Docsis 3.1 downstream module Micro	CBR-CCAP-LC-40G Gemini2 Micro	3.1A	<b>show platform diag</b>
Docsis 3.1 downstream module FPGA	CBR-CCAP-LC-40G Gemini2 Apollo	4.484B	<b>show platform diag</b>
RF-PIC Firmware	CBR-RF-PIC	00000746	<b>show platform diag</b>
RF-PROT-PIC Firmware	CBR-RF-PROT-PIC	0000071E	<b>show platform diag</b>

## Upgrading Manually

### Before you begin

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

- The firmware versions are not lower than the ones listed in [Firmware versions](#) table. Otherwise upgrade the firmware versions, see [Upgrading the Cisco cBR-8 Router Firmware](#).
- Make sure Line Card CPLD version is 00000025. If the value is lower than 00000025, follow this procedure to upgrade the Line Card CPLD to version 00000025 first:  
[http://www.cisco.com/c/en/us/td/docs/cable/cbr/upgrade/guide/b\\_cbr\\_upgrade-3-18s/b\\_cbr\\_upgrade\\_hardware.html#task\\_E0B78DCCC88A41749DA2783736CE37A6](http://www.cisco.com/c/en/us/td/docs/cable/cbr/upgrade/guide/b_cbr_upgrade-3-18s/b_cbr_upgrade_hardware.html#task_E0B78DCCC88A41749DA2783736CE37A6)
- Download two files from the following Cisco.com Software Center URL:  
<https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>
  - IOS XE Software Version 16.7.1b: **cbrsup-universalk9.16.07.01b.SPA.bin**

- IOS XE Hardware Programmable Devices Version 16.7.1:  
**cbrsup-programmable\_firmware.16.07.01.SPA.pkg**

- Console access for both SUPs are required.
- Ability to power cycle the chassis. Power cycle chassis is required to upgrade Supervisor CPLD.



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

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**Step 1** Copy Cisco IOS-XE Fuji 16.7.1b package to bootflash: and stby-bootflash:.

```
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin bootflash:
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin stby-bootflash:
```

**Step 2** Verify Cisco IOS-XE Fuji 16.7.1b package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
verify /md5 stby-bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
```

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

```
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg harddisk:
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg stby-harddisk:
```

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

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.07.01.SPA.pkg
verify /md5 stby-harddisk:cbrsup-programmable_firmware.16.07.01.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** Configure the chassis to boot the system with Cisco IOS-XE Fuji 16.7.1b image.

```
Configure terminal
no boot system
boot system bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
end
write mem
```

**Step 7** Reload the cBR-8 router.

```
Reload
```

**Note** The system will reload twice.

**Step 8** Remove the secondary line card from line card redundancy group if redundancy is configured.

```
Configure terminal
redundancy
linecard-group 0 internal-switch
no member slot 0 secondary
end
```

**Step 9** Configure config-register to manual boot.

```
Configure terminal
config-register 0x0
end
```

**Step 10** Upgrade Docsis 3.1 downstream modules in all the slots.

```
upgrade hw-programmable cable <slot> dsphy auto
pkg_name/harddisk/cbrsup-programmable_firmware.16.07.01.SPA.pkg
```

**Step 11** Upgrade Supervisor 0/1 CPLD.

```
upgrade hw-programmable cable r0 viper pkg_name
/harddisk/cbrsup-programmable_firmware.16.07.01.SPA.pkg
upgrade hw-programmable cable r1 viper pkg_name
/harddisk/cbrsup-programmable_firmware.16.07.01.SPA.pkg
```

**Step 12** Make sure the line card Docsis 3.1 downstream modules upgrade has completed successfully by examining the system log:

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

**Step 13** Reload the cBR-8 router. Answer **no** to not save the configuration.

```
cBR8#reload
System configuration has been modified. Save? [yes/no]: no
Proceed with reload? [confirm]
cBR8#
```

**Step 14** Configure to automatic boot by typing following command in **rommon** > prompt.

```
rommon 1 > confreg 0x2102
rommon 2 > sync
rommon 3 >
```

**Step 15** Power cycle chassis, wait for both SUPs to auto boot to 16.7.1b image.

---

### 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 Ansible

### Before you begin

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

1. Prepare Ansible Server, operating system can be Linux/Windows/Mac, with docker service pre-installed.  
For docker installation guide, please check following link:

<https://docs.docker.com/engine/installation/>

2. Check if the chassis supports AAA or local authentication with username & password. If not configured, use following CLI to enable local authentication, for example:

```
Cbr8#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
cBR8(config)#username cisco privilege 15 password 0 cisco
cBR8(config)#enable secret cisco
cBR8(config)#line vty 0 15
cBR8(config)#login local
cBR8(config)#exec-timeout 0 0
cBR8(config)#session-timeout 0
cBR8(config)#exit
```

3. If SSH is not enabled, use following CLI to enable SSH on cBR8, skip the domain name configuration if already configured.

```
cBR8(config)# ip domain-name domain.com
cBR8(config)#crypto key generate rsa
The name for the keys will be: cbr8.domain.com
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...
[OK] (elapsed time was 0 seconds)

cBR8(config)#end
cBR8#copy running-config startup-config
cBR8#show ip ssh
SSH Enabled - version 1.99
```

4. Check if there is enough bootflash disk space on both SUP (>1.8GB).

5. Verify if the Ansible server can access cBR-8 using SSH.

```
[ansible@server ~]$ ssh cisco@100.0.0.1
The authenticity of host '100.0.0.1 (100.0.0.1)' can't be established.
RSA key fingerprint is c3:be:8f:cf:76:f4:31:4b:80:d8:2e:f0:76:6d:ff:bf.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '100.0.0.1' (RSA) to the list of known hosts.
Password:
cBR8#
```

6. Download three files from the following Cisco.com Software Center URL:

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

- IOS XE Software Version 16.7.1b: **cbrsup-universalk9.16.07.01b.SPA.bin**
- IOS XE Hardware Programmable Devices Version 16.7.1:  
**cbrsup-programmable\_firmware.16.07.01\_compat\_with\_3.18SP.SSA.pkg**
- Ansible upgrade script: **cbr-8\_upgrade\_ansible\_16.7.1a.tar**

7. Copy IOS XE Software package and IOS XE Hardware Programmable Devices package to TFTP/FTP/SCP server or usb disk. Upload Ansible upgrade script to Ansible server.

8. Console access for both SUPs are required.
9. Ability to power cycle the chassis. Power cycle chassis is required to upgrade Supervisor CPLD.

---

**Step 1** Run following CLI on the Ansible server to create the docker image.

```
docker import cbr-8_upgrade_ansible_16.7.1a.tar ansible_mop
```

**Step 2** Start docker container with the image and enter the container shell.

```
docker run -it --name=mop ansible_mop /bin/bash
```

**Step 3** Change current directory to the playbook folder for this software and firmware upgrade.

```
cd /opt/cbr-8_upgrade_ansible_3.18sp_to_16.7.1a
```

**Step 4** Modify hosts file to add target cBR-8 ip addresses, can be multiple lines if customer wants to upgrade firmware on multiple cBR8 routers simultaneously, sample file is as below:

```
[cbr]
100.110.110.110
100.185.185.185
```

**Step 5** Modify secrets.yaml file, change the username/password/enable password to reflect the real username/password/enable configuration for target cBR. If no enable password is set, just keep the sample **cisco** for **auth\_pass**.

```
creds:
  username: cisco
  password: cisco
  auth_pass: cisco
```

**Step 6** Modify upgrade\_vars.yaml file to indicate the firmware package name, ios image name and source (Optional if the package files are already on cbr-8 harddisk:).

```
file_info:
  image_name: cbrsup-universalk9.16.07.01b.SPA.bin
  pkg_name: cbrsup-programmable_firmware.16.07.01_compat_with_3.18SP.SSA.pkg
  #if the pkg file in the TB, just modify dst_dir to the pkg location
  #the four examples shows the usage
  #example1
  #src_dir: "ftp://username:password@20.11.0.42:~/ "
  #example2
  #src_dir: "tftp://192.168.3.47/ "
  #example3
  #src_dir: "usb0:"
  #example4
  src_dir: "harddisk:"

slot_info:
  #slot_to_upgrade: [2,3,6,7,8,9]
  slot_to_upgrade: "ALL"
```

**Step 7** Modify md5\_map.yaml file in the folder **version\_file** to add new image label and md5 value.

```
pkg_md5:
  cbrsup-programmable_firmware.16.07.01_compat_with_3.18SP.SSA.pkg: 292e26e20b038147f3443a5977415465
image_md5:
  cbrsup-universalk9.16.07.01b.SPA.bin: 1bc67f5266665043bd9336cacad1bac6
```

**Step 8** Execute following command to start the playbook to upgrade firmware.

```
./run_mop_upgrade
```

**Step 9** Reload the system by typing **reload** on the active SUP and answering **no** to not save the configuration.

```
cBR8#reload
System configuration has been modified. Save? [yes/no]: no
Proceed with reload? [confirm]
cBR8#
```

**Step 10** From ROMMON issue the following command on both SUPs.

```
rommon 1 > confreg 0x2102
rommon 2 > sync
rommon 3 >
```

**Step 11** Power cycle chassis, wait for both SUPs to auto boot to 16.7.1b image.

```
rommon 1>
Initializing Hardware ...

?

System Bootstrap, Version 16.6(2r)S, RELEASE SOFTWARE
Copyright (c) 1994-2016 by cisco Systems, Inc.

Current image running: Boot ROM1

Last reset cause: PowerOn

Viper version register: 0x16052011
Set Chassis Type to 13RU
Cisco cBR-8 platform with 50331648 Kbytes of main memory
```

**Step 12** After system bootup and stable, execute following command to start the playbook to check the upgrade result.

```
./run_mop_upgrade_post

...
TASK [debug] *****
Friday 17 March 2017 14:30:25 +0800 (0:00:00.014) 0:01:10.187 *****
ok: [100.185.185.185] => {
  "msg": "Mop upgrade passed!"
}
PLAY RECAP *****
100.185.185.185 : ok=120 changed=1 unreachable=0 failed=0
```



**Step 13** Exit the container if finished upgrading this time to stop the container.

```
exit
```

**Step 14** If user wants to start the container again, use following command to start the container and enter its shell.

```
docker start mop
docker attach mop
```

**Step 15** All the file changes are kept in the container, user can run step 4-11 to upgrade again.

## Upgrading from Cisco IOS XE Everest 16.x to Cisco IOS XE Fuji 16.7.1b

The correct firmware versions are listed in the tables below. Use the commands in the tables to verify the firmware versions.

**Table 2: Firmware Versions**

Internal Name	Component Name	Correct Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G Rommon CPLD	16052011	<b>show platform</b>
Supervisor ROMMON	CBR-CCAP-SUP-160G Rommon	16.6(1r)S	<b>show platform</b>
Linecard CPLD	CBR-CCAP-LC-40G CPLD	00000025	<b>show platform</b>
Linecard Uboot	CBR-CCAP-LC-40G Rommon	2011.03.18	<b>show platform</b>
Linecard PSOC	CBR-CCAP-LC-40G PSOC	4.6	<b>show platform diag</b>
Docsis 3.0 downstream module PSOC	CBR-CCAP-LC-40G Gemin1 PSOC	3.9	<b>show platform diag</b>
Docsis 3.0 downstream module CPLD	CBR-CCAP-LC-40G Gemin1 CPLD	0.7	<b>show platform diag</b>

Docsis 3.0 downstream module Micro	CBR-CCAP-LC-40G Gemini1 Micro	1.E	<b>show platform diag</b>
Docsis 3.0 downstream module FPGA	CBR-CCAP-LC-40G Gemini1 Apollo	2.F	<b>show platform diag</b>
Docsis 3.1 downstream module PSOC	CBR-CCAP-LC-40G Gemini2 PSOC	4.4	<b>show platform diag</b>
Docsis 3.1 downstream module CPLD	CBR-CCAP-LC-40G Gemini2 CPLD	0.7	<b>show platform diag</b>
Docsis 3.1 downstream module Micro	CBR-CCAP-LC-40G Gemini2 Micro	3.1A	<b>show platform diag</b>
Docsis 3.1 downstream module FPGA	CBR-CCAP-LC-40G Gemini2 Apollo	4.484B	<b>show platform diag</b>

## Upgrading Manually

### Before you begin

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

- Download two files from the following Cisco.com Software Center URL:  
<https://software.cisco.com/download/type.html?mdfid=286283913&flowid=73842>
  - IOS XE Software Version 16.7.1b: **cbrsup-universalk9.16.07.01b.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 16.7.1: **cbrsup-programmable\_firmware.16.07.01.SPA.pkg**
- Console access for both SUPs are required.




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

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### Step 1

Copy Cisco IOS-XE Fuji 16.7.1b package to bootflash: and stby-bootflash:.

```
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin bootflash:
```

```
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin stby-bootflash:
```

**Step 2** Verify Cisco IOS-XE Fuji 16.7.1b package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
verify /md5 stby-bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
```

**Step 3** Copy the hardware programmable devices upgrade package to harddisk: and stby-harddisk:

```
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg harddisk:
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg stby-harddisk:
```

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

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.07.01.SPA.pkg
verify /md5 stby-harddisk:cbrsup-programmable_firmware.16.07.01.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** Configure the chassis to boot the system with Cisco IOS-XE Fuji 16.7.1b image.

```
Configure terminal
no boot system
boot system bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
end
write mem
```

**Step 7** Reload the cBR-8 router.

```
Reload
```

**Note** The system will reload twice.

**Step 8** Remove the secondary line card from line card redundancy group if redundancy is configured.

```
Configure terminal
redundancy
linecard-group 0 internal-switch
no member slot 0 secondary
end
```

**Step 9** Upgrade Docsis 3.1 downstream modules in all the slots.

```
upgrade hw-programmable cable <slot> dsphy micro
pkg_name/harddisk/cbrsup-programmable_firmware.16.07.01.SPA.pkg
```

**Step 10** Wait for the system log message asking the user to reload the line card that was upgraded.

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

**Step 11** Reload Docsis 3.1 downstream modules in all the slots.

```
hw slot <slot> reload
```

**Step 12** Add secondary line card into line card redundancy group.

```
configure terminal
redundancy
linecard-group 0 internal-switch
member slot 0 secondary
end
```

---

### 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 Ansible

### Before you begin

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

1. Prepare Ansible Server, operating system can be Linux/Windows/Mac, with docker service pre-installed.

For docker installation guide, please check following link:

<https://docs.docker.com/engine/installation/>

2. Check if the chassis supports AAA or local authentication with username & password. If not configured, use following CLI to enable local authentication, for example:

```
Cbr8#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
cBR8(config)#username cisco privilege 15 password 0 cisco
cBR8(config)#enable secret cisco
cBR8(config)#line vty 0 15
cBR8(config)#login local
cBR8(config)#exec-timeout 0 0
cBR8(config)#session-timeout 0
cBR8(config)#exit
```

3. If SSH is not enabled, use following CLI to enable SSH on cBR8, skip the domain name configuration if already configured.

```
cBR8(config)# ip domain-name domain.com
cBR8(config)#crypto key generate rsa
The name for the keys will be: cbr8.domain.com
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...
[OK] (elapsed time was 0 seconds)

cBR8(config)#end
cBR8#copy running-config startup-config
cBR8#show ip ssh
SSH Enabled - version 1.99
```

4. Check if there is enough bootflash disk space on both SUP (>1.8GB).
5. Verify if the Ansible server can access cBR-8 using SSH.

```
[ansible@server ~]$ ssh cisco@100.0.0.1
The authenticity of host '100.0.0.1 (100.0.0.1)' can't be established.
RSA key fingerprint is c3:be:8f:cf:76:f4:31:4b:80:d8:2e:f0:76:6d:ff:bf.
Are you sure you want to continue connecting (yes/no)? yes
```

```
Warning: Permanently added '100.0.0.1' (RSA) to the list of known hosts.
Password:
cBR8#
```

6. Download three files from the following Cisco.com Software Center URL:

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

- IOS XE Software Version 16.7.1b: **cbrsup-universalk9.16.07.01b.SPA.bin**
  - IOS XE Hardware Programmable Devices Version 16.7.1: **cbrsup-programmable\_firmware.16.07.01.SPA.pkg**
  - Ansible upgrade script: **cbr-8\_upgrade\_ansible\_16.7.1a.tar**
7. Copy IOS XE Software package and IOS XE Hardware Programmable Devices package to TFTP/FTP/SCP server or usb disk. Upload Ansible upgrade script to Ansible server.
  8. Console access for both SUPs are required.
  9. Ability to power cycle the chassis. Power cycle chassis is required to upgrade Supervisor CPLD.

- 
- Step 1** Run following CLI on the Ansible server to create the docker image.

```
docker import cbr-8_upgrade_ansible_16.7.1a.tar ansible_mop
```

- Step 2** Start docker container with the image and enter the container shell.

```
docker run -it --name=mop ansible_mop /bin/bash
```

- Step 3** Change current directory to the playbook folder for this software and firmware upgrade.

```
cd /opt/cbr-8_upgrade_ansible_16.x_to_16.7.1a
```

- Step 4** Modify hosts file to add target cBR-8 ip addresses, can be multiple lines if customer wants to upgrade firmware on multiple cBR8 routers simultaneously, sample file is as below:

```
[cbr]
100.110.110.110
100.185.185.185
```

- Step 5** Modify secrets.yaml file, change the username/password/enable password to reflect the real username/password/enable configuration for target cBR. If no enable password is set, just keep the sample **cisco** for **auth\_pass**.

```
creds:
  username: cisco
  password: cisco
  auth_pass: cisco
```

- Step 6** Modify upgrade\_vars.yaml file to indicate the firmware package name, ios image name and source (Optional if the package files are already on cbr-8 harddisk:).

```

file_info:
  image_name: cbrsup-universalk9.16.07.01b.SPA.bin
  pkg_name: cbrsup-programmable_firmware.16.07.01.SPA.pkg
  #if the pkg file in the TB, just modify dst_dir to the pkg location
  #the four examples shows the usage
  #example1
  #src_dir: "ftp://username:password@20.11.0.42:~/ "
  #example2
  #src_dir: "tftp://192.168.3.47/ "
  #example3
  #src_dir: "usb0:"
  #example4
  src_dir: "harddisk:"

slot_info:
  #slot_to_upgrade: [2,3,6,7,8,9]
  slot_to_upgrade: "ALL"

```

**Step 7** Modify md5\_map.yaml file in the folder **version\_file** to add new image label and md5 value.

```

pkg_md5:
  cbrsup-programmable_firmware.16.07.01.SPA.pkg: c99c25ae470364b905369efaec30c1f0
image_md5:
  cbrsup-universalk9.16.07.01b.SPA.bin: 1bc67f5266665043bd9336cacad1bac6

```

**Step 8** Execute following command to start the playbook to upgrade firmware.

```
./run_mop_upgrade
```

**Step 9** Exit the container if finished upgrading this time to stop the container.

```
exit
```

**Step 10** If user wants to start the container again, use following command to start the container and enter its shell.

```
docker start mop
docker attach mop
```

**Step 11** All the file changes are kept in the container, user can run step 4-11 to upgrade again.

## Upgrading from Cisco IOS XE Everest 16.6.1 to Cisco IOS XE Fuji 16.7.1b with ISSU

The correct firmware versions are listed in the tables below. Use the commands in the tables to verify the firmware versions.

Table 3: Firmware Versions

Internal Name	Component Name	Correct Version	Command
Supervisor CPLD	CBR-CCAP-SUP-160G Rommon CPLD	16052011	<b>show platform</b>
Supervisor ROMMON	CBR-CCAP-SUP-160G Rommon	16.6(1r)S	<b>show platform</b>
Linecard CPLD	CBR-CCAP-LC-40G CPLD	00000025	<b>show platform</b>
Linecard Uboot	CBR-CCAP-LC-40G Rommon	2011.03.18	<b>show platform</b>
Linecard PSOC	CBR-CCAP-LC-40G PSOC	4.6	<b>show platform diag</b>
Docsis 3.0 downstream module PSOC	CBR-CCAP-LC-40G Gemini1 PSOC	3.9	<b>show platform diag</b>
Docsis 3.0 downstream module CPLD	CBR-CCAP-LC-40G Gemini1 CPLD	0.7	<b>show platform diag</b>
Docsis 3.0 downstream module Micro	CBR-CCAP-LC-40G Gemini1 Micro	1.E	<b>show platform diag</b>
Docsis 3.0 downstream module FPGA	CBR-CCAP-LC-40G Gemini1 Apollo	2.F	<b>show platform diag</b>
Docsis 3.1 downstream module PSOC	CBR-CCAP-LC-40G Gemini2 PSOC	4.4	<b>show platform diag</b>
Docsis 3.1 downstream module CPLD	CBR-CCAP-LC-40G Gemini2 CPLD	0.7	<b>show platform diag</b>
Docsis 3.1 downstream module Micro	CBR-CCAP-LC-40G Gemini2 Micro	3.1A	<b>show platform diag</b>
Docsis 3.1 downstream module FPGA	CBR-CCAP-LC-40G Gemini2 Apollo	4.484B	<b>show platform diag</b>

**Before you begin**

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



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

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

- IOS XE Software Version 16.7.1b: **cbrsup-universalk9.16.07.01b.SPA.bin**
- IOS XE Hardware Programmable Devices Version 16.7.1: **cbrsup-programmable\_firmware.16.07.01.SPA.pkg**




---

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

---

**Step 1** Copy Cisco IOS-XE Fuji 16.7.1b package to bootflash: and stby-bootflash:.

```
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin bootflash:
copy <location>/cbrsup-universalk9.16.07.01b.SPA.bin stby-bootflash:
```

**Step 2** Verify Cisco IOS-XE Fuji 16.7.1b package against the md5 hash as provided in the Cisco.com Software center.

```
verify /md5 bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
verify /md5 stby-bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
```

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

```
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg harddisk:
copy <location>/cbrsup-programmable_firmware.16.07.01.SPA.pkg stby-harddisk:
```

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

```
verify /md5 harddisk:cbrsup-programmable_firmware.16.07.01.SPA.pkg
verify /md5 stby-harddisk:cbrsup-programmable_firmware.16.07.01.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** Upgrade Docsis 3.1 downstream modules in all the slots.

```
upgrade hw-programmable cable <slot> dsphy micro
pkg_name/harddisk/cbrsup-programmable_firmware.16.07.01.SPA.pkg
```

**Step 7** Wait for the system log message asking the user to reload the line card that was upgraded.

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

**Step 8** Before the ISSU upgrade please check and make sure:

- The cBR-8 is in Subpackage mode.
- Both SUPs are running same image from same path.
- Autoboot is enabled.
- The cBR-8 has two SUP and in SSO mode, standby SUP is in standby hot mode.
- All linecards are in normal state in LCHA group. Use **show redundancy linecard all** command, active cards should be in **Stdy Warm** state.
- There is enough bootflash disk space on both SUP.

**Step 9** Copy 16.7.1b image in the same folder of current boot package on active SUP.

**Step 10** Make sure .issu folder and config files exists on both active and standby SUP harddisk. If no such folder exists or files missing, create a new one and generate files needed.

**Step 11** Perform ISSU.

```
request platform software package install node file bootflash:cbrsup-universalk9.16.07.01b.SPA.bin
```

**Step 12** To monitor the ISSU progress, use the command below.

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

**Step 13** Use these CLI to check status after ISSU.

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

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

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

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

- b. Wait for 30 seconds.
- c. Admin perform no-shut on all OFDM channels. This may be done from a script, or from cut and paste of the CLI. There is no need to have a delay between successive no-shuts. For example:

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

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

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

---

### What to do next

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

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

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

- **show redundancy**
- **show platform**
- **show platform diag**
- **show environment**
- **show redundancy linecard all**
- **show isis neighbors**

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