Install SMU in Cisco IOS XR7

Contents

Introduction

This document describes the installation of Software Maintenance Updates (SMUs) for routers that run Cisco IOS® XR7 software versions.

✎ **Note**: Cisco IOS XR7 (also referred to as Lindt) is an XR software architecture evolution. It is currently applicable to Cisco 8000, NCS 540L, and NCS-57B1 series. A software release can contain the number 7 but still observes cXR or eXR software architecture (for example, the ASR 9000 XR 7.5.2 release is not XR7 architecture). Refer to the datasheet here for more information.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Workflow for installing the Cisco IOS XR7 Software
- Repository set up for installing operations in Cisco IOS XR7 and the upgrade process

Components Used

The information in this document is based on all routers running Cisco IOS XR7.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.
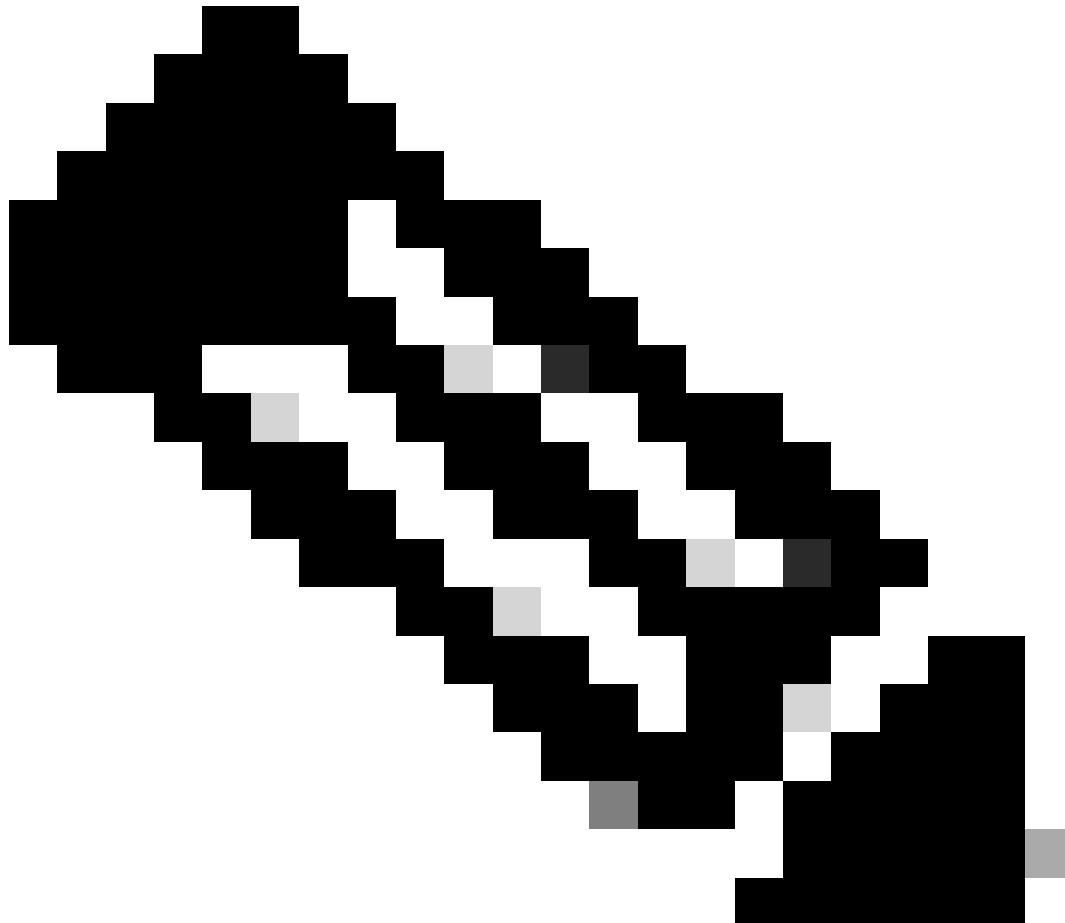
Preparation

- Download the SMU files from the [Cisco Software Download](#) page.
- Copy these SMU files from your PC to the router harddisk:/<path-to-repository> with the command **scp**.

```
#scp *.tar admin@10.124.50.24:/harddisk:/repo
(admin@10.124.50.24) Password:
8000-7.8.2.CSCwc95868   .tar                                      100%  260MB 894.1KB/s   04:
8000-7.8.2.CSCwe50868   .tar                                      100%  180KB 676.5KB/s   00:
8000-7.8.2.CSCwe67656   .tar                                      100%  259MB 734.8KB/s   06:
8000-7.8.2.CSCwh35363   .tar                                      100% 2960KB 804.6KB/s   00:
```

Note: You can also use the copy operation at the router in order to copy the files from a remote server like FTP/TFTP. [Here](#) is the copy command introduced.

- Login to the router and use two simple shell scripts in order to decompress all the SMU files you

upload.

```
RP/0/RP0/CPU0:8201#run
[node0_RP0_CPU0:~]$cd /harddisk:/repo/
[node0_RP0_CPU0:/harddisk:/repo]$ls -al
total 534524
drwxr-xr-x.  3 root root      4096 Feb  8 12:50 .
drwxrwxrwx. 19 root root      4096 Feb  8 12:41 ..
-rwxr-xr-x.  1 root root 272168960 Feb  8 11:43 8000-7.8.2.CSCwc95868   .tar
-rwxr-xr-x.  1 root root    184320 Feb  8 11:43 8000-7.8.2.CSCwe50868   .tar
-rwxr-xr-x.  1 root root 271953920 Feb  8 11:49 8000-7.8.2.CSCwe67656   .tar
-rwxr-xr-x.  1 root root   3031040 Feb  8 11:49 8000-7.8.2.CSCwh35363   .tar
[node0_RP0_CPU0:/harddisk:/repo]$
[node0_RP0_CPU0:/harddisk:/repo]$for tar in *.tar; do tar -xvf $tar; done
8000-7.8.2.CSCwc95868   .txt
8000-x86_64-7.8.2-CSCwc95868.tgz
8000-7.8.2.CSCwe50868   .txt
8000-x86_64-7.8.2-CSCwe50868.tgz
8000-7.8.2.CSCwe67656   .txt
8000-x86_64-7.8.2-CSCwe67656.tgz
8000-7.8.2.CSCwh35363   .txt
8000-x86_64-7.8.2-CSCwh35363.tgz
[node0_RP0_CPU0:/harddisk:/repo]$
[node0_RP0_CPU0:/harddisk:/repo]$for tgz in *.tgz; do tar -xvf $tgz; done
8000-x86_64-7.8.2-CSCwc95868/
8000-x86_64-7.8.2-CSCwc95868/8101-32h-cpa-sb-x86-7.8.2v1.0.4-r0.corei7_64.rpm
8000-x86_64-7.8.2-CSCwc95868/8102-64h-cpa-sb-x86-7.8.2v1.0.4-r0.corei7_64.rpm
8000-x86_64-7.8.2-CSCwc95868/8111-32eh-cpa-sb-x86-7.8.2v1.0.4-r0.corei7_64.rpm
8000-x86_64-7.8.2-CSCwc95868/8201-32fh-cpa-sb-x86-7.8.2v1.0.4-r0.corei7_64.rpm
8000-x86_64-7.8.2-CSCwc95868/8201-cpa-sb-x86-7.8.2v1.0.4-r0.corei7_64.rpm
```

Configure

Configure Local Repository

```
RP/0/RP0/CPU0:8201(config)#install
RP/0/RP0/CPU0:8201(config-install)#repository local-repo
RP/0/RP0/CPU0:8201(config-repository)#url file:///harddisk:/repo/
RP/0/RP0/CPU0:8201(config-repository)#commit
```

Verify the SMU under Repository

- Check for what components the SMU fixes.

```
RP/0/RP0/CPU0:8201#show install available
Trying to access repositories...

Package                                               Architecture      Version Repos
----------------------------------------------------- ---------------- -------------------------- -----
xr-8000-core                                          x86_64            7.8.2v1.0.1-1 local
```

```
xr-8000-core                                          x86_64                    7.8.2v1.0.1-1 local
xr-8000-cpa                                           x86_64                    7.8.2v1.0.3-1 local
xr-8000-cpa                                           x86_64                    7.8.2v1.0.4-1 local
xr-8000-cpa-npu                                       x86_64                    7.8.2v1.0.4-1 local
xr-8000-cpa-npu                                       x86_64                    7.8.2v1.0.6-1 local
xr-8000-forwarder                                     x86_64                    7.8.2v1.0.1-1 local
xr-cpa-common                                         x86_64                    7.8.2v1.0.4-1 local
xr-cpa-common                                         x86_64                    7.8.2v1.0.6-1 local
xr-cpa-driver-optics                                  x86_64                    7.8.2v1.0.1-1 local
xr-cpa-driver-optics                                  x86_64                    7.8.2v1.0.3-1 local
xr-is-is                                              x86_64                    7.8.2v1.0.2-1 local
xr-optics                                             x86_64                    7.8.2v1.0.1-1 local
xr-optics                                             x86_64                    7.8.2v1.0.2-1 local
```

- Check the SMU ID where the local repository contains this:

```
RP/0/RP0/CPU0:8201#show install fixes available
Trying to access repositories...

Available Fixes (count: 9):
Bug Id       Packages                                                  Repository
-----------  --------------------------------------------------------  ----------------------------
CSCwc95868     xr-8000-cpa-7.8.2v1.0.4-1                                 local-repo
               xr-8000-cpa-npu-7.8.2v1.0.6-1                            local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
               xr-cpa-driver-optics-7.8.2v1.0.3-1                       local-repo
CSCwe50868     xr-8000-forwarder-7.8.2v1.0.1-1                          local-repo
CSCwe54175     xr-is-is-7.8.2v1.0.2-1                                   local-repo
CSCwe54265     xr-8000-core-7.8.2v1.0.1-1                               local-repo
               xr-8000-cpa-7.8.2v1.0.3-1                                local-repo
               xr-8000-cpa-7.8.2v1.0.4-1                                local-repo
               xr-8000-cpa-npu-7.8.2v1.0.4-1                            local-repo
               xr-8000-cpa-npu-7.8.2v1.0.6-1                            local-repo
               xr-cpa-common-7.8.2v1.0.4-1                              local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
               xr-optics-7.8.2v1.0.1-1                                  local-repo
               xr-optics-7.8.2v1.0.2-1                                  local-repo
CSCwe67656     xr-8000-cpa-7.8.2v1.0.3-1                                 local-repo
               xr-8000-cpa-7.8.2v1.0.4-1                                local-repo
               xr-8000-cpa-npu-7.8.2v1.0.4-1                            local-repo
               xr-8000-cpa-npu-7.8.2v1.0.6-1                            local-repo
               xr-cpa-common-7.8.2v1.0.4-1                              local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
CSCwe90105     xr-8000-cpa-7.8.2v1.0.3-1                                 local-repo
               xr-8000-cpa-7.8.2v1.0.4-1                                local-repo
               xr-8000-cpa-npu-7.8.2v1.0.4-1                            local-repo
               xr-8000-cpa-npu-7.8.2v1.0.6-1                            local-repo
               xr-cpa-common-7.8.2v1.0.4-1                              local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
               xr-cpa-driver-optics-7.8.2v1.0.1-1                       local-repo
               xr-cpa-driver-optics-7.8.2v1.0.3-1                       local-repo
CSCwf20312     xr-8000-cpa-npu-7.8.2v1.0.4-1                             local-repo
               xr-8000-cpa-npu-7.8.2v1.0.6-1                            local-repo
               xr-cpa-common-7.8.2v1.0.4-1                              local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
CSCwf30655     xr-8000-cpa-npu-7.8.2v1.0.6-1                             local-repo
               xr-cpa-common-7.8.2v1.0.6-1                              local-repo
               xr-cpa-driver-optics-7.8.2v1.0.3-1                       local-repo
```

```
          xr-optics-7.8.2v1.0.2-1                              local-repo
CSCwh35363    xr-is-is-7.8.2v1.0.2-1                           local-repo
```

SMU Installation

SMU activation requires three operational steps:

1. Add the SMU to the filesystem with the **install package** command.
2. Activate the SMU on the system with the **install apply** command (this step requires a router reload if the SMU is a reload needed SMU).
3. After the SMU is applied, do not forget to **install commit**.

Example Install Package Operation

You have three methods in order to add the SMU to the filesystem:

Commands	Purpose
install package add cisco-CSCab12345	Install a special SMU like the Cisco bug ID CSCab12345
install package upgrade xr-core	Install the Cisco Unified Presence Server (CUPS) of SMUs in order to fix one or more special components, like the xr-core
install package upgrade	Install all the SMUs under your repository

Here is an example to install all the SMU under your repository:

```
RP/0/RP0/CPU0:8201#install  package upgrade
Thu Feb  8 13:16:48.087 +08
Install upgrade operation 1.1.1 has started
Install operation will continue in the background
RP/0/RP0/CPU0:8201#show install request
Thu Feb  8 13:17:25.744 +08

User request: install package upgrade
Operation ID: 1.1.1
State:        In progress since 2024-02-08 13:16:48 UTC+08:00

Current activity:    Verify input and download to internal repository if needed
Next activity:       Veto check
Time started:        2024-02-08 13:16:57 UTC+08:00

No per-location information.
```

Install Apply Operation

After the SMU is successfully added to the system, the show install request output shows the **State** as **Success**.

```
RP/0/RP0/CPU0:8201#show install request
Thu Feb  8 13:31:19.943 +08

User request: install package upgrade
Operation ID: 1.1.1
State:          Success since 2024-02-08 13:20:54 UTC+08:00.   <<<<<

Current activity:    Await user input
Time started:        2024-02-08 13:20:54 UTC+08:00

The following actions are available:
    install package add
    install package remove
    install package upgrade
    install package downgrade
    install package abort latest
    install package abort all-since-apply
    install apply reload

Least impactful apply method: install apply reload
```

Then you can activate the SMU with the command **install apply**.

```
RP/0/RP0/CPU0:8201#install apply synchronous
Thu Feb  8 13:35:18.600 +08
Once the packaging dependencies have been determined, the install operation may have to reload the syst
If you want more control of the operation, then explicitly use 'install apply restart' or 'install appl
Continue? [yes/no]:[yes] yes
Starting:
  install apply reload
Atomic change 1.1
Press Ctrl-C to return to the exec prompt. This will not cancel the install operation

Current activity: Initializing
Current activity: Apply by reload .
```

Install Commit Operation

In order to make an SMU activation persistent across reloads, you must commit the change with the **install commit** command.

Here is an example:

```
RP/0/RP0/CPU0:8201#show install active summary
Thu Feb  8 13:46:09.237 +08
Active Packages:    XR: 201    All: 1457
```

```
Label:              7.8.2
Software Hash:      a15e0ebf78fcb8390810ac451cd76935097c3d48b2907a4030dc59ead5ef8b9d

Optional Packages                                            Version
------------------------------------------------------- ---------------------------
xr-8000-l2mcast                                              7.8.2v1.0.0-1
xr-8000-mcast                                                7.8.2v1.0.0-1
xr-8000-netflow                                              7.8.2v1.0.0-1
xr-bgp                                                       7.8.2v1.0.0-1
xr-ipsla                                                     7.8.2v1.0.0-1
xr-is-is                                                     7.8.2v1.0.2-1
xr-lldp                                                      7.8.2v1.0.0-1
xr-mcast                                                     7.8.2v1.0.0-1
xr-mpls-oam                                                  7.8.2v1.0.0-1
xr-netflow                                                   7.8.2v1.0.0-1
xr-ospf                                                      7.8.2v1.0.0-1
xr-perf-meas                                                 7.8.2v1.0.0-1
xr-perfmgmt                                                  7.8.2v1.0.0-1
xr-track                                                     7.8.2v1.0.0-1

Mandatory Packages with Active Bugfixes                      Version
------------------------------------------------------- ---------------------------
xr-8000-core                                                7.8.2v1.0.1-1
xr-8000-cpa                                                  7.8.2v1.0.4-1
xr-8000-cpa-npu                                             7.8.2v1.0.6-1
xr-8000-forwarder                                           7.8.2v1.0.1-1
xr-cpa-common                                               7.8.2v1.0.6-1
xr-cpa-driver-optics                                        7.8.2v1.0.3-1
xr-optics                                                   7.8.2v1.0.2-1

Active Fixes (count: 9):
  CSCwc95868    : xr-8000-cpa, xr-8000-cpa-npu, xr-cpa-common, xr-cpa-driver-optics
  CSCwe50868    : xr-8000-forwarder
  CSCwe54175    : xr-is-is
  CSCwe54265    : xr-8000-core, xr-8000-cpa, xr-8000-cpa-npu, xr-cpa-common, xr-optics
  CSCwe67656    : xr-8000-cpa, xr-8000-cpa-npu, xr-cpa-common
  CSCwe90105    : xr-8000-cpa, xr-8000-cpa-npu, xr-cpa-common, xr-cpa-driver-optics
  CSCwf20312    : xr-8000-cpa-npu, xr-cpa-common
  CSCwf30655    : xr-8000-cpa-npu, xr-cpa-common, xr-cpa-driver-optics, xr-optics
  CSCwh35363    : xr-is-is
RP/0/RP0/CPU0:8201#
RP/0/RP0/CPU0:8201#install commit
Thu Feb  8 13:46:16.209 +08
Install commit operation 1 has started
Install operation will continue in the background
```

You can also use the command show install request in order to check the commit state.

```
RP/0/RP0/CPU0:8201#show install request
Thu Feb  8 13:47:56.727 +08

User request: install commit
Operation ID: 1
State:         Success since 2024-02-08 13:46:40 UTC+08:00

Current activity:    No install operation in progress

The following actions are available:
```

```
install package add
install package remove
install package upgrade
install package downgrade
install package replace
install package rollback
install replace
install rollback
install source
```

Verify

Use these commands in order to verify the commit software and active software. Usually, the hash values are equal.

If they are not, you can forget to **install commit**.

```
RP/0/RP0/CPU0:8201#show install committed summary  | in Hash
Thu Feb  8 13:49:32.854 +08
Software Hash:      a15e0ebf78fcb8390810ac451cd76935097c3d48b2907a4030dc59ead5ef8b9d
RP/0/RP0/CPU0:8201#
RP/0/RP0/CPU0:8201#show install active summary | in Hash
Thu Feb  8 13:49:43.616 +08
Software Hash:      a15e0ebf78fcb8390810ac451cd76935097c3d48b2907a4030dc59ead5ef8b9d
RP/0/RP0/CPU0:8201#
```

Troubleshoot

These are some commands that can help you to understand the install process, status, and whether there are any errors.

Commands	Purpose
show install request [verbose]	Check the install process status
show install log [detail]	Check the log information for the installation process
show install history table	Show a summary table of install operations
show install history id <ID> [verbose]	Show a specific transaction ID option log
show tech-support install	Generate the TAC Support File