System Setup and Software Installation Guide for Cisco Optical Site Manager, IOS XR

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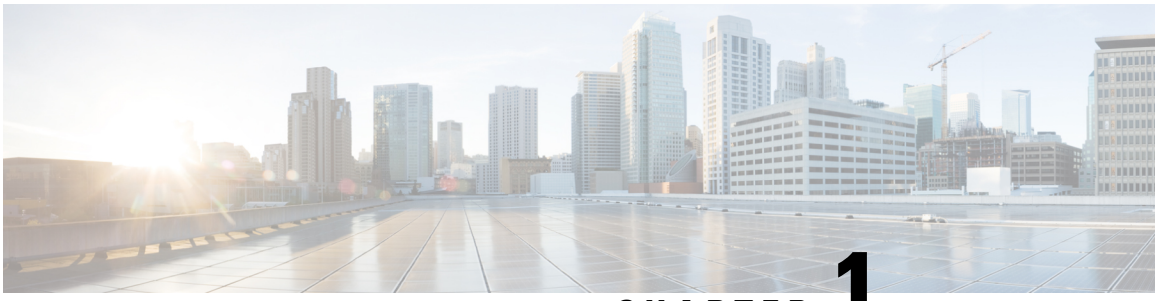


CHAPTER 1

Cisco Optical Site Manager Overview

This chapter gives us an overview of the Cisco Optical Site Manager.

- Cisco Optical Site Manager Overview, on page 1

Cisco Optical Site Manager Overview

Cisco Optical Site Manager is an application that allows you to view and access the topology of all the optical devices located in the same optical site. It represents ROADM functionality by aggregating any transponder or muxponder (or optical transceiver in general) present in the same location across supported platforms, including NCS 1000 and NCS 2000 devices.

Cisco Optical Site Manager enables software-defined networks to automate site operations. Its site aggregation feature for Optical Sites includes NCS 1000 and NCS 2000 devices connected to the network.

Cisco Optical Site Manager provides the following features:

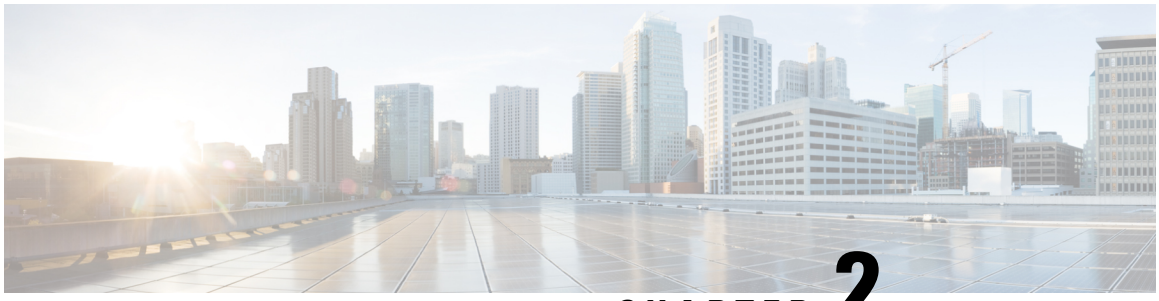
1. **Site Aggregation for Optical Sites:** Cisco Optical Site Manager allows site aggregation for Optical Sites with NCS 1000 devices, such as NCS 1010, NCS 1014, NCS 1004, and NCS 1001, as well as supported NCS 2000 devices. This feature provides a clear view of the topology of the optical site and the devices connected to it. Cisco Optical Site Manager also allows abstraction of OLS site (Optical Line System), OT site (Optical Terminal), and/or OLS+OT site.
2. **Site-Level Management:** Cisco Optical Site Manager collects and manages site-level information, including inventory details, site topology, performance monitoring, and correlated alarms for both NCS 1000 and NCS 2000 devices.
3. **Web-Based User Interface:** Cisco Optical Site Manager offers a web-based user interface (Web UI) that provides improved management control for NCS 1000 and NCS 2000 devices and their configurations. This interface allows you to easily view the layout of chassis, cards, and passive devices. Additionally, you can check the active and acknowledged alarms for the NCS 1000 and NCS 2000 devices.
4. **High Availability:** Cisco Optical Site Manager can be configured with High Availability on two separate devices of the same network. This ensures that node manageability will continue to operate even if one Cisco Optical Site Manager hosting device fails.
5. **Performance Monitoring:** Cisco Optical Site Manager enables you to keep track of the performance of different cards and chassis hosted on NCS 1000 and NCS 2000 devices. You can access both current and historical performance monitoring counters at various intervals. Additionally, you can verify connections and perform loopbacks.

For more information about Cisco Optical Site Manager, see the data sheet.

PART I

Install and Setup for NCS 1000

- Install Cisco Optical Site Manager on NCS 1000, on page 5
- Configure Cisco Optical Site Manager on NCS 1000, on page 17
- Setup Cisco Optical Site Manager on NCS 1000, on page 47



CHAPTER 2

Install Cisco Optical Site Manager on NCS 1000

This chapter describes the Cisco Optical Site Manager installation on NCS 1000.

Table 1: Feature History

Feature Name	Release Information	Feature Description
NCS 2000 Node Upgrade	Cisco NCS 2000 Release 25.1.1	The NCS 2000 nodes will be upgraded from R11.x.x to R25.1.1 to transition the NCS 2000 node management from CTC to COSM. The source releases that upgrade to R25.1.1 SSON are: • R11.1.2.3 SSON • R11.1.3 SSON • R11.1.3.2 SSON • R11.1.1.4 SSON With this upgrade, you can manage the NCS 2000 nodes in the Node view of the COSM application. The node upgrade is a non-traffic-affecting operation and must be performed in the following order: **1.** NCS 2000 nodes that host the SVO line card. **2.** NCS 2000 nodes that do not have the SVO line card. **3.** NCS 2000 transponder nodes before adding them to the NCS 2000 nodes.

• Cisco Optical Site Manager installation workflow on NCS 1010 or NCS 1014, on page 6

- Installation requirements, on page 7
- Enable NETCONF over SSH on host devices, on page 7
- Configure static routes on peer devices, on page 8
- Install Cisco Optical Site Manager on NCS 1010 or NCS 1014, on page 9
- Install Cisco Optical Site Manager on NCS 1001 or NCS 1004, on page 11
- Install a Cisco Optical Site Manager SMU, on page 13

Cisco Optical Site Manager installation workflow on NCS 1010 or NCS 1014

This workflow helps you install and configure Cisco Optical Site Manager. You will set up Cisco Optical Site Manager, configure it for standalone or high availability (HA) operation, manage interfaces, and activate the application as needed.

Before you begin

Verify that the installation requirements are met before proceeding. For details, see Installation requirements, on page 7.

Perform these tasks to install and configure Cisco Optical Site Manager on NCS 1010 or NCS 1014 devices.

Procedure

Step 1 Install Cisco Optical Site Manager on NCS 1010 or NCS 1014 device. For more details, see Install Cisco Optical Site Manager on NCS 1010 or NCS 1014, on page 9.

Step 2 Configure Cisco Optical Site Manager in standalone or high availability mode. For more details, see Configure Cisco Optical Site Manager in standalone mode for NCS 1010 or NCS 1014, on page 17 or High availability for NCS 1000, on page 20.

Step 3 Follow these tasks to setup Cisco Optical Site Manager:

a) Enable or disable Cisco Optical Site Manager interfaces individually. For more details, see Enable or disable Cisco Optical Site Manager north-bound interfaces, on page 47.

Note
By default, these interfaces are enabled

- NETCONF
- RESTCONF
- Interactive Web-UI

b) Activate Cisco Optical Site Manager. For more details, see Activate Cisco Optical Site Manager, on page 48.

Installation requirements

This section lists the prerequisites for installing Cisco Optical Site Manager.

These requirements must be met before using Cisco Optical Site Manager to manage NCS 1000 devices.

- All the Cisco NCS 1000 devices on the network are reachable from the device hosting Cisco Optical Site Manager.
- SSH is configured on all the devices.
- Netconf-Yang agent is configured to use SSH for communication.
- The SSH rate limit is set to 600.
- Before Release 24.3.1, use the *MgmtEth0/RP0/CPU0/1* interface for auto-onboarding of directly connected devices (peer devices). The interface uses IP addresses *192.168.1.1/30* and *192.168.1.2/30*.
- Static routes are added on devices that belong to different subnets or configured as peer devices. For more details, see Configure static routes on peer devices, on page 8.

Enable NETCONF over SSH on host devices

Enable NETCONF over SSH so that Cisco Optical Site Manager can connect to host devices to perform configuration and monitoring. Also, enable NETCONF on each Cisco Optical Site Manager host device.

Before you begin

Follow these steps to enable netconf:

Procedure

Step 1 Enter the configuration mode using the **configure terminal** command.

Example:

```
RP/0/RP0/CPU0:ios#configure terminal
```

Step 2 Enable NETCONF-YANG agent over SSH connection using the **netconf-yang agent ssh** command.

Example:

```
RP/0/RSP0/CPU0:ios(config)# netconf-yang agent ssh
```

Step 3 Configure the device to use SSH protocol v2 using the **ssh server v2** command.

Note
Only SSH version 2 is supported. Cisco Optical Site Manager does not accept SSH version 1 connections.

Example:

```
RP/0/RP0/CPU0:ios(config)# ssh server v2
```

Step 4 Set the rate limit for incoming SSH connection requests to 600 per minute using the **ssh server rate-limit** *rate-limit* command.

Example:

```
RP/0/RP0/CPU0:ios(config)# ssh server rate-limit 600
```

Step 5 Enable NETCONF protocol over SSH connection using the **ssh server netconf** command.

Example:

```
RP/0/RP0/CPU0:ios(config)# ssh server netconf
```

Step 6 Commit the changes using the **commit** command.

After you enable NETCONF, Cisco Optical Site Manager can establish a secure communication with the device using the NETCONF protocol over SSH.

This example describes the commands to enable NETCONF over SSH on the host devices:

```
RP/0/RP0/CPU0:ios# configure terminal
RP/0/RSP0/CPU0:ios(config)# netconf-yang agent ssh
RP/0/RP0/CPU0:ios(config)# ssh server v2
RP/0/RP0/CPU0:ios(config)# ssh server rate-limit 600
RP/0/RP0/CPU0:ios(config)# ssh server netconf
```

What to do next

Configure static route on peer devices

Configure static routes on peer devices

Configure static route to ensure that the Cisco Optical Site Manager host device can reach its peer device for management and high availability communication.

In a high-availability setup, two Cisco Optical Site Manager devices located remotely are directly connected through their *MgmtEth* interfaces.

- Each device must have either a static route or a routing protocol configuration that defines how to reach the peer's *loopback* interface (for example, Loopback 1), using the peer's *MgmtEth* interface as the next hop.
- Static route configuration is optional.

Before you begin

Install Netconf.

Follow these steps to configure a static route on the peer devices:

Procedure

Step 1 Enter the configuration mode using the **configure terminal** command.

Example:

```
RP/0/RP0/CPU0:ios#configure terminal
```

Step 2 Enter the static router configuration mode using the **router static** command.

Example:

```
RP/0/RP0/CPU0:ios(config)#router static
```

Step 3 Configure the IPv4 unicast address static routes using the **address-family ipv4 unicast 0.0.0.0/0** *default gateway* command.

Example:

```
RP/0/RSP0/CPU0:ios(config-static)#address-family ipv4 unicast 0.0.0.0/0 192.168.2.1
```

Step 4 Exit the configuration mode using the **exit** command.

Step 5 Verify the configuration using the **show running-config router static** command.

Example:

```
RP/0/RP0/CPU0:ios#show running-config router static
router static
 address-family ipv4 unicast
  0.0.0.0/0 192.168.2.1
 !
!
```

Caution

When using OLC, do not configure **redistribute static** under OSPF if there are static routes configured for any of the IP addresses belonging to OLT nodes or ILA nodes in optical network. This can cause OLC topology discovery failures and prevent control loops from operating properly.

The Cisco Optical Site Manager host device gains reliable network reachability to its peer devices, enabling effective management and failover operations.

This example describes the commands to configure a static route on the peer devices:

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#router static
RP/0/RSP0/CPU0:ios(config-static)#address-family ipv4 unicast 0.0.0.0/0 192.168.2.1
RP/0/RSP0/CPU0:ios(config-static)#exit
RP/0/RP0/CPU0:ios#show running-config router static
router static
 address-family ipv4 unicast
  0.0.0.0/0 192.168.2.1
 !
!
```

What to do next

- Install Cisco Optical Site Manager on NCS 1010 or NCS 1014, on page 9
- Install Cisco Optical Site Manager on NCS 1001 or NCS 1004, on page 11

Install Cisco Optical Site Manager on NCS 1010 or NCS 1014

Cisco Optical Site Manager is an optional software component that can be installed on NCS 1010 or NCS 1014 platforms. If Cisco IOS XR is already installed, you can install Cisco Optical Site Manager manually

using the provided *.rpm* files. You can download the Cisco Optical Site Manager software image from the Software Download page.

Before you begin

Download the *NCS1010/NCS1020 and NCS1014 IOS XR Software optional-rpms* optional package from Software Download page.

Follow these steps to install Cisco Optical Site Manager:

Procedure

Step 1 Copy all the *.rpm* files in the **cosm** folder of the downloaded package to the device storage.

Step 2 Add the Cisco Optical Site Manager package source folder to the Cisco IOS XR software management system in synchronous mode using the **install package add source file:** *rpm-folder* **synchronous** command.

Example:

```
RP/0/RP0/CPU0:ios#install package add source file:/harddisk:/cosm/ synchronous
Install add operation 2.1.1 has started
```

Installation in synchronous mode is optional and runs in the foreground and waits for the operation to complete before returning control to the user.

Step 3 Install the Cisco Optical Site Manager RPM in synchronous mode using the **install package add** *package-name* **synchronous** command.

Example:

```
RP/0/RSP0/CPU0:ios#install package add xr-cosm synchronous
```

Step 4 Apply the latest changes in synchronous mode on the NCS 1000 device using the **install apply restart synchronous** command.

Example:

```
RP/0/RP0/CPU0:ios#install apply restart synchronous
```

The latest changes are applied to all processes, including the impacted processes.

Step 5 Commit the changes using the **install commit synchronous** command.

Example:

```
RP/0/RP0/CPU0:ios#install commit synchronous
```

Step 6 Verify that Cisco Optical Site Manager rpm is installed using the **show install active | include xr-cosm** command.

Example:

```
RP/0/RP0/CPU0:ios#show install active | include xr-cosm
Fri Nov 14 11:07:17.877 UTC
xr-cosm                                                    25.1.1v1.0.2-1
```

Cisco Optical Site Manager is installed on the device.

This example describe the commands to install Cisco Optical Site Manager:

```
RP/0/RP0/CPU0:ios#install package add source file:/harddisk:/cosm/ synchronous
RP/0/RSP0/CPU0:ios#install package add xr-cosm synchronous
RP/0/RP0/CPU0:ios#install apply restart synchronous
RP/0/RP0/CPU0:ios#install commit synchronous
RP/0/RP0/CPU0:ios#sh install active | include xr-cosm
Fri Nov 14 11:07:17.877 UTC
xr-cosm                                                    25.1.1v1.0.2-1
```

What to do next

Configure Cisco Optical Site Manager in Standalone or High Availability mode.

Install Cisco Optical Site Manager on NCS 1001 or NCS 1004

Cisco Optical Site Manager is an optional software component that can be installed on NCS 1001 or NCS 1004 platforms. If Cisco IOS XR is already running on your device, you can manually install Cisco Optical Site Manager using the supplied *.rpm* packages.

For release 25.4.1, NCS 1004 and NCS 1001 host devices do not support storing multiple software packages of the same release; downloading a new package of the same build replaces the existing one.

This table outlines the supported software package count and device management capacity based on the platform hosting Cisco Optical Site Manager.

Cisco Optical Site Manager hosting platform	Supported software package in repository	Device management capacity
NCS 1001	One	Two including host NCS 1001 device
NCS 1004	One	• Three NCS 1004 devices and • three NCS 1001 devices. **Note** The software upgrade on the NCS1004 or NCS 1001 from Cisco Optical Site Manager does not succeed when using a mini ISO file.

Note NCS 1001 does not support the iXPE boot of a golden ISO with Cisco Optical Site Manager.

Before you begin

Download the *NCS1001 and NCS1004 IOS XR Software optional-rpms* optional package from Software Download page.

Follow these steps to install Cisco Optical Site Manager on NCS 1001 or NCS 1004:

Procedure

Step 1 Copy the downloaded *.rpm* files to the device storage.

Step 2 Install the Cisco Optical Site Manager package source file in synchronous mode using the **install add source** <*folder*> <*pkg name*> **synchronous** command.

Example:

```
RP/0/RP0/CPU0:ios#install add source /harddisk:/cosm ncs1001-cosm-1.0.0.0-r253107I.x86_64.rpm
 synchronous
Install add operation 2.1.1 has started
```

Step 3 Identify the inactive Cisco Optical Site Manager package name using the **show install inactive** command.

Example:

The bold line in this example shows the inactive package name. You will use this package name to activate the package in the next step.

```
RP/0/RP0/CPU0:ios#show install inactive
Fri Apr 11 08:10:57.969 UTC
1 inactive package(s) found:
    ncs1001-cosm-1.0.0.0-r253107I
```

Step 4 Activate the package using the **install activate** <*package name*> **synchronous** command.

Example:

```
RP/0/RP0/CPU0:ios#install activate ncs1001-cosm-1.0.0.0-r253107I synchronous
```

Use the <*package name*> from the output of the **show install inactive** command.

Warning
Do not activate a base IOS XR GISO on a device that is running Cisco Optical Site Manager, as this action will remove the application.

Step 5 Commit the changes using the **install commit** command.

Example:

```
RP/0/RP0/CPU0:ios#install commit
```

Cisco Optical Site Manager is installed on the device.

This example shows the commands to install Cisco Optical Site Manager on NCS 1001 or NCS 1004:

```
RP/0/RP0/CPU0:ios#install add source /harddisk:/cosm ncs1001-cosm-1.0.0.0-r253107I.x86_64.rpm
 synchronous
Install add operation 2.1.1 has started
RP/0/RP0/CPU0:ios#show install inactive
Fri Apr 11 08:10:57.969 UTC
1 inactive package(s) found:
    ncs1001-cosm-1.0.0.0-r253107I
RP/0/RP0/CPU0:ios#install activate ncs1001-cosm-1.0.0.0-r253107I synchronous
RP/0/RP0/CPU0:ios#install commit
```

What to do next

Configure Cisco Optical Site Manager in Standalone mode.

Install a Cisco Optical Site Manager SMU

A Software Maintenance Upgrade is a package that can be installed on a system to deliver patch fixes or security updates to a released image. A Cisco Optical Site Manager SMU is an updated Cisco Optical Site Manager image bundled as an XR SMU, providing the latest enhancements or fixes for Cisco Optical Site Manager \within the XR environment.

Install a SMU to update your Cisco Optical Site Manager with bug fixes and enhancements. Transfer the installation file, install the SMU, and verify that the new image is active.

In high availability (HA) deployments, install the SMU on the standby node first. Then, install it on the active node.

Warning Installing a SMU triggers the host device's controller to reload.

Before you begin

Download the SMU from the Cisco Software Download page.

Follow these steps to install a Cisco Optical Site Manager SMU:

Procedure

Step 1 Use the **scp** command to copy the file to the standby node and confirm the md5sum value.

Example:

```
[root@NCS1k-ZTP smu]# scp /harddisk/cosm/smu/ncs1010-x86_64-25.1.1-CSCwr67302.tgz
cixxx@10.xx.xx.xx:/harddisk:/

[node0_RP0_CPU0:/harddisk:]$md5sum ncs1010-x86_64-25.1.1-CSCwr67302.tgz
c28dcced4e562e329e36baf1d7621ca0  ncs1010-x86_64-25.1.1-CSCwr67302.tgz
```

Step 2 Use the **install source** command to install the SMU.

Example:

```
RP/0/RP0/CPU0:COSM_OLT-3_214# install source /harddisk:/ncs1010-x86_64-25.1.1-CSCwr67302.tgz
```

Wait for the installation to complete.

Step 3 Use the **show install request** command to verify the status of installation was successful.

Example:

```
RP/0/RP0/CPU0:COSM_OLT-3_214#show install request
Mon Oct 27 11:12:05 UTC

User request: install source /harddisk:/ncs1010-x86_64-25.1.1-CSCwr67302.tgz
Operation ID: 33.1
State:        Success since 2025-10-27 11:09:59 UTC
Current activity:    Await user input
```

```
Time started:        2025-10-27 11:09:59 UTC
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
    install commit
    install replace reimage
```

Step 4 Use the **install commit** command to commit the SMU.

Example:

```
RP/0/RP0/CPU0:COSM_OLT-3_214#install commit
```

Step 5 Use the **show install fixes committed** command to verify that the SMU image is committed.

Example:

The bold text displays the committed SMU *CSCwr67302 xr-cosm-25.1.1v1.0.1-1*.

```
RP/0/RP0/CPU0:ios#show install fixes committed
Mon Dec  8 05:16:35.319 UTC

Committed Fixes (count: 2):
Bug Id      Packages
----------- ------------------------------------------------------------
CSCwr31650  xr-ncs1010-forwarder-25.1.1v1.0.1-1
CSCwr67302  xr-cosm-25.1.1v1.0.1-1
```

Step 6 Use the **show install fixes active** command to verify that the SMU image is active.

Example:

The text in bold in this example displays the active SMU version *CSCwr67302 xr-cosm-25.1.1v1.0.1-1*.

```
RP/0/RP0/CPU0:ios#show install fixes active
Tue Dec  9 06:51:23.276 UTC

Active Fixes (count: 2):
Bug Id      Packages
----------- ------------------------------------------------------------
CSCwr31650  xr-ncs1010-forwarder-25.1.1v1.0.1-1
CSCwr67302  xr-cosm-25.1.1v1.0.2-1
RP/0/RP0/CPU0:ios#show cosm status
Tue Dec  9 06:51:31.549 UTC
COSM state: APP_ACTIVATED
AppMgr app state: ACTIVATED
AppMgr container state: RUNNING
Container status: Up 13 hours
Last error: No error
COSM version: 25.1.1.D0372
```

Step 7 Use the **show cosm status** command to verify that the Cisco Optical Site Manager SMU version is activated.

Example:

The text in bold in this example displays the active Cisco Optical Site Manager version *25.1.1.R0366*.

```
RP/0/RP0/CPU0:HAN-1#show cosm status
Thu Oct 30 10:21:25.374 UTC
COSM state: APP_ACTIVATED
```

```
AppMgr app state: ACTIVATED
AppMgr container state: RUNNING
Container status: Up 2 days
Last error: No error
COSM version: 25.1.1.R0366
Redundancy role: ACTIVE (NONE)
```

The status of the standby node appears as **NONE** in the output of the **show cosm status** command.

Step 8 Perform the same installation process on the active node.
After the installation is completed and the controller is reloaded, these redundancy status changes occur:

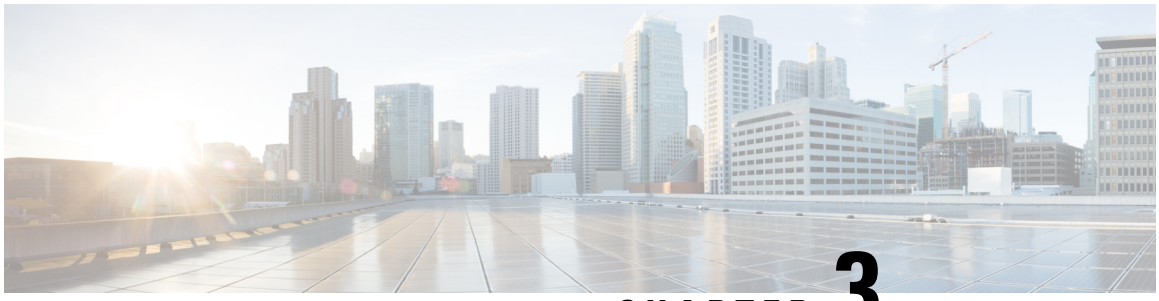
- On the active node, during the SMU installation, the redundancy status transitions through **UNKNOWN** → **STARTING** → **NONE** → **STANDBY** (connected active 1.1.1.1-COSM) after the active node reloads.
- The redundancy status of the standby node changes to **NONE** during the SMU installation on the active node and updates to **ACTIVE (standby not connected)** after the active node completes its reload.

The Cisco Optical Site Manager SMU is installed.

This table explains the redundancy status changes in the output of the `show cosm status` command on both nodes during the SMU installation.

Table 2: Cisco Optical Site Manager redundancy status transitions during SMU installation

Node	Node Operation	Redundancy Status	Details
Standby Node	Install SMU, the reloads	Status varies (install / reload in progress)	The standby node temporarily disconnects during SMU installation.
Active Node	No action / monitoring	**ACTIVE (standby not connected)**	The active node displays **standby not connected** while the SMU installs on the standby node.
Active Node	Install SMU, then reloads	Transitions: **UNKNOWN** → **STARTING** → **NONE** → **STANDBY (connected active 1.1.1.1-COSM)**	The active node undergoes state transitions while coming back online.
Standby Node (becomes new Active)	Monitors while old active reloads	**NONE** → **ACTIVE (standby not connected)** → **ACTIVE (connected active 2.2.2.2-COSM)**	• The standby node initially shows a redundancy status of **NONE** during the SMU installation on the active node. • Once the active node completes its reload, the standby node transitions to **ACTIVE (connected active 2.2.2.2-COSM)** and remains active thereafter.



CHAPTER 3

Configure Cisco Optical Site Manager on NCS 1000

This chapter outlines the configuration tasks for Cisco Optical Site Manager, covering both standalone and high availability modes on NCS 1000.

- Configure Cisco Optical Site Manager in standalone mode for NCS 1010 or NCS 1014, on page 17
- Configure Cisco Optical Site Manager in standalone mode for NCS 1001 or NCS 1004, on page 19
- High availability for NCS 1000, on page 20
- Configure Cisco Optical Site Manager in high availability on NCS 1000, on page 21
- Deployment models for HA in Cisco Optical Site Manager, on page 24

Configure Cisco Optical Site Manager in standalone mode for NCS 1010 or NCS 1014

Cisco Optical Site Manager can be configured in standalone mode on a single NCS 1010 or NCS 1014 controller card. This mode is useful for deployments where local management via a GUI is needed, or where interaction with third-party controllers is required without full network-wide SDN automation.

The configuration involves setting up Cisco Optical Site Manager interfaces, defining management interface parameters, and establishing user credentials for access.

Before you begin

Verify that these configurations are enabled before configuring Cisco Optical Site Manager in standalone mode on NCS 1010 or NCS 1014:

- Enable NETCONF over SSH on host devices, on page 7
- Configure static routes on peer devices.

Follow these steps to configure Cisco Optical Site Manager in standalone mode:

Procedure

Step 1 Enter into the IOS XR and COSM configuration mode using the **configure terminal** and **cosm** commands.

Example:

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RSP0/CPU0:ios(config)# cosm
```

Step 2 Configure the interface of the device running the Cisco Optical Site Manager by using **mgmt-interface-name MgmtEth** *R/S/I/P* command.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# mgmt-interface-name MgmtEth 0/RP0/CPU0/0
```

Step 3 Configure the username using the **user-name** *user name* command.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# user-name cisco
```

Note
The username must match the username of the host device.

Step 4 Configure the password using the **user-password** *password* command.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# user-password ***
```

Note
The password must match the password of the host device.

Step 5 Commit the changes and exit the configuration modes using the **commit** and **end** commands.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm) commit
RP/0/RP0/CPU0:ios(config-cosm) end
```

Step 6 Verify the configuration using the **show running-config cosm** command.

Example:

This example shows the standalone Cisco Optical Site Manager configuration.

```
RP/0/RP0/CPU0:ios#show running-config cosm
Fri Oct 18 12:53:47.056 UTC
cosm
 mgmt-interface-name Loopback1
!
```

The configured *user-name* and *user-password* are not displayed in the output of the **show running-config cosm** command.

Cisco Optical Site Manager is configured in the standalone mode.

What to do next

Enable or disable Cisco Optical Site Manager north-bound interfaces, on page 47

Configure Cisco Optical Site Manager in standalone mode for NCS 1001 or NCS 1004

Cisco Optical Site Manager can be configured in standalone mode on a single NCS 1001 or NCS 1004 controller card.

The configuration involves setting up Cisco Optical Site Manager interfaces and defining management interface parameters.

Before you begin

Verify that these NETCONF over SSH is enabled. For more details, see Enable NETCONF over SSH on host devices, on page 7.

Follow these steps to configure Cisco Optical Site Manager in standalone mode on a single NCS 1001 or NCS 1004 controller card:

Procedure

Step 1 Enter global configuration mode.

Example:

```
RP/0/RP0/CPU0:1001-otdr-187#configure terminal
```

Step 2 Configure Linux networking, VRF, and interface parameters for the management interface and a loopback interface.

Example:

```
RP/0/RP0/CPU0:1001-otdr-187(config)#linux networking
RP/0/RP0/CPU0:1001-otdr-187(config-lnx-net)# vrf default
RP/0/RP0/CPU0:1001-otdr-187(config-lnx-vrf)# east-west Loopback2
RP/0/RP0/CPU0:1001-otdr-187(config-lnx-vrf)#address-family ipv4
RP/0/RP0/CPU0:1001-otdr-187(config-lnx-vrf)# source-hint default-route interface mgmtEth
0/RP0/CPU0/0
RP/0/RP0/CPU0:1001-otdr-187(config)#interface Loopback2
RP/0/RP0/CPU0:1001-otdr-187(config-if)# ipv4 address 2.2.2.2 255.255.255.255
RP/0/RP0/CPU0:1001-otdr-187(config-if)#interface MgmtEth0/RP0/CPU0/0
RP/0/RP0/CPU0:1001-otdr-187(config-if)# ipv4 address 10.0.0.123 255.255.255.0
```

Step 3 Configure a static default route for IPv4 unicast traffic.

Example:

```
RP/0/RP0/CPU0:1001-otdr-187(config)#router static
RP/0/RP0/CPU0:1001-otdr-187(config-static)# address-family ipv4 unicast
RP/0/RP0/CPU0:1001-otdr-187(config-static-afi)#  0.0.0.0/0 10.0.0.1
```

Step 4 Configure the management interface for Cisco Optical Site Manager by using the **mgmt-interface-name MgmtEth** *R/S/I/P* command.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# mgmt-interface-name MgmtEth 0/RP0/CPU0/0
```

Step 5 Commit the changes and exit the configuration modes using the **commit** and **end** commands.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# commit
RP/0/RP0/CPU0:ios(config-cosm)# end
```

Step 6 Verify the Cisco Optical Site Manager status using the **show cosm status** command.

Example:

```
P/0/RP0/CPU0:ios#show cosm status
Fri Nov 14 10:26:44.215 UTC
COSM state: CLIENT_REGISTERED
AppMgr app state: UNKNOWN
AppMgr container state: UNKNOWN
Container status: Not present
Last error: 'Appmgr' detected the 'warning' condition 'Application not found'
Role: UNKNOWN
```

You can also use the **show running-config cosm** command to verify the configured parameters, though user credentials are not displayed.

Cisco Optical Site Manager is configured in the standalone mode.

What to do next

- (Optional) Enable or disable Cisco Optical Site Manager north-bound interfaces, on page 47.
- Activate Cisco Optical Site Manager, on page 48

High availability for NCS 1000

Cisco Optical Site Manager High Availability (HA) provides continuous management and operational resilience for Cisco optical devices. By deploying two instances, one as Active and the other as Standby, HA ensures that device management remains uninterrupted even if one instance fails.

How does Cisco Optical Site Manager high availability ensure operational continuity?

Cisco Optical Site Manager High Availability (HA) provides a robust solution for managing device operations by utilizing dual application instances and specialized network interfaces.

The main features of Cisco Optical Site Manager high availability include:

- Two devices must be able to communicate with each other, allowing their respective Cisco Optical Site Manager instances to coordinate application roles (active or standby) and manage operations.
- Each device requires a Cisco Optical Site Manager management interface configured with the same IP address, starting in a shutdown state. This interface automatically transitions between UP and DOWN states based on whether the device is active or standby.
- A dedicated Cisco Optical Site Manager redundancy interface is used to establish the high availability communication channel and typically serves as the device's management interface.
- When in the active role, Cisco Optical Site Manager binds the HA server to the redundancy interface's IP address on port 5454.

- When in the Standby role, Cisco Optical Site Manager connects to the peer's redundancy interface IP address on port 5454 to communicate with the active instance.

HA roles and interfaces

- **Active role**: manages all device operations and binds the HA server to its redundancy interface and port.
- **Standby role**: monitors the active instance and connects to the peer's redundancy IP and port. It is ready to take over if needed.
- **Redundancy interface**: network interface used solely for HA communication between Cisco Optical Site Manager instances.
- **Management interface**: interface with the same IP address on both devices, managed automatically depending on the instance role.

Note High availability is not supported on NCS 1004 and NCS 1001.

Configure Cisco Optical Site Manager in high availability on NCS 1000

Configure High Availability (HA) on Cisco Optical Site Manager is to enable fast recovery from faults in the optical transport network and to maintain service continuity by switching to standby components when active ones fail.

Cisco Optical Site Manager HA configuration requires these interfaces configured.

- `cosm mgmt-interface-name`: This interface must be configured with same IP address on both Cisco Optical Site Manager active and standby devices. This interface must be configured in a shutdown state and will automatically transition between UP and DOWN states based on the role (Active or Stand-By) assigned by the application.
- `cosm redundancy interface-name`: This interface must be configured with the redundancy interface and is used to establish the high availability communication channel and is typically the interface used for device management.
- `redundancy gateway-ip`: Specifies the gateway IP address (for example, *10.0.2.1*) used by Cisco Optical Site Manager to reach peer devices or for routing HA traffic in environments where a direct path to the peer is not available.

Before you begin

Verify that Cisco Optical Site Manager rpm is installed. For more details, see Install Cisco Optical Site Manager on NCS 1010 or NCS 1014, on page 9.

Follow these steps to configure Cisco Optical Site Manager in HA mode on a NCS 1010 or NCS 1014 device:

Procedure

Step 1 Enter into the IOS XR and Cisco Optical Site Manager configuration modes.

Example:

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RSP0/CPU0:ios(config)# cosm
```

Step 2 Configure the gateway IP address.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# redundancy gateway-ip 10.0.2.1
```

Step 3 Configure the peer IP address.

This is the IP address of the peer device running the Cisco Optical Site Manager HA instance.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# redundancy peer-ip 10.0.1.12
```

For releases 24.x.x and 25.x.x, verify that the *redundancy interface-name* IP address and the *redundancy peer-ip* address are not substrings of each other. For example, configuring 10.0.1.1 as the *redundancy interface-name* and 10.0.1.10 or 10.0.1.101 as the *redundancy peer-ip* (or vice-versa) causes Cisco Optical Site Manager HA to fail during startup.

Step 4 Configure the HA interface name.

This is the interface of the device running the Cisco Optical Site Manager HA instance, which is used for all HA traffic.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# redundancy interface-name MgmtEth 0/RP0/CPU0/2
```

Step 5 Commit the changes and exit all configuration modes.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# commit
RP/0/RP0/CPU0:ios(config-cosm)# end
```

Step 6 Perform these steps 1 to 6 on both the second Cisco Optical Site Manager host device.

Step 7 Verify the HA configuration on both host devices.

Example:

```
RP/0/RP0/CPU0:ios#show cosm status
Fri Nov 14 10:26:44.215 UTC
COSM state: CLIENT_REGISTERED
AppMgr app state: UNKNOWN
AppMgr container state: UNKNOWN
Container status: Not present
Last error: 'Appmgr' detected the 'warning' condition 'Application not found'
Role: UNKNOWN
```

You can view the active and standby application status in the **Device Software** section of the **Software Manager** menu.

Note If the HA node is on loopback, the MAC address of the HA device is displayed as **N/A** in the **Devices** section of the **Device Configuration** page.

This example explains how to configure Cisco Optical Site Manager HA on a NCS 1010 or NCS 1014 device.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RSP0/CPU0:ios(config)# cosm
RP/0/RP0/CPU0:ios(config-cosm)# redundancy gateway-ip 10.0.2.1
RP/0/RP0/CPU0:ios(config-cosm)# redundancy peer-ip 10.0.1.12
RP/0/RP0/CPU0:ios(config-cosm)# redundancy interface-name MgmtEth 0/RP0/CPU0/2
RP/0/RP0/CPU0:ios(config-cosm)# commit
RP/0/RP0/CPU0:ios(config-cosm)# end
RP/0/RP0/CPU0:ios#show cosm status
Fri Nov 14 10:26:44.215 UTC
COSM state: CLIENT_REGISTERED
AppMgr app state: UNKNOWN
AppMgr container state: UNKNOWN
Container status: Not present
Last error: 'Appmgr' detected the 'warning' condition 'Application not found'
Role: UNKNOWN
```

What to do next

Enable or disable Cisco Optical Site Manager north-bound interfaces, on page 47

HA commands for Cisco Optical Site Manager

These commands are used to configure HA in Cisco Optical Site Manager on a NCS 1000 device.

Command	Description
configure	Enters global configuration mode.
cosm user-name <username>	Configures Cisco Optical Site Manager application username.
cosm user-password <password>	Configures Cisco Optical Site Manager application password.
cosm mgmt-interface-name <type> <number>	Configures the Cisco Optical Site Manager management interface. All Cisco Optical Site Manager NBI services (web UI, NETCONF, RESTCONF) are available on this interface.
cosm redundancy interface-name <type> <number>	Configures Cisco Optical Site Manager high availability interface. The interface is used to communicate with the peer device.
cosm redundancy peer-ip <IP-address>	Configures the IP address of the peer device, where other Cisco Optical Site Manager is running.

Command	Description
cosm redundancy gateway-ip <IP-address>	Configures the IP address of a target device that is always reachable by both devices hosting Cisco Optical Site Manager in high availability. Configuring the same gateway IP on both devices is strongly recommended. Cisco Optical Site Manager uses this target device to perform checks in certain high availability scenarios. The target device must be different from the **cosm redundancy peer-ip**. The target device may be the subnet gateway, the multilayer switch connecting the two devices, or another suitable device.
commit	Commits the changes.
end	Exits the global configuration mode.

Deployment models for HA in Cisco Optical Site Manager

Cisco Optical Site Manager supports several deployment models for implementing high availability (HA), each with distinct configuration requirements, advantages, and dependencies on the Data Communication Network (DCN) architecture and local site availability. Each model:

- analyzes possible deployment scenarios, detailing device connections and configurations,
- covers routing protocols in use and information on any additional devices involved.

Cisco Optical Site Manager supports these deployment models:

- **Dual-homing deployment with devices connected to DCN:** This model involves connecting devices to the DCN using a dual-homing setup.
- **Single-homing deployment with devices connected to DCN:** This model utilizes a single-home connection for devices to the DCN.
- **Deployment with devices interconnected and managed remotely:** In this model, devices are interconnected and managed remotely through the Optical Service Channel (OSC).
- **Deployment with devices interconnected with redundancy and managed remotely:** This model extends the previous one by incorporating redundancy for devices interconnected and remotely managed via OSC.

Dual-homing deployment with devices connected to DCN

This deployment model ensures that Cisco Optical Site Manager can always communicate with its peer, routing traffic through an alternative interface, cable, or switch if one fails.

Requirements for the dual-homing deployment

This HA deployment model requires following conditions:

- Both Cisco Optical Site Manager redundancy and management interfaces must be configured as Loopback interfaces.

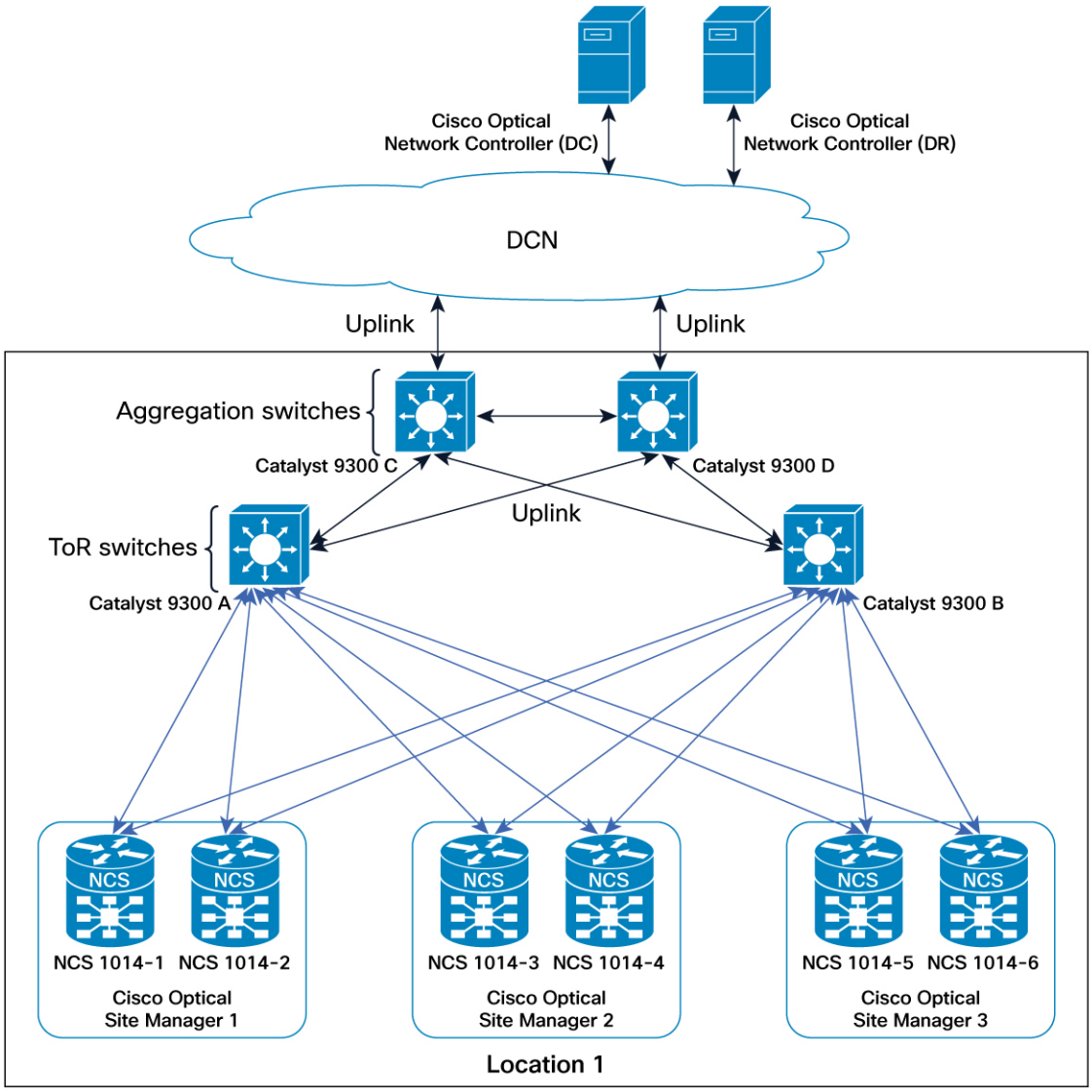
- The IP addresses assigned to the MgmtEth interfaces of the devices are typically part of a private subnet, isolated under the Top-of-Rack (ToR) switches.
- Loopback IP addresses are distributed within the Data Communication Network (DCN) and must be reachable from Cisco Optical Network Controller.
- Loopback 0 interfaces are designated as Cisco Optical Site Manager management interfaces.
- Loopback 1 interfaces serve as Cisco Optical Site Manager redundancy interfaces, also providing direct access to the devices.

Implementing this deployment model requires specific network configurations and routing considerations:

- ToR switches must advertise the default route to downstream devices. This can be achieved by configuring a static route on the devices or by using `default-information originate` with OSPF on the switches.
- The two devices hosting Cisco Optical Site Manager in high availability must have a static route or routing protocol configuration to reach the peer's Cisco Optical Site Manager redundancy interface (for example, Loopback 1 interface) using the VRRP IP as the next hop.
- ToR switches should implement VRRP and channel aggregation on multiple ports towards the peer switch for enhanced redundancy.

This figure explains the connections diagram of two-degrees node deployment model with devices connected to DCN in dual-homing.

Figure 1: Conceptual Explanation of High Availability Deployment for Devices Connected to DCN in a Dual-Homing Model



IP addressing schema for devices connected to DCN in dual-homing

This table details the IP addressing for the devices connected to DCN in dual-homing deployment model, with MgmtEth interfaces of the devices using the 192.168.1.0/24 subnet and loopback interfaces distributed within the DCN as part of the 10.1.1.0/27 subnet.

Table 3: IP addressing schema for dual-homing deployment

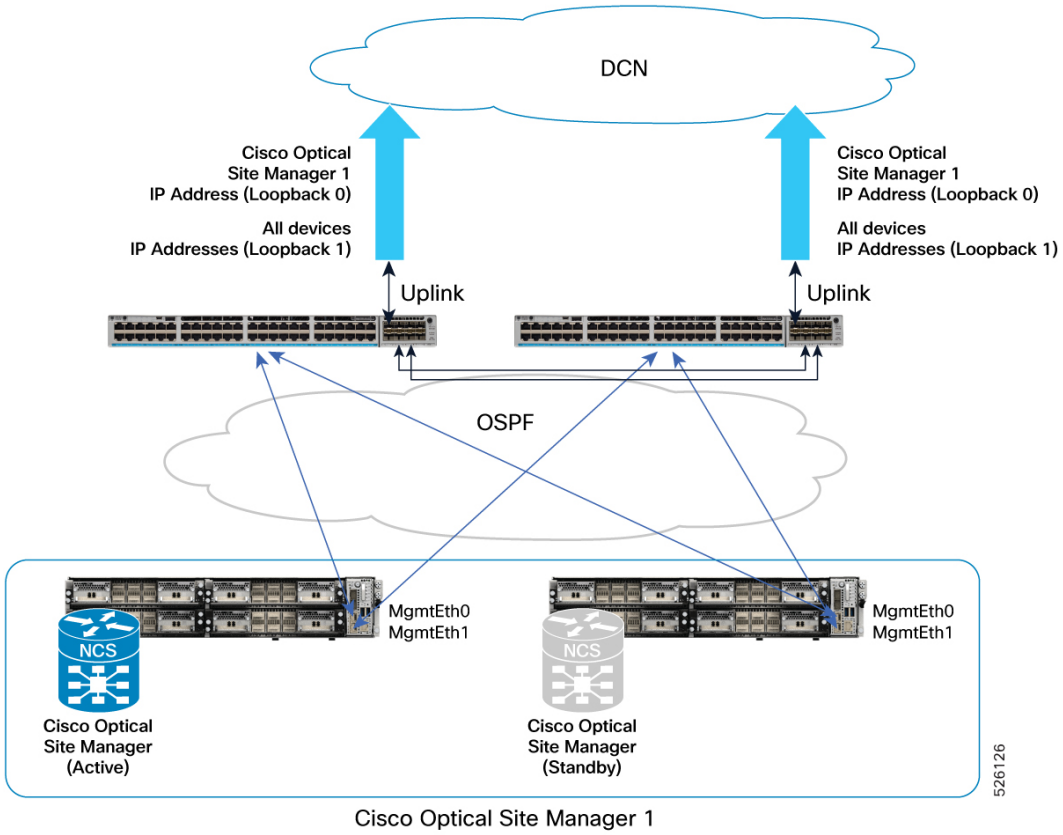
Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to switch	Connected to switch interface
Cisco Optical Site Manager 1	NCS 1000-1	MgmtEth0/RP0/CPU0/0	192.168.1.11/24	Catalyst 9300 (A)	Gil/0/1
		MgmtEth0/RP0/CPU0/1	192.168.1.12/24	Catalyst 9300 (B)	Gil/0/1
		Loopback 0	10.1.1.1/32	–	–
		Loopback 1	10.1.1.11/32	–	–
	NCS 1000-2	MgmtEth0/RP0/CPU0/0	192.168.1.13/24	Catalyst 9300 (A)	Gil/0/2
		MgmtEth0/RP0/CPU0/1	192.168.1.14/24	Catalyst 9300 (B)	Gil/0/2
		Loopback 0	10.1.1.1/32	–	–
		Loopback 1	10.1.1.12/32	–	–
Cisco Optical Site Manager 2	NCS 1000-3	MgmtEth0/RP0/CPU0/0	192.168.1.15/24	Catalyst 9300 (A)	Gil/0/3
		MgmtEth0/RP0/CPU0/1	192.168.1.16/24	Catalyst 9300 (B)	Gil/0/3
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.13/32	–	–
	NCS 1000-4	MgmtEth0/RP0/CPU0/0	192.168.1.17/24	Catalyst 9300 (A)	Gil/0/4
		MgmtEth0/RP0/CPU0/1	192.168.1.18/24	Catalyst 9300 (B)	Gil/0/4
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.14/32	–	–

Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to switch	Connected to switch interface
Cisco Optical Site Manager 3	NCS 1000-5	MgmtEth0/RP0/CPU0/0	192.168.1.19/24	Catalyst 9300 (A)	Gil/0/5
		MgmtEth0/RP0/CPU0/1	192.168.1.20/24	Catalyst 9300 (B)	Gil/0/5
		Loopback 0	10.1.1.3/32	–	–
		Loopback 1	10.1.1.15/32	–	–
	NCS 1000-6	MgmtEth0/RP0/CPU0/0	192.168.1.21/24	Catalyst 9300 (A)	Gil/0/6
		MgmtEth0/RP0/CPU0/1	192.168.1.22/24	Catalyst 9300 (B)	Gil/0/6
		Loopback 0	10.1.1.3/32	–	–
		Loopback 1	10.1.1.16/32	–	–

Practical example of devices connected to DCN in dual-homing

This figure provides a practical example of this deployment model, implemented with two Catalyst 9300 switches and two NCS1014 devices.

Figure 2: Deployment model featuring Catalyst 9300 Switches and Active/Standby NCS1014 devices



This example details the configurations for a Dual-Homing HA deployment model of NCS1014 devices connected to a DCN via Catalyst 9300 switches.

Catalyst 9300-A configuration

```
hostname CAT9300-A

fhrp version vrrp v3
ip routing

interface Vlan1
 ip address 192.168.1.253 255.255.255.0
 ip ospf 1 area 0
 vrrp 1 address-family ipv4
  address 192.168.1.1 primary
  exit-vrrp

interface TenGigabitEthernet1/1/1
 no switchport
 ip address <Uplink IP> <Uplink mask>

interface TenGigabitEthernet1/1/2
 channel-group 1 mode active

interface TenGigabitEthernet1/1/3
 channel-group 1 mode active

router ospf 1
 router-id 192.168.1.253
```

```
 default-information originate

ip route 0.0.0.0 0.0.0.0 <Uplink gateway IP>
```

Catalyst 9300-B configuration

```
hostname CAT9300-B

fhrp version vrrp v3
ip routing

interface Vlan1
 ip address 192.168.1.254 255.255.255.0
 ip ospf 1 area 0
 vrrp 1 address-family ipv4
  address 192.168.1.1 primary
  exit-vrrp

interface TenGigabitEthernet1/1/1
 no switchport
 ip address <Uplink IP> <Uplink mask>

interface TenGigabitEthernet1/1/2
 channel-group 1 mode active

interface TenGigabitEthernet1/1/3
 channel-group 1 mode active

router ospf 1
 router-id 192.168.1.254
 default-information originate

ip route 0.0.0.0 0.0.0.0 <Uplink gateway IP>
```

NCS 1014-A configuration

```
hostname COSM1-NCS1014-A

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.1 255.255.255.255
 shutdown

interface Loopback1
 ipv4 address 10.1.1.11 255.255.255.255

interface MgmtEth0/RP0/CPU0/0
 ipv4 address 192.168.1.11 255.255.255.0

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.1.12 255.255.255.0

router static
 address-family ipv4 unicast
  10.1.1.12/32 192.168.1.1

router ospf 1
 router-id 10.1.1.11
 area 0
 interface Loopback0
 interface Loopback1
```

```
 interface MgmtEth0/RP0/CPU0/0
 interface MgmtEth0/RP0/CPU0/1

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.12
 redundancy gateway-ip 192.168.1.1
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```

NCS 1014-B configuration

```
hostname COSM1-NCS1014-B

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.1 255.255.255.255
 shutdown

interface Loopback1
 ipv4 address 10.1.1.12 255.255.255.255

interface MgmtEth0/RP0/CPU0/0
 ipv4 address 192.168.1.13 255.255.255.0

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.1.14 255.255.255.0

router static
 address-family ipv4 unicast
  10.1.1.11/32 192.168.1.1

router ospf 1
 router-id 10.1.1.12
 area 0
 interface Loopback0
 interface Loopback1
 interface MgmtEth0/RP0/CPU0/0
 interface MgmtEth0/RP0/CPU0/1

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.11
 redundancy gateway-ip 192.168.1.1
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```

Single-homing deployment with devices connected to DCN

This deployment model for utilizes a single Top-of-Rack (ToR) switch and a single Management Ethernet interface for device connectivity.

Requirements for the single-homing deployment

This HA deployment model requires following conditions:

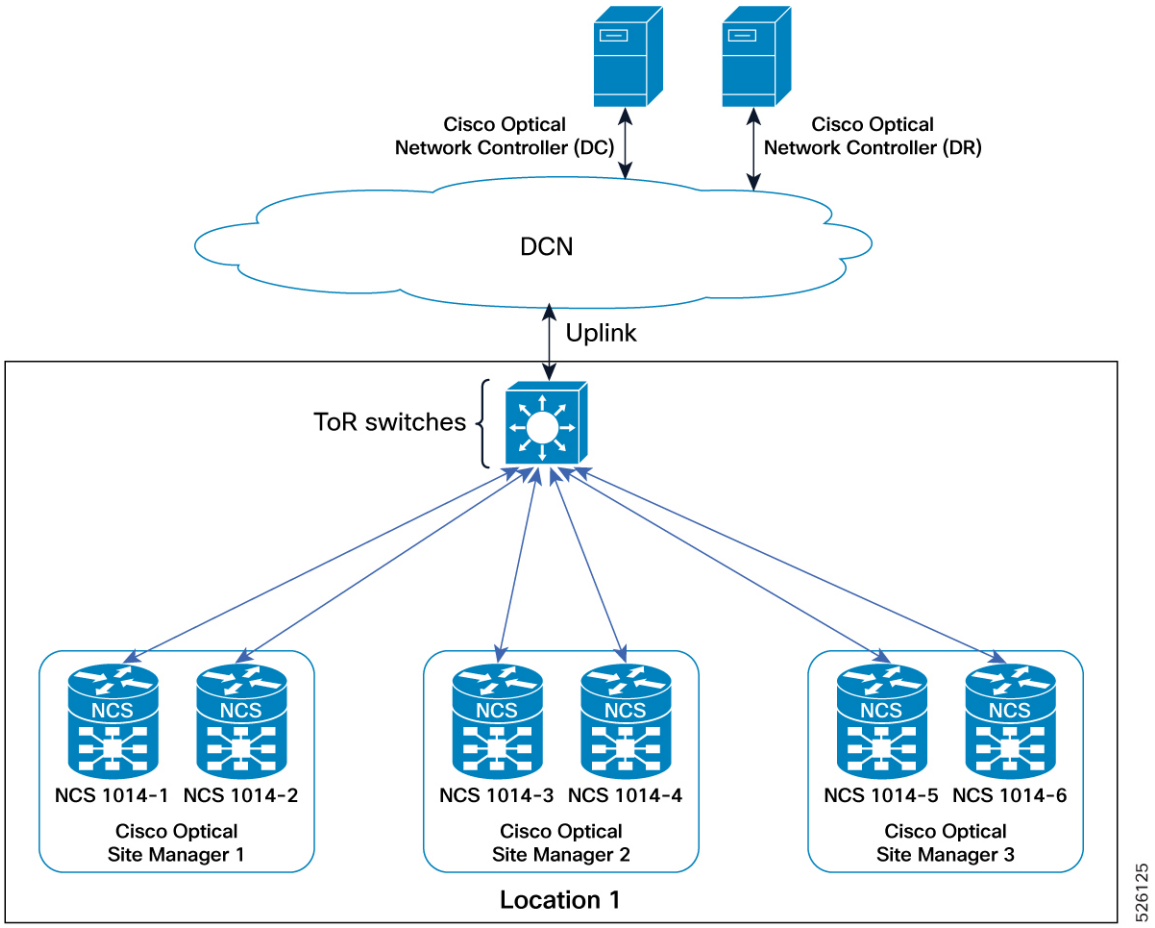
- Devices connect to the network over a single MgmtEth interface with a single cable to a single ToR switch.
- The Cisco Optical Site Manager redundancy interface can match the cabled interface (MgmtEth 0).
- The Cisco Optical Site Manager management interface must be configured as a Loopback interface (Loopback 0).
- IP addresses assigned to the MgmtEth interfaces can be part of a private subnet isolated under the ToR switches.
- The Loopback IP address should be distributed within the Data Communication Network (DCN) and be reachable from CONC.
- Direct access to the devices is always possible through the MgmtEth 0 IP addresses.

This deployment model offers specific operational characteristics and configuration guidelines:

- While a single failure can impact the reachability of a device, Cisco Optical Site Manager configured in high availability remains continuously reachable.
- The address plan and configurations described are specifically focused on the deployment of transponder platforms (e.g., NCS1014) to highlight differences from other deployment models.
- For optical line system platforms (e.g., NCS1010) in a mesh network, where an alternative path to reach the Cisco Optical Site Manager peer device exists via OSC, the address plan and configurations are consistent with models using Loopback interfaces for both Cisco Optical Site Manager redundancy and management interfaces (excluding MgmtEth0/RP0/CPU0/1 configuration if not cabled).

This figure explains the connections diagram of three Cisco Optical Site Manager instances configured in high availability mode on NCS 1000 device with devices connected to DCN in single-homing.

Figure 3: Conceptual explanation of HA deployment for devices connected to DCN in a single-homing model



IP addressing schema for devices connected to DCN in single-homing

This table details the IP addressing for the devices connected to DCN in single-homing deployment model, with the *MgmtEth* interface of the devices in subnet **192.168.1.0/24** and the *Loopback* interface distributed in the DCN as part of the subnet **10.1.1.0/27**.

Table 4: IP addressing schema for single-homing deployment

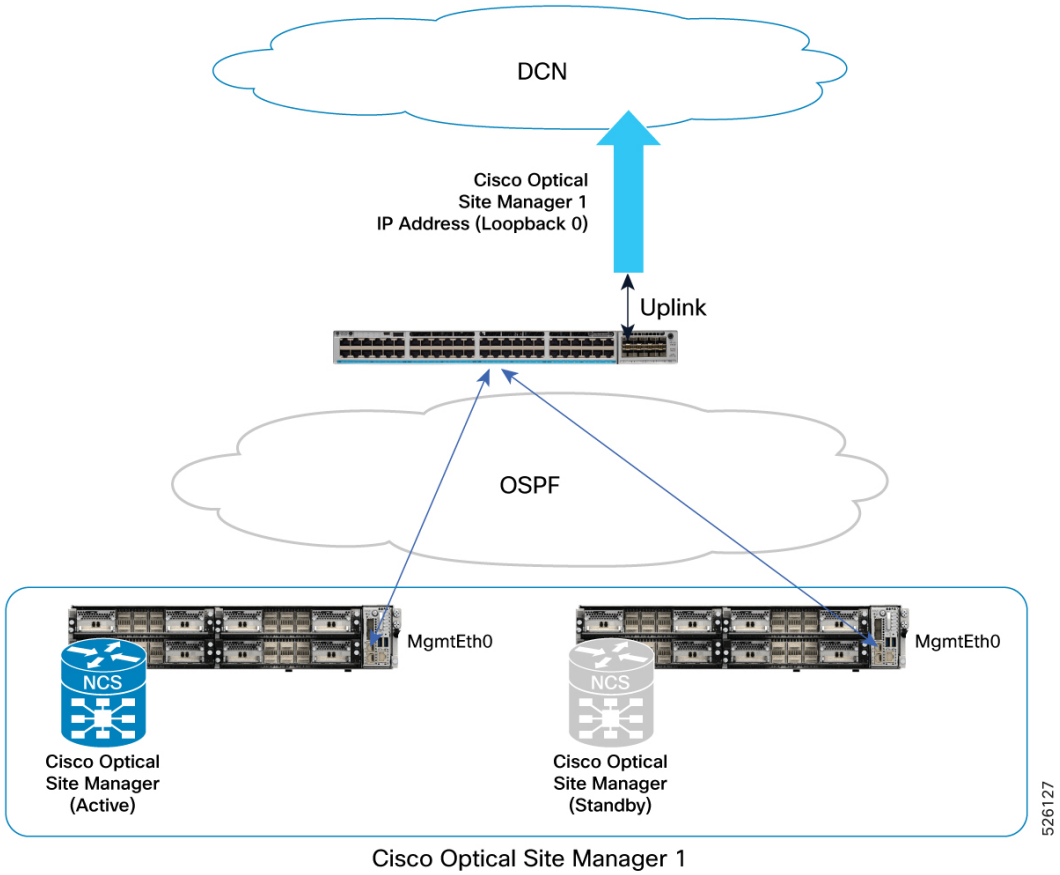
Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to switch	Connected to switch interface
Cisco Optical Site Manager-1	NCS 1000-1	MgmtEth0/RP0/CPU0/0	192.168.1.11/24	Catalyst 9300	Gi1/0/1
		Loopback 0	10.1.1.1/32	–	–
	NCS 1000-2	MgmtEth0/RP0/CPU0/0	192.168.1.12/24	Catalyst 9300	Gi1/0/2
		Loopback 0	10.1.1.1/32	–	–

Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to switch	Connected to switch interface
Cisco Optical Site Manager-2	NCS 1000-3	MgmtEth0/RP0/CPU0/0	192.168.1.13/24	Catalyst 9300	Gi1/0/3
		Loopback 0	10.1.1.2/32	–	–
	NCS 1000-4	MgmtEth0/RP0/CPU0/0	192.168.1.14/24	Catalyst 9300	Gi1/0/4
		Loopback 0	10.1.1.2/32	–	–
Cisco Optical Site Manager-3	NCS 1000-5	MgmtEth0/RP0/CPU0/0	192.168.1.15/24	Catalyst 9300	Gi1/0/5
		Loopback 0	10.1.1.3/32	–	–
	NCS 1000-6	MgmtEth0/RP0/CPU0/0	192.168.1.16/24	Catalyst 9300	Gi1/0/6
		Loopback 0	10.1.1.3/32	–	–

Practical example of devices connected to DCN in single-homing

This figure provides a practical example of this deployment model, implemented with one Catalyst 9300 switch and two NCS 1014 devices.

Figure 4: Deployment model featuring Catalyst 9300 switch and Active/Standby NCS 1014 devices



This example details the configurations for a single-homing HA deployment model of NCS 1014 devices connected to a DCN via a Catalyst 9300 switch.

Catalyst 9300 configuration

```
hostname CAT9300

ip routing
interface Vlan1
 ip address 192.168.1.1 255.255.255.0
 ip ospf 1 area 0

interface TenGigabitEthernet1/1/1
 no switchport
 ip address <Uplink IP> <Uplink mask>

router ospf 1
 router-id 192.168.1.1
 default-information originate

ip route 0.0.0.0 0.0.0.0 <Uplink gateway IP>
```

NCS 1014-A configuration

```
hostname COSM1-NCS1014-A

netconf-yang agent ssh
```

```
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.1 255.255.255.255
 shutdown

interface MgmtEth0/RPO/CPU0/0
 ipv4 address 192.168.1.11 255.255.255.0

router ospf 1
 router-id 192.168.1.11
 area 0
  interface Loopback0
  interface MgmtEth0/RPO/CPU0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 192.168.1.12
 redundancy gateway-ip 192.168.1.1
 redundancy interface-name MgmtEth0/RPO/CPU0/0
 auto-onboard enable
 mgmt-interface-name Loopback0
```

NCS 1014-B configuration

```
hostname COSM1-NCS1014-B

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.1 255.255.255.255
 shutdown

interface MgmtEth0/RPO/CPU0/0
 ipv4 address 192.168.1.12 255.255.255.0

router ospf 1
 router-id 192.168.1.12
 area 0
  interface Loopback0
  interface MgmtEth0/RPO/CPU0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 192.168.1.11
 redundancy gateway-ip 192.168.1.1
 redundancy interface-name MgmtEth0/RPO/CPU0/0
 auto-onboard enable
 mgmt-interface-name Loopback0
```

Deployment with devices interconnected and managed remotely via OSC

This deployment model facilitates the management of a remote node, specifically a 2-degrees ROADM, where devices are interconnected without direct Data Communication Network (DCN) connectivity.

Requirements for devices interconnected and managed remotely via OSC

This HA deployment model requires these conditions:

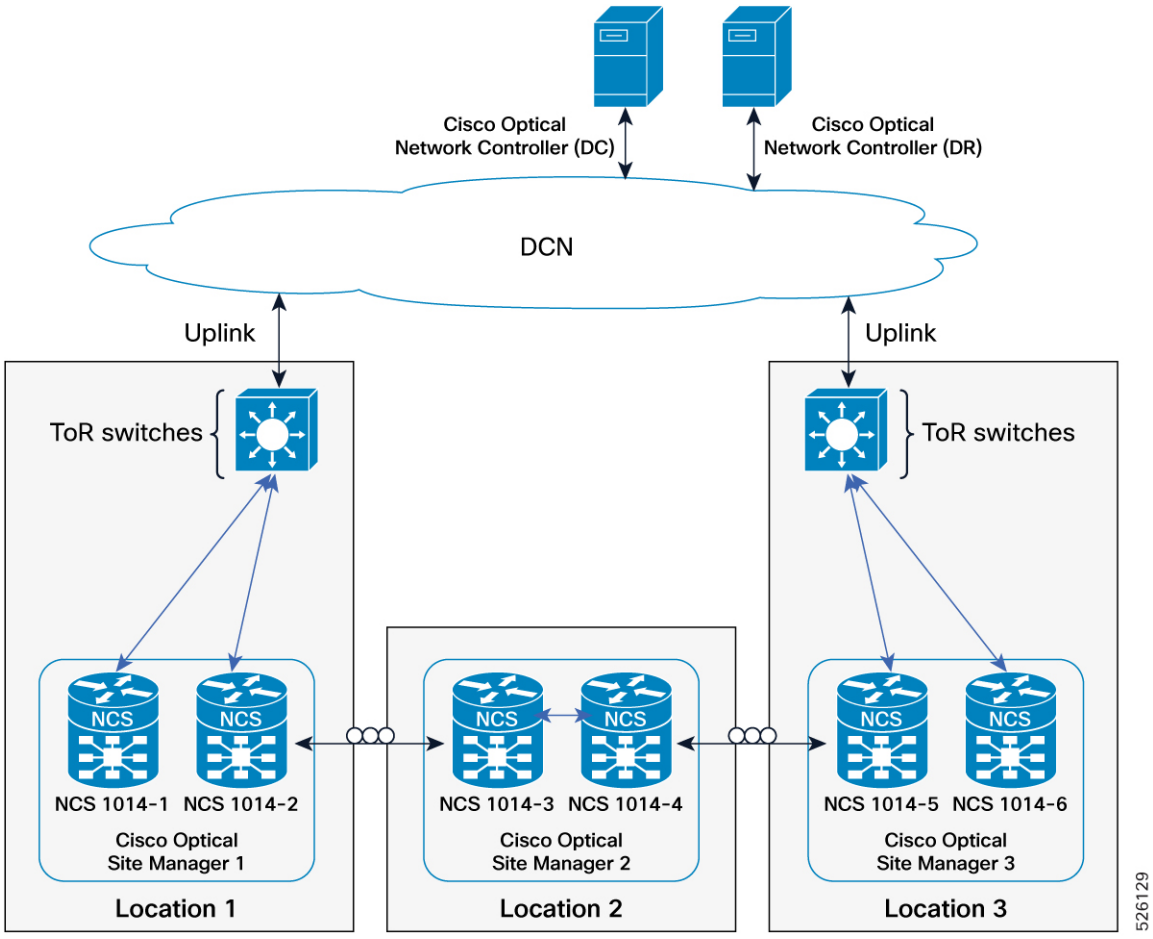
- Cisco Optical Site Manager is configured in high availability mode on the remote node.
- The remote node is reachable over the Optical Service Channel (OSC) from other nodes connected to the customer's DCN.
- Devices within the remote node (e.g., Location 2) achieve DCN reachability through multiple paths over the OSC of different degrees.
- The two devices hosting Cisco Optical Site Manager in high availability are directly interconnected through an Ethernet cable connected to their MgmtEth interfaces.

Implementing this deployment model requires specific interface configurations and routing to ensure high availability and remote manageability, independent of failures.

- Both Cisco Optical Site Manager redundancy and management interfaces must be configured as Loopback interfaces to ensure reachability independent of potential failures.
- IP addresses assigned to the MgmtEth interfaces (used for device interconnection) and GigabitEthernet interfaces must be strategically distributed within the network to support interconnection failures.
- Loopback IP addresses must be distributed within the DCN and be reachable from the Centralized Operations and Network Control (CONC) system.
- The two devices hosting Cisco Optical Site Manager in high availability in the remote location, which are directly interconnected via an Ethernet cable on their MgmtEth interfaces, require a static route or routing protocol configuration.
- This routing configuration must define how to reach the peer's Cisco Optical Site Manager redundancy interface (e.g., Loopback 1 interface) using the peer's MgmtEth interface as the next hop.

This figure shows a network diagram with three Cisco Optical Site Manager instances in three different locations, configured in HA mode on NCS 1000 family devices. The Cisco Optical Site Manager-2 device in the middle is managed as a remote device.

Figure 5: Conceptual explanation of HA deployment for devices interconnected and managed remotely via OSC



IP addressing schema for devices interconnected and managed remotely via OSC

This table details the IP addressing for devices in the managed remotely via OSC deployment model. The *MgmtEth* interfaces are in subnet **192.168.1.12/31**, and the *Loopback* interfaces are distributed in the DCN as part of subnet **10.1.1.0/27**.

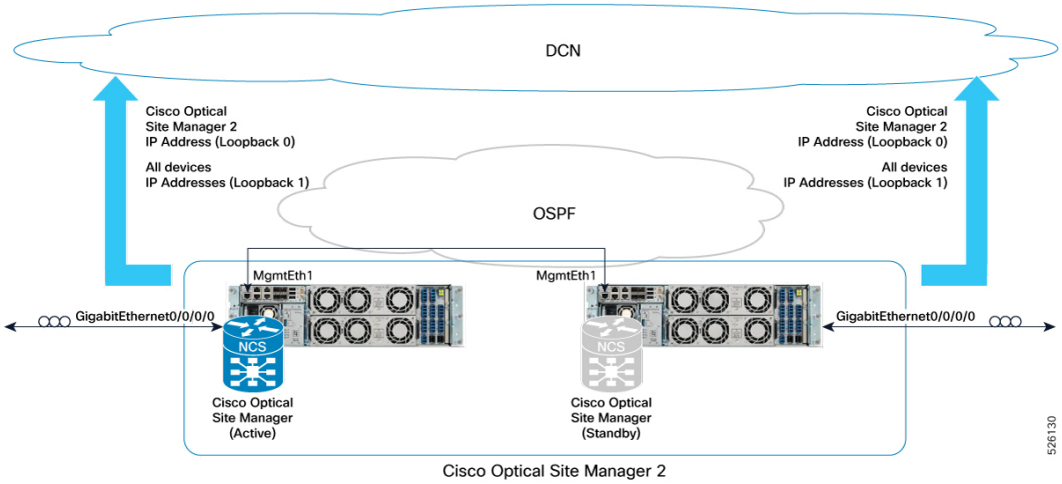
Table 5: IP addressing schema for deployment with devices interconnected and managed remotely

Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to NCS device	Connected to NCS device interface
Cisco Optical Site Manager 2	NCS 1010-3	MgmtEth0/RP0/CPU0/1	192.168.1.12/31	Peer NCS 1010	MgmtEth0/RP0/CPU0/1
		GigabitEthernet0/0/0/0	172.18.0.1/31	Neighbor	GigabitEthernet0/0/0/0
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.13/32	–	–
	NCS 1010-4	MgmtEth0/RP0/CPU0/1	192.168.1.13/31	Peer NCS 1010	MgmtEth0/RP0/CPU0/1
		GigabitEthernet0/0/0/0	172.18.0.2/31	Neighbor	GigabitEthernet0/0/0/0
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.14/32	–	–

Practical example of deployment with devices interconnected managed remotely via OSC

This figure provides a practical example of this deployment model, implemented with two NCS 1010 devices.

Figure 6: Example of deployment model with two NCS 1010 and Catalyst 93000 configured as 2-degrees ROADM



This example describes the configuration of two NCS 1010 devices deployed as a 2-degree ROADM, interconnected and managed remotely through the OSC.

NCS 1010-A configuration

```
hostname COSM1-NCS1010-A

netconf-yang agent ssh
ssh server v2
ssh server netconf
```

```
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.2 255.255.255.255
 shutdown

interface Loopback1
 ipv4 address 10.1.1.13 255.255.255.255

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.1.12 255.255.255.254

interface GigabitEthernet0/0/0/0
 ipv4 address 172.18.0.1 255.255.255.254

router static
 address-family ipv4 unicast
  10.1.1.14/32 192.168.1.13

router ospf 1
 router-id 10.1.1.13
 area 0
 interface Loopback0
 interface Loopback1
 interface MgmtEth0/RP0/CPU0/1
 interface GigabitEthernet0/0/0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.14
 redundancy gateway-ip <gateway>
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```

NCS 1010-B configuration

```
hostname COSM1-NCS1010-B

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.2 255.255.255.255
 shutdown

interface Loopback1
 ipv4 address 10.1.1.14 255.255.255.255

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.1.13 255.255.255.254

interface GigabitEthernet0/0/0/0
 ipv4 address 172.18.0.2 255.255.255.254

router static
 address-family ipv4 unicast
  10.1.1.13/32 192.168.1.12

router ospf 1
 router-id 10.1.1.14
 area 0
```

```
 interface Loopback0
 interface Loopback1
 interface MgmtEth0/RP0/CPU0/1
 interface GigabitEthernet0/0/0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.13
 redundancy gateway-ip <gateway>
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```

Deployment with devices interconnected with redundancy and managed remotely via OSC

This deployment model describes the management of a remote node, a 2-degrees ROADM, with physical redundancy, where Cisco Optical Site Manager is configured in high availability and reachable over the Optical Service Channel.

Requirements for devices interconnected with redundancy and managed remotely via OSC

This HA deployment model requires these conditions:

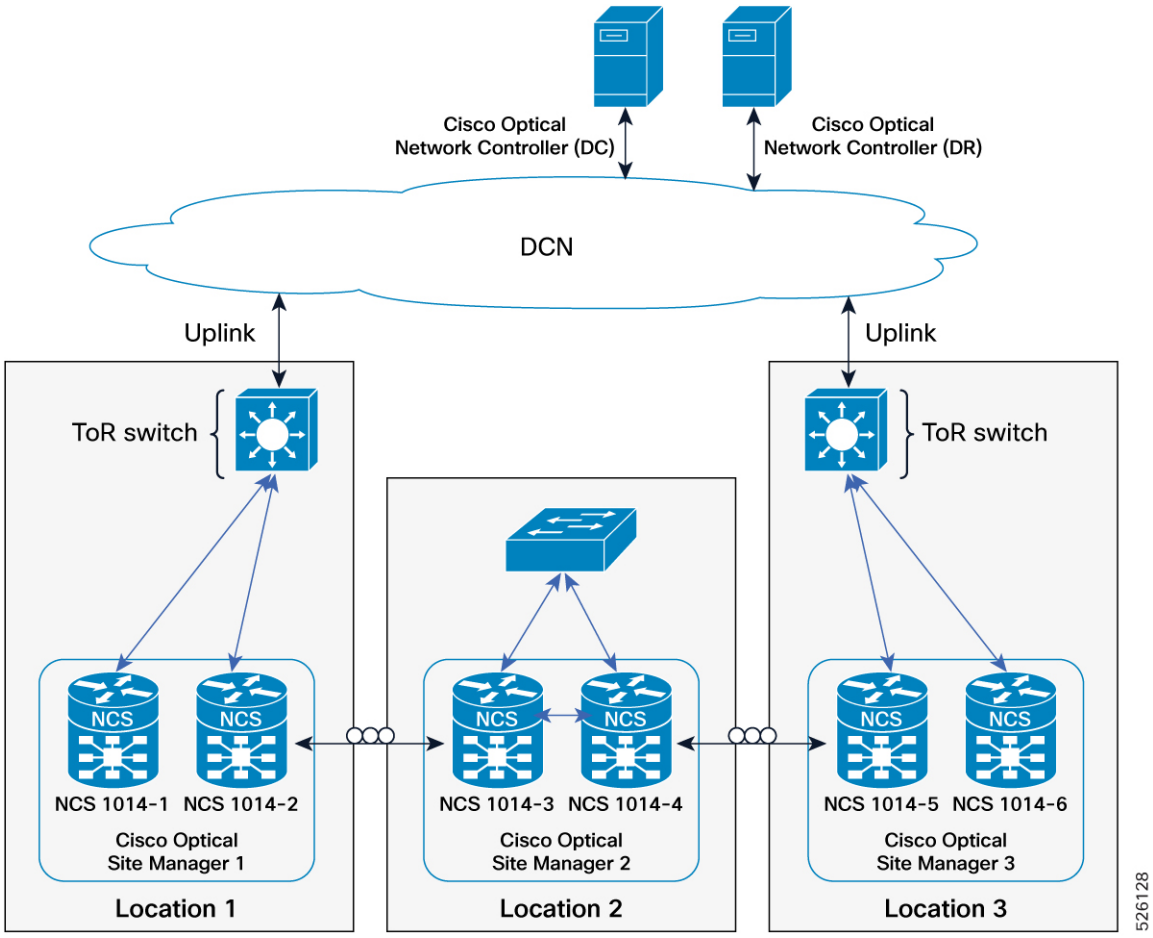
- Devices in the remote node are interconnected with physical redundancy and lack direct DCN connectivity.
- Cisco Optical Site Manager instances are configured in high availability, accessible via OSC from other nodes connected to the customer's DCN.
- Devices within the remote node (Location 2) achieve DCN reachability through multiple paths over the OSC with varying degrees.
- Two devices hosting Cisco Optical Site Manager in high availability are directly interconnected through both an Ethernet cable plugged into MgmtEth interfaces and an external switch.

Implementing this deployment model requires specific interface configurations and routing to ensure high availability and remote manageability, even with physical redundancy.

- Both Cisco Optical Site Manager redundancy and management interfaces must be configured as Loopback interfaces to ensure reachability independent of potential failures.
- IP addresses assigned to the MgmtEth interfaces (used for device interconnection) and GigabitEthernet interfaces must be strategically distributed within the network to support interconnection failures.
- Loopback IP addresses must be distributed within the DCN and be reachable from the Centralized Operations and Network Control (CONC) system.
- The two devices hosting Cisco Optical Site Manager in high availability in the remote location require a static route or routing protocol configuration.
- This routing configuration must define how to reach the redundancy interface for Cisco Optical Site Manager on the peer device (e.g., Loopback 1 interface) using the peer's MgmtEth interface as the next hop.

This figure illustrates the connection diagram of three Cisco Optical Site Manager instances in three different locations, configured in HA mode on NCS 1000 family devices. The device in the middle, Cisco Optical Site Manager-2, is managed as a remote device.

Figure 7: Conceptual explanation of deployment with devices interconnected with redundancy and managed remotely via OSC deployment



IP addressing schema for devices interconnected with redundancy and managed remotely via OSC deployment

This table details the IP addressing for the devices interconnected with redundancy and managed remotely via OSC deployment model, with the *MgmtEth* interfaces of the devices in subnets **192.168.1.0/24** and **192.168.2.12/31** and the *Loopback* interfaces distributed in the DCN as part of the subnet **10.1.1.0/27**.

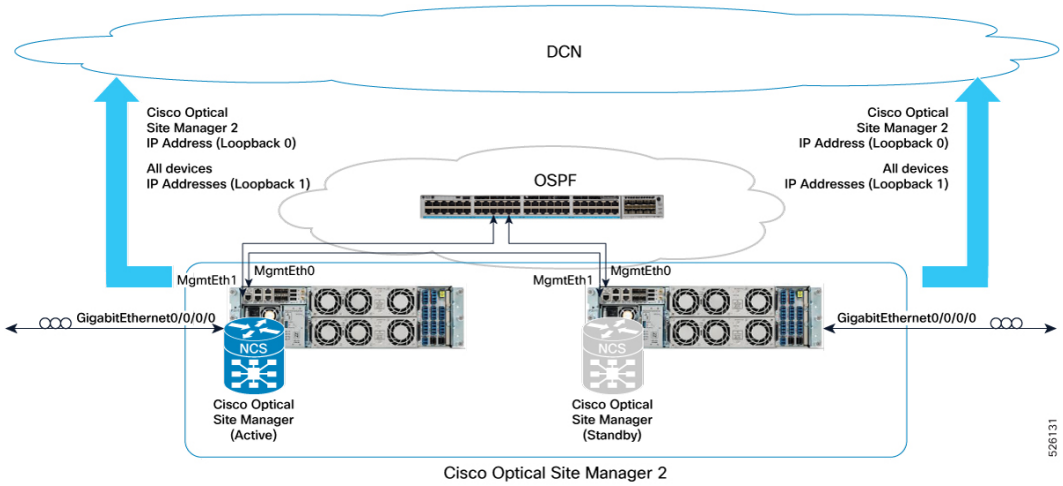
Table 6: IP addressing schema for devices interconnected with redundancy and managed remotely via OSC deployment

Cisco Optical Site Manager instance	NCS device	NCS device interface	NCS device IP/Mask	Connected to switch	Connected to switch interface
Cisco Optical Site Manager 2	NCS 1010-3	MgmtEth0/RP0/CPU0/0	192.168.1.12/24	Ext Switch	–
		MgmtEth0/RP0/CPU0/1	192.168.2.12/31	Peer NCS1K	MgmtEth0/RP0/CPU0/1
		GigabitEthernet0/0/0/0	172.18.0.1/31	Neighbor NCS1K	GigabitEthernet0/0/0/0
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.13/32	–	–
	NCS 1010-4	MgmtEth0/RP0/CPU0/0	192.168.1.13/24	Ext Switch	–
		MgmtEth0/RP0/CPU0/1	192.168.2.13/31	Peer NCS1K	MgmtEth0/RP0/CPU0/1
		GigabitEthernet0/0/0/0	172.18.0.2/31	Neighbor NCS1K	GigabitEthernet0/0/0/0
		Loopback 0	10.1.1.2/32	–	–
		Loopback 1	10.1.1.14/32	–	–

Practical example of devices interconnected with redundancy and managed remotely via OSC deployment

This figure provides a practical example of this deployment model, implemented with one Catalyst 9300 switch and two NCS 1010 devices.

Figure 8: Example of deployment model with two NCS 1010 configured as 2-degrees ROADM



Example configuration for the deployment

This example describes the configuration of two NCS 1010 devices set up as a 2-degree ROADM with redundancy and remote management through the OSC.

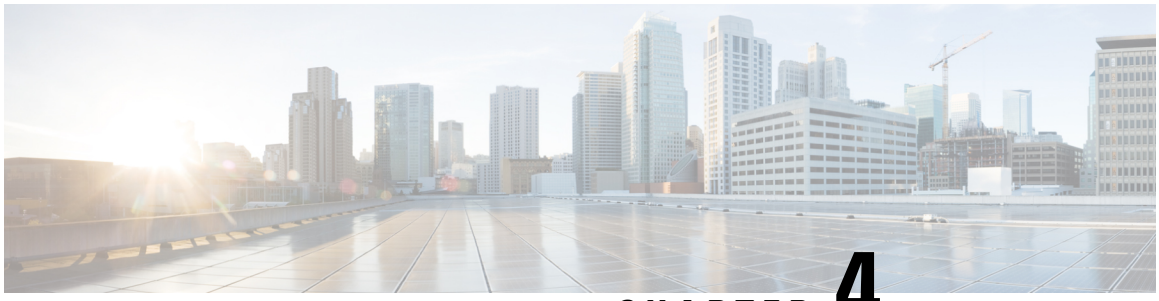
NCS 1010-A configuration

```
hostname COSM1-NCS1010-A

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.2 255.255.255.255
 shutdown

interface Loopback1
 ipv4 address 10.1.1.13 255.255.255.255

interface MgmtEth0/RP0/CPU0/0
 ipv4 address 192.168.1.12 255.255.255.0

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.2.12 255.255.255.254

interface GigabitEthernet0/0/0/0
 ipv4 address 172.18.0.1 255.255.255.254

router static
 address-family ipv4 unicast
 10.1.1.14/32 192.168.2.13
 router ospf 1
 router-id 10.1.1.13
 area 0
 interface Loopback0
 interface Loopback1
 interface MgmtEth0/RP0/CPU0/0
 interface MgmtEth0/RP0/CPU0/1
 interface GigabitEthernet0/0/0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.14
 redundancy gateway-ip <gateway>
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```

NCS 1010-B configuration

```
hostname COSM1-NCS1010-B

netconf-yang agent ssh
ssh server v2
ssh server netconf
ssh server rate-limit 600

interface Loopback0
 ipv4 address 10.1.1.2 255.255.255.255
 shutdown
```

```
interface Loopback1
 ipv4 address 10.1.1.14 255.255.255.255

interface MgmtEth0/RP0/CPU0/0
 ipv4 address 192.168.1.13 255.255.255.0

interface MgmtEth0/RP0/CPU0/1
 ipv4 address 192.168.2.13 255.255.255.254

interface GigabitEthernet0/0/0/0
 ipv4 address 172.18.0.2 255.255.255.254

router static
 address-family ipv4 unicast
 10.1.1.13/32 192.168.2.12
 router ospf 1
 router-id 10.1.1.14
 area 0
 interface Loopback0
 interface Loopback1
 interface MgmtEth0/RP0/CPU0/0
 interface MgmtEth0/RP0/CPU0/1
 interface GigabitEthernet0/0/0/0

cosm
 user-name <device username>
 user-password <device password>
 redundancy peer-ip 10.1.1.13
 redundancy gateway-ip <gateway>
 redundancy interface-name Loopback1
 auto-onboard enable
 mgmt-interface-name Loopback0
```



CHAPTER 4

Setup Cisco Optical Site Manager on NCS 1000

This chapter provides step-by-step instructions for enabling Cisco Optical Site Manager northbound interfaces and for activating or deactivating Cisco Optical Site Manager on NCS 1000 devices.

- Enable or disable Cisco Optical Site Manager north-bound interfaces, on page 47
- Activate Cisco Optical Site Manager, on page 48
- Deactivate Cisco Optical Site Manager , on page 50

Enable or disable Cisco Optical Site Manager north-bound interfaces

Cisco Optical Site Manager provides three north-bound interfaces. By default, all these interfaces are enabled. If required, individual interfaces can be disabled.

- NETCONF
- RESTCONF
- Interactive Web-UI

Warning Disabling all the interfaces will make Cisco Optical Site Manager inaccessible!

This configuration is optional and must be completed before activating Cisco Optical Site Manager on the device. Use the device's CLI in COSM configuration mode to enable or disable interfaces individually. The default NETCONF port is *2022*. You may change this port during configuration.

Before you begin

Ensure that Cisco Optical Site Manager is configured Standalone or High Availability mode.

Follow these steps to enable or disable Cisco Optical Site Manager north-bound interfaces.

Procedure

Step 1 Enter IOS XR and COSM configuration modes using the **configure terminal** and **cosm** commands.

Example:

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RSP0/CPU0:ios(config)# cosm
```

Step 2 (Optional) Configure the NETCONF port if you want to use a port other than 2022 using the **netconf port** *port-number* command

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)#netconf port 2021
```

Configures the specified port for the NETCONF SSH server. If no port is specified, port 2022 is used by default.

Step 3 Enable or disable the Cisco Optical Site Manager interfaces using the <*interface-name*> **enable | disable** command.

Example:

```
RP/0/RP0/CPU0:ios(config-cosm)# netconf enable
RP/0/RP0/CPU0:ios(config-cosm)# restconf disable
RP/0/RP0/CPU0:ios(config-cosm)# webui enable
```

Enables or disables the specified Cisco Optical Site Manager interfaces.

Step 4 Commit the changes using the **commit** command.

After configuration changes are committed, the application operates with the specified interface availability. Only enabled interfaces are accessible for management and monitoring, and disabled interfaces do not accept connections.

What to do next

Activate Cisco Optical Site Manager, on page 48

Activate Cisco Optical Site Manager

After configuration is complete, activate Cisco Optical Site Manager to enable the application.

After configuring Cisco Optical Site Manager in standalone or high availability mode, including setting management interfaces, user credentials, and optional features like auto-onboarding, the application remains inactive until explicitly activated.

Cisco Optical Site Manager activation takes about 11 minutes on the NCS 1001 and about eight minutes on the NCS 1004 to initialize.

Important The configuration of interfaces used by Cisco Optical Site Manager should not be changed after activation.

Before you begin

- Before activating Cisco Optical Site Manager in HA mode, verify that these parameter values are same on both host devices, if configured.
  - *netconf (optional)*
  - *restconf (optional)*

- *webui (optional)*
- *user-name*
- *user-password*

Follow these steps to activate Cisco Optical Site Manager.

Procedure

Step 1 Activate Cisco Optical Site Manager using the **cosm activate** command.

Example:

```
RP/0/RP0/CPU0:ios# cosm activate
```

Step 2 Verify the status of the application using the **show cosm status** command.
It may take a few minutes to activate Cisco Optical Site Manager.

- After activating, wait for few minutes before logging in to the Cisco Optical Site Manager GUI.
- Upon successful activation, the application transitions to an active state. Status commands display APP_ACTIVATED and ACTIVATED states.

This example shows the status of Cisco Optical Site Manager configured in standalone mode.

```
RP/0/RP0/CPU0:OLT-2#show cosm status
Fri Oct 18 13:06:09.862 UTC
COSM state: APP_ACTIVATED
AppMgr app state: ACTIVATED
AppMgr container state: RUNNING
Container status: Up 3 weeks
Last error: No error
COSM version: 24.3.1.D0186
```

This example shows the status of Active instance of the Cisco Optical Site Manager configured in HA mode.

```
RP/0/RP0/CPU0:HAN-1#show cosm status
Thu Oct 30 10:21:25.374 UTC
COSM state: APP_ACTIVATED
AppMgr app state: ACTIVATED
AppMgr container state: RUNNING
Container status: Up 2 days
Last error: No error
COSM version: 25.1.1.R0366
Redundancy role: ACTIVE (connected standby 2.2.2.2-COSM)
```

This example shows the status of Standby instance of the Cisco Optical Site Manager configured in HA mode.

```
RP/0/RP0/CPU0:HAN-2#show cosm status
Thu Oct 30 10:23:01.366 UTC
COSM state: APP_ACTIVATED
AppMgr app state: ACTIVATED
AppMgr container state: RUNNING
Container status: Up 2 days
```

```
Last error: No error
COSM version: 25.1.1.R0366
Redundancy role: STANDBY (connected active 1.1.1.1-COSM)
```

What to do next

- Login to Cisco Optical Site Manager
- Auto onboarding of the NCS 1001 device hosting Cisco Optical Site Manager does not complete because the XR device communicates with the third-party docker through the east-west interface. To onboard a NCS 1001 device, manually add it in Cisco Optical Site Manager using the east-west interface. For more details, see Add a device.

Deactivate Cisco Optical Site Manager

Deactivating Cisco Optical Site Manager should be performed only when:

- A change in the IP address of the Cisco Optical Site Manager instance is required.
- The deployment is transitioning from a standalone setup to a high availability (HA) configuration.
- The device hosting Cisco Optical Site Manager is being decommissioned and needs to be relocated to another device within the same aggregation site.
- The Cisco Optical Site Manager installation is incomplete or corrupted and requires removal and reinstallation.

Note Deactivating Cisco Optical Site Manager for general debugging or troubleshooting is not recommended.

Warning Deactivating Cisco Optical Site Manager removes its database and the Disaster Recovery backup.

Before you begin

Before deactivating Cisco Optical Site Manager:

- Create a backup of Cisco Optical Site Manager database. For more details, see Backup and Download Database .
- Download the current diagnostic logs in case required for troubleshooting. For more details, see View Cisco Optical Site Manager Diagnostics .
- Ensure that all the devices are in sync completed state in Cisco Optical Site Manager. If multiple devices are managed in Cisco Optical Site Manager, prepare to delete all associated devices simultaneously.

Follow these steps to deactivate Cisco Optical System Manager from your host devices. This process is not traffic impacting.

Procedure

Step 1 Perform these steps from the Cisco Optical Site Manager WEB-UI.

a. Lock the devices.

b. Back up the device configuration.

c. Unlock the devices.

d. Wait for synchronization to complete for all devices.

e. Select all devices and delete them from the Cisco Optical Site Manager.

Step 2 Perform these steps from the IOS XR CLI.

a. Run the `no lldp system-description` command to remove the LLDP system description on each device deleted from the Cisco Optical Site Manager.

Example:

```
RP/0/RP0/CPU0:COSM_OLT-4_215#configure terminal
Thu Oct 23 16:34:24.928 +0530
RP/0/RP0/CPU0:COSM_OLT-4_215(config)#no lldp system-description
RP/0/RP0/CPU0:COSM_OLT-4_215(config)#commit
```

b. Run the **cosm deactivate** command to deactivate the Cisco Optical System Manager.

Example:

```
RP/0/RP0/CPU0:ios# cosm deactivate
```

c. Run the **show cosm status** command to verify the status of the Cisco Optical Site Manager instance.

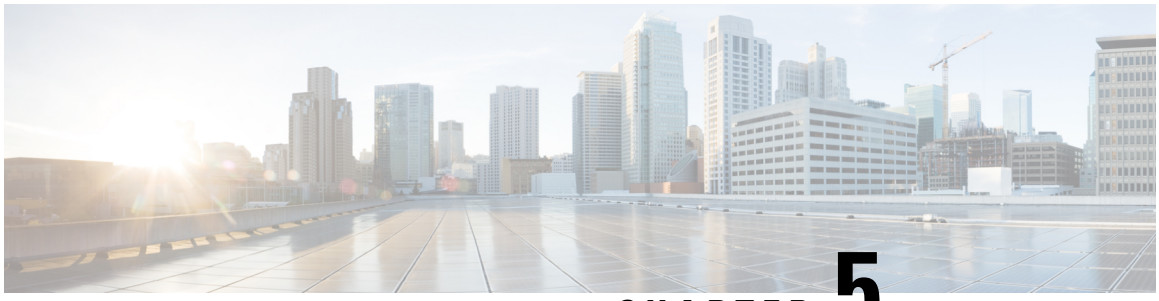
Example:

```
RP/0/RP0/CPU0: ios#show cosm status
COSM state: APP DEACTIVATED
AppMgr app state: DEACTIVATED
AppMgr container state: UNKNOWN
Container status: Not present
Last error: No error
COSM version: 24.3.1.D0186
```

PART II

Install and Setup for NCS 2000

- Install Cisco Optical Site Manager on NCS 2000 SVO-LC, on page 55
- Configure Cisco Optical Site Manager on NCS 2000 SVO-LC, on page 65
- Upgrade NCS 2000 nodes to the Cisco Optical Site Manager, on page 83



CHAPTER 5

Install Cisco Optical Site Manager on NCS 2000 SVO-LC

Table 7: Feature History

Feature Name	Release Information	Description
Geographic Redundancy Support for High Availability	Cisco NCS 2000 Release 25.1.1	The Cisco Optical Site Manager now facilitates geographic redundancy by connecting two NCS 2000 nodes located in different places. The Geo HA Mode configuration in SVO-LCs ensures that redundancy is maintained if one of the NCS2000 nodes fails. HA mode can be deployed in three modes: • Local HA • Geo HA using the UDC channel • Geo HA between near-by NCS2000 nodes The YAML file is updated to include the redundancy mode setting: `redundancy-mode: "GEO_HA".`

- Install Cisco Optical Site Manager on NCS 2000 SVO-LC, on page 56
- HA deployment modes, on page 56
- Network YAML configuration file, on page 60
- Prepare the Network Configuration, on page 62
- Install Cisco Optical Site Manager Tool, on page 62
- Recommended resources, on page 64

Install Cisco Optical Site Manager on NCS 2000 SVO-LC

Table 8: Feature History

Feature Name	Release Information	Description
Geographic Redundancy Support for High Availability	Cisco NCS 2000 Release 25.1.1	The Cisco Optical Site Manager now facilitates geographic redundancy by connecting two NCS 2000 nodes located in different places. The Geo HA Mode configuration in SVO-LCs ensures that redundancy is maintained if one of the NCS2000 nodes fails. HA mode can be deployed in three modes: • Local HA • Geo HA using the UDC channel • Geo HA between near-by NCS2000 nodes The YAML file is updated to include the redundancy mode setting: `redundancy-mode: "GEO_HA".`

HA deployment modes

You can deploy HA in the different modes:

- Local HA
- Geo HA between adjacent nodes using UDC channel
- Geo HA between nearby NCS 2000 nodes

Local HA (Local High Availability)

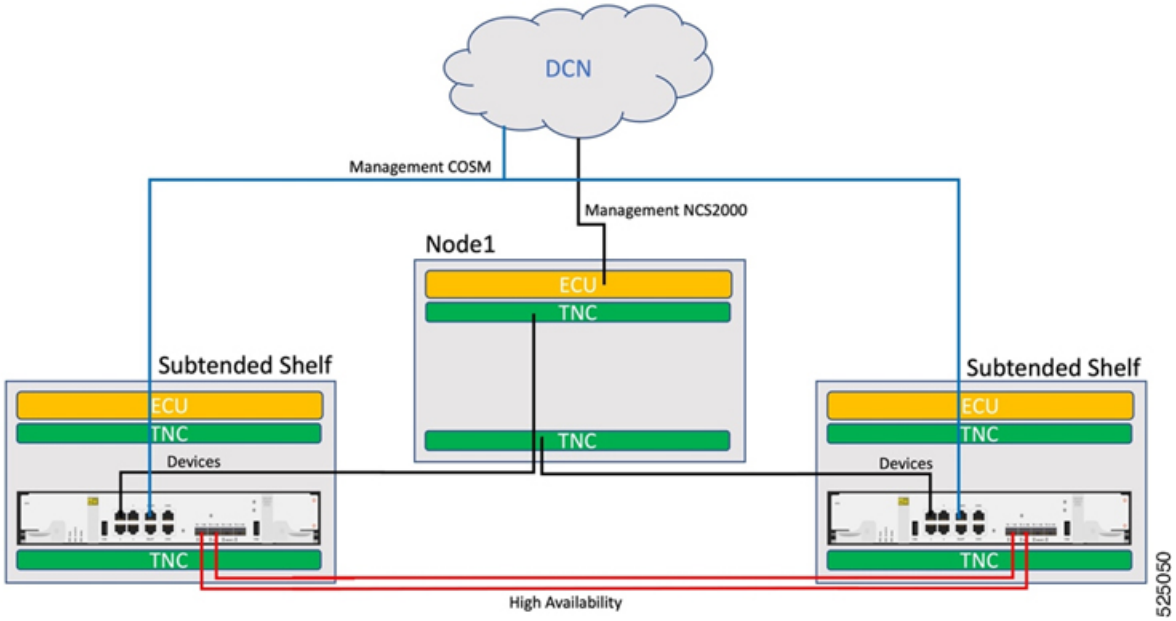
Local HA mode provides high availability by inserting two SVO-LCs into the same NCS2000 node. This setup ensures redundancy within a single node.

In Local HA mode, two SVO-LCs are installed within the same NCS 2000 node. It provides redundancy by using two SVO-LCs in the same NCS 2000 node and ensures high availability by enabling failover to the

standby SVO-LC in case of primary SVO-LC failure. Simplifies deployment by keeping all components within a single node.

This image shows the Local HA connection for NCS 2000 multishelf node.

Figure 9: Local HA connection for NCS 2000 multishelf node



The connection requirements for each SVO-LC are outlined below:

- Connect MGMT1 port to the customer Data Communication Network (DCN).
- Connect two optical fibers, necessitating the insertion of two pluggables into the SVO-LC card's HA1 and HA2 ports.
- Connect Port 1 to one TNC and peer SVO-LC port 1 connected to the other TNC.
- (Optional) Connect NCS 2000 ECU EMS connected to customer DCN (in case of multishelf, the ECU of master chassis), in case there is a specific requirement of direct accessibility of the NCS 2000 device.

Geographic high availability

In Geo HA mode, two SVO-LCs are installed in separate NCS 2000 nodes. The high availability network between these SVO-LCs is transported through the User-Defined Channel (UDC) channel. Each SVO-LC runs a Cisco Optical Site Manager Admin Plane, managing its local line card and communicating with its peer on the other SVO-LC. A Cisco Optical Site Manager instance, representing a virtual network element (vNE), runs on both SVO-LCs, with one in Active state and the other in Standby state.

Benefits of geo HA

Geo HA offers several benefits in terms of redundancy and network reliability:

- Utilizes two SVO-LCs located in separate NCS2000 nodes to provide robust redundancy.
- Utilizes the UDC channel or the SVO-LC optical pluggables to transmit high-availability data between adjacent nodes, ensuring uninterrupted operations.

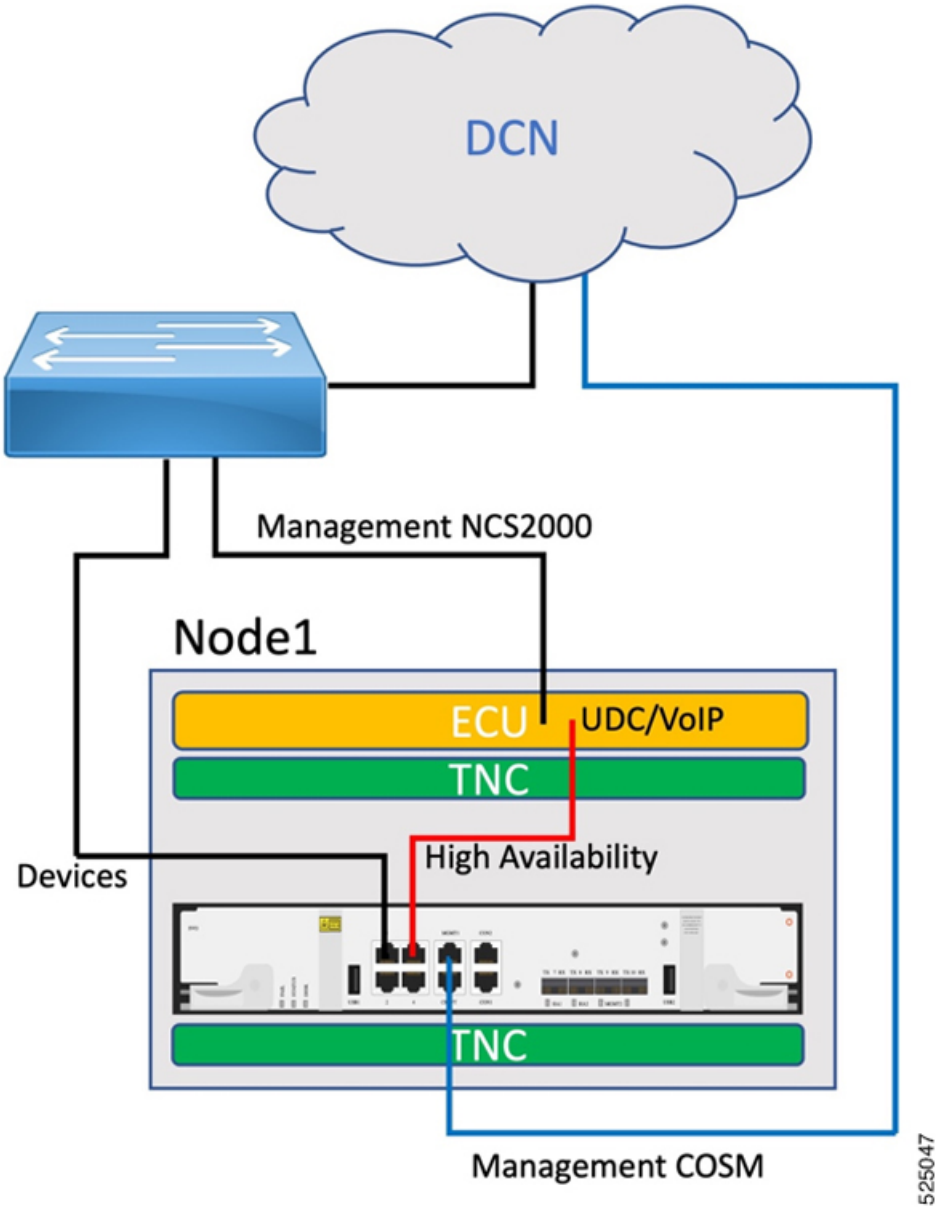
- Facilitates failover to the standby SVO-LC in the event of primary SVO-LC failure, increasing network resilience.

Geo HA using the UDC channel

Geo HA Mode is a configuration that enhances network reliability and availability by placing two SVO-LC cards into two adjacent NCS 2000 nodes. The UDC channel is utilized to transport the high availability network, ensuring continuous service even in the event of failures.

This image shows the Geo HA connection using the UDC channel.

Figure 10: Geo HA connection using the UDC channel



The Geo HA link is implemented using the available NCS 2000 UDC channel, enabling packet processing at the hardware level without impacting the NCS 2000 controller CPU. It supports a single-path UDC HA link with a theoretical bandwidth of 80 Mbps.

It is important to note that connecting one of the optical HA ports to the local ECU UDC port using the electrical ONS-SE-ZE-EL-C pluggable is not possible. This limitation arises from a re-timer connected to the PPM, which only supports a 1G rate, whereas the NCS 2000 UDC port operates at an FE rate. To address this, port 3 is reconfigured as an electrical HA port and will properly negotiate the FE speed.

The UDC must be configured through CTC, as the Cisco Optical Site Manager does not support this functionality. The UDC is set on the Transponder Node Controller (TNC) pluggable associated with the Optical Supervisory Channel (OSC) connected to the side facing the adjacent node. The same configuration is applied to the corresponding TNC pluggable on the adjacent NCS 2000 node.

Each SVO-LC must be connected as below:

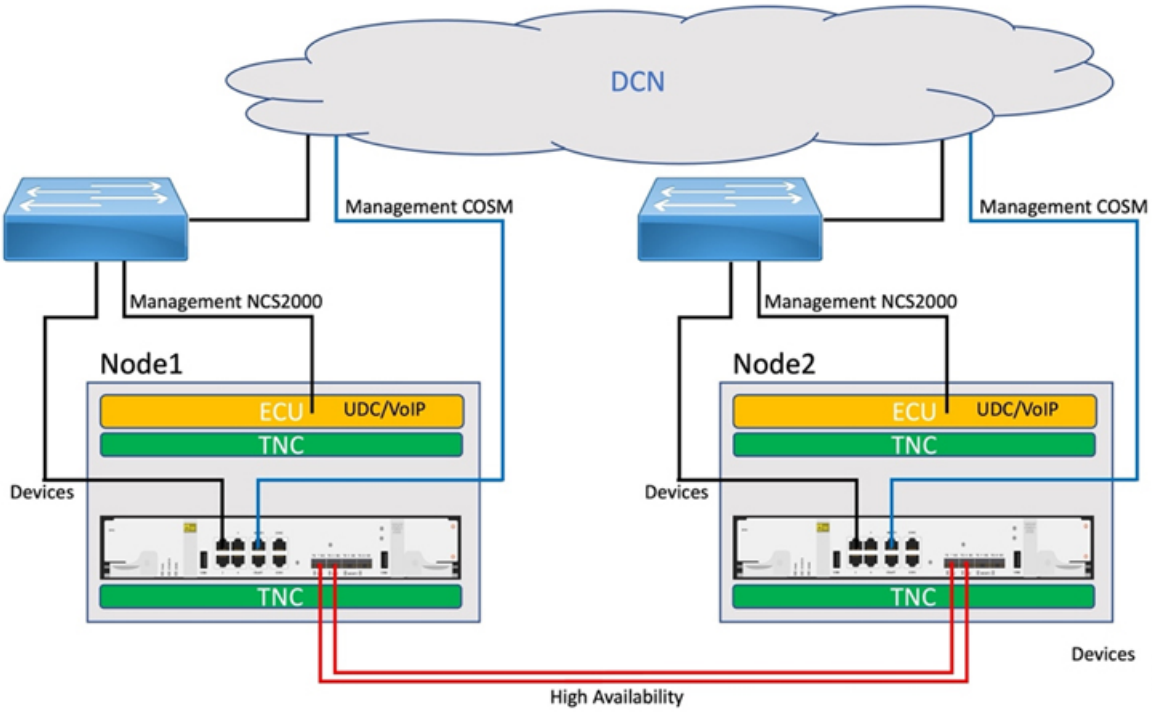
- Connect MGMT1 port to the customer Data Communication Network (DCN).
- Connect port 3 to the NCS 2000 ECU UDC/VoIP.
- Connect port 1 to the NCS 2000 ECU EMS or the same switch (same VLAN) where NCS 2000 ECU EMS is connected.
- (Optional) NCS 2000 ECU EMS may connect directly to the customer DCN for multishelf setups, offering direct accessibility to the NCS2000 device if needed.

Geo HA between nearby NCS 2000 nodes

In Geo HA mode involving nearby NCS 2000 nodes, the two SVO-LCs are installed in separate NCS 2000 nodes, likely situated within the same building or close enough to allow direct interconnection of the two SVO-LCs through HA optical pluggables.

This image shows Geo HA between nearby NCS 2000 nodes.

Figure 11: Geo HA between nearby NCS 2000 nodes



Network YAML configuration file

The network YAML configuration file includes essential network details needed to set up the SVO-LC interfaces and the Cisco Optical Site Manager application network infrastructure.

The redundancy-mode must be set to "GEO_HA" for initiating Geo high availability.

Each SVO-LC has an individual network YAML file for installation. When deploying two SVO-LCs for high availability, the only difference between the two files should be the value of the **server-name** field.

Here an example of IPv4 Network YAML configuration file for Geo HA configuration.

```
server-name: "Server-A"
mgmt-address-family: "IPv4"
ospf-area-id: "0.0.0.0"
redundancy-mode: "GEO_HA"
servers:
- name: "Server-A"
  mgmt:
    ipv4:
      ip: "10.0.123.0"
      prefix: 22
      gateway: "10.0.123.1"
      host-nic: "10.0.123.2"
  devices:
    ipv4:
      ip: "10.0.1.123"
      prefix: 24
      gateway: "10.0.123.1"
```

```
      host-nic: "10.0.123.2"
- name: "Server-B"
  mgmt:
    ipv4:
      ip: "10.1.123.123"
      prefix: 22
      gateway: "10.1.123.1"
      host-nic: "10.1.123.2"
  devices:
    ipv4:
      ip: "10.1.123.123"
      prefix: 24
      gateway: "10.1.123.1"
      host-nic: "10.1.123.2"
```

This table describes the fields in the network.yml configuration files.

Table 9:

Field	Description
server-name	The name of the SVO-LC being installed. It name must be same as one of the server.name entries.
mgmt-address-family	Indicates the address family for the management network. Acceptable values include: • IPv4 In all three scenarios, the `mgmt:ipv4` section must be included.
ospf-area-id	The OSPF area ID associated with the NCS 2000 device.
redundancy-mode	This is an optional field, necessary only when using Geo HA mode; otherwise, it can be omitted. The valid value is: `GEO_HA`
servers	A list of SVO-LCs along with their network details.
servers.name	The name of the SVO-LC.
mgmt	Details about the management network. Subsection is ipv4 for the mgmt-address-family value. • **ip**: Specify the subnet. • **prefix**: Specify the subnet mask. • **gateway**: Specify the gateway for the subnet. • **host-nic**: Represents the IP address assigned to the SVO-LC br-management interface, which is also used by the Cisco Optical Site Manager Administration Plane web UI via HTTPS on port 443.

Field	Description
`devices`	The network details for NCS 2000 devices. • **ip**: Specify the subnet. • **prefix**: Specify the subnet mask. • **gateway**: Specify the gateway for the subnet. • **host-nic**: Represents the IP address assigned to the SVO-LC br-management interface, which is also used by the Cisco Optical Site Manager Administration Plane web UI via HTTPS on port 443.

Prepare the Network Configuration

Use this task to prepare the network configuration for the SVO card model.

Procedure

Step 1 Create a configuration file (*network.yml)* for each server with the networking configuration data. This file is uploaded during the installation.

Step 2 Cable and configure the related network interfaces (physical or virtual).

Both the configuration files are identical and contain the data for both the servers in HA. The only difference is the *server-name* attribute that contains the name of the server to which the file is applied.

Install Cisco Optical Site Manager Tool

The Cisco Optical Site Manager installation tool is a web-based application designed to streamline the setup of the Cisco Optical Site Manager environment. It requires user credentials and a network YAML configuration file to create the administration user, configure the network infrastructure and resources, and set up the environment.

Use this task to install the Cisco Optical Site Manager application.

Before you begin

Ensure you have the necessary login credentials and the *network.yml* configuration file.

Procedure

Step 1 Start the Cisco Optical Site Manager installation tool using the pre-defined IP address, http://192.168.0.66.

Step 2 In the **Credentials** section, perform these steps:

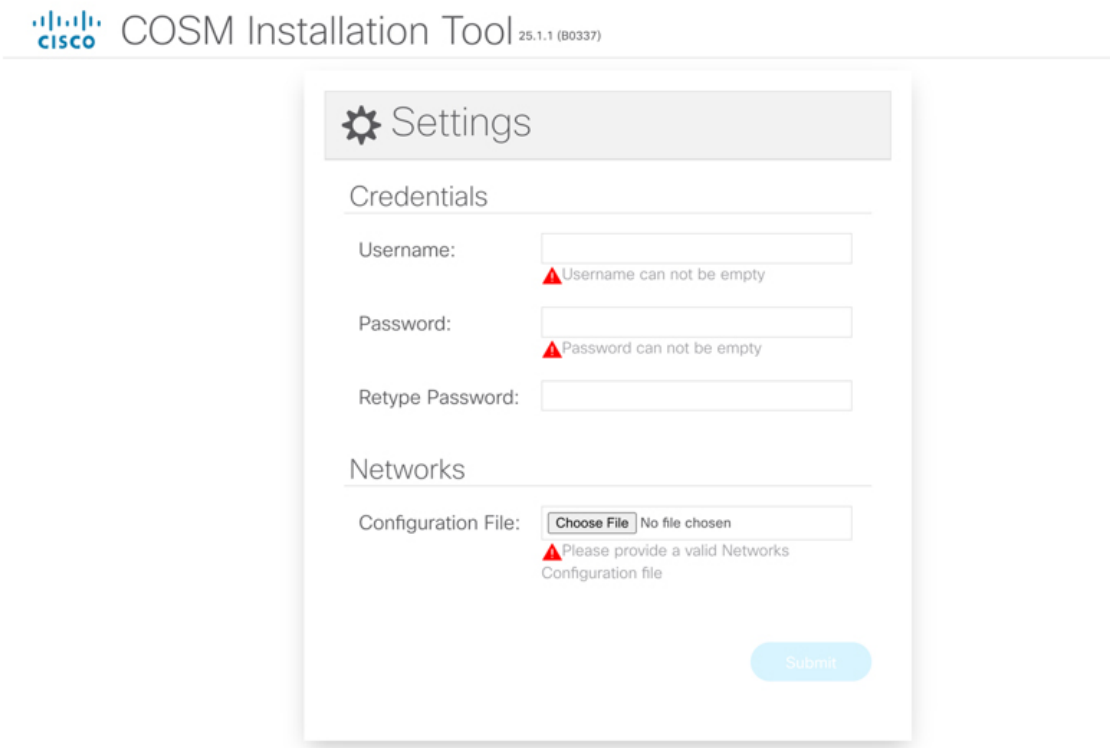
a. Enter a username in the **Username** field.

b. Enter a password in the **Password** field.

The password must be a minimum of eight characters, and it can be a maximum of 127 characters. The password must have at least one uppercase letter, one lowercase character, one number, and one special character.

c. Retype the password in the **Retype Password** field.

Figure 12: COSM Installation Tool Settings page

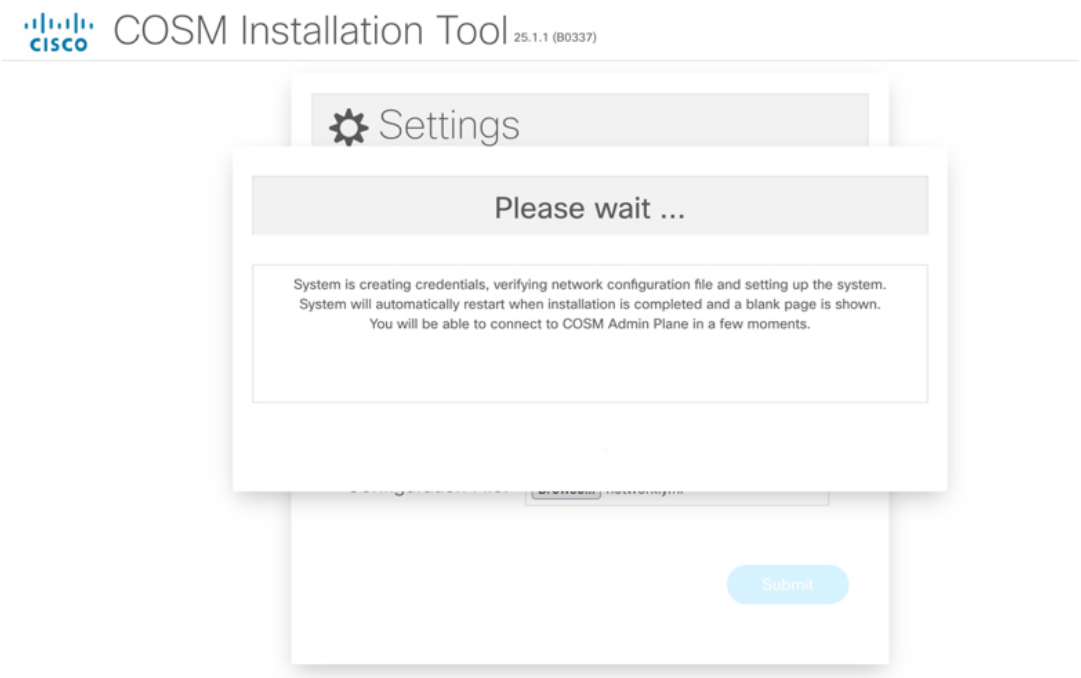


Step 3 Click **Choose File** to select the *network.yml* file from the **Configuration File** field.

For more details about the confighuration file, see Network YAML configuration file, on page 60.

Step 4 Click the **Submit** button to start the installation process.

A confirmation message is displayed, indicating that the credentials have been created, the network configuration file has been verified, and the system has been brought up.



After the installation completes, a blank web page appears, indicating that the COSM Admin Plane has successfully started.

What to do next

Log into the Cisco Optical Site Manager Admin Plane

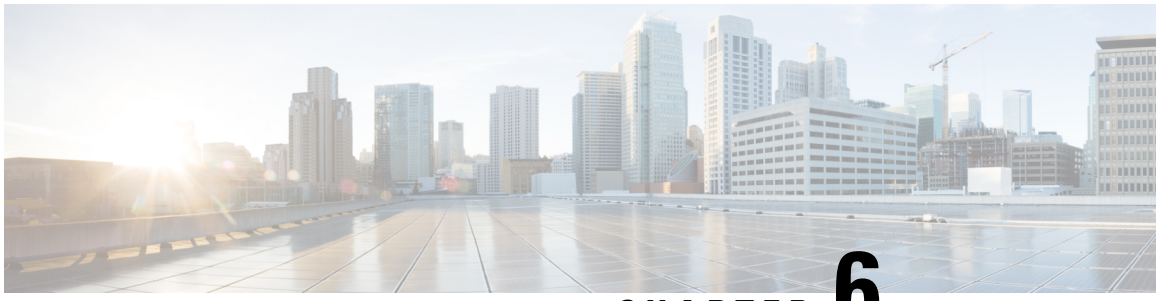
Recommended resources

To define SVO instances, ensure the necessary resources are allocated. For high availability, allocate identical resources on both VMs to maintain consistency and failover support.

Supported resources

Table 10: Supported Resources per Node/Instance

Node/Instance	Memory	Degree	Maximum Memory Allowed
OLA / ROADM	2.1 GB	up to 4 degrees	32 GB
ROADM	4 GB	greater than 4 degrees	



CHAPTER 6

Configure Cisco Optical Site Manager on NCS 2000 SVO-LC

This chapter describes how to configure Cisco Optical Site Manager on NCS 2000 SVO-LC using the Admin Plane. The Cisco Optical Site Manager Admin Plane provides a dedicated user interface that allows users to add and manage ROADM, DGE, and OLA Cisco Optical Site Manager instances on the server.

- Cisco Optical Site Manager Admin Plane Overview, on page 65
- Log into the Cisco Optical Site Manager Admin Plane, on page 66
- Admin Plane Home Page, on page 67
- Cisco Optical Site Manager Instances, on page 68
- Cisco Optical Site Manager Instance Details, on page 73
- Reset the SVO Card or Restart Admin Plane, on page 76
- View and Renew Certificate, on page 76
- Generate and apply certificates, on page 77
- Cisco Optical Site Manager Instances Statistics, on page 78
- Download Diagnostic Log Files, on page 79
- Custom Scripts, on page 80
- Modify Admin Plane Properties, on page 81

Cisco Optical Site Manager Admin Plane Overview

Cisco Optical Site Manager admin plane is responsible for turning up the shelf virtualization orchestration services for the network elements (NE). It is a web user interface that facilitates the installation of the Cisco Optical Site Manager software and configures the NE instances and orchestrates high availability (HA) services.

The admin plane allows you to create, update, manage, and delete Cisco Optical Site Manager NE instances.

In the case of the SVO card, two Cisco Optical Site Manager line cards are installed in two different chassis of the ROADM node. The two SVO cards are connected by two intercommunication links—through the HA network (primary link) and through the devices network (secondary link). Both links are used for the communication between the admin planes. The primary link is also responsible for replicating all the configuration transactions that are performed on each active Cisco Optical Site Manager instance to the related standby Cisco Optical Site Manager instance.

All the networking configuration data required by the admin plane is present in a file shared by both the SVO cards. When creating a new Cisco Optical Site Manager instance, you can configure the management interface

address, while the other parameters are automatically selected by the admin plane based on the constraints defined in the configuration file.

The admin planes coordinate to automatically assign active and standby roles to the Cisco Optical Site Manager instances. The admin planes can also perform an automatic switchover that promotes the standby instance to active when software or hardware faults affect the active instance.

The Cisco Optical Site Manager admin plane allows you to:

- Create the super user for the SVO card model.
- Create, update, or delete Cisco Optical Site Manager instances of type ROADM, OLA, DGE, or TXP. You can also view the details of the Cisco Optical Site Manager instances.
- Control, monitor, and performs health checks of the Cisco Optical Site Manager instances.
- Auto switch Cisco Optical Site Manager instances during a software or hardware fault in the SVO cards or servers.
- Force a manual switch between the active and standby Cisco Optical Site Manager instances.
- View parameters of the network configuration file.
- View a list of allowed and blocked IP addresses
- Troubleshoot using diagnostics. A zip file containing the log files from the admin plane can be downloaded.
- Reset the SVO card to factory defaults. This action erases all containers and configurations on the SVO card.

These are the highlights the SVO Card system installation.

- The super user must be created to log in to the admin plane.

  Only IPv4 addresses can be configured.

  Only one ROADM Cisco Optical Site Manager instance can be created. Subsequent instances must be of type OLA, DGE, or TXP.

  The SVO card can be reset to its default values.

Log into the Cisco Optical Site Manager Admin Plane

Use this task to log in to the Cisco Optical Site Manager admin plane.

Procedure

Step 1 In the browser URL field, enter the IP address of the admin plane (https://*IP_address*/login).

The login page appears.

Step 2 Enter the **Username** and **Password**.

In an SVO card system, only the superuser is allowed to log in to the Cisco Cisco Optical Site Manager admin plane.

Step 3 Click **Login**.

The **COSM Instances** page is displayed.

Admin Plane Home Page

Side Menu Items

In the Cisco Optical Site Manager Admin Plane home page, the menu items are present in the left panel. The menu items allow you to monitor and troubleshoot Cisco Optical Site Manager instances, view certificates, and restart admin plane. The following list describes the menu items.

- **Instances**—Instances menu enables you to create, edit, and monitor Cisco Optical Site Manager instances.
- **Diagnostics**—Diagnostics menu allows you to download log files to troubleshoot Cisco Optical Site Manager instances.
- **Networks**—Networks menu enables you to configure networks and assign IP addresses.
- **Certificates**—Certificates menu enables you to view and renew the self-signed admin plane certificates.
- **Utilities**—Utilities menu allows you to restart the admin plane.

Device Synchronization and Alarm Status Icon

The device synchronization and alarm status are indicated as a summary icon with changing colors close to the bell icon.

Note The icon appears only when you synchronize a device.

The icon indicates the device synchronization and alarm status with respective colors. The icon color changes from lower to a higher priority. The icon statuses are:

- **Green**—All the defined devices are connected and synchronized. The device status is alarm-synchronised.
- **Orange**—One or more devices are disconnected or locked by the user. The device status changes as sync-not-started, sync-configuration, and sync-operational.
- **Red**—One or more devices have sync-error, sync-not-completed, or out-of-sync-alarms.

Bell Icon (HA Status)

The icon on the top right of the Cisco Optical Site Manager home page indicates the status of high availability network (primary link) and devices network (secondary link). The icon statuses are:

- **Green**—Both the primary and secondary links are up. High availability is working successfully.
- **Yellow**—A warning that the primary link is up but the secondary link is down.
- **Red**—There are two cases:

- **Small red icon**—The primary link is down but the admin planes are able to communicate because the secondary link is up.
- **Large red icon**—Both the primary and secondary links are down and the server is functioning in standalone mode.

User Profile Icon

The user profile icon displays the username and the log out option for the user to exit the current Cisco Optical Site Manager session.

Cisco Optical Site Manager Instances

A Cisco Optical Site Manager instance is a software virtualization of the physical NCS 2000 node that has been configured to manage.

In a SVO card model, you can configure these Cisco Optical Site Manager instances:

Table 11: Number of Instances Supported

Instance Type	Number of Instances Supported
ROADM and OLA	15

You can create, update and delete Cisco Optical Site Manager instances using the admin plane. Each Cisco Optical Site Manager instance runs as an active instance on one server and as a standby instance on the other server. It is also possible to manually switch the roles of the Cisco Optical Site Manager instance between active and standby.

The peer admin planes that are running on the local and remote server respectively have two intercommunication links, one through the HA network (primary link) and the other through the devices network (secondary link).

The table displays the Cisco Optical Site Manager instances that were created. Each row has two entries relating to the local and remote SVO card or server. In each row, the first entry is the local instance and the second entry is the remote instance. The details are:

- **Name**—Name of the Cisco Optical Site Manager instance.
- **IP Address**—The IP address of the Cisco Optical Site Manager instance. It is IPv4 for the SVO card model.
- **SW version**—SW version on the server.
- **State**—State of the Cisco Optical Site Manager instance.
- **App State**—State of the Cisco Optical Site Manager application that is running on the Cisco Optical Site Manager instance.
  - During a manual switching process, the **App State** field displays different statuses such as SWITCHING, SWITCH_DONE, or UP.
  - The **App State** field displays ACTIVATING or ACTIVATE_RESTART only after the Cisco Optical Site Manager web UI has requested the admin plane to orchestrate the activation process.

- **Role** —Role of the Cisco Optical Site Manager instance. The roles are ACTIVE, STANDBY, NONE, and UNKNOWN. In case of issues or specific Cisco Optical Site Manager states, special tags are displayed such as NOT_RESPONDING, STARTING,STOPPED, or BAD_CLUSTER.

Note The green icon indicates the reachability of the Cisco Optical Site Manager instance to the connected NCS 2000 device. If the active Cisco Optical Site Manager instance is unable to reach the NCS 2000 device due to a network segregation, it performs an auto-switch.

- **Up Time**—Up time of the Cisco Optical Site Manager instance.
- **Type**—Label for the Cisco Optical Site Manager instance.
- **Action**—A set of actions can be performed on the Cisco Optical Site Manager instance:
  - **Details of the Cisco Optical Site Manager instance—**Click this icon to view the summary of the local and remote Cisco Optical Site Manager instance.
  - **Edit Cisco Optical Site Manager Instance**—Click this icon to edit the memory size of the Cisco Optical Site Manager instance.
  - **Switch Cisco Optical Site Manager Instance**—Click this icon to manually switch the Cisco Optical Site Manager instance between servers.

Note A switch operation is possible only if both the Cisco Optical Site Manager instances are up and running and the role of the instances are Active and Standby.

- **Delete Cisco Optical Site Manager Instance**—Click this icon to delete an Cisco Optical Site Manager instance.

Note This icon is disabled when a switch operation is in progress.

Create a Cisco Optical Site Manager Instance

Use this task to configure an Cisco Optical Site Manager instance.

Before you begin

- Log into the Cisco Optical Site Manager Admin Plane, on page 66
- Verify that the High Availability (HA) link between the two Admin planes is operational so that any container memory changes made on the active instance are automatically reflected on the standby instance.

Procedure

Step 1 Click the + button at the top-left of the **COSM Instances** page.

The **COSM Instance Configuration** page appears.

Step 2 In the **General Info** section, perform these steps:

a) Enter the name for the new Cisco Optical Site Manager instance in the **Name** field.

The name is mandatory and must be unique among the Cisco Optical Site Manager instances managed by the admin plane. It can contain a minimum of two characters and a maximum of 64 characters. It can include numbers, uppercase letters, lowercase letters, dashes (-), or underscores (_).

b) Choose the version from the **Software Version** drop-down list.

c) Choose the type of the Cisco Optical Site Manager instance from the **TDM Terminology** drop-down list.

The two options are ANSI and ETSI.

d) Choose the label of the Cisco Optical Site Manager instance from the **Type** drop-down list.

Note
When **Type** is selected, a default value for memory size is displayed in the **Reserved Memory GB** field.

e) Choose the memory size to be allocated to the Cisco Optical Site Manager instance from the **Profile** drop-down list **Reserved Memory GB** field.

Ensure the High Availability link between the two Adminplanes is properly operating before editing COSM container memory. This guarantees that the configuration change is applied to both containers simultaneously.

Note
In addition to the reserved memory, Cisco Optical Site Manager solution automatically sets the Limit Memory with a threshold value of 2 GB higher than the configured reserved memory. This threshold acts as a buffer to absorb the temporary peak memory requirements. Docker engine kills the operations that cross the Limit Memory threshold due to Out-of-Memory (OOM).

If the reserved memory is alloted more than the server or VM memory, the docker engine fails the allocation. Allocate only up to 80 percent of the server or VM memory for the Reserved Memory.

Step 3 In the **Admin User** section, perform these steps:

a) Enter the username in the **Username** field.

The values "admin," "oper," "private," or, "public" cannot be used as the admin username.

b) Enter the password in the **Password** field.

The password must be a minimum of eight characters. The password must contain at least an uppercase letter a number, and a special character. The special characters supported are ! $ % ^ ( ) [ ] _ - ~ { } . +

c) Enter the password again in the **Retype Password** field.

Step 4 In the **Management Network** section, the system suggests the management subnets to be used in the **IPv4 Address** fields, depending on the type of addressing defined during the installation. The system checks for constraints defined in the network configuration file and ensures that the IP addresses that are assigned are not in use.

a) Enter the IPv4 Address in the **IPv4 Address** field in a SVO card model.

Step 5 Click **Create**.
A message is displayed indicating the creation of the Cisco Optical Site Manager instance.

Step 6 Click **OK**.
The Cisco Optical Site Manager Instances page appears. The table displays the new Cisco Optical Site Manager instance.

The Cisco Optical Site Manager instance can now be accessed through a web browser.

View Details of an Cisco Optical Site Manager Instance

Use this task to view the details of a Cisco Optical Site Manager instance.

Note This feature simplifies troubleshooting and allows extracting detailed information about the runtime environment of both local and remote Cisco Optical Site Manager instances.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click the **Details** icon under the **Actions** column corresponding to the the Cisco Optical Site Manager instance you want to view.
The **COSM Instance Details** page is displayed. See Cisco Optical Site Manager Instance Details, on page 73.

Step 2 Click the heartbeat icon next to the desired instance to view the runtime status of the instance.

The **COSM Runtime Status** page is displayed.

Step 3 Expand the related sections to view the details of the Cisco Optical Site Manager instances.

The sections are **NCS Status**, **HA Agent**, and **NCS Launcher**.

Step 4 Click the hyperlink above the expandable sections to view the details as a plaint text in a new window.

Edit a Cisco Optical Site Manager Instance

Use this task to edit the memory size of the Cisco Optical Site Manager instance.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click the **Edit COSM Instance** icon under the **Actions** column corresponding to the instance you want to edit.
The **COSM Instance Edit** page is displayed.

Step 2 Specify the memory in the **Reserved Memory GB** field.

Step 3 Click **Edit**.

Switch Cisco Optical Site Manager Instances

Use this task to manually switch between active and standby Cisco Optical Site Manager instances.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click the **Switch COSM Instance** icon under the **Actions** column corresponding to the instance you want to switch.
A warning message is displayed prompting you to confirm instance switch.

Step 2 Click **Confirm**.

During the switching process, the **App State** field displays different statuses such as SWITCHING, SWITCH_DONE, and UP. The **Role** field displays NONE, ACTIVE, and STANDBY.

Delete an Cisco Optical Site Manager Instance

Use this task to delete an Cisco Optical Site Manager instance.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click the **Delete** button under the **Actions** column corresponding to the Cisco Optical Site Manager instance you want to delete.
A confirmation message is displayed.

Step 2 Click **Confirm**.

The Cisco Optical Site Manager instance is deleted.

Cisco Optical Site Manager Instance Details

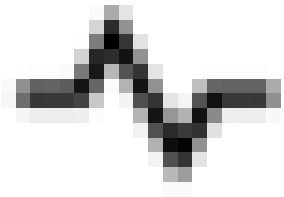
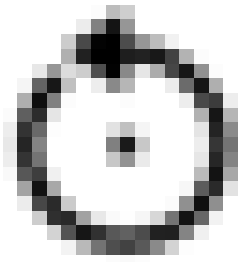
The Cisco Optical Site Manager Instance Details page is a user interface that displays the property information of both local and remote Cisco Optical Site Manager instances.

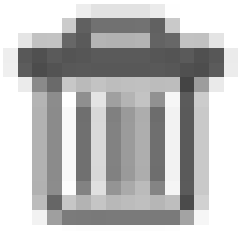
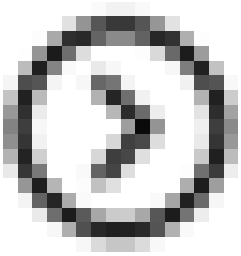
- Shows properties for both local and remote Cisco Optical Site Manager instances.
- Includes an Admin & Troubleshooting property with action icons for both instances.
- Action icons enable troubleshooting and management of Cisco Optical Site Manager instances.

Admin & Troubleshooting Actions

The Admin & Troubleshooting property provides a set of action icons for both Cisco Optical Site Manager instances. These icons allow you to perform troubleshooting and management actions.

Table 12: Action Icons for Cisco Optical Site Manager Instances

Icon	Icon Name	Description
	**Get local COSM runtime status**	Click this icon to extract detailed information about the runtime status of both local and remote Cisco Optical Site Manager applications.
	**Restart local COSM container**	Click this icon to restart the target Cisco Optical Site Manager container.

Icon	Icon Name	Description
	**Delete local COSM container**	Click this icon to delete the target Cisco Optical Site Manager container.
	**Force active local COSM container**	Click this icon to force the local Cisco Optical Site Manager container to become the active instance if high availability is not working.

Retrieve runtime status of an instance

You can extract detailed information about the runtime environment of a local or remote Cisco Optical Site Manager instance.

Use this task to retrieve the runtime information of local or remote Cisco Optical Site Manager container.

Note

Procedure

Step 1 Click the heartbeat icon next to the required instance.

The **Cisco Optical Site Manager Runtime Status** page is displayed.

Step 2 Expand the related sections to view the details of the Cisco Optical Site Manager instances.

These sections are dispalyed:

- NCS Status
- HA Agent
- NCS Launcher

Step 3 Click the hyperlink above the expandable sections to view the details in a separate window as plain text.

Restart an instance

Use this task to restart a a local or remote Cisco Optical Site Manager instance.

Procedure

Click the **Restart local COSM container** (reload) icon.

You are redirected to the Cisco Optical Site Manager Instances page.

The Cisco Optical Site Manager instance reloads.

You are redirected to the **COSM Instances** page. The COSM instance restarts.

Delete an instance

Use this task to delete a Cisco Optical Site Manager instance.

Procedure

Step 1 Click the **Delete local COSM container** (trashcan) icon.

A warning message is displayed.

Step 2 Click **Confirm**.

A success message is displayed.

Step 3 Click **OK**.

You are redirected to the **COSM Instances** page.

Force activate a local instance

Use this task to forcefully activate a local Cisco Optical Site Manager instance.

Important This task must be performed only when the admin plane fails to assign a role to the local instance.

Procedure

Click the **Force active local COSM container** icon.

You are redirected to the **COSM Instances** page. The status of the local instance changes from NONE to ACTIVE.

Reset the SVO Card or Restart Admin Plane

Use this task to reset the SVO card to factory defaults or restart the Cisco Optical Site Manager admin plane.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Tools** in the left panel and select **Utilities**.

The **Utilities** page appears.

Step 2 Perform one of the following steps:

- Click **Reset to Factory Default** to reset the SVO card to the fautory defaults.

  Caution
  All the instances and configurations available on the SVO card are erased.

- Click **Restart Admin Plane** to restart the admin plane.

  Caution
  Restarting admin plane may interrupt any running procedure.

A **Warning!** dialog box appears.

Step 3 Click **Confirm**.

View and Renew Certificate

Use this task to view and renew the certificates of the admin plane.

Lifetime of self-signed admin plane certificates can be extended by five years. In HA networks, the renewal must be run individually for each admin plane application.

Note The admin plane container must be restarted to renew the certificate. The operation is blocked if any orchestrated operation is running on the admin plane such as SW download.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66.

Procedure

Step 1 Click **Certificates** in the left panel.

The **Certificates** page displays the certificate details.

Step 2 In case of renewal, click **Renew Certificate**.

Generate and apply certificates

Certificates are required to enable security protocols for Cisco Optical Site Manager. Use this task to generate a self-signed certificate or upload your own certificate.

Before you begin

Log into Cisco Optical Site Manager .

Procedure

Step 1 Click **Users & Access** in the left panel.

The **Users & Access** page is displayed.

Step 2 Click the **x509 Certificates** tab.

Step 3 Click to expand the **Certificates Configuration** section.

Step 4 To automatically generate and apply certificate, click **Auto Generate & Apply Certificate** .

Step 5 To manually generate and apply certificates, perform these steps:

a) In the **Certificate file** field, click the **Select Files** to select a certificate file in *.crt* , *.cert* , or *.cer* formats.

b) In the **Key file** field, click the **Select Files** to select a key file in *.key* format.

c) Click **Apply** to upload and apply the certificate.

Cisco Optical Site Manager Instances Statistics

Cisco Optical Site Manager instances statistics table is a collection of memory resource details for each Cisco Optical Site Manager instance. The table periodically collects details such as allocation and consumption of memory for each Cisco Optical Site Manager instance. The statistics table is similar to the Cisco Optical Site Manager instances table with a **Memory** column.

You can view and download the statistical data of the Cisco Optical Site Manager instances using the icons in the **Actions** column. Each Cisco Optical Site Manager instance runs as an active instance on one server and as a standby instance on the other server.

The table displays the created Cisco Optical Site Manager instances and the associated memory details. Each row has two entries relating to the local and remote SVO card or server. In each row, the first entry is the local instance and the second entry is the remote instance. The details are:

- **Name**—Name of the Cisco Optical Site Manager instance.
- **IP Address**—The IP address of the Cisco Optical Site Manager instance. It is IPv4 for the SVO card model, and IPv4 for the external server model.
- **SW version**—SW version on the server.
- **Role**—Role of the Cisco Optical Site Manager instance.

Note The green icon indicates the reachability of the Cisco Optical Site Manager instance to the connected NCS 2000 device. If the active Cisco Optical Site Manager instance is unable to reach the NCS 2000 device due to a network segregation, it performs an auto-switch.

- **Type**—Label for the Cisco Optical Site Manager instance.
- **Memory (GB) Min/Max/Actual**—Minimum and maximum memory allocated for each instance and actual memory utilized by each instance.
- **Actions**—A set of actions performed on the Cisco Optical Site Manager instance. The actions are:
  - **Memory Statistics Graph**—Click this icon to view the summary of the local and remote Cisco Optical Site Manager instance.
  - **Download Local Statistics File**—Click this icon to download all the statistics files of the local Cisco Optical Site Manager instance as a zip package.

View Memory Statistics Graphical Summary

Use this task to view the memory details of local and remote Cisco Optical Site Manager instances in graphical format.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Statistics** in the left panel.

The **Statistics** page appears.

Step 2 Click **Memory Statistics Graph** for an Cisco Optical Site Manager instance.

The **Cisco Optical Site Manager Instance Memory Statistics** page appears displaying memory statistics for both local and remote instances.

Note
The **Memory Statistics** graph displays a fine-grained collection of memory usage of the Cisco Optical Site Manager instance in the last few days. Memory limits defined at creation time are also displayed for reference. The **Historical Daily Statistics** graph displays the daily memory details such as average memory usage and maximum memory usage of the Cisco Optical Site Manager instances since creation.

Step 3 (Optional) Click the calender icon to view the statistics for the required period.

Step 4 Click the table icon to export the data as plain text in a new window.

Download Local Cisco Optical Site Manager Instances Memory Files

Use this task to download the local Cisco Optical Site Manager instances memory files.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Statistics** in the left panel.

The **Statistics** page appears.

Step 2 Click **Download Local Statistics File** for an Cisco Optical Site Manager instance.

A confirmation message appears.

Step 3 Click **OK**.

The statistics files for the local Cisco Optical Site Manager instance downloads as a zip package.

Download Diagnostic Log Files

Use this task to download the Cisco Optical Site Manager admin plane diagnostic log files.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Diagnostics** in the left panel.

The **Diagnostics** page appears.

Step 2 Click the **Download Log Files** button.

A zip file that contains the admin plane logs is downloaded.

Custom Scripts

Custom scripts are quick solutions that are specific to each feature. The scripts provide access to the full application object model to extend the capabilities of the admin plane at runtime

The custom scripts let you do the following actions and more:

- Add UI- and REST-based custom actions
- Define in a declarative way web input forms for action parameters
- Export data in different text formats
- Add custom validation logic, for example, when creating a new Cisco Optical Site Manager instance
- Perform custom tasks on application events, for example, when the HA role changes
- Define scripted HA services that can communicate through the Admin Plane GRPC channels

The scripts table displays the added scripts and the relevant script details. The following list describes the table items.

- **Name**—Name of the custom script
- **Type**—Type of the custom script
- **Target**—Target GUI of the Cisco Optical Site Manager admin plane
- **Status**—Status of the custom script
- **Version**—Version of the custom script added
- **Lifetime**—Duration of the script in the admin plane in **dd:hh:mm:ss** format
- **Action**—Action to delete the added script

Add Custom Scripts

Use this task to add custom scripts to the Cisco Optical Site Manager admin plane, for example, **importInstancesCSV** file.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Scripts** in the left panel.

The Scripts page appears.

Step 2 Click **Add new Cisco Optical Site Manager script**.

An explorer window opens.

Step 3 Select a custom script and click **Open**, for example, **importInstancesCSV** file.

A Success message appears.

Step 4 Click **OK**.

The **importInstancesCSV** script is added to the scripts table.

Step 5 Check the Cisco Optical Site Manager Instances table in the admin plane for the **Import CSV** button.

The **Import CSV** button allows you to import the Cisco Optical Site Manager instances using a CSV file.

Modify Admin Plane Properties

Admin plane is customizable through several configuration properties. A few of the admin plane properties are useful in particular contexts or for troubleshooting. You can modify some “expert only” settings from the Admin Plane web UI.

Use this task to modify the admin plane properties.

Before you begin

Log into the Cisco Optical Site Manager Admin Plane, on page 66

Procedure

Step 1 Click **Tools** in the left panel and choose **Properties**.

The **Properties** page appears to display the admin plane properties, current values, and edited values.

Table 13: Properties Table

Label	Description
Property	Displays the customizable admin plane properties
Current Value	Displays the current values of each admin plane property
Edited Value	This field is editable. Enter the values for the admin plane properties.

Step 2 To modify the values for the admin plane properties, perform one of the following actions:

Tip
When you hover over a property, a tooltip appears to explain the property purpose.

- In **Edited Value**, enter the needed values for the properties that you want to customize.
- Click **Reset to default** to restore the default settings for all the properties.

Step 3 Click **Apply** to apply the modified values.

A **Warning!** message appears.

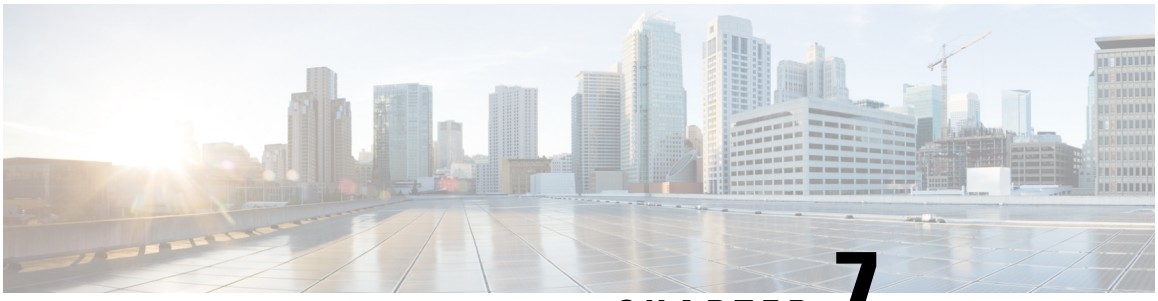
Step 4 Click **Continue**.

A **Success!** message appears.

Step 5 Click **OK**.

Step 6 Restart the admin plane to commit the modified values in the properties files. See Reset the SVO Card or Restart Admin Plane, on page 76.

Remember
Modified properties are not automatically propagated to the peer server. Make the same changes on the peer server to align the properties files with the host server.



CHAPTER 7

Upgrade NCS 2000 nodes to the Cisco Optical Site Manager

Table 14: Feature History Table

Feature Name	Release Information	Feature Description
NCS 2000 Node upgrade	Cisco NCS 2000 Release 25.1.1	The NCS 2000 nodes are upgraded to R25.1.1 to transition NCS 2000 node management from CTC to Cisco Optical Site Manager. With this upgrade, you can manage the NCS 2000 nodes in the Node view of the Cisco Optical Site Manager application. The list of SSON releases that upgrade to R25.1.1 SSON are: • R11.1.1.4 • R11.1.2.3 • R11.1.3 • R11.1.3.1 • R11.1.3.2 The node upgrade is a non-traffic-affecting operation and must be performed in the following order: • Upgrade the NCS 2000 node from a 11.x release using CTC. • Install and configure the SVO line card. • Launch Cisco Optical Site Manager via SVO line card admin plane and onboard the NCS 2000 device hosting the SVO line card(s). • (Optional) Add other nodes, either NCS 2000 or NCS 1000 nodes, into the Cisco Optical Site Manager.

NCS 2000 node upgrade is a software upgrade procedure that

- transitions NCS 2000 node management from CTC to Cisco Optical Site Manager, and
- upgrades R11.1.1.4, R11.1.2.3, R11.1.3, R11.1.3.1, and R11.1.3.2 to R25.1.1.

This section contains these topics.

- Prerequisites for adding the NCS 2000 nodes to Cisco Optical Site Manager, on page 84
- Upgrade NCS 2000 nodes hosting SVO line cards, on page 85
- Upgrade the remaining NCS 2000 nodes, on page 88
- Add an NCS 2000 remote TXP node to a Cisco Optical Site Manager node, on page 90
- Troubleshooting NCS 2000 Cisco Optical Site Manager node upgrade, on page 90

Prerequisites for adding the NCS 2000 nodes to Cisco Optical Site Manager

Pre-requisites for NCS 2000 Upgrade

This section provides the prerequisites to add the NCS 2000 nodes to Cisco Optical Site Manager. In CTC, perform the actions:

- Check the NCS 2000 is configured as multishelf.
- Check that Rack ID and Chassis IDs are configured as expected into the NCS 2000 node.
- Choose **Node View** > **Provisioning** > **Network** > **General** and then enable the **Enable SOCKS-proxy only** check box.

Note This configuration applies to all NCS 2000 nodes such as ROADM, OLA, and remote transponders.

- In addition to usual operation required for an NCS 2000 release upgrade, run the node diagnostic to get the snapshot before the NCS 2000 node upgrade.
- In case of the NCS 2000 Remote TXP, adjust the Rack IDs and Chassis IDs to avoid shelves overlapping with ROADM node.

  Choose **Node View** > **Provisioning** > **General** > **Rack Layout Config** and click **Edit**.

Note Set the Rack Number for the NCS 2000 remote transponder node that is different from the Rack Number of the NCS 2000 ROADM node to which you want to add the NCS 2000 remote transponder node.

Pre-requisites for Cisco Optical Site Manager

This section provides the prerequisites to add the NCS 2000 SVO line cards to Cisco Optical Site Manager.

- Install the new SVO line cards. Refer to SVO LC installation procedure for more information.
- Define the SVO line card high availability and its placement in the existing networks. In high availability configurations, upgrade the two NCS 2000 nodes hosting the SVO line card.
- Plan the Cisco Optical Site Manager nodes IP address according to SVO LC installation rules.

Upgrade NCS 2000 nodes hosting SVO line cards

Table 15: Feature History Table

Feature Name	Release Information	Feature Description
SSH upgrade	Cisco NCS 2000 Release 25.1.1	When you upgrade to R25.1.1, the SSH and SSL libraries upgrade to the latest revisions that provide better security, addressing vulnerabilities. New versions Cisco Optical Site Manager supports after upgrade (25.x) CISCOSSL: 1.1.1y.7.3.377 (6/6/2024) CISCOSSH: 1.14.55

Use this task to upgrade the NCS 2000 nodes that will install a fresh R25.1.1 SVO line cards from R11.x to R25.1.1.

Note If SVO line cards are present in the NCS 2000 nodes in the geo HA configuration, repeat this task on both NCS 2000 nodes.

Procedure

Step 1 Upgrade the NCS 2000 nodes to the R25.1.1.

a) Download and activate the NCS2K-S-package for R25.1.1.

For more information on the software activation, refer to *Cisco NCS 2000 Series Upgrade Guide*.

Note
While the NCS 2000 nodes upgrade to R25.1.1, both Active and Standby controller cards perform an additional boot during the upgrade.

b) Reopen CTC in the R25.1.1 node.

c) Delete the cache option on the login window as this is a major release upgrade.

Note
The CTC R25.1.1 will now have some panels disabled as some node management will be performed via the Cisco Optical Site Manager WebUI.

Step 2 In CTC, perform the following steps.

a) Enable the OSPF on LAN as follows.

This setting is required on the NCS 2000 node that is hosting the SVO line card irrespective of any HA configuration. The **LAN Port Area ID** value depends on your network.

1. In Tab View, go to **Provisioning** > **Network** > **OSPF**.

2. In the **OSPF on LAN** pane, enable the **OSPF active on LAN** check box.

b) Open the controller card in the node that is connected to the other NCS 2000 node.

The SVO line cards in GEO HA configuration use the UDC ports. So the UDC ports need to be properly enabled on the NCS 2000 node. The SVO line cards in GEO HA configuration are supported between two NCS 2000 adjacent nodes, both nodes need to enable UDC.

1. In Tab View, go to **Provisioning** > **UDC/VOIP**.
2. In the **UDC/VOIP** pane, select **UDC** for the available **Service Type**.

Step 3 Install the SVO line card in person. Refer the SVO line card installation for more information.

a) Plug-in the first SVO line card into the NCS 2000 node with proper cabling.
b) Install the second SVO line card in high availability configuration.

Note
For the geo HA configuration, install the SVO line cards in two different NCS 2000 nodes.

Two NCS 2000 nodes are upgraded with two SVO line card ready to configure the Cisco Optical Site Manager application.

The CTC view of the SVO line card will be a double slot line card with the name reported.

Step 4 Connect to Cisco Optical Site Manager Admin Plane WebUI. For more information, refer to Cisco Optical Site Manager Admin Plane .

Note
In the geo HA configuration, there are two SVO line cards. Each SVO instance has its own IP address. You can connect to one of the two instances for the initial Cisco Optical Site Manager application setup.

Step 5 Create a Cisco Optical Site Manager instance using the Admin Plane WebUI. For more information, refer to Cisco Optical Site Manager Instances..

Cisco Optical Site Manager application will run in a container environment via docker. Hence, this step will require settings used by the virtual environment.

Step 6 After you create the Cisco Optical Site Manager Admin Plane instance, log in to the Cisco Optical Site Manager WebUI. For more information, refer to Log into Cisco Optical Site Manager.

Note
Use the *Username* and *Password* that you configured in Step 5 for Cisco Optical Site Manager instance creation.

The Cisco Optical Site Manager WebUI opens in **Node Functional View**.

Step 7 Create Cisco Optical Site Manager Authentication Group for SVO line cards and NCS 2000 nodes.

The *Authentication Group* defines the username and password that the Cisco Optical Site Manager application will use to connect to the SVO line card, NCS 2000 node or remote device.

a) Choose **Devices** > **Authorization Group**.

1. For the SVO line card, Cisco Optical Site Manager creates the Authentication Group automatically. Edit the password field to enter the password of the added SVO line card.

Note

The SVO line card password is the password that you created during the SVO line card installation.

Note
SVO line card is considered as a separate device for the Cisco Optical Site Manager node although it is physically a line card plugged into the NCS 2000 node.

In the HA mode, both line cards are added to the *Authentication Group*.

2. For the NCS 2000 node, refer to Manage Authorization Groups.

Note
After creating the Authorization Group, Cisco Optical Site Manager manages only one NCS 2000 node.

After you create the Authorization group, all the SVO line cards, NCS 2000 nodes and remote nodes appear in a list.

Step 8 (Optional) Set the NTP Server for the Cisco Optical Site Manager WebUI.

Cisco Optical Site Manager requires its own NTP Server settings.

a) At the bottom left of the application, click settings icon and then click **NTP**.

You can either maintain the NTP settings on NCS 2000 device or remove them depending on your network choie.

If you decide to	then
maintain the NCS 2000 NTP settings	the Cisco Optical Site Manager node NTP setting affects only the Cisco Optical Site Manager application.
remove the NCS 2000 NTP settings	the Cisco Optical Site Manager application pushes the time information to the NCS 2000 node.

b) Click **Edit** to edit the NTP server settings.

Step 9 Onboard the NCS 2000 node to the Cisco Optical Site Manager WebUI. For more information, refer to

a) Choose **Devices** > **Devices** and click + icon to add device. For more information on adding a device, refer to *Add Devices*.

In Cisco Optical Site Manager application, a subtended network element, in this case NCS 2000, is referred as device.

The **Add Device** box opens.

b) Enter the device information as required.

Fields	Actions
Device Type	Select **ncs2000** from the drop-down list.
Device Flavor	**any-config** is the default option.
Device Name	Name of the device to add. This is the string to identify the device into the Cisco Optical Site Manager application.

Fields	Actions
First Active Chassis UID	As this is the first NCS2K node/device added to a Cisco Optical Site Manager-Node leave it blank (this imply starting Chassis UID from 0)
IP Address	IP address of the NCS2K node.
Auth Group	Select the one added in previous step containing the credential for the NCS2K node.

Note
Device Name and *Device Flavor* cannot be changed afterwards unless you delete and re-add the device.

c) Click **Add** to initiate the operation.

Device onboarding may take few minutes.

Step 10 Verify the NCS 2000 device **Sync Status** is *sync completed, alarm-synchronized*.

If **Sync Status** has a different message, refer to the troubleshooting upgrades.

The NCS 2000 node is upgraded to R25.1.1 and managed by its Cisco Optical Site Manager application accessible via Web UI. Cisco Optical Site Manager application represents the new view of the node as the Cisco Optical Site Manager node. The Cisco Optical Site Manager node is reachable via its IP address in the new DCN planned for the Cisco Optical Site Manager Management. Cisco Optical Site Manager node is ready to be imported into CONC.

What to do next

Upgrade the remaining NCS 2000 nodes in the network.

Upgrade the remaining NCS 2000 nodes

Table 16: Feature History Table

Feature Name	Release Information	Feature Description
SSH upgrade	Cisco NCS 2000 Release 25.1.1	When you upgrade to R25.1.1, the SSH and SSL libraries upgrade to the latest revisions that provide better security, addressing vulnerabilities. New versions Cisco Optical Site Manager supports after upgrade (25.x) CISCOSSL: 1.1.1y.7.3.377 (6/6/2024) CISCOSSH: 1.14.55

Use this task to upgrade the rest of the NCS 2000 nodes in the network that do not host the SVO line card.

Note The NCS 2000 nodes considered in this task do not have SVO line cards. But these nodes are connected to NCS 2000 nodes that have an operational SVO line card. Each SVO line card can monitor up to 15 Cisco Optical Site Manager nodes.

Procedure

Step 1 Upgrade the NCS 2000 nodes to the R25.1.1.

a) Download and activate the NCS2K-S-package for R25.1.1.

For more information on the software activation, refer to *Cisco NCS 2000 Series Upgrade Guide*.

Note
While the NCS 2000 nodes upgrade to R25.1.1, both Active and Standby controller cards perform an additional boot during the upgrade.

b) Reopen CTC in the R25.1.1 node.

c) Delete the cache option on the login window as this is a major release upgrade.

Note
The CTC R25.1.1 will now have some panels disabled as some node management will be performed via the Cisco Optical Site Manager WebUI.

Step 2 Connect to Cisco Optical Site Manager Admin Plane WebUI. For more information, refer to Cisco Optical Site Manager Admin Plane .

Step 3 Create a Cisco Optical Site Manager instance using the Admin Plane WebUI. For more information, refer to Cisco Optical Site Manager Instances..

Cisco Optical Site Manager application will run in a container environment via docker. Hence, this step will require settings used by the virtual environment.

Step 4 After you create the Cisco Optical Site Manager Admin Plane instance, connect to the Cisco Optical Site Manager WebUI. For more information, refer to Log into Cisco Optical Site Manager.

Note
Use the *Username* and *Password* that you configured during Cisco Optical Site Manager instance creation.

The Cisco Optical Site Manager WebUI opens in **Node Functional View**.

Step 5 Create Cisco Optical Site Manager Authentication Group for the NCS 2000 nodes.

The *Authentication Group* defines the username and password that the Cisco Optical Site Manager application will use to connect to the NCS 2000 node. For more information, refer to Manage Authorization Groups.

After you create the Authorization group NCS 2000 nodes appear in a list.

Step 6 Onboard the NCS 2000 node to the Cisco Optical Site Manager WebUI. Repeat the Step 8 to 10 in *Upgrade NCS 2000 nodes hosting SVO line cards*.

The NCS 2000 node is upgraded to R25.1.1 and managed by its Cisco Optical Site Manager application accessible via Web UI. Cisco Optical Site Manager application represents the new view of the node as the

Cisco Optical Site Manager node. The Cisco Optical Site Manager node is reachable via its IP address in the new DCN planned for the Cisco Optical Site Manager Management. Cisco Optical Site Manager node is ready to be imported into CONC.

Add an NCS 2000 remote TXP node to a Cisco Optical Site Manager node

Before you begin

Configure the rack number for the NCS 2000 Remote TXP node so that it does not overlap with rack number of its associated ROADM already added in CTC.

Procedure

Step 1 Upgrade the NCS 2000 transponder nodes to R25.1.1. Repeat Step 1 from *Upgrade NCS 2000 nodes hosting SVO line cards*.

Step 2 Log in to Cisco Optical Site Manager WebUI using the credentials of the required Cisco Optical Site Manager instance.

Step 3 Go to **Devices** > **Devices** > **Device Hardware Details** and verify the available UIDs in the Cisco Optical Site Manager WebUI.

Step 4 Add the remote transponder node to the Cisco Optical Site Manager node.

a) In the **Devices** tab, click + to add the devices.
The **Add Device** window opens.

b) Select **Device Type** as *ncs2000* and **Device Flavor** as *txp-only*.

c) Enter the **Device Name**, **First Active Chassis UID**, and **IP Address**.

Make sure the value of **First Active Chassis UID** is a not in use. The value must follow the sequence of free UIDs as the chassis UID for the remote transponder. If you enter an incorrect UID, wait for the device addition to complete. Then delete the device and repeat the steps.

d) Select the required **Auth Group** and then click **Add**.

Troubleshooting NCS 2000 Cisco Optical Site Manager node upgrade

NCS 2000 remote TXP nodes are overlapping in the Cisco Optical Site Manager UI

Issue

“Rack Number” of the remote TXP is overlapping with the rack number of an already present Cisco Optical Site Manager node.

When you add a remote TXP device to a Cisco Optical Site Manager node with an already existing Rack number, then the Cisco Optical Site Manager UIS fits the the chassis of the newly added NCS 2000 TXP node into an occupied rack.

Solution

1. Delete the device of remote TXP from the Cisco Optical Site Manager node.
2. Fix the 'Rack Number' via CTC.
3. Repeat the add-device operation.

Device Sync Status is *OUT-OF-SYNC*

Issue

Admin plane credentials is not added in the Authentication Group for the SVO controller.

Solution

1. Edit the Authentication Group for the SVO controller to add the Admin Plane credentials.

Device settings misconfigurations

Issue

The device name of the node is set incorrect. This parameter is used as key in the device yang models hence it cannot be edited after adding the device. The only way to properly adjust this setting is to delete the device.

Solution

1. Delete the device.
2. Add the device again with the correct device name.

Issue

The device flavor of the node is set incorrect. Incorrect device flavor may affect the device behavior in Cisco Optical Site Manager management.

Solution

1. Delete the device.
2. Add the device again with the correct device flavor.