



Cisco Optical Automation Solution for NCS 2000 Networks, Release 26.1.1

Cisco Network Convergence System 2015
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1 Get started with the Cisco Optical Automation Solution for NCS 2000 networks

Topics:

- [Cisco Optical Automation Solution scope](#)
- [Use this guide](#)

Start here to understand the NCS 2000 OAS scope, audience, source documents, and document flow before planning or upgrading the network.

Get started with the Cisco Optical Automation Solution for NCS 2000 networks

Cisco Optical Automation Solution scope

Review the deployment scope for NCS 2000 OAS procedures, including transition, upgrade, transponder management, circuit operations, and Cisco Optical Site Manager maintenance boundaries.

This document provides an overview of the OAS solution for NCS 2000 networks and describes the procedures for network transition and upgrade to release 26.x, including node and circuit management aspects.

The document covers:

- High-level architecture and components (SVO card, Cisco Optical Site Manager 2000, Cisco Optical Network Controller)
- Network transition from release 11.x to 26.x
- Network upgrade from release 25.x to 26.x
- NCS 1000 transponder management in 26.x
- Critical operational procedure in 26.x

This document refers to a brownfield NCS 2000 network.

Use this guide

Use this topic to understand how the guide is organized and how the chapters build from design context to operational procedures.

This document is organized to guide the reader through the OAS solution for NCS 2000 networks, from architecture overview to detailed operational procedures.

Document organization

The document includes these chapters in the order in which they appear:

Chapter	Chapter title	Description
Chapter 1	Get started with the Cisco Optical Automation Solution for NCS 2000 networks	Provides the scope, audience, and guide organization before planning or upgrading the network.
Chapter 2	Design the Cisco Optical Automation Solution for NCS 2000 networks	Explains the NCS 2000 OAS architecture, reference setup, software image types, and design considerations that guide transition and operation.
Chapter 3	Transition your NCS 2000 network from 11.x to 26.x	Guides the transition of an existing NCS 2000 network from release 11.x to 26.x, including node preparation, SVO card deployment, Cisco Optical Site Manager onboarding, and Cisco Optical Network Controller integration.
Chapter 4	Upgrade your NCS 2000 network from 25.x to 26.x	Guides the upgrade of an NCS 2000 network from release 25.x to 26.x through Cisco Optical Network Controller, Cisco Optical Site Manager, and device software workflows.
Chapter 5	Manage NCS 1000 transponders in an NCS 2000 GMPLS network	Describes how NCS 1000 transponders are prepared, onboarded, connected through IPC and LMP, and managed in an NCS 2000 GMPLS network.

Chapter	Chapter title	Description
Chapter 6	Maintain Cisco Optical Site Manager for NCS 2000 networks	Supports maintenance of Cisco Optical Site Manager-managed NCS 2000 networks through recovery, re-onboarding, lock and unlock, network modification, and troubleshooting procedures.
Chapter 7	Install the Cisco Optical Site Manager 2000 service pack	Covers preparation and installation for a Cisco Optical Site Manager 2000 service pack, including package retrieval, health checks, and web UI download steps.

2 Design the Cisco Optical Automation Solution for NCS 2000 networks

Topics:

- [Cisco Optical Automation Solution NCS 2000](#)
- [Golden reference setup for NCS 2000 networks](#)
- [Cisco Optical Site Manager features and deployment models](#)
- [Cisco Optical Network Controller deployment models and requirements](#)
- [Cisco software image purposes](#)
- [Cisco Optical Network Controller circuit management in NCS 2000 networks](#)
- [SVO card placement capabilities in Cisco Optical Network Planner](#)

This chapter explains the NCS 2000 OAS architecture, reference setup, software image types, and design considerations that guide transition and operation.

Design the Cisco Optical Automation Solution for NCS 2000 networks

Cisco Optical Automation Solution NCS 2000

This section introduces how Cisco Optical Site Manager and Cisco Optical Network Controller work together to manage NCS 2000 ROADM, OLA, and transponder nodes.

The Optical Automation Solution for NCS 2000 networks is based on the integration of Cisco Optical Site Manager and Cisco Optical Network Controller applications in a network having NCS 2000 ROADM/OLA and remote TXP nodes and optionally NCS 1000 TXP.

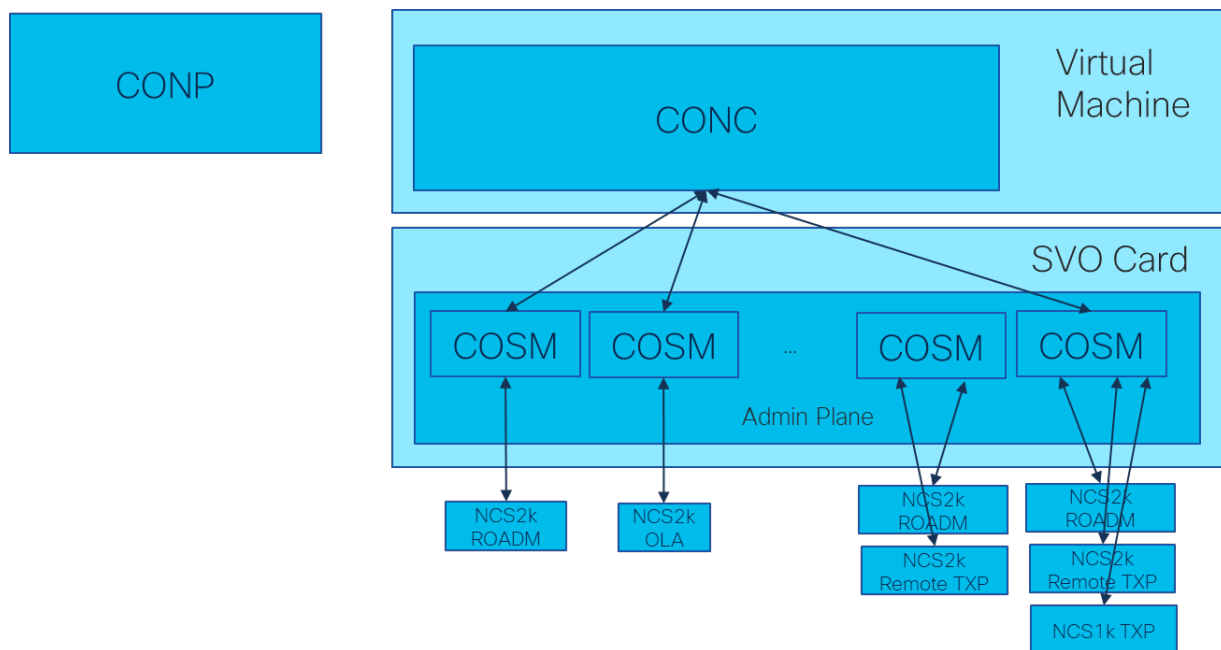
Cisco Optical Automation Solution architecture

Cisco Optical Network Controller is a centralized management platform for Cisco optical networks. It simplifies network operations, topology monitoring, and service provisioning.

Together, Cisco Optical Site Manager and Cisco Optical Network Controller form a hierarchical management architecture, where Cisco Optical Site Manager manages devices at site-level and Cisco Optical Network Controller provides network-level orchestration and visibility.

Cisco Optical Network Planner is also available for NCS 2000 for SVO card placement on network.

Figure 1: Cisco Optical Automation Solution for NCS 2000 architecture



Golden reference setup for NCS 2000 networks

Use this reference setup to understand the sample NCS 2000 topology used throughout the procedures and to relate screenshots to a consistent network model.

Cisco NCS 2000 golden reference setup is used throughout this guide as the standard example for OAS procedures. It offers a consistent point of reference but does not represent a mandatory deployment model.

Golden reference setup components

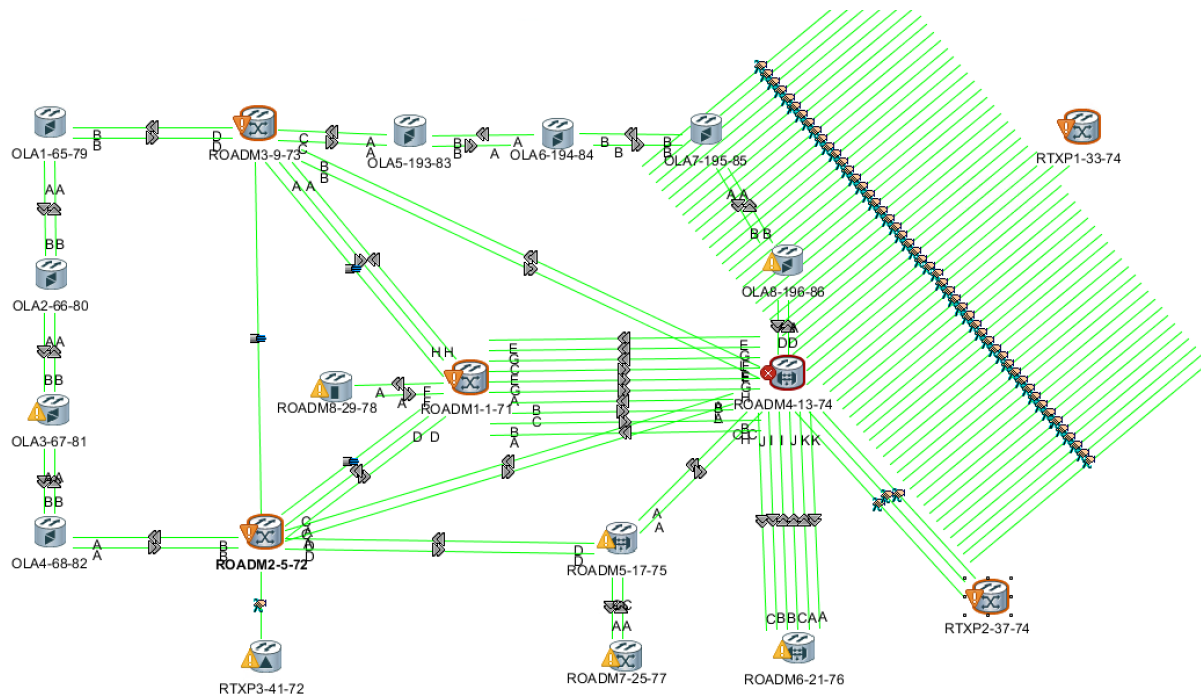
The example network that is used to illustrate the OAS procedures includes:

- 8 ROADM nodes

- 8 OLA nodes
- 3 Cisco NCS 2000 remote transponder nodes
- 2 Cisco NCS 1000 transponders

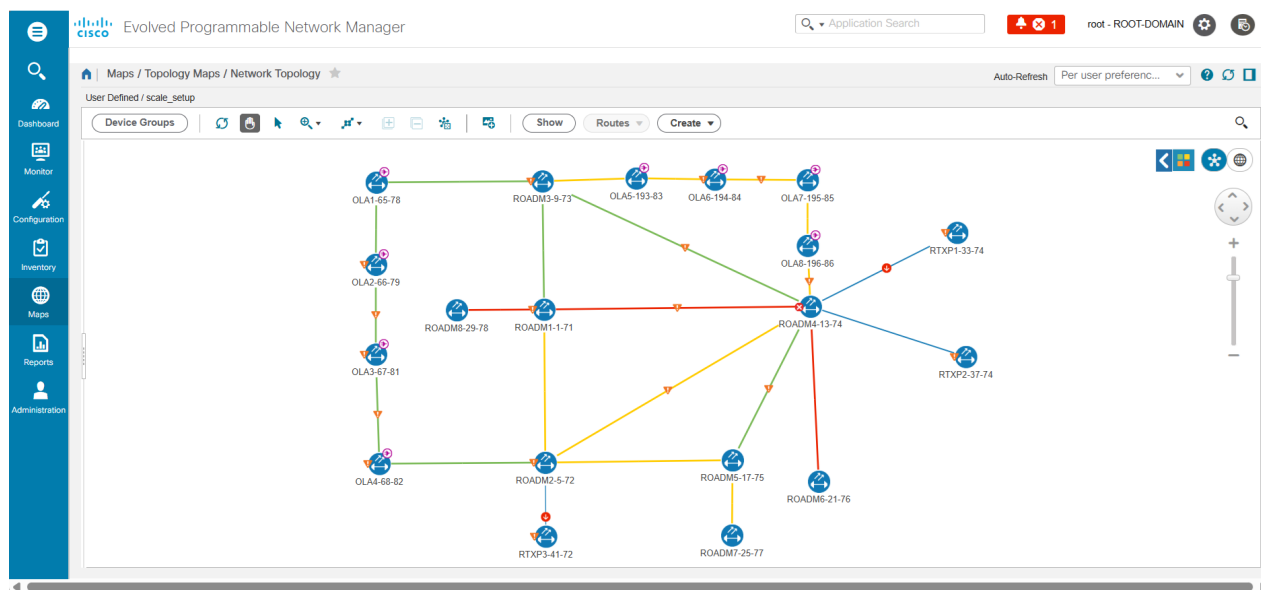
This figure shows the Cisco NCS 2000 golden reference setup from the CTC view.

Figure 2: NCS 2000 golden reference setup in CTC view



This figure shows the Cisco NCS 2000 golden reference setup from the EPNM view.

Figure 3: NCS 2000 golden reference setup in EPNM view



Cisco Optical Site Manager features and deployment models

This section describes Cisco Optical Site Manager functions, deployment options, sizing considerations, networking requirements, and instance grouping for NCS 2000 and NCS 1000 environments.

Review Cisco Optical Site Manager functions, deployment models, sizing requirements, and instance grouping for NCS 2000 and NCS 1000 environments.

Cisco Optical Site Manager features and architecture

Cisco Optical Site Manager is a software application that aggregates NCS 2000 devices at a site, abstracts the site topology for controller or web UI access, and supports software-defined turn-up, operations, and maintenance.

Cisco Optical Site Manager runs on NCS 2000 SVO-LC. It can operate as a standalone local craft interface, integrate with Cisco Optical Network Controller, or provide an open NETCONF/YANG northbound interface for third-party controllers.

Cisco Optical Site Manager allows you to:

- Aggregate site-level optical devices under a single management view.
- View site topology, inventory, alarms, performance monitoring data, and mechanical layouts for chassis, cards, and passive devices.
- Use operations, administration, and maintenance functions such as connection verification, loopbacks, PRBS, OTDR, and threshold crossing alerts.
- Configure cards and modules for site-level operations.

Cisco Optical Network Controller can consume the site-level data streamed by Cisco Optical Site Manager and use it for network-level provisioning, monitoring, troubleshooting, topology views, and analytics.

For details about Cisco Optical Site Manager, see [Cisco Optical Site Manager Data Sheet](#).

Figure 4: Cisco Optical Site Manager 2000 architecture and functions

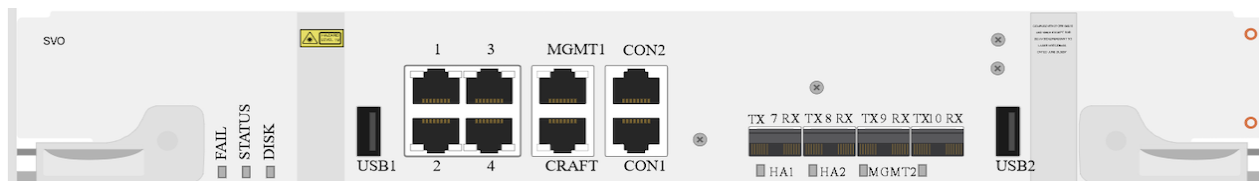


SVO card

In release 25.x and 26.x, SVO cards are required to manage NCS 2000 networks. SVO cards are installed in NCS 2000 chassis (M6, M15, or M2) and host the Cisco Optical Site Manager application.

This figure shows the SVO card front panel.

Figure 5: SVO card front panel



Cisco Optical Site Manager deployment models

SVO card deployments support two main models, designed to address different operational and availability requirements:

- **Standalone (SA)**

The standalone deployment uses a single SVO card. This model has not been fully validated and is not recommended for production environments or demonstrations.

- **High Availability (HA)**

SVO cards can be deployed using different HA configurations:

- Local HA: two SVO cards installed in different shelves of the same ROADM.
- Local HA (distributed): one SVO card in a ROADM and one in an external M2 chassis.
- Geo HA (nearby-node): redundancy between SVO cards deployed on nearby NCS 2000 nodes co-located within the same site.
- Geo HA (via UDC): geo-redundancy between SVO cards deployed on nodes in different sites and connected through UDC.

For HA architecture and cabling details, see the Cisco Optical Site Manager installation documentation for NCS 2000 SVO-LC.

Admin Plane and instance management

The Admin Plane is a software component that runs on the SVO card. Each SVO card has its own Admin Plane and web UI where Cisco Optical Site Manager instances are defined.

Figure 6: Admin Plane web UI interface (example)

Name	IP Address	SW Version	State	App State	Role	Up time	Type	Actions
OLA1	10.58.230.79	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	OLA (2.1 GB)	
OLA2	10.58.230.80	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	STANDBY ACTIVE	Up 8 days Up 8 days	OLA (2.1 GB)	
OLA3	10.58.230.81	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	OLA (2.1 GB)	
OLA4	10.58.230.82	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	STANDBY ACTIVE	Up 8 days Up 8 days	OLA (2.1 GB)	
ROADM1	10.58.230.71	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	ROADM (4 GB)	
ROADM2	10.58.230.72	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	ROADM (2.1 GB)	
ROADM5	10.58.230.75	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	ROADM (2.1 GB)	
ROADM6	10.58.230.76	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	ROADM (2.1 GB)	
ROADM7	10.58.230.77	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	STANDBY ACTIVE	Up 8 days Up 8 days	ROADM (2.1 GB)	
ROADM8	10.58.230.78	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 8 days Up 8 days	ROADM (2.1 GB)	

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A Cisco Optical Site Manager instance runs on both SVO cards in an HA configuration, active on one card and standby on the other. A Cisco Optical Site Manager instance can be an OLA or ROADM type.

Cisco Optical Site Manager network considerations

Consider these networking aspects:

• IP addressing

Cisco Optical Site Manager IP addresses belong to the management network, while NCS 2000 and NCS 1000 devices belong to the device network. Keep the management and device networks separate.

SVO card network YAML file

A specific YAML configuration file is required for each SVO card.

In high availability deployments, each card uses a separate file, with the only difference being the `server-name` parameter.

• SVO card cabling

Connect each SVO card to both the management network and the device network. Cabling depends on the SVO card deployment model.

Cisco Optical Site Manager sizing requirements

The memory required for each Cisco Optical Site Manager instance depends on the NCS 2000 node degree and on whether remote transponder or NCS 1000 transponders are present.

This table summarizes the Cisco Optical Site Manager minimum sizing requirements.

Table 1: Cisco Optical Site Manager sizing requirements

Sizing	Memory
OLA	2.1 GB
ROADM 1, 2, 3, 4 degrees	2.1 GB
ROADM 5, 6, ..., 12 degrees	4 GB

ROADM 13, 14, 15, 16 degrees

6 GB

The total memory allocated per SVO card must not exceed 32 GB. For example, if a network is composed of 15 ROADMs with max 4-degree, this means a maximum of 15 Cisco Optical Site Manager instances.

Note

These are the minimum recommended theoretical values based on the node degree (also applicable to Layer2 SMRs).

- Customize values when you create the Cisco Optical Site Manager instance. See [Create Cisco Optical Site Manager instances](#).
- RAM allocation can be adjusted during Cisco Optical Site Manager instance management.

SVO card placement

In our Golden Setup, there are two pairs of SVO card Geo HA located as follows:

- Geo HA (UDC): SVO-LC-141 and SVO-LC-142 are installed on ROADM1 and ROADM2, respectively.
- Geo HA (nearby-node): SVO card-66 and SVO card-67 are installed on ROADM3 and ROADM4, respectively.

Figure 7: SVO card in GeoHA in the golden setup

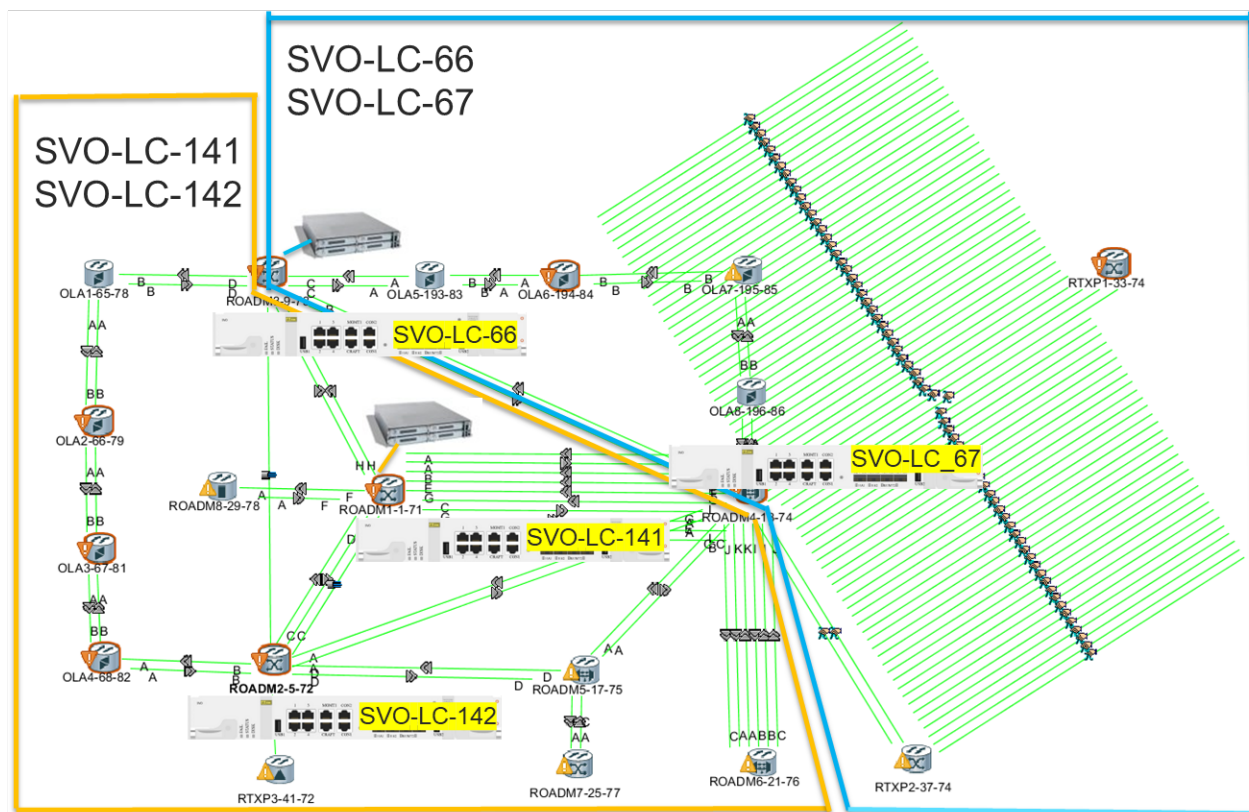


Table 2: Cisco Optical Site Manager instance group 1

Cisco Optical Site Manager Instance Name	Cisco NCS 2000/NCS 1000 managed devices	Reserved Memory
ROADM1 (8-deg)	ROADM1-1-71 Kepler-45	4 GB
ROADM2 (4-deg)	ROADM2-5-72 RTXP3	2.1 GB
ROADM5 (3-deg)	ROADM5-17-75	2.1 GB
ROADM6 (3-deg)	ROADM6-21-76	2.1 GB
ROADM7 (1-deg)	ROADM7-25-77	2.1 GB
ROADM8 (1-deg)	ROADM8-29-78	2.1 GB
OLA1	OLA1-64-78	2.1 GB
OLA2	OLA2-65-79	2.1 GB
OLA3	OLA3-66-80	2.1 GB
OLA4	OLA4-67-81	2.1 GB

Table 3: Cisco Optical Site Manager instance group 2

Cisco Optical Site Manager Instance Name	Cisco NCS 2000/NCS 1000 managed devices	Reserved Memory
ROADM3 (4-deg)	ROADM3-9-73 Kepler-49	2.1 GB
ROADM4 (12-deg)	ROADM4-13-74 RTXP1 RTXP2	4 GB
OLA5	OLA5-193-82	2.1 GB
OLA6	OLA6-194-83	2.1 GB
OLA6	OLA6-195-84	2.1 GB
OLA8	OLA8-196-85	2.1 GB

Cisco Optical Site Manager instance

In an NCS 2000 network, a Cisco Optical Site Manager instance can manage multiple device types, including ROADM, OLA, Remote Transponder nodes, standalone transponders, and NCS 1000 transponders, as a single managed entity. With reference to the Golden Reference Setup (2.2), a single Cisco Optical Site Manager instance is used to manage multiple devices within a site.

These examples show how Cisco Optical Site Manager enables unified management of different device combinations within the same site:

- Cisco Optical Site Manager instance managing OLA nodes.
- Cisco Optical Site Manager instance managing ROADM and remote transponder nodes.
- Cisco Optical Site Manager instance managing ROADM and one Cisco NCS 1014 device.

In this example, these Cisco Optical Site Manager instances are defined:

OLA5 Cisco Optical Site Manager instance

OLA5-193

ROADM2 Cisco Optical Site Manager instance

- ROADM2-5-72
- RTXP3-41-72
- SVO-228-142 Controller (i.e. the SVO card plugged in ROADM2-5-72)

ROADM3 Cisco Optical Site Manager Instance

- ROADM3-9-73
- Kepler49
- SVO-231-66 Controller (i.e. the SVO card plugged in ROADM3-9-73)

OLA

Figure 8: OLA managed devices

Name	Device Type	Device Flavour	IP Address	Authorization Group	Sync Status	Netx
OLA5-193	ncs2000	any-config	192.168.5.193	ncs2k	sync-completed, alarm-synchronised	N/A

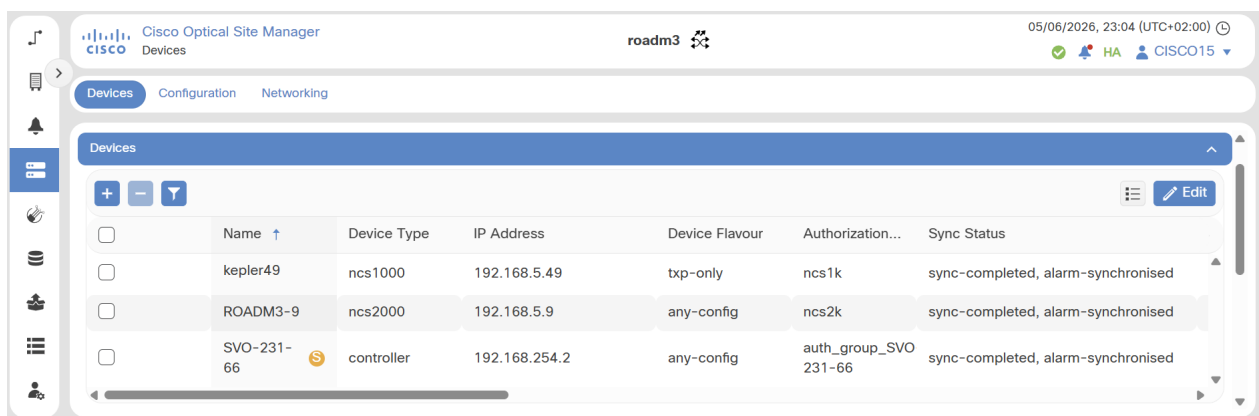
ROADM, remote transponder, and SVO card instance

Figure 9: ROADM and remote transponder managed devices

Name	Device Type	Device Flavour	IP Address	Authorization Group	Sync Status	Netx
ROADM2-5	ncs2000	any-config	192.168.5.5	ncs2k	sync-completed, alarm-synchronised	
RTXP3-41	ncs2000	txp-only	192.168.5.41	ncs2k	sync-completed, alarm-synchronised	
SVO-228-142	controller	any-config	192.168.254.3	auth_group_SVO-228-142	sync-completed, alarm-synchronised	

ROADM, NCS 1000 transponder, and SVO card instance

Figure 10: ROADM and Cisco NCS 1014 managed devices



UID mapping

The UID (Unique Identifier) uniquely identifies:

- Each NCS 1000 or NCS 2000 chassis
- Passive shelves
- Passive modules placed directly in the rack.

UIDs are not reserved. In principle, any NCS 1000 chassis, NCS 2000 chassis, passive shelf, or passive module can be associated with any UID.

This ensures correct device management, synchronization, and configuration consistency within the network.

In release 26.x, the UID mapping is derived from the identifiers defined in the NCS 2000 system and visible in CTC, as shown in this table.

Table 4: UID mapping

	NCS 2000/CTC	Cisco Optical Site Manager UID
Chassis	NCS 2000 Chassis ID = N	Cisco Optical Site Manager Chassis UID = N
Passive Chassis	NCS 2000 Passive Chassis ID = N	Cisco Optical Site Manager Passive Chassis UID = 1000 + N
Passive Unit	NCS 2000 Passive Chassis ID = N	Cisco Optical Site Manager Passive Unit UID = 500 + N

Before adding a new device (remote transponder or NCS 1000 Transponder), always verify the list of existing UIDs in the Cisco Optical Site Manager inventory to avoid overlaps.

- When you add an NCS 1000 device, select the UID to associate with the NCS 1000 chassis. Use an identifier that is not already used in the ROADM. Otherwise, Cisco Optical Site Manager assigns the first available UID.
- When you add an NCS 2000 remote TXP node or a simple transponder node, assign a first UID that is higher than the maximum chassis UID already present in the Cisco Optical Site Manager instance.
- If a remote transponder has more than one chassis, Cisco Optical Site Manager will assign UIDs sequentially.

This figure shows ROADM2 and RTXP3 managed by the same Cisco Optical Site Manager instance.

**Note**

You can force UID-to-NCS 2000 ID mapping by importing an XML file, as described in the device onboarding workflow.

Figure 11: UID mapping for ROADM2 and RTXP3

Devices						
	Name ↑	Device Type	Device Flavour	IP Address	Authorization Group	Sync Status
☐	ROADM2	ncs2000	any-config	192.168.5.5	ncs2000	sync-completed, alarm-synchronised
☐	RTXP3	ncs2000	txp-only	192.168.5.41	ncs2000	sync-completed, alarm-synchronised
☐	SVO-228-142	controller	any-config	192.168.254.3	auth_group_SVO-228-142	sync-completed, alarm-synchronised

Device Hardware Details:

UID ↑	Name	ID (Chassis/Passive Unit)	Type (Chassis/Passive Unit)	Rack
1	ROADM2	1	NCS2015-ANSI	1/13
2	ROADM2	2	NCS2015-ANSI	1/29
20	RTXP3	1	NCS2006-ANSI	3/2
21	RTXP3	2	NCS2006-ANSI	3/9
22	RTXP3	3	NCS2006-ANSI	3/16
502	ROADM2	2	NCS2K-PPMESH8-5AD	1/1
1001	ROADM2	1001	NCS2K-MF10-6RU	1/5

Cisco Optical Network Controller deployment models and requirements

This section explains Cisco Optical Network Controller deployment models, node requirements, redundancy options, and interfaces used for OAS network operations.

Use this topic to understand Cisco Optical Network Controller deployment options for OAS. Review standalone and Geo HA models, network segments, and hardware sizing requirements before installation or upgrade planning.

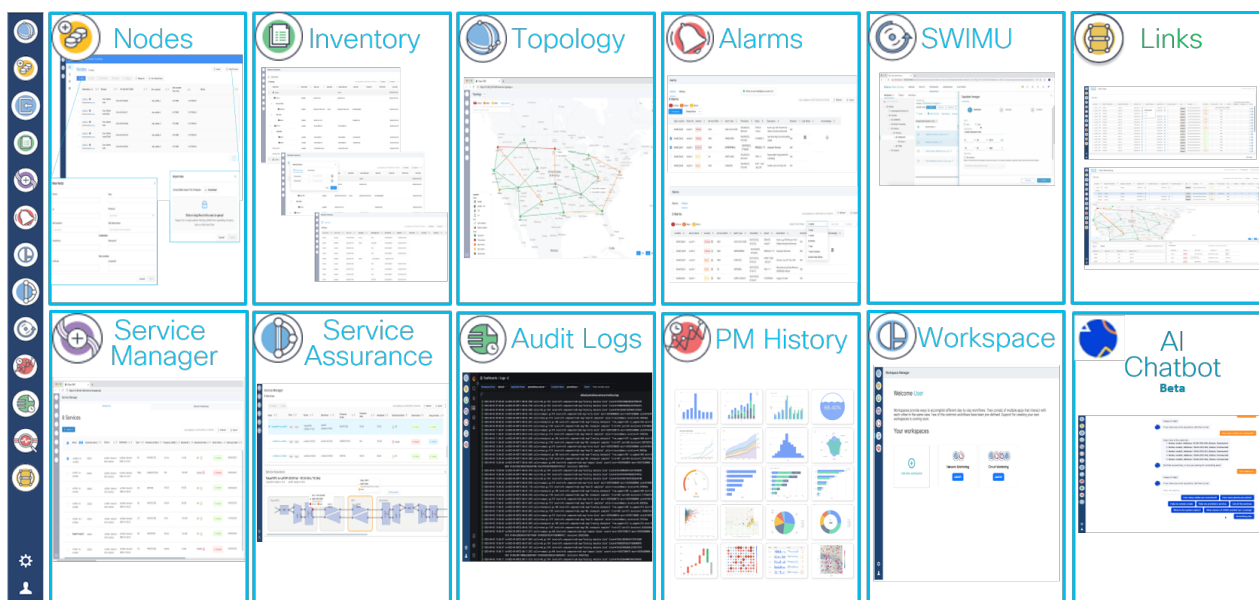
Cisco Optical Network Controller architecture and functions

Cisco Optical Network Controller supports these key functions:

- Network inventory and topology discovery and maintenance
- Continuous monitoring of network status and topology changes
- Network and service event notification
- Optical service provisioning and management

The platform supports software upgrades and pathing without requiring full reinstallation.

Figure 12: Cisco Optical Network Controller functions



Cisco Optical Network Controller deployment models

Cisco Optical Network Controller supports two deployment models, designed to address different operational and availability requirements:

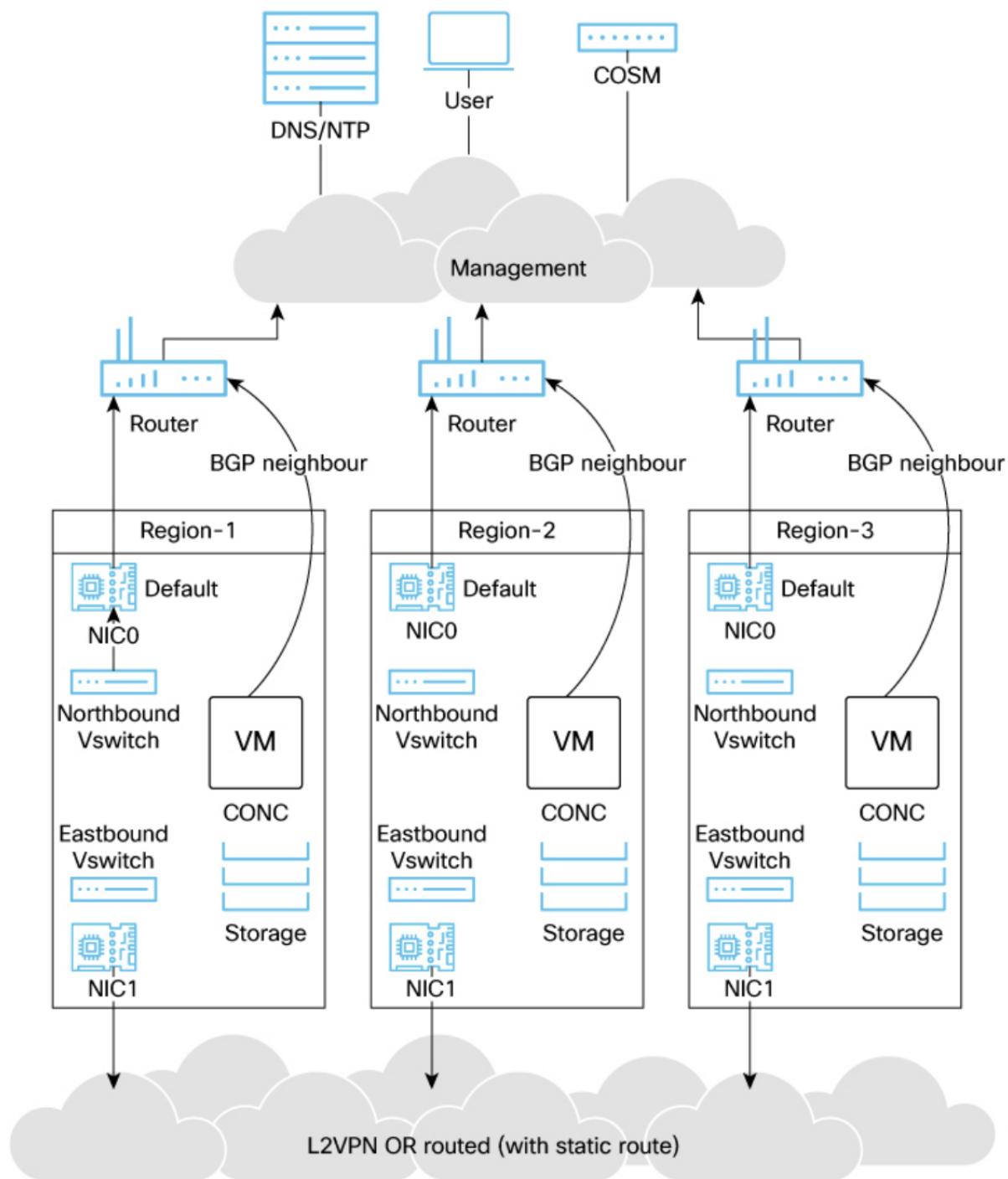
- **Standalone (SA)**

The Standalone deployment consists of a single virtual machine hosting the controller. It is typically used for lab environments, proof of concepts (PoC), or small-scale deployments where high availability is not required.

- **Geo High Availability (GeoHA)**

The GeoHA deployment provides a geo-redundant architecture to ensure service continuity. It is based on a three-node topology (active, standby, arbitrator) distributed across different locations. This model is intended for production environments requiring high availability and resilience to site failures.

Figure 13: Cisco Optical Network Controller Geo HA architecture



Cisco Optical Network Controller networking

Configure these network segments:

- Northbound: User access and external system integration
- Control Plane: Internal system communication
- Eastbound: Inter-node communication (required for GeoHA deployments)

For GeoHA deployments, these minimum requirements apply:

- Bandwidth ≥ 1 Gbps
- Latency < 100 ms

Standalone mode hardware requirements and sizing notes

This table lists the minimum hardware requirements for the base profile with daily retention only.

Table 5: Standalone mode hardware requirements for base profile with daily retention

Sizing	CPU	Memory	Solid State Drive (SSD)
Extra Small (XS)	16 vCPU	64 GB	1 TB
Small (S)	32 vCPU	128 GB	2.5 TB
Medium (M)	48 vCPU	256 GB	6 TB

This table lists the minimum hardware requirements for the extended profile with weekly and monthly retention.

Table 6: Standalone mode hardware requirements for extended profile with weekly and monthly retention

Sizing	CPU	Memory	Solid State Drive (SSD)
Extra Small (XS)	16 vCPU	64 GB	1.5 TB
Small (S)	32 vCPU	128 GB	5 TB
Medium (M)	48 vCPU	256 GB	12 TB

HA mode hardware requirements and sizing notes

Table 7: HA mode hardware requirements for base profile with daily retention

Profile	Worker Node CPU (in cores)	Arbitrator Node CPU (in cores)	Worker Node Memory (GB)	Arbitrator Node Memory (GB)	Solid State Drive (SSDs) (TB)
XS	16 vCPU	8	64	32	1
S	32 vCPU	8	128	32	2.5
M	48 vCPU	8	256	32	6

This table lists the minimum hardware requirements for the extended profile in HA mode with weekly and monthly retention.

Table 8: HA mode hardware requirements for extended profile with weekly and monthly retention

Profile	Worker Node CPU (in cores)	Arbitrator Node CPU (in cores)	Worker Node Memory (GB)	Arbitrator Node Memory (GB)	Solid State Drive (SSDs) (TB)
XS	16 vCPU	8	64	32	1.5
S	32 vCPU	8	128	32	5

Profile	Worker Node CPU (in cores)	Arbitrator Node CPU (in cores)	Worker Node Memory (GB)	Arbitrator Node Memory (GB)	Solid State Drive (SSDs) (TB)
M	48 vCPU	8	256	32	12

Cisco software image purposes

This reference describes the Cisco NCS 2000, Cisco Optical Site Manager, and Cisco Optical Network Controller software images used for installation, upgrade, and service-pack workflows.

Cisco NCS 2000, Cisco Optical Site Manager, and Cisco Optical Network Controller software packages are distributed through Cisco Software Download. Different image types are available depending on the target component and operation, such as installation or upgrade.

Cisco NCS 2000 software package

This software package is used for Cisco NCS 2000 Release 26.1.1.

Table 9: Cisco NCS 2000 software package

Package	File name	Usage
Cisco NCS 2000 software package	NCS 2000.S.K9.R2611.pkg	Use this package for node upgrades through CTC or EPNM. In releases 25.x and 26.x, only the Cisco NCS 2000 S package is provided.

Cisco Optical Site Manager software images

Cisco Optical Site Manager software is distributed as ISO images or service packs and differs based on the target platform.

Table 10: Cisco Optical Site Manager software images

Image type	File name	Download location	Usage and contents
Cisco Optical Site Manager 2000 image (.iso)	ncs2k-base-26.1.1.iso	Cisco Software Download page for Cisco NCS 2000	Use this image for Cisco Optical Site Manager 2000 installation and deployment on an SVO card. The image is a complete package that contains admin plane, Aggregator, Card Controller, and Cisco NCS 2000 package components.
Cisco Optical Site Manager 2000 service pack image (.tar)	ncs2k-base-26.1.1.P<index>.tar	Cisco Software Download page for Cisco NCS 2000	Use this image to deliver fixes or functionality on top of the Cisco Optical Site Manager release image. The service pack image is versioned as P2, P3, and so on, and contains only the Aggregator component.

Cisco Optical Site Manager 1000 image (.iso)	ncs1010-x64-26.1.1.iso	Cisco Software Download page for Cisco NCS 1010	Use this image for Cisco Optical Site Manager deployment on the Cisco NCS 1000 platform.
--	------------------------	---	--



Note

The Cisco Optical Site Manager 1000 image package can be downloaded on the SVO card when a Cisco NCS 1000 TXP is onboarded to a Cisco Optical Site Manager 2000 instance that requires an upgrade.

Cisco Optical Network Controller software images

Cisco Optical Network Controller software is distributed through the Cisco Software Download page in multiple formats depending on the operation.

Table 11: Cisco Optical Network Controller software images

Image type	File extension	Operation	Usage
OVA	.ova	New deployment	Contains the full virtual machine template that is required to install Cisco Optical Network Controller in VMware environments.
KVM	.qcow2	New deployment	Use this image for new deployments on KVM platforms.
System Pack	.tar	Major software upgrade	Use this image for release-to-release upgrades.
Service pack	.tar	Minor update	Use this image for bug fixes and incremental features. The service pack acts as a roll-up package that includes multiple software maintenance updates (SMUs).

Cisco Optical Network Controller circuit management in NCS 2000 networks

Review the circuit management changes introduced with release 26.x so operators understand which actions move from legacy tools to Cisco Optical Network Controller.

Use this topic to understand how circuit management changes when NCS 2000 networks move to release 26.x. Review which operations remain available through legacy tools and which GMPLS circuit workflows are handled through Cisco Optical Network Controller.

Circuit management changes in release 26.x

Once NCS 2000 node is upgraded into a release 26.x, users should be aware that:

- TL1 interface will remain fully supported.
- CTC Circuit Management in CTC is fully supported

EPNM 8.1 and later supports NCS 2000 release 26.x through the TL1 interface, maintaining the same operational model used in release 11.x.

Cisco Optical Network Controller circuit management

In a NCS 2000 Optical Network, Cisco Optical Network Controller supports provisioning and management of GMPLS Circuit. Although CPCE control is also supported in NCS 2000 networks, the simultaneous use of CPCE and GMPLS is not recommended. Running both control planes in parallel may lead to inconsistencies during provisioning, rerouting, and restoration, as the two control planes are not coordinated.

In case of GMPLS circuits, Cisco Optical Network Controller makes circuit provisioning request only to Head node then Distributed control plane in NCS 2000 nodes takes care of circuit deployment.

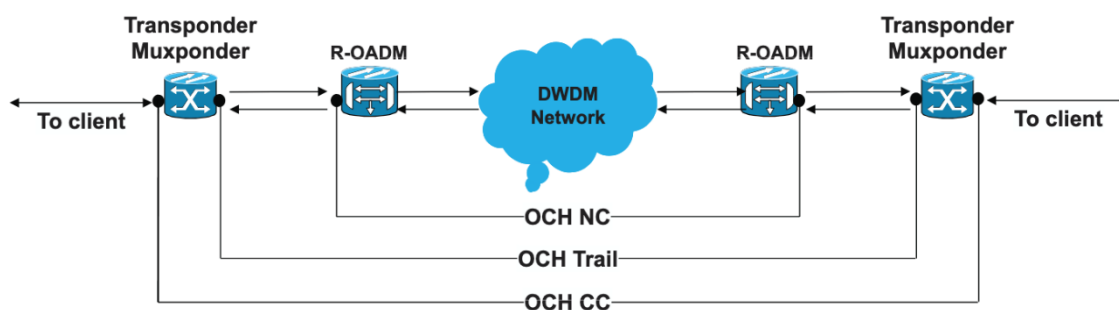
For additional details, review the Cisco Optical Network Controller GMPLS circuit documentation.

Cisco Optical Network Controller supports three types of optical circuits, organized in a hierarchical structure:

- OCH-NC (Optical Channel - Network Connection) Provides wavelength-based connectivity between two optical nodes within the DWDM network.
- OCH-CC (Optical Channel - Client Connection) Represents the end-to-end client service between transponder (TXP) or muxponder (MXP) client ports. It extends the underlying OCH-NC connectivity to deliver actual service traffic.
- OCH-Traill Provides the trunk-level optical connection between network elements, supporting the transport of one or more OCH-CC circuits. An OCH-Traill is automatically created when an OCH-CC is provisioned.

The OCH-CC services (if present) rely on OCH-Traill connectivity.

Figure 14: Circuit hierarchy



Cisco Optical Network Controller service manager

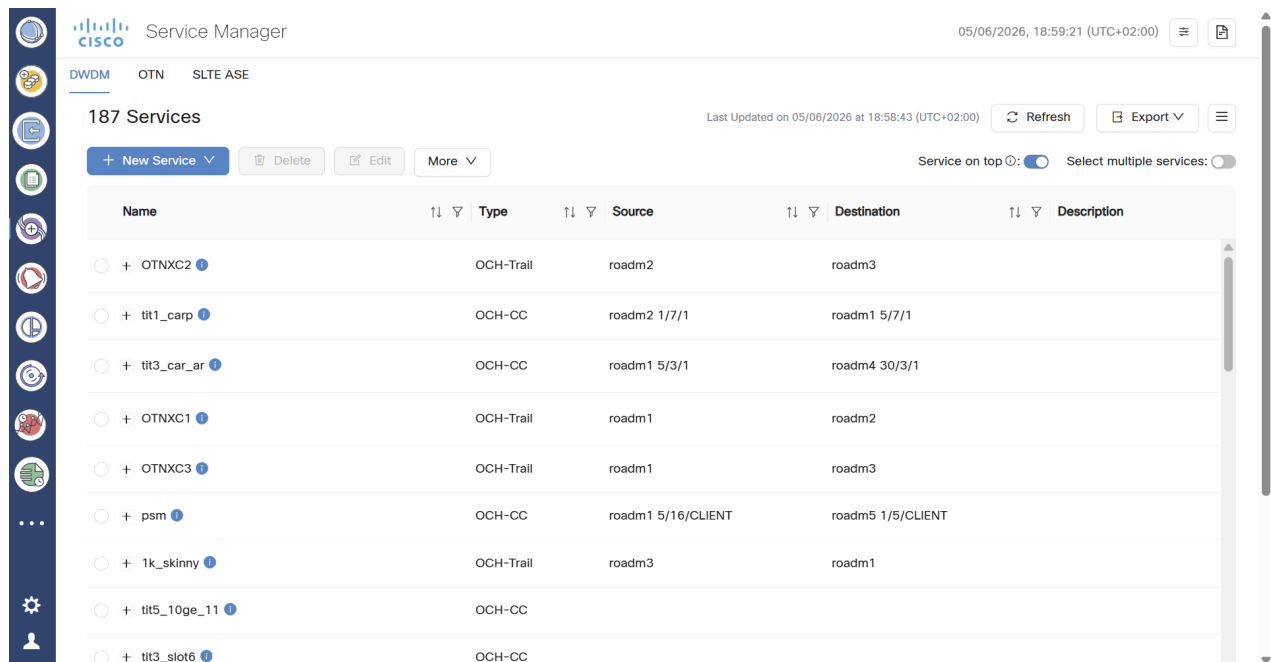
Access the Service Manager by selecting Service Manager from the left navigation panel.

The Service Manager is an application within Cisco Optical Network Controller that provides a centralized interface for circuit management. It allows users to:

- Visualize network services
- Provision new circuits
- Monitor circuit status

- Modify or delete existing services

Figure 15: Cisco Optical Network Controller service manager



The screenshot shows the Cisco Optical Network Controller Service Manager interface. At the top, there's a header with the Cisco logo and 'Service Manager'. Below it, there are tabs for 'DWDM', 'OTN', and 'SLTE ASE'. The main section displays '187 Services' with a table listing various services. The table has columns for Name, Type, Source, Destination, and Description. Services listed include OTNXC2, tit1_carp, tit3_car_ar, OTNXC1, OTNXC3, psm, 1k_skinny, tit5_10ge_11, and tit3_slot6.

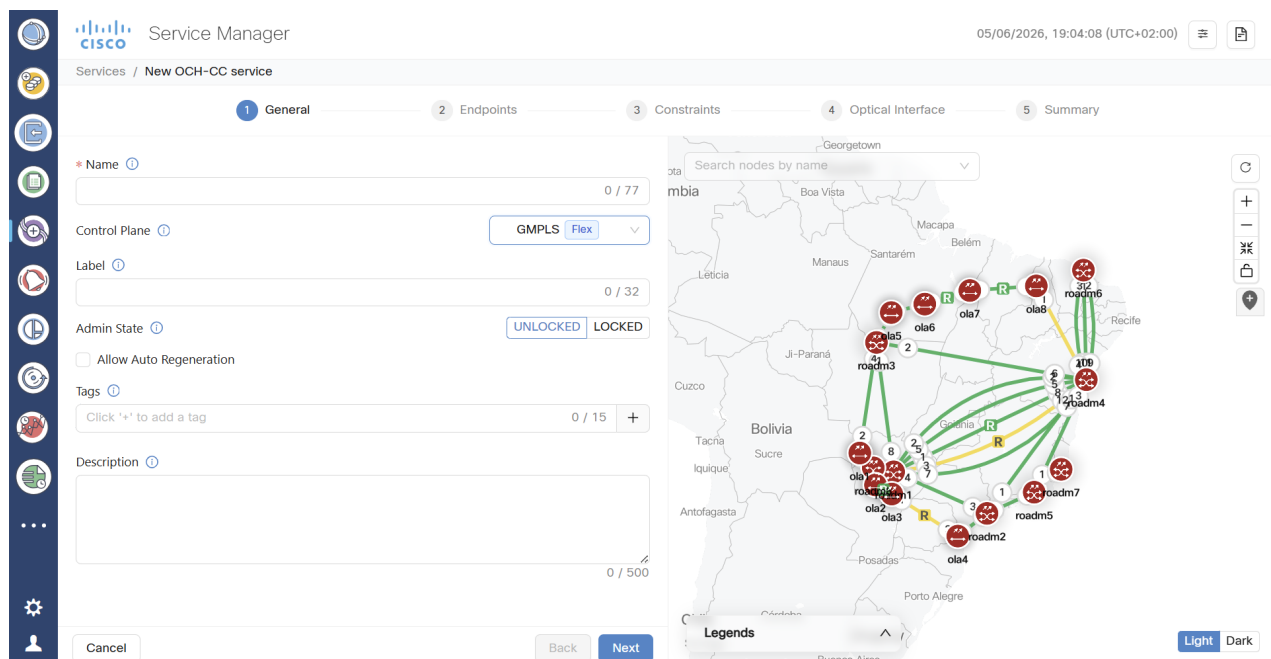
Name	Type	Source	Destination	Description
OTNXC2	OCH-Trail	roadm2	roadm3	
tit1_carp	OCH-CC	roadm2 1/7/1	roadm1 5/7/1	
tit3_car_ar	OCH-CC	roadm1 5/3/1	roadm4 30/3/1	
OTNXC1	OCH-Trail	roadm1	roadm2	
OTNXC3	OCH-Trail	roadm1	roadm3	
psm	OCH-CC	roadm1 5/16/CLIENT	roadm5 1/5/CLIENT	
1k_skinny	OCH-Trail	roadm3	roadm1	
tit5_10ge_11	OCH-CC			
tit3_slot6	OCH-CC			

Cisco Optical Network Controller includes a Provisioning Wizard that simplifies circuit creation across multiple nodes.

The wizard:

- Collects required configuration inputs step by step
- Allows users to review and modify parameters before deployment
- Once the configuration is validated, it can be deployed directly to the network nodes.

Figure 16: Cisco Optical Network Controller service manager wizard



The screenshot shows the Cisco Optical Network Controller Service Manager wizard for creating a new OCH-CC service. The wizard has five steps: General, Endpoints, Constraints, Optical Interface, and Summary. The 'General' step is currently active, showing fields for Name, Control Plane (set to GMPLS), Label, Admin State (set to UNLOCKED), Tags, and Description. A map of South America is displayed on the right side of the wizard, showing the network topology with various nodes and connections.

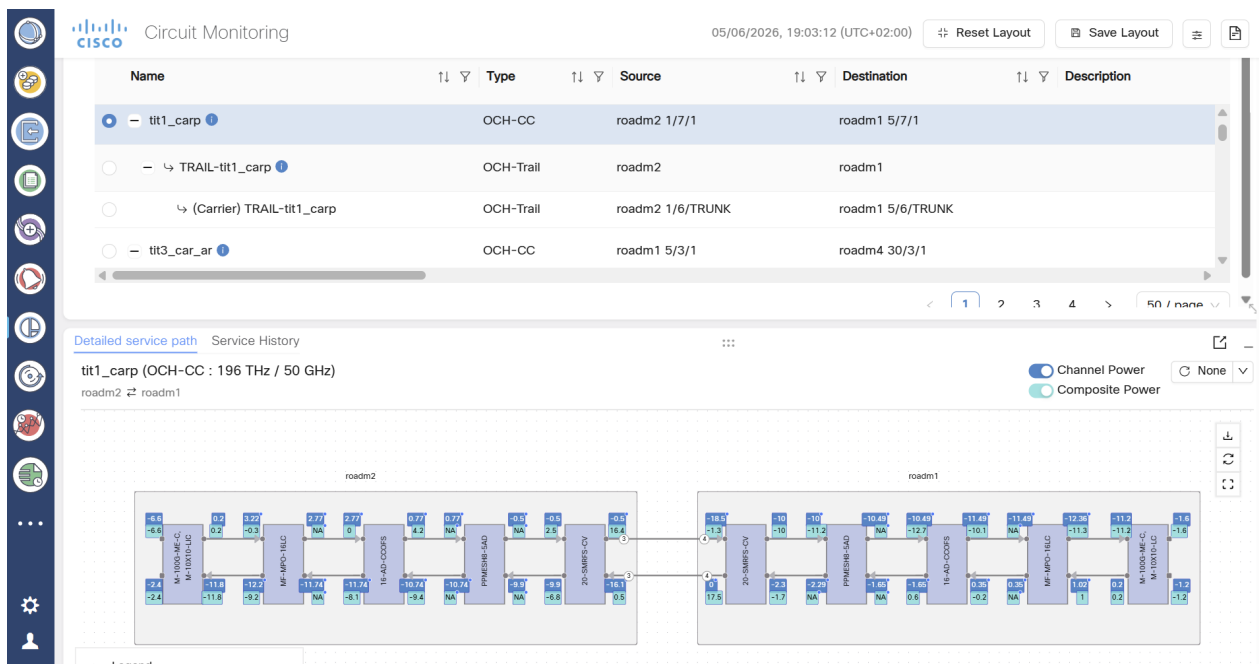
Cisco Optical Network Controller circuit monitoring workspace

After a circuit is provisioned, it can be monitored using the Circuit Monitoring workspace.

This view provides visibility into:

- Circuit status
- Operational parameters
- Detailed Service path
- Alarms
- Path in the map

Figure 17: Cisco Optical Network Controller circuit monitoring



Cisco Optical Network Controller circuits out of scope in 26.1.1

These circuits are out of scope for release 26.1.1 by design:

- GMPLS service with MR-MXP client (Partial in Cisco Optical Network Controller)
- PSM circuits (Partial in Cisco Optical Network Controller)
- GMPLS OCH trail between two endpoints that use Cisco NCS 1000 line card PIDs NCS 1000-1.2T-K9 and NCS 1000-1.2T-L-K9 (Licensed). Although these line cards differ only by PID, they should be interoperable. However, Cisco Optical Network Controller prevents circuit creation with this error: "The application code of both endpoints must match". (CSCww07470)

SVO card placement capabilities in Cisco Optical Network Planner

This section explains how Cisco Optical Network Planner supports SVO card placement decisions and shows the design artifacts used to validate supported deployment models.

Cisco Optical Network Planner provides comprehensive SVO card placement capabilities, enabling operators to design resilient and efficient optical network architectures.

Key SVO card placement features

Main features are:

- **Placement Intelligence**

- Flexible Placement Strategy: Cisco Optical Network Planner can suggest optimal SVO card placements or allow users to manually select preferred locations based on network topology and requirements.
- Automated Determination: Cisco Optical Network Planner automatically calculates primary and secondary SVO card placements, reducing manual configuration complexity.

- **Visualization & Management**

- GUI visualization: SVO associations are displayed intuitively through the graphical interface.
- Excel Export Format: Support for exporting placement configurations and associations in Excel for documentation, analysis, and integration with external tools.

- **Memory Configuration Flexibility**

Adjustable Memory Settings: Memory parameters can be tailored to specific deployment requirements and network conditions.

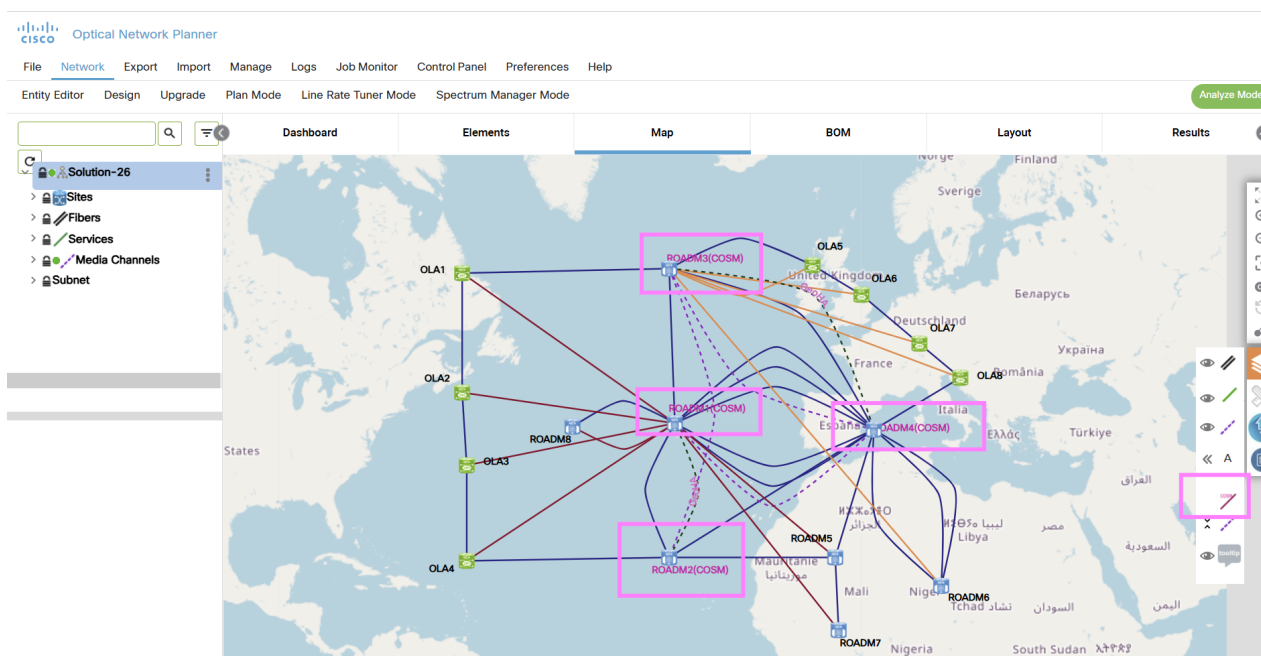
- **High Availability & Redundancy**

- Local HA Configuration: Cisco Optical Network Planner supports redundancy within a single site for localized fault protection.
- Geo HA Configuration: Cisco Optical Network Planner enables geographic high availability across distributed network sites.
- Multi-Node Association: Users can associate multiple network nodes with a single SVO line card, optimizing resource utilization.

Cisco Optical Network Planner SVO card placement visualization

Cisco Optical Network Planner displays SVO card placements and node associations directly in the topology view.

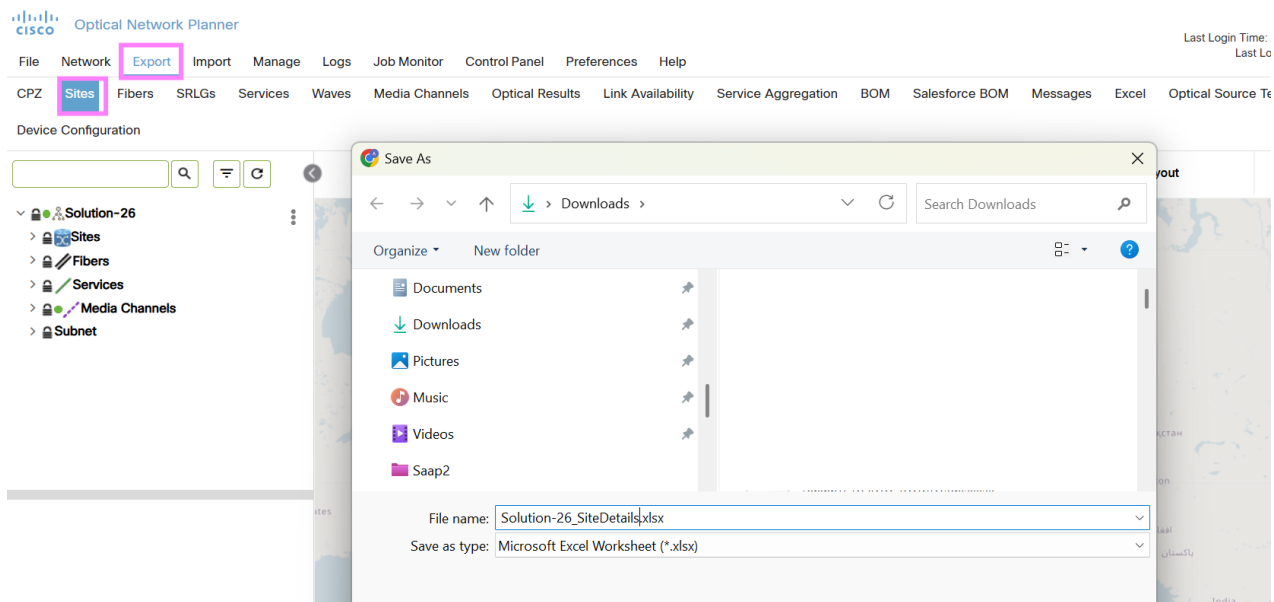
Figure 18: Cisco Optical Network Planner SVO placement - GUI visualization



SVO card placement Excel export

Placement data, including associations, can be exported as Excel files for further documentation or integration.

Figure 19: Cisco Optical Network Planner SVO card placement Excel exports



SVO card placement association data

This table lists node-level SVO placement associations, high availability relationships, and Cisco Optical Site Manager memory usage as exported by the tool:

Table 12: Cisco Optical Network Planner SVO card placement associations

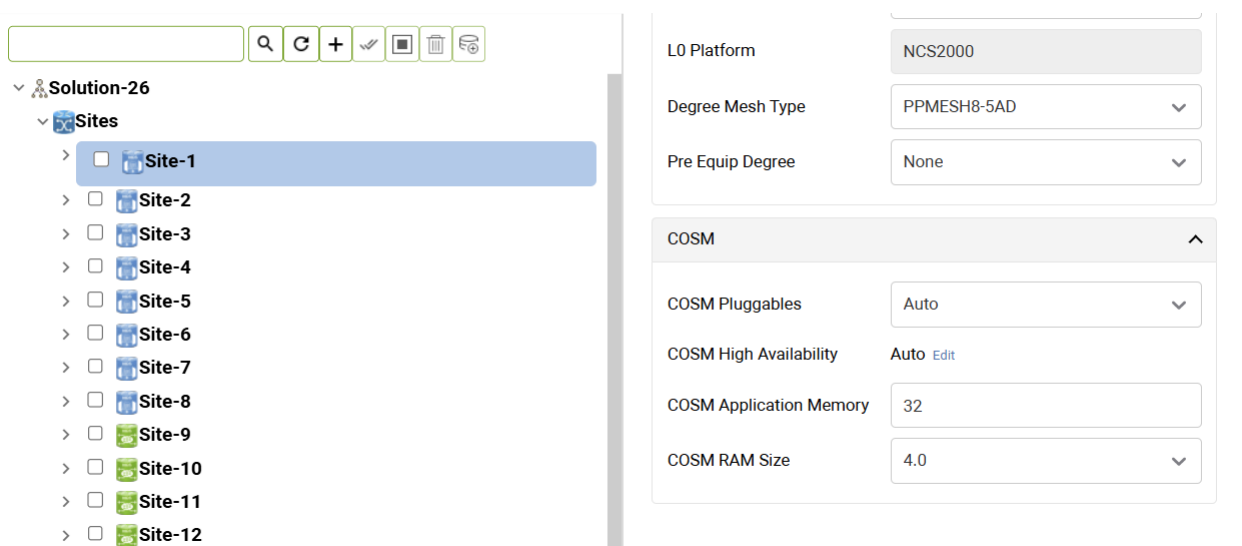
	Type	X	Y	Pre Equip Degree	Cisco Optical Site Manager HA	Cisco Optical Site Manager Associations	Total Cisco Optical Site Manager Used Memory
ROADM1	ROADM	-28.79684	40.10732	None	ROADM2 (secondaryHA of ROADM1)	ROADM8, ROADM5, OLA4, ROADM7, OLA3, OLA2, OLA1	20.80
ROADM2	ROADM	-29.67575	22.50698	None	ROADM1 (primaryHA of ROADM2)	ROADM8, ROADM5, OLA4, ROADM7, OLA3, OLA2, OLA1	
ROADM3	ROADM	-29.67575	55.92159	None	ROADM4 (secondaryHA of ROADM3)	OLA5, ROADM6, OLA8, OLA6, OLA7	16.60
ROADM4	ROADM	1.96536	39.34119	None	ROADM3 (primaryHA of ROADM4)	OLA5, ROADM6, OLA8, OLA6, OLA7	
ROADM5	ROADM	-4.01130	22.50698	None	None	ROADM1, ROADM2	
ROADM6	ROADM	12.36577	18.39042	None	None	ROADM3, ROADM4	
ROADM7	ROADM	-3.48395	11.77524	None	None	ROADM1, ROADM2	
ROADM8	ROADM	-44.61739	39.70278	None	None	ROADM1, ROADM2	
OLA1	OLA	-61.66844	55.52560	NA		ROADM1, ROADM2	
OLA2	OLA	-61.66844	43.63994	NA		ROADM1, ROADM2	
OLA3	OLA	-60.96530	34.95323	NA		ROADM1, ROADM2	
OLA4	OLA	-60.96530	22.01894	NA		ROADM1, ROADM2	
OLA5	OLA	-7.52698	56.21596	NA		ROADM3, ROADM4	
OLA6	OLA	0.03173	53.58929	NA		ROADM3, ROADM4	

	Type	X	Y	Pre Equip Degree	Cisco Optical Site Manager HA	Cisco Optical Site Manager Associations	Total Cisco Optical Site Manager Used Memory
OLA7	OLA	8.99672	48.86108	NA		ROADM3, ROADM4	
OLA8	OLA	15.32494	45.27094	NA		ROADM3, ROADM4	

SVO card placement memory adjustment

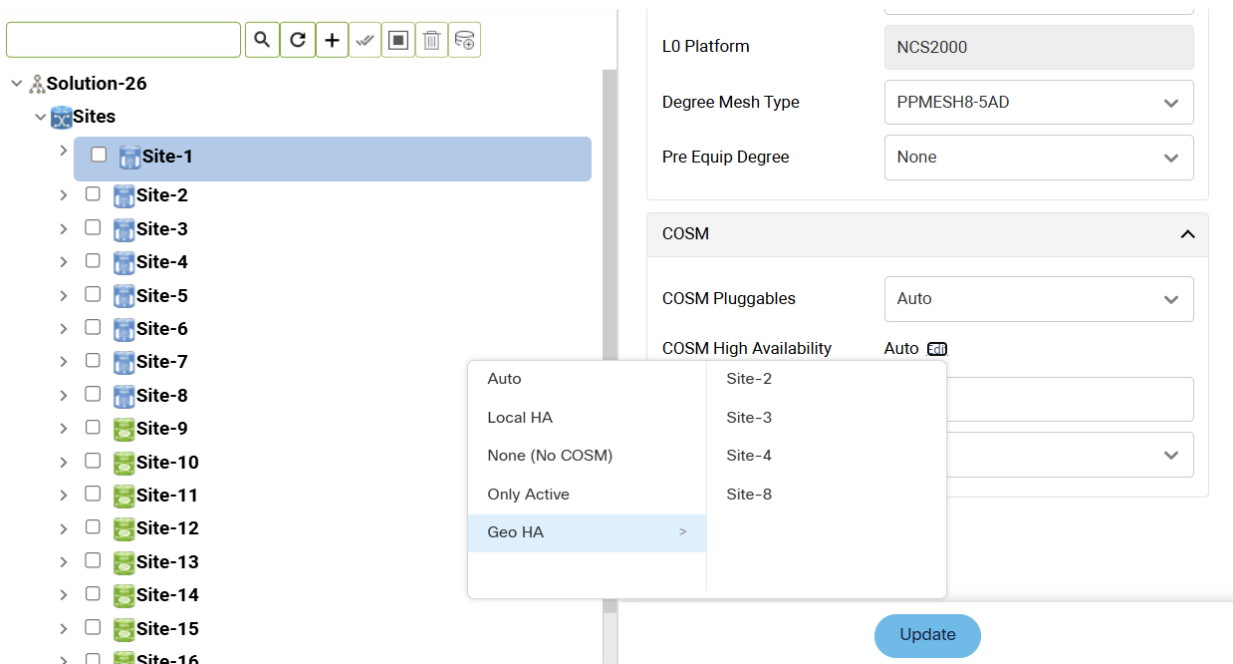
Cisco Optical Network Planner allows memory settings for SVO card placements to be adjusted based on deployment requirements.

Figure 20: Cisco Optical Network Planner SVO card placement memory adjustment



Memory-related SVO placement information is included in exported reports.

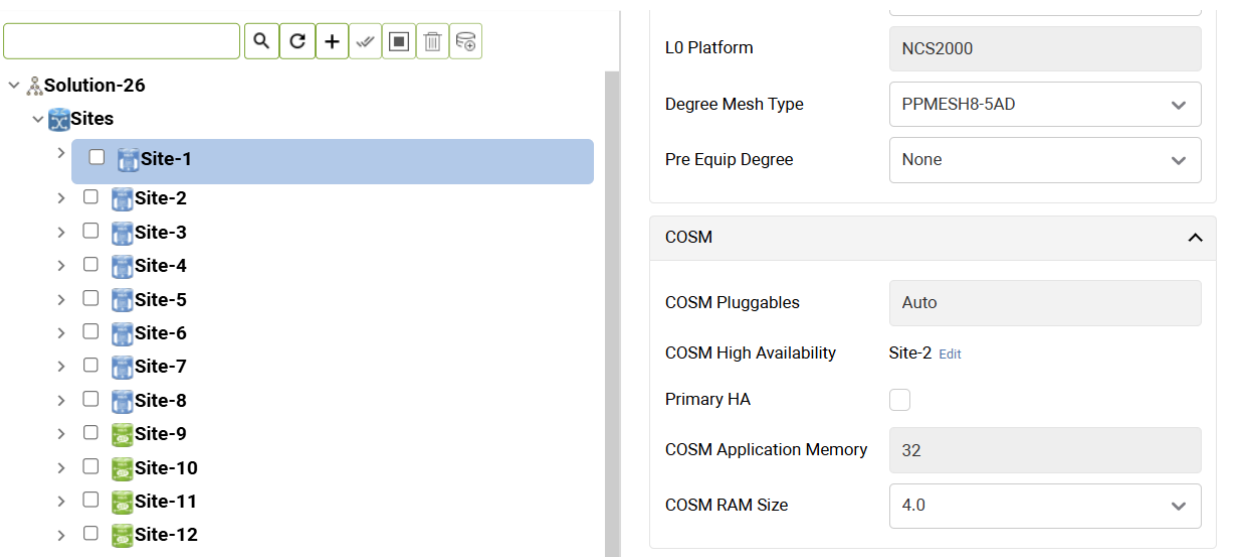
Figure 21: Cisco Optical Network Planner SVO card placement memory export



High availability configuration

Cisco Optical Network Planner provides options to configure SVO card high availability and redundancy, supporting both localized failover and geographic HA.

Figure 22: Cisco Optical Network Planner SVO card placement HA configuration flexibility



3 Transition your NCS 2000 network from 11.x.x to 26.x.x

Topics:

- [NCS 2000 network transition workflow](#)
- [Prepare NCS 2000 nodes for transition](#)
- [Plan Cisco Optical Site Manager deployment](#)
- [Upgrade NCS 2000 ROADM nodes that host SVO cards](#)
- [Install and configure SVO cards](#)
- [Create Cisco Optical Site Manager instances and onboard SVO card host nodes](#)
- [Upgrade and onboard NCS 2000 nodes that do not host SVO cards](#)
- [Upgrade remote transponder nodes](#)
- [Install Cisco Optical Network Controller and onboard Cisco Optical Site Manager nodes](#)

This chapter walks through the transition of an existing NCS 2000 network from release 11.x.x to 26.x.x, including node preparation, SVO card deployment, Cisco Optical Site Manager onboarding, and Cisco Optical Network Controller integration.

Use this chapter to transition an existing NCS 2000 network from release 11.x.x to 26.x.x. Prepare the nodes, deploy SVO cards and Cisco Optical Site Manager, onboard devices, and integrate Cisco Optical Network Controller for centralized operations.

NCS 2000 network transition workflow

Outlines the full transition path from CTC or EPNM-based operations to release 26.x management through Cisco Optical Site Manager and Cisco Optical Network Controller.

The transition applies to networks including NCS 2000 ROADM nodes, OLA nodes, remote transponder nodes or standalone transponder nodes, and, where applicable, NCS 1000 transponder nodes.

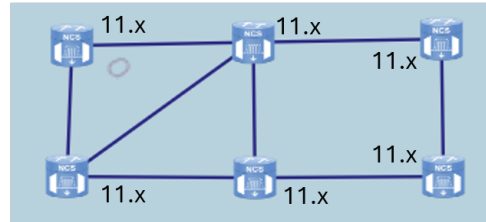
The procedures use the golden reference setup as an example. During the transition, the network may operate in a mixed-management mode:

- CTC/EPNM remains used for legacy circuit management.
- Cisco Optical Site Manager is introduced for NCS 2000 node management.
- Cisco Optical Network Controller is introduced after Cisco Optical Site Manager instances are available and synchronized.

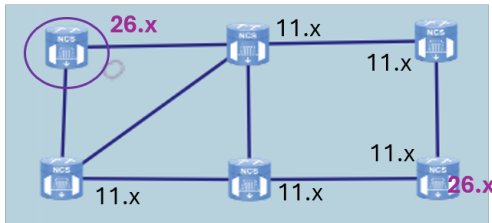
This figure shows the high-level network transition from release 11.x.x operations to release 26.x.x management with Cisco Optical Site Manager and Cisco Optical Network Controller.

Figure 23: Network transition from 11.x.x to 26.x.x

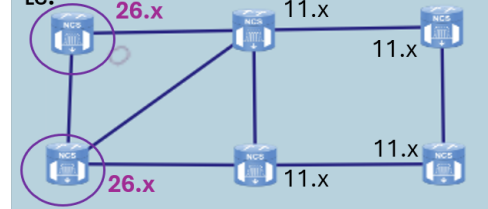
1. Network in 11.x



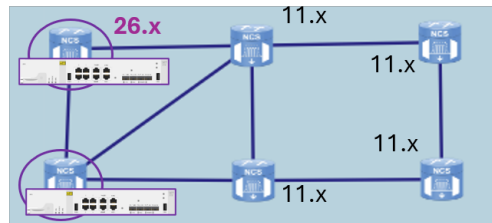
2. Upgrade a node selected to host the SVO-LC



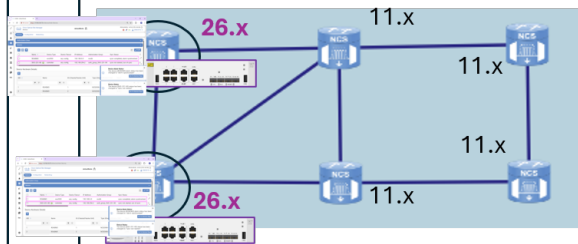
3. Upgrade the second node selected to host the SVO-LC.



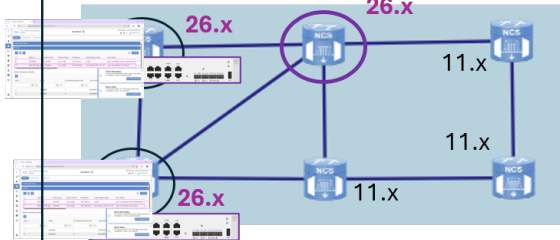
4. Cabling and install SVO Card in geo HA



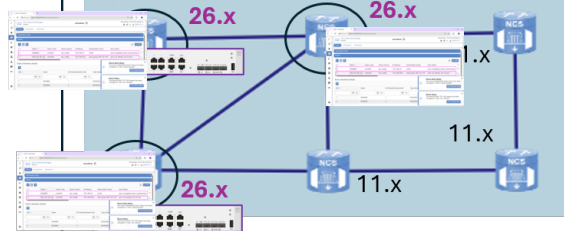
5. Create both COSM Instances



6. Upgrade one node selected to have COSM instances into the just installed SVO-LC



7. Create its COSM Instance



8. Continue as all nodes selected to have COSM instances into the just installed SVO-LC



The migration procedure is organized into a sequence of workflows, each addressing a specific part of the transition:
Perform these tasks to transition the NCS 2000 network from 11.x.x to 26.x.x:

Procedure

1. [Prepare NCS 2000 nodes for transition.](#)
2. [Plan Cisco Optical Site Manager deployment](#) and SVO card deployment.
3. [Upgrade NCS 2000 ROADM nodes that host SVO cards.](#)
4. [Install and configure SVO cards.](#)

In Geo HA deployments, install and configure the SVO cards in parallel after SVO card plug-in and cabling.

5. [Create Cisco Optical Site Manager instances and onboard SVO card host nodes.](#)
6. [Upgrade and onboard NCS 2000 nodes that do not host SVO cards.](#)
7. [Upgrade remote transponder nodes.](#)
8. [Install Cisco Optical Network Controller and onboard Cisco Optical Site Manager nodes.](#)

Cisco Optical Network Controller onboarding can start after a node is upgraded or after all Cisco Optical Site Manager instances running on an SVO-LC are up and running.

Prepare NCS 2000 nodes for transition

Prepare the existing NCS 2000 nodes before transition by checking network readiness, SOCKS proxy behavior, rack settings, and CTC-visible node conditions.

Use this topic to prepare existing NCS 2000 nodes before you transition the network from release 11.x to 26.x. Confirm CTC access, configure SOCKS proxy behavior where required, verify rack settings for remote or standalone transponder nodes, and validate that the nodes are ready for Cisco Optical Site Manager onboarding.

This workflow includes the preparation tasks that must be completed on NCS 2000 nodes before starting the network transition. These activities are performed through CTC and are not traffic-affecting.

Perform these tasks to prepare the NCS 2000 nodes:

- [Configure SOCKS proxy.](#) For an NCS 2000 node provisioned with GNE or ENE, convert the node to SOCKS proxy only.
- [Configure remote or standalone transponder node rack settings.](#)
- [Verify NCS 2000 preparation.](#)

After you complete these tasks, the NCS 2000 nodes are ready to support Cisco Optical Site Manager onboarding in the later workflows.

Configure SOCKS proxy

Learn how to enable SOCKS proxy mode on NCS 2000 nodes so Cisco Optical Site Manager can communicate with managed devices across the DCN.

Enable the SOCKS proxy on NCS 2000 nodes to allow communication between Cisco Optical Site Manager and network devices.

This procedure applies to all NCS 2000 nodes, including ROADM, OLA, and remote transponder nodes.

For NCS 2000 nodes that are already provisioned as GNE or ENE, convert the nodes to SOCKS proxy only. If the network must keep GNE or ENE mode, contact engineering to manage the deviation.

 Note

This configuration is required even if the node, such as an OLA node, is reachable only through OSC.

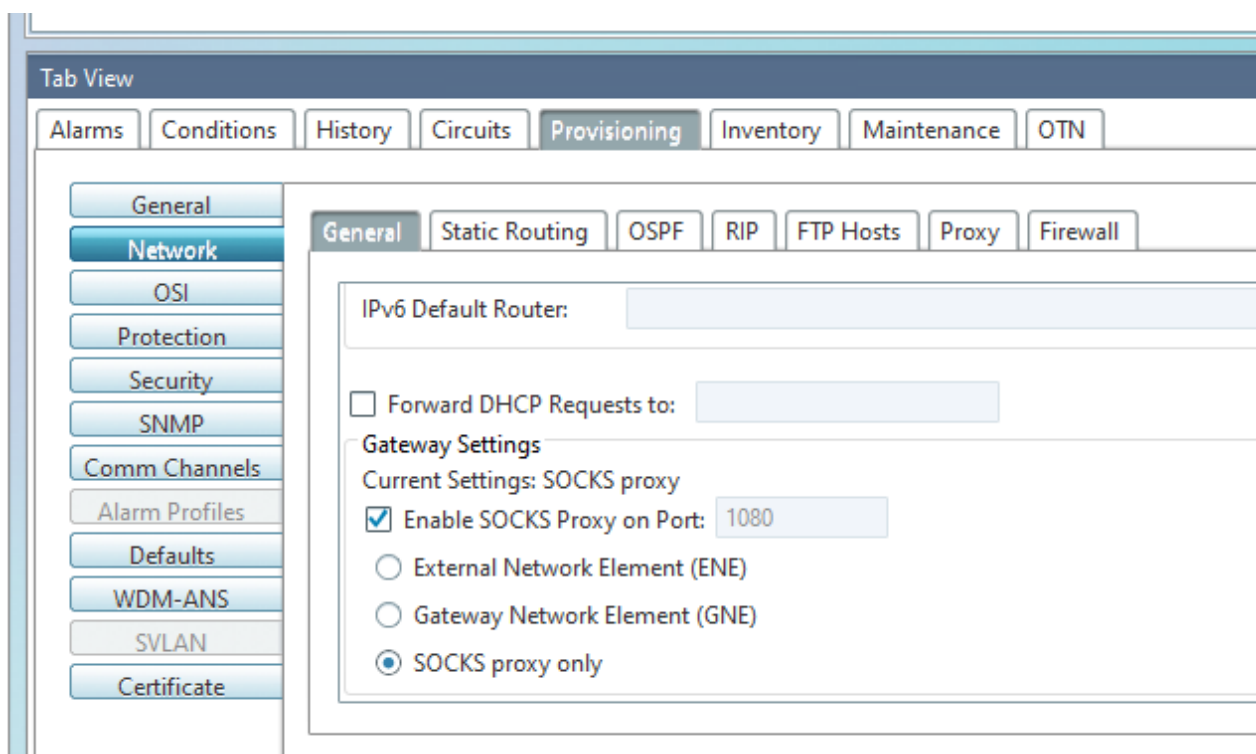
Follow these steps to configure SOCKS proxy.

Procedure

1. Open CTC.
2. Choose **Node View > Provisioning > Network > General**.
3. Select the **Enable SOCKS-proxy only** option.
4. Apply the configuration.

The SOCKS proxy is enabled and visible in the Node View -> Provisioning -> Network -> General panel.

Figure 24: CTC network setting: SOCKS proxy only



Configure remote or standalone transponder node rack settings

Verify and adjust rack numbers for remote or standalone transponder nodes so Cisco Optical Site Manager groups devices correctly in the site view.

Ensure in ROADM and Remote (or standalone transponder) node, the correct Rack Number assignment to allow proper device grouping and visualization in Cisco Optical Site Manager.

This procedure applies when a ROADM connects to a remote transponder node or a standalone transponder node. Each node must have a unique rack number to avoid overlap.

Follow these steps to configure remote or standalone transponder node rack settings.

Procedure

1. Open CTC.
2. Select **Remote TXP** (or **Standalone TXP**).
3. Choose **Node View > Provisioning > General > Rack Layout Config**.
4. Click **Edit**.
5. Verify the current Rack Number.
6. Modify the Rack Number if required to ensure uniqueness.
7. Apply the configuration.

Each node is assigned a unique Rack Number, and no overlap is present in the Cisco Optical Site Manager site view.



Note

If the remote node or standalone transponder uses a single-shelf configuration, Cisco Optical Site Manager allocates it to a rack with sufficient space for the chassis type.

Tab View

Alarms Conditions History Circuits **Provisioning** Inventory Maintenance OTN

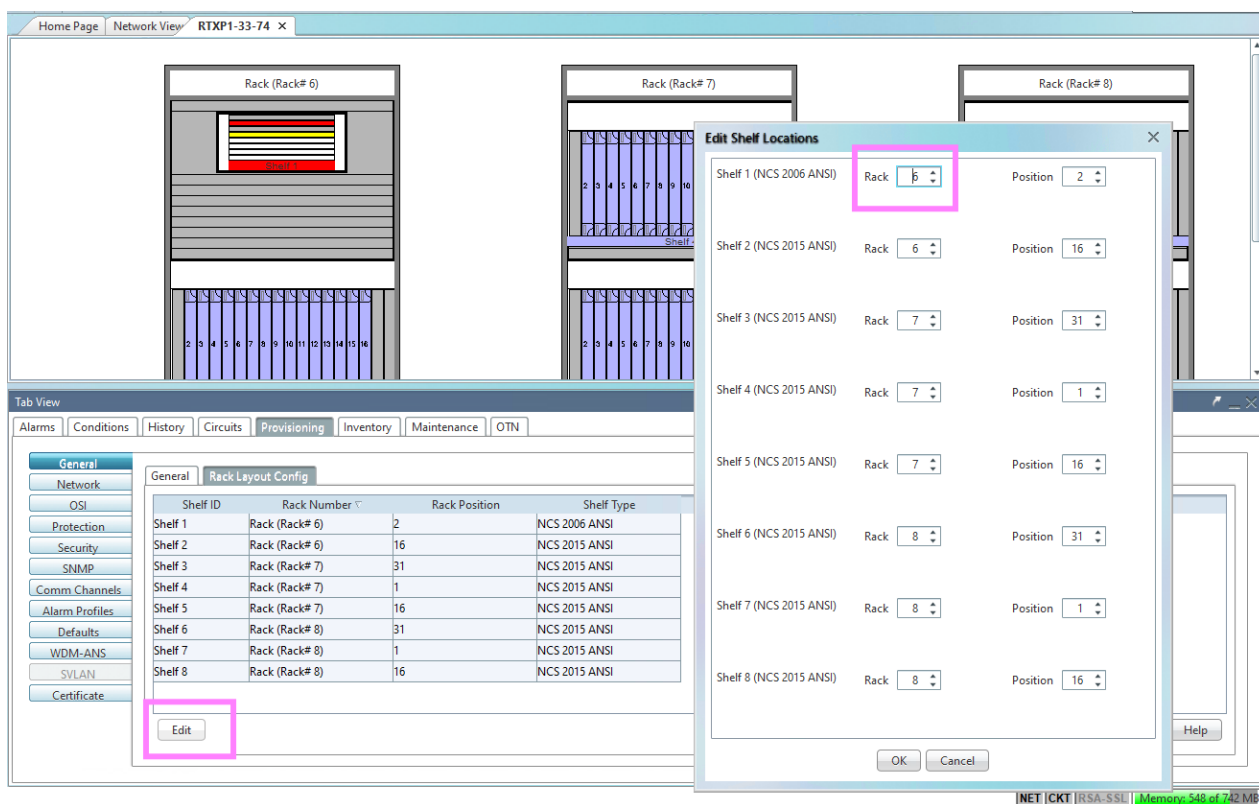
General Network OSI Protection Security SNMP Comm Channels Alarm Profiles Defaults WDM-ANS SVLAN Certificate

General **Rack Layout Config**

Shelf ID	Rack Number	Rack Position	Shelf Type
Shelf 1	(Rack# 1)	7	NCS 2006 ANSI
Shelf 2	(Rack# 1)	1	NCS 2006 ANSI

Edit

Figure 25: CTC rack ID check and change (on a remote TXP)



What to do next

Move the chassis from the Cisco Optical Site Manager web UI later if rack placement must change.

Verify NCS 2000 preparation

Use this verification step to confirm that NCS 2000 nodes are reachable, consistent in CTC, and ready for the next transition phase.

Before proceeding to the next workflow, verify that all NCS 2000 nodes are ready for Cisco Optical Site Manager onboarding.

Follow these steps to verify NCS 2000 preparation.

Procedure

1. All nodes are reachable and accessible via CTC.
2. No connectivity issues are present between nodes.
3. Rack layout is consistent and does not show overlapping nodes in the site view.
4. Network configuration changes have been successfully applied on all nodes.
5. No pending or unapplied configuration changes are present in CTC.

Plan Cisco Optical Site Manager deployment

Plan Cisco Optical Site Manager deployment before configuration starts by confirming placement, IP addressing, YAML files, UID strategy, and instance requirements.

Use this topic to plan Cisco Optical Site Manager deployment before network transition begins. Identify SVO card placement, IP addressing, YAML file requirements, UID mapping, and instance requirements needed for onboarding.

Cisco Optical Site Manager deployment plan

This workflow defines the planning activities required before the network transition and Cisco Optical Site Manager deployment. No configuration is performed on the network during this workflow. The objective is to prepare all required inputs for SVO card installation and Cisco Optical Site Manager instance creation. Define these items:

- SVO card deployment model and placement
- Cisco Optical Site Manager IP addressing
 - Cisco Optical Site Manager YAML file preparation
- Cisco Optical Site Manager UID planning

The related sections describe these points.

SVO card deployment plan

Define the SVO card deployment model and its placement within the network.

Consider these aspects:

- Selection of ROADM nodes hosting SVO cards
- HA model (local, distributed, geo)

The deployment model impacts redundancy, availability, and Cisco Optical Site Manager instance distribution.

Cisco Optical Network Planner 26.1.1 provides capabilities to help users allocate SVO cards in the network.

Cisco Optical Site Manager IP address plan

Define the IP addressing scheme for Cisco Optical Site Manager instances and SVO cards.

Ensure these items:

- Cisco Optical Site Manager IP addresses belong to the management network
- Each Cisco Optical Site Manager instance has a unique IP address

Cisco Optical Site Manager YAML file requirements

Prepare the YAML file according to the Cisco Optical Site Manager installation requirements for NCS 2000 SVO-LC deployments.

For more details, see [Network YAML configuration file for Geo HA](#).

Cisco Optical Site Manager UID plan

Define the UID allocation strategy for all devices managed by Cisco Optical Site Manager.

Consider these items:

- Mapping between NCS 2000 chassis IDs and Cisco Optical Site Manager UIDs
- UID allocation for remote transponder, standalone transponder, and NCS 1000 nodes
- Plan UIDs for chassis related to remote transponder nodes, standalone transponder nodes, or NCS 1000 transponders so the chassis can be identified consistently.

- If the ROADM is added as the first device, follow the UID mapping rules defined for the Cisco Optical Site Manager instance plan.

Verify Cisco Optical Site Manager deployment planning

Use this checklist to confirm that Cisco Optical Site Manager deployment planning is complete before installing SVO cards or creating instances.

Before proceeding to the next workflow, verify Cisco Optical Site Manager deployment planning.

Follow these steps to verify Cisco Optical Site Manager deployment planning.

Procedure

1. SVO card deployment model and placement are defined.
2. Cisco Optical Site Manager IP addressing plan is complete and consistent.
3. YAML files are ready.
4. UID allocation strategy is defined and validated.

Upgrade NCS 2000 ROADM nodes that host SVO cards

Upgrade and prepare the NCS 2000 ROADM nodes that host SVO cards so they can support Cisco Optical Site Manager deployment and connectivity.

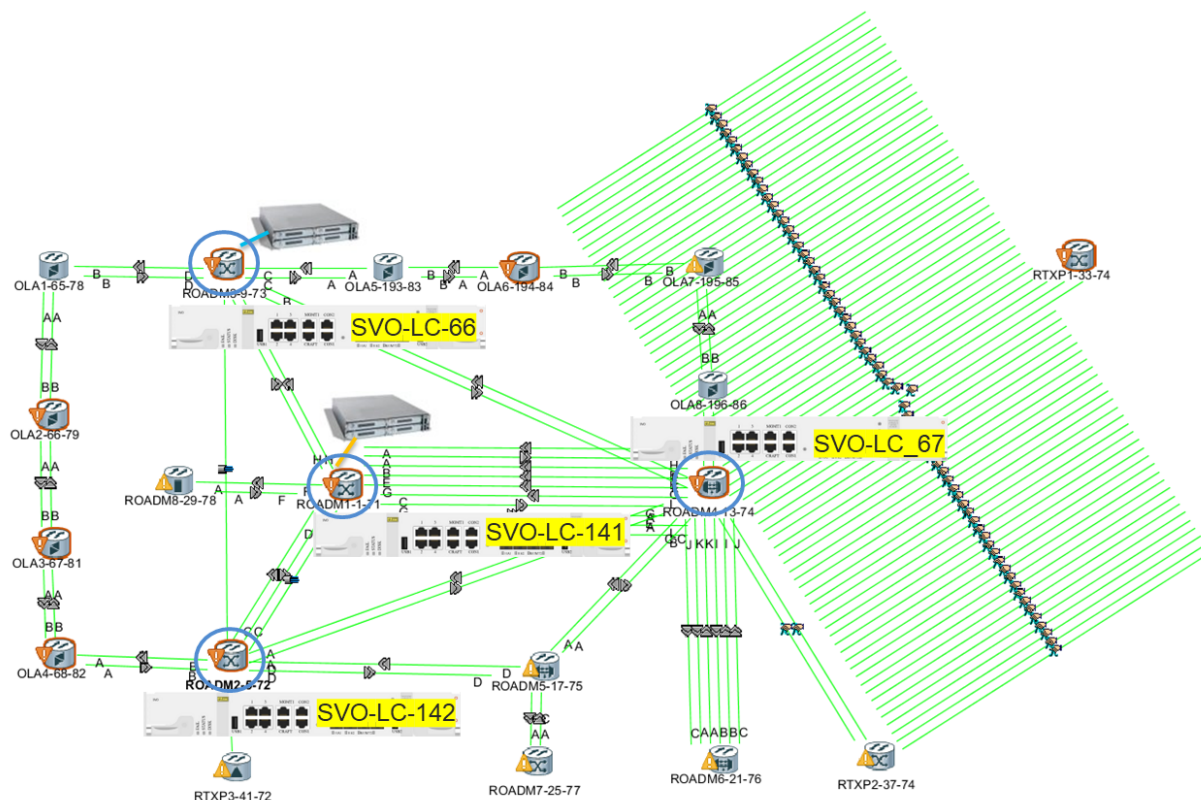
Use this topic to upgrade and prepare the NCS 2000 ROADM nodes that will host SVO cards. Complete the required software upgrade, configure connectivity for SVO communication, and apply optional Geo HA settings before you install the SVO cards and deploy Cisco Optical Site Manager.

ROADM upgrade requirements

This workflow includes the upgrade and configuration of NCS 2000 ROADM nodes that will host the SVO cards. The objective is to prepare these nodes to support SVO card installation and Cisco Optical Site Manager deployment. These activities are performed:

- Upgrade of NCS 2000 software to release 26.x
- Optional UDC configuration for Geo HA deployments
- OSPF on LAN configuration for SVO connectivity

Figure 26: NCS 2000 ROADM node upgrade that hosts an SVO card



Upgrade NCS 2000 software

Upgrade selected NCS 2000 ROADM nodes to release 26.x before SVO card installation and Cisco Optical Site Manager onboarding workflows.

Upgrade the NCS 2000 ROADM nodes that host SVO cards to release 26.x before you install SVO cards and create Cisco Optical Site Manager instances.

Use CTC or EPNM to download and activate the NCS 2000 software package, and then reopen CTC with a cleared local cache before continuing with the transition workflow.



Note

In a mixed-release network that contains both 11.1.4/11.1.4.1 and 26.1.1 nodes, CTC Release 26.1.1 cannot discover nodes that continue to run release 11.1.4 or 11.1.4.1.

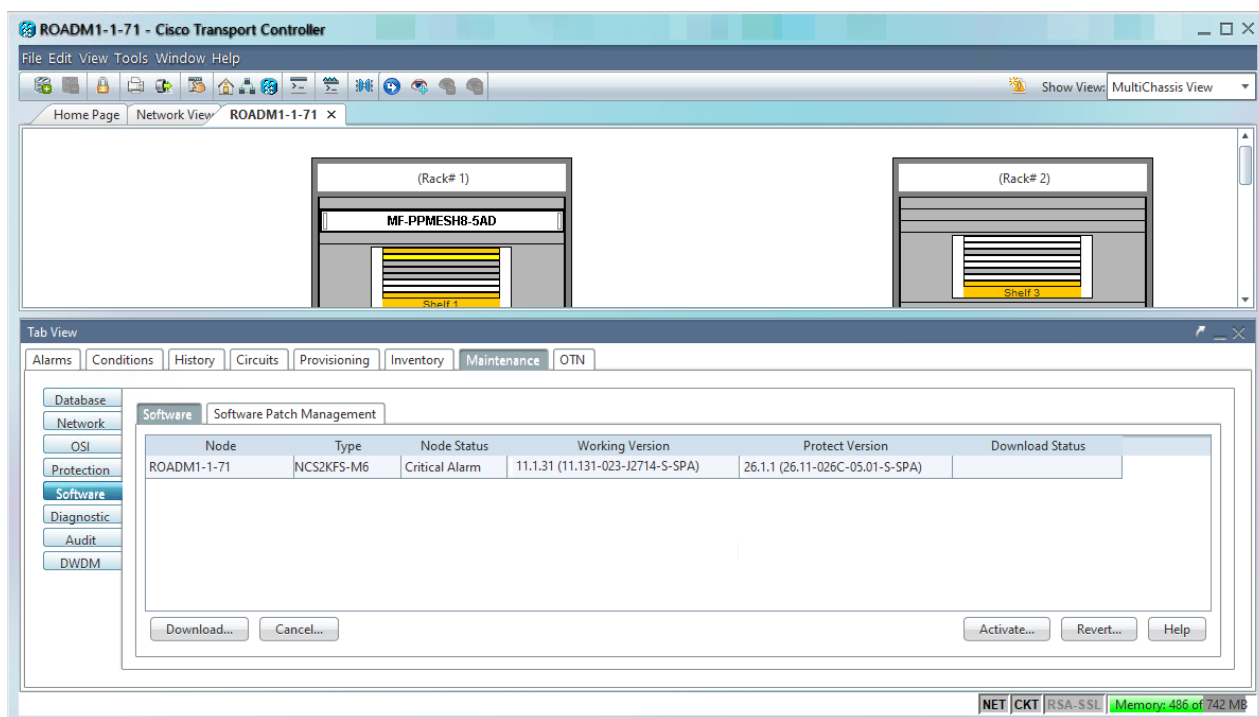
Follow these steps to upgrade NCS 2000 software.

Procedure

1. Download the NCS 2000 software package (26.1.1) using CTC (or EPNM).
Use this Cisco procedure for the complete workflow: [Upgrade the Cisco NCS software](#).
2. Activate the software using CTC (or EPNM).
Refer to the product procedure: [Upgrade the Cisco NCS software](#).

3. After upgrade, re-open CTC.
4. Select the **Delete Cache** option at login.

Figure 27: CTC 11.x software download workflow



Configure UDC

Learn how to enable UDC between peer nodes when the deployment uses Geo HA for SVO card redundancy across sites.

Enable UDC for Geo HA deployments.

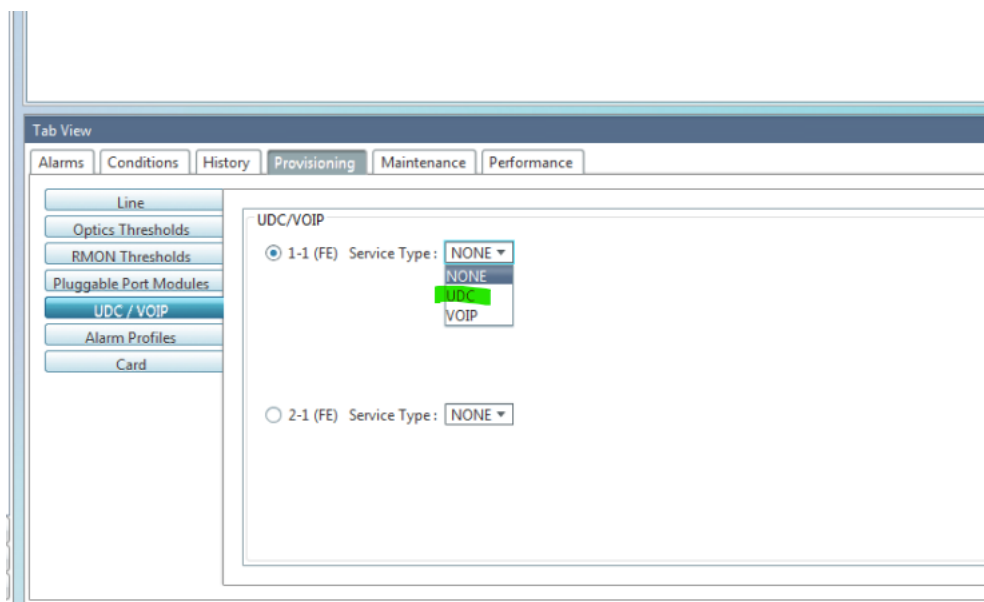
This procedure is required only when Geo HA via UDC is used.

Follow these steps to configure UDC.

Procedure

1. Access CTC on both nodes hosting SVO cards.
2. Open **the controller card (TNC)**.
3. Enable UDC on the controller connected to the peer node.
4. Repeat on the adjacent node.

Figure 28: CTC - UDC setting



What to do next

Verify that UDC is enabled on both nodes participating in the Geo HA configuration.

Configure OSPF on LAN

Configure OSPF on LAN for nodes that host SVO cards so routing aligns with the SVO card YAML and management network design.

Configure OSPF on LAN for nodes hosting SVO cards.

This procedure is mandatory for nodes that host SVO cards.



Note

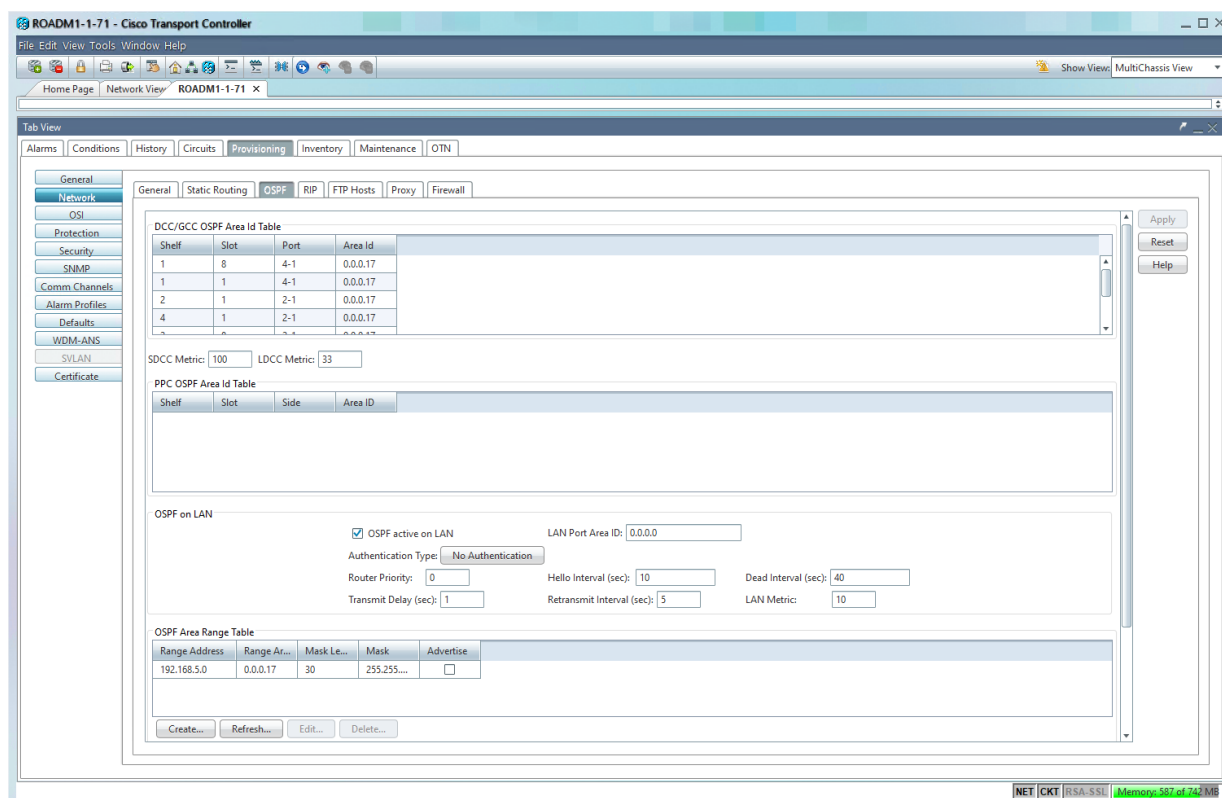
In CTC Release 25.x and Release 26.x, configure OSPF before you set the OSPF on LAN port ID to 0.0.0.0.

Follow these steps to configure OSPF on LAN.

Procedure

1. Open CTC.
2. Choose **Node View > Provisioning > Network > OSPF**.
3. Configure the **LAN Port Area ID**.
4. Set the value equal to the `ospf-area-id` defined in the SVO card YAML file.
5. Apply the configuration.

Figure 29: ROADM OSPF on LAN configuration



What to do next

Enable OSPF on LAN on OLA and ROADM nodes that do not host SVO cards only when the network design requires additional routing resiliency, such as protection against a fiber cut that can isolate a node.

Verify ROADM upgrade

Confirm that upgraded ROADM nodes are reachable, configured for required connectivity, and free from critical alarms before installing SVO cards.

Before proceeding to the next workflow, verify the ROADM upgrade status.

Follow these steps to verify ROADM upgrade.

Procedure

1. All target ROADM nodes are running release 26.x.
2. Nodes in 26.x are accessible via CTC after upgrade.
3. OSPF on LAN is correctly configured on all SVO hosting nodes.
4. UDC is correctly configured (if applicable).
5. No critical alarms are present after upgrade.

Install and configure SVO cards

Install and initialize SVO cards on prepared NCS 2000 ROADM nodes so they can host Cisco Optical Site Manager instances in later workflows.

Use this topic to install and configure SVO cards on prepared NCS 2000 ROADM nodes. Complete physical installation, initialize the cards, verify Admin Plane access, and prepare the cards to host Cisco Optical Site Manager instances.

SVO card installation requirements

This workflow includes the physical installation and initial configuration of SVO cards on NCS 2000 ROADM nodes. The objective is to prepare the SVO card to host Cisco Optical Site Manager instances in later workflows. These activities are performed:

- Physical installation of SVO cards
- Initial configuration using the Cisco Optical Site Manager Installation Tool
- Access verification to the Admin Plane web UI

Install SVO cards in an NCS 2000 chassis

Install SVO cards in the correct NCS 2000 chassis slots and prepare the required cabling according to the deployment design.

Install the SVO card in the NCS 2000 chassis.



Note

The SVO card does not boot if the node is running release 11.x or remains in the factory-default state. The card may appear with status **Ldg** without impacting functionality.

Follow these steps to install SVO cards in an NCS 2000 chassis.

Procedure

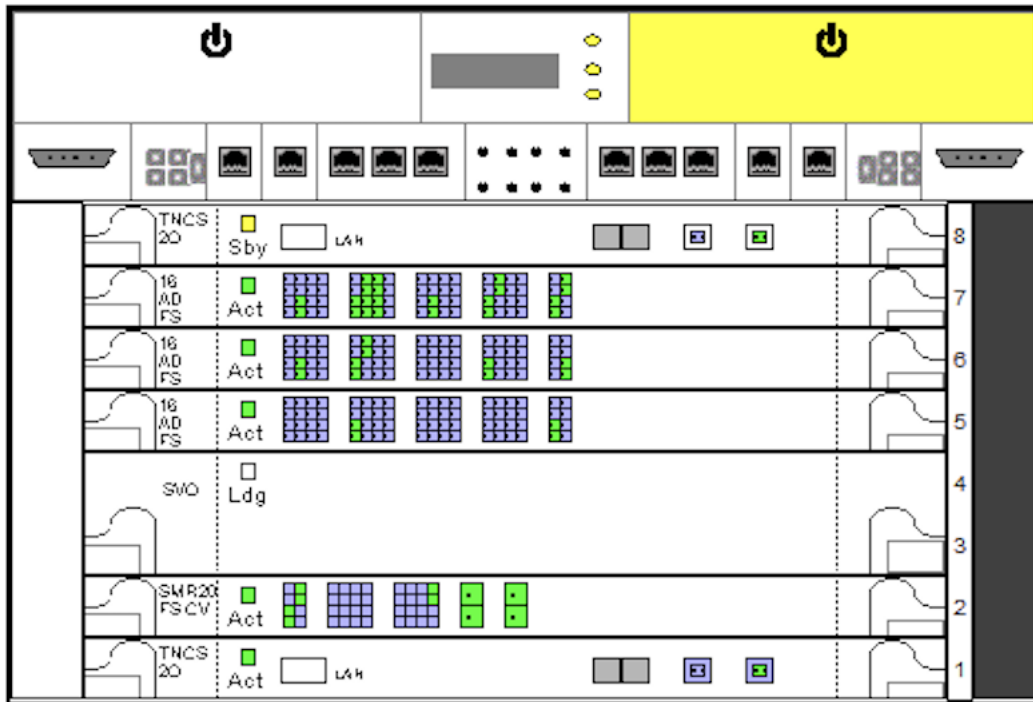
1. Verify that the NCS 2000 node has been upgraded to 26.x.
2. Insert the SVO card into the chassis slot.

For the supporting workflow, see: [Cisco Optical Site Manager installation workflow on NCS 2000 SVO-LC](#).

3. Connect all required cables according to the deployment design.
 4. If geo HA is required, install the second SVO card on the peer node.
-

The SVO card is visible in CTC as a double-slot line card.

Figure 30: SVO card CTC shelf view



Configure SVO cards

Learn how to apply the initial YAML configuration through the Cisco Optical Site Manager Installation Tool on the SVO card.

Configure the SVO card using the Cisco Optical Site Manager Installation Tool, which is embedded in the SVO card software.

Before you begin

- The SVO card is installed.
- The network YAML file is available.



Note

The YAML file must match the network design. The SVO card username and password can match or differ from other credentials based on the customer policy.

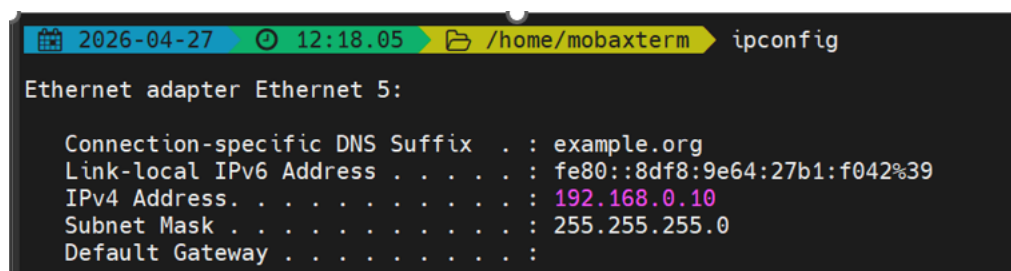
Follow these steps to configure SVO cards.

Procedure

1. Connect a PC to the CRAFT port of the SVO card.
2. Configure the PC network interface to use DHCP.

3. The PC receives an IP address automatically.

Figure 31: PC local network interface configuration



```

2026-04-27 12:18.05 /home/mobaxterm ipconfig

Ethernet adapter Ethernet 5:

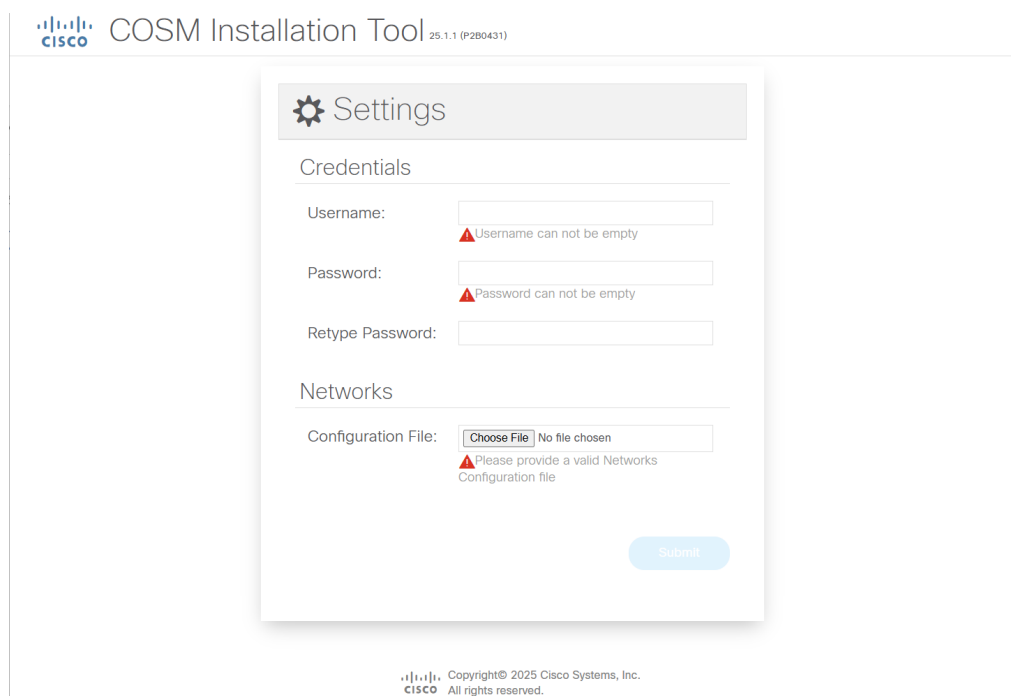
    Connection-specific DNS Suffix  . : example.org
    Link-local IPv6 Address . . . . . : fe80::8df8:9e64:27b1:f042%39
    IPv4 Address. . . . . : 192.168.0.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :
  
```

4. Open `http://192.168.0.66` in a browser to upload the initial YAML configuration file.
5. Access the Cisco Optical Site Manager Installation Tool.
6. The Cisco Optical Site Manager Installation Tool page is displayed.
7. Enter the administrator credentials that were created on the SVO card during this procedure.
8. Upload the network YAML configuration file.

Use this reference section for the task: [Cisco Optical Site Manager installation workflow on NCS 2000 SVO-LC](#).

9. Apply the configuration. The process of installation is complete when the screen goes blank.

Figure 32: Cisco Optical Site Manager installation tool interface



COSM Installation Tool 25.1.1 (P2B0431)

Settings

Credentials

Username: ▲ Username can not be empty

Password: ▲ Password can not be empty

Retype Password:

Networks

Configuration File: No file chosen ▲ Please provide a valid Networks Configuration file

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The SVO card is configured and ready to host Cisco Optical Site Manager instances.

What to do next

- Repeat the procedure on both cards in HA deployments.
- Use the SVO card credentials to connect to the Cisco Optical Site Manager Admin Plane in the next workflow.

Access the Admin Plane web UI

Confirm Admin Plane web UI reachability after SVO card installation and initial configuration so later Cisco Optical Site Manager instance tasks can proceed.

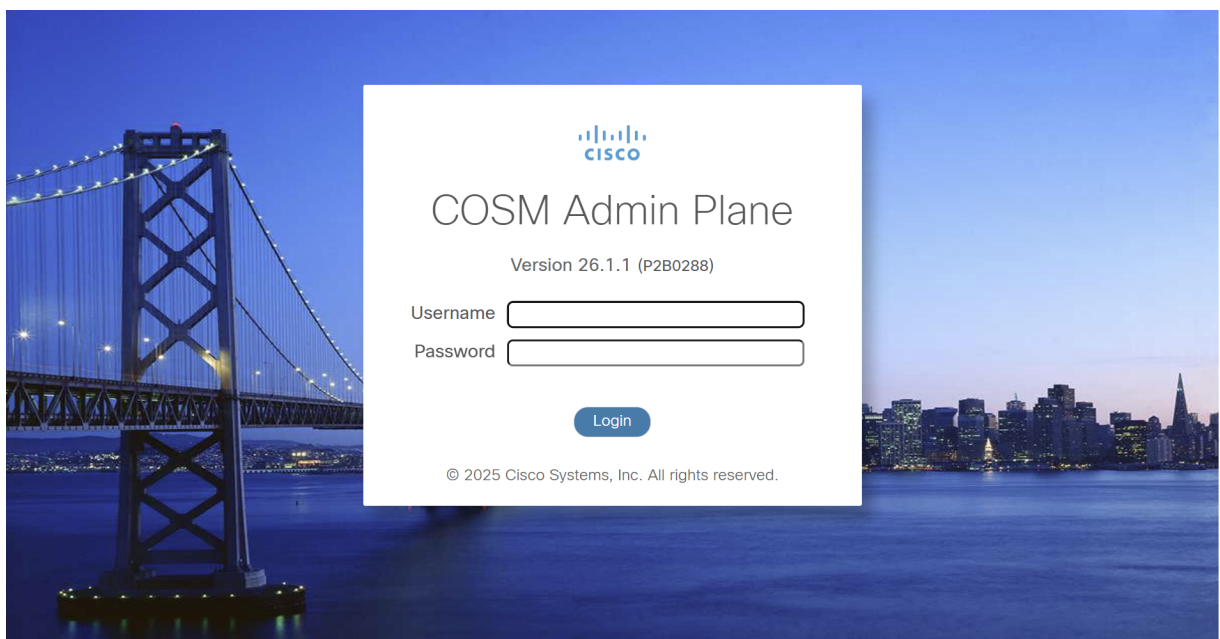
Verify access to the Admin Plane web UI.

Follow these steps to access the Admin Plane web UI.

Procedure

1. Open a web browser.
2. Connect to: `https://<ADMIN_PLANE_IP>`.
3. Enter credentials.
4. Click **Login**.

Figure 33: Cisco Optical Site Manager Admin Plane login



The Admin Plane web UI is accessible, and the Instances panel is displayed.

At first access, the list of Cisco Optical Site Manager Instances is empty.

Check both Admin pane instances in HA

The HA icon should be green, if it is any other color, please troubleshoot and fix the issue.

 **Note**

In HA deployments, each SVO card has its own IP address. The Admin Plane IP address is the same as the SVO card management IP address.

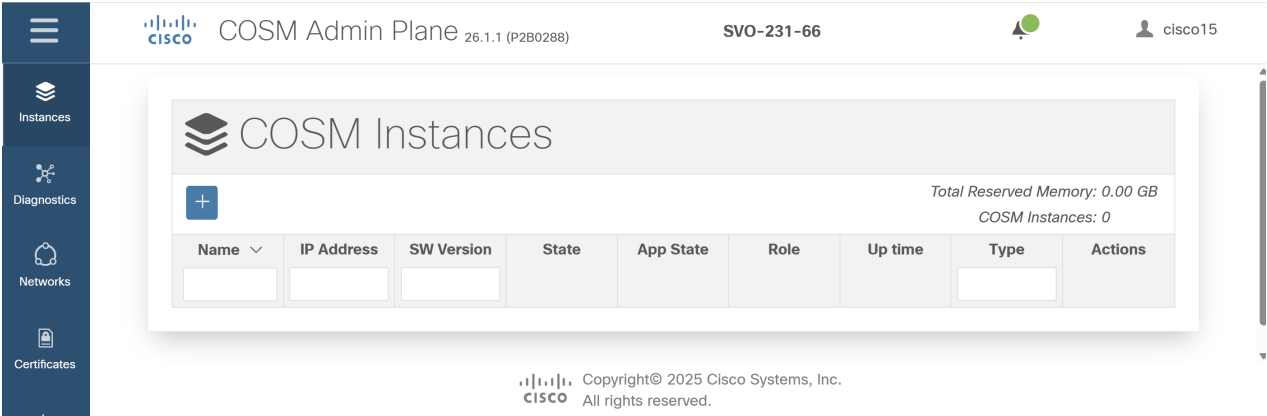
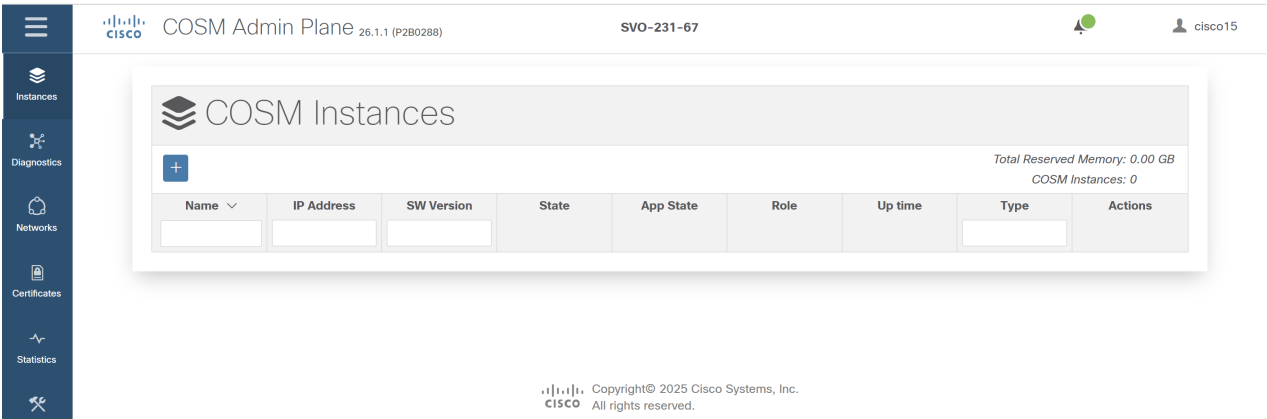


Figure 34: Admin Plane first access with no SVO instances



What to do next

Use either SVO card instance for the initial setup.

Verify SVO card installation

Verify SVO card installation by checking card visibility, management reachability, Admin Plane access, HA status, and alarm conditions before instance creation.

Before proceeding to the next workflow, verify the SVO card installation.

Follow these steps to verify SVO card installation.

Procedure

1. SVO cards are correctly installed and visible in CTC.
2. All required cabling is completed.

3. SVO cards are reachable via management IP.
 4. Cisco Optical Site Manager Installation Tool configuration has been successfully applied.
 5. Admin Plane web UI is accessible.
 6. HA connection is successfully established between the two SVO cards.
 7. No critical alarms are present on the hosting nodes.
-

What to do next

Create a temporary Cisco Optical Site Manager instance to upgrade the controller card and the Admin Plane if the SVO cards are running a release that is different from the expected release.

Create Cisco Optical Site Manager instances and onboard SVO card host nodes

Create Cisco Optical Site Manager instances and onboard the NCS 2000 nodes that host SVO cards to establish the first managed sites.

Use this topic to create Cisco Optical Site Manager instances and onboard NCS 2000 nodes that host SVO cards. Complete instance creation, web UI access, authorization group setup, node onboarding, and initial configuration before adding more managed devices.

Cisco Optical Site Manager instance and node onboarding plan

This workflow includes the creation of Cisco Optical Site Manager instances and the onboarding of NCS 2000 nodes. The objective is to enable Cisco Optical Site Manager-based management of network elements. These activities are performed:

- Creation of Cisco Optical Site Manager instances via Admin Plane
- Access to Cisco Optical Site Manager web UI
- Configuration of authorization groups
- Onboarding of NCS 2000 nodes
- Initial system configuration (e.g., NTP)

The onboarding must be completed for the primary ROADM node before adding any additional devices.

Cisco Optical Site Manager instance and node onboarding verification

At the end of this workflow, Cisco Optical Site Manager instances and SVO cards are installed as planned, and all related Cisco Optical Site Manager instances are up and running.

Create Cisco Optical Site Manager instances

Create Cisco Optical Site Manager instances from the Admin Plane web UI with the release and instance parameters required by the deployment design.

Create a Cisco Optical Site Manager instance using the Admin Plane web UI.

**Note**

The instance name and IP address cannot be modified after creation. The TDM terminology must match the node configuration.

Follow these steps to create Cisco Optical Site Manager instances.

Procedure

1. Access the [Admin Plane web UI](#).
2. Open the **Instances** panel.
3. Click the + icon.
4. Enter the required parameters:

The product workflow is documented in: [Create a Cisco Optical Site Manager instance](#).

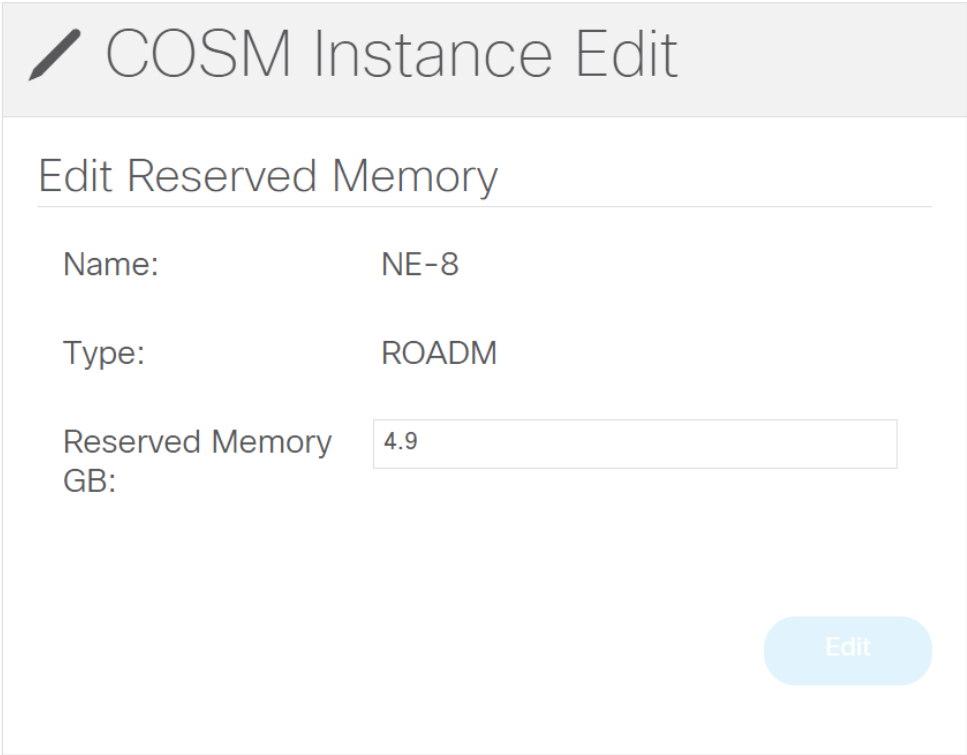
- **Name** (must be unique)
- **Software Version**
- **TDM Terminology**
- **Type** (ROADM or OLA)
- **Reserved Memory**
- **Username / Password**
- **IPv4 Address**

5. Click **Create**.
-

The Cisco Optical Site Manager instance is created and appears in RUNNING / UP state.

Later on clicking on the pencil it is possible to modify the Reserved Memory

Figure 35: Edit memory size



COSM Instance Edit

Edit Reserved Memory

Name: NE-8

Type: ROADM

Reserved Memory GB:

Edit

What to do next

Reserve memory according to the sizing guidelines before you create additional Cisco Optical Site Manager instances.

Access the Cisco Optical Site Manager web UI

Open the Cisco Optical Site Manager web UI for a newly created instance and verify that the configured user credentials provide access.

Access the Cisco Optical Site Manager web UI.



Note

The Cisco Optical Site Manager web UI is accessible only after the instance is in **RUNNING / UP** state. Use the credentials defined during the **Add Instance** step.

Follow these steps to access the Cisco Optical Site Manager web UI.

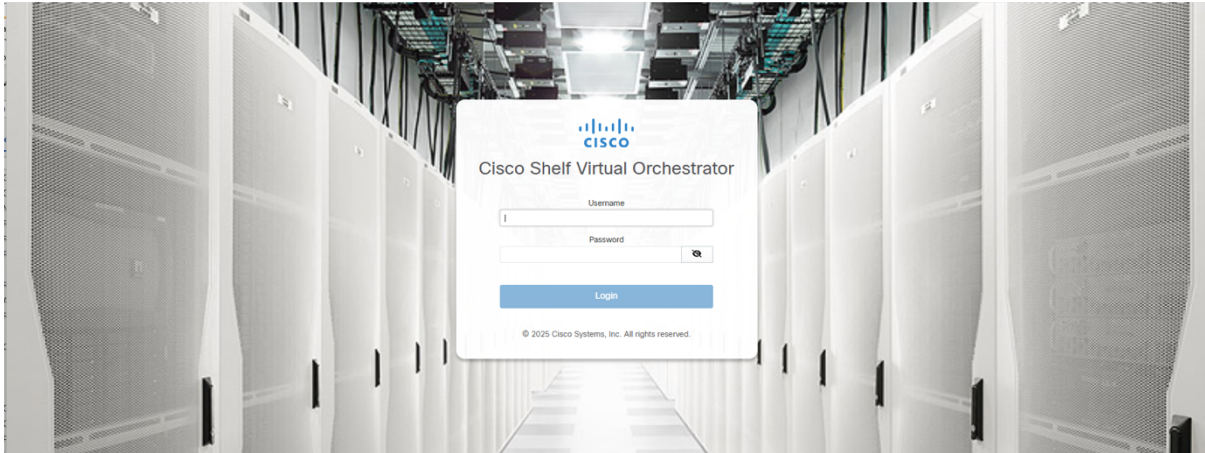
Procedure

1. Open a web browser.
2. Connect to the Cisco Optical Site Manager web UI using one of these methods:
 - From the Admin Plane: click the hyperlink in the "IP Addresses" column of the instance
 - Directly from browser: `https://<COSM_IP_ADDRESS>`

3. Enter the username and password defined during Cisco Optical Site Manager instance creation.
4. Click **Login**.

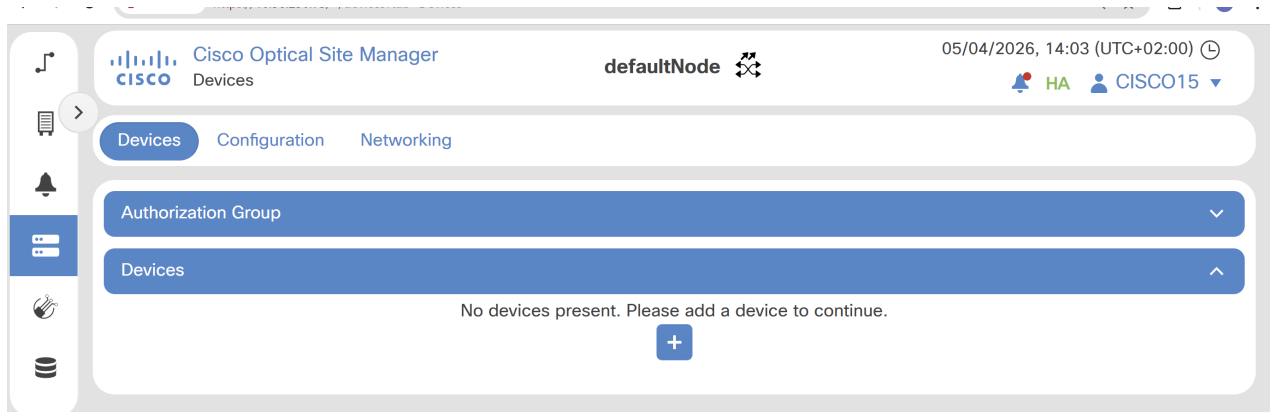
This figure shows the Cisco Optical Site Manager web UI login window.

Figure 36: Cisco Optical Site Manager web UI login window



The Cisco Optical Site Manager web UI landing page is displayed.

Figure 37: Cisco Optical Site Manager landing page (before device onboarding)



What to do next

Use the Cisco Optical Site Manager web UI for device management and configuration tasks.

Create Cisco Optical Site Manager authorization groups

Create authorization groups that allow Cisco Optical Site Manager to authenticate to NCS 2000 nodes during onboarding and later synchronization workflows.

Create an authorization group to allow Cisco Optical Site Manager to access NCS 2000 nodes.

Note

An authorization group is required for Cisco Optical Site Manager to access NCS 2000 devices. If Cisco Optical Site Manager onboards only one device that uses one credential set, one authorization group is sufficient.

Follow these steps to create Cisco Optical Site Manager authorization groups.

Procedure

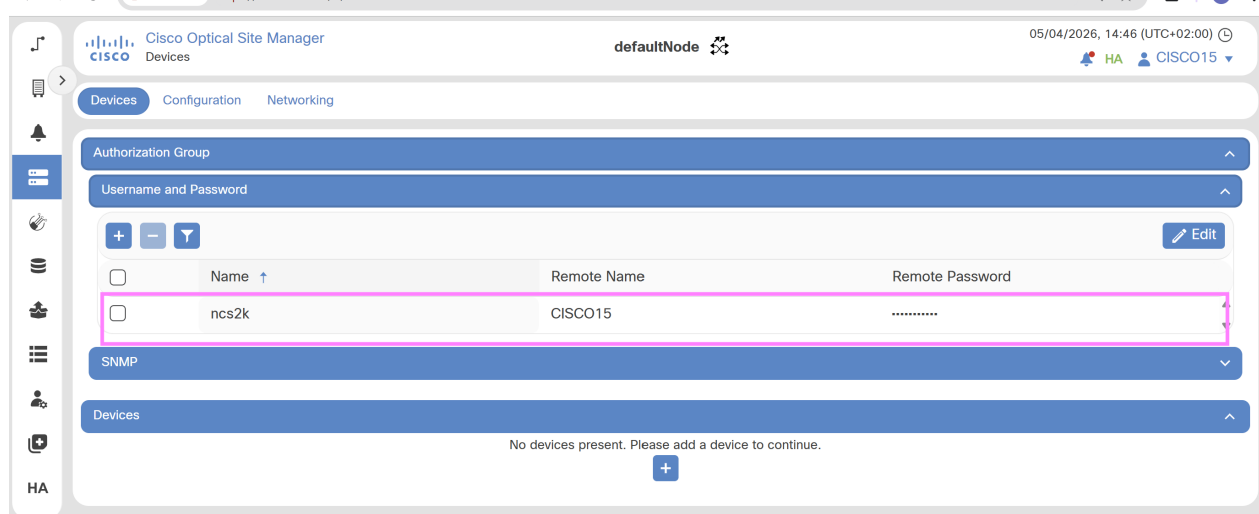
1. Access the Cisco Optical Site Manager web UI.
2. Open the **Devices** page.
3. Choose **Devices > Authorization Group > Username and Password**.
4. Click the **+**.
5. Enter these parameters:

For the supporting workflow, see: [Create or edit an authorization group](#).

- **Auth Group Name:** logical name of the Authorization Group
- **Remote Username:** username configured on the NCS 2000 node
- **Remote Password:** password configured on the NCS 2000 node
- **Save the configuration**

The Authorization Group is successfully created and appears in the Authorization Group list.

Figure 38: Authorization group creation



What to do next

- Verify that the credentials in the authorization group match the credentials configured on the NCS 2000 node.
- Create additional authorization groups when multiple devices use different credentials.

- Use the same procedure to create authorization groups for NCS 1000 devices.

Onboard ROADM nodes that host SVO cards

Add the ROADM nodes that host SVO cards to their Cisco Optical Site Manager instances so synchronization can begin for the first managed sites.

Add the ROADM node that hosts the SVO card to the Cisco Optical Site Manager instance.



Note

The device name and device flavor cannot be modified after creation.

Follow these steps to onboard ROADM nodes that host SVO cards.

Procedure

1. Access the Cisco Optical Site Manager web UI.
2. Choose **Devices** > **Devices**.
3. Click the + icon to open the Add Device dialog.
4. Enter:

Cisco documents the workflow in: [Add a device](#).

- **Device Type:** ncs2000
- **Device Flavour:** any-config
- **Device Name**
- **IP Address**
- **Auth Group**

5. Click **Add** to start the onboarding process.

The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list.

Immediately after onboarding, the Sync Status is "sync-not-started, out-of-sync".

Device synchronization may take several minutes, and large nodes may take 30 to 40 minutes.

Wait until the Sync Status becomes "sync-completed, alarm-synchronized".

Because the ROADM hosts an SVO card, a controller device type appears automatically in the list. The name is taken from the YAML file.

In the Admin Plane, the SVO instances show that the devices are reachable and that the SVO card is discovered.

Figure 39: ROADM hosting SVO card

COSM Admin Plane 26.1.1 (P2B0288) SVO-231-66 cisco15

COSM Instances

Total Reserved Memory: 2.10 GB
COSM Instances: 1

Name	IP Address	SW Version	State	App State	Role	Up time	Type	Actions
ROADM3	10.58.230.73	26.1.1.P2D0288 26.1.1.P2D0288	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 4 hours Up 4 hours	ROADM (2.1 GB)	[Edit] [Refresh] [Delete]

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What to do next

- Delete and add the device again if the device name or device flavor is configured incorrectly.
- Change the display name from the Cisco Optical Site Manager web UI settings, if needed.
- Verify the node name in Cisco Optical Network Controller after Cisco Optical Site Manager onboarding completes.

Adjust SVO card authorization groups

Update SVO card authorization group credentials after automatic creation so Cisco Optical Site Manager can authenticate to the Admin Plane correctly.

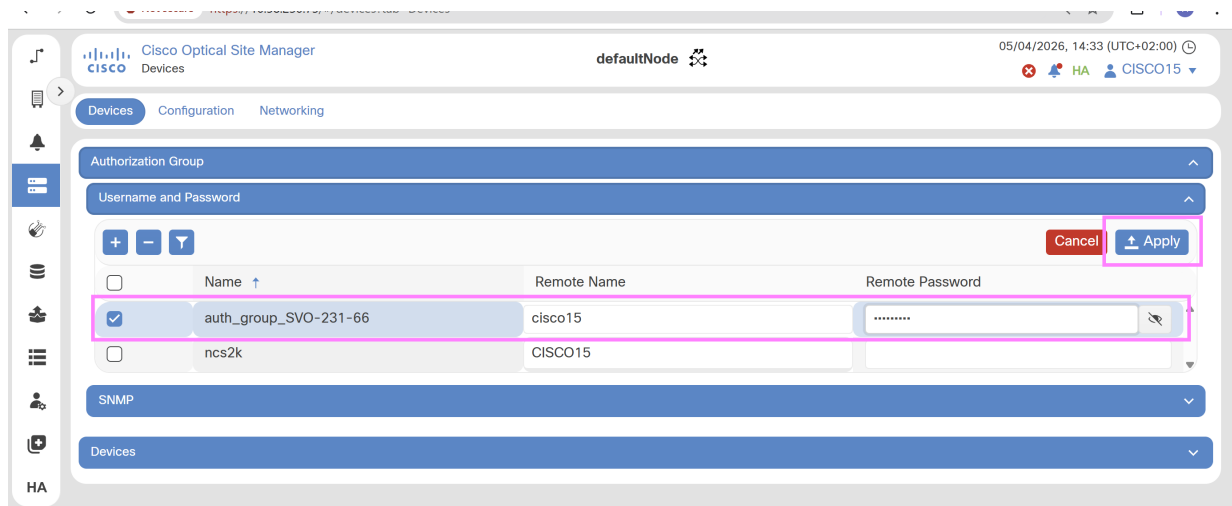
Update the automatically created authorization group for SVO cards.

Follow these steps to adjust SVO card authorization groups.

Procedure

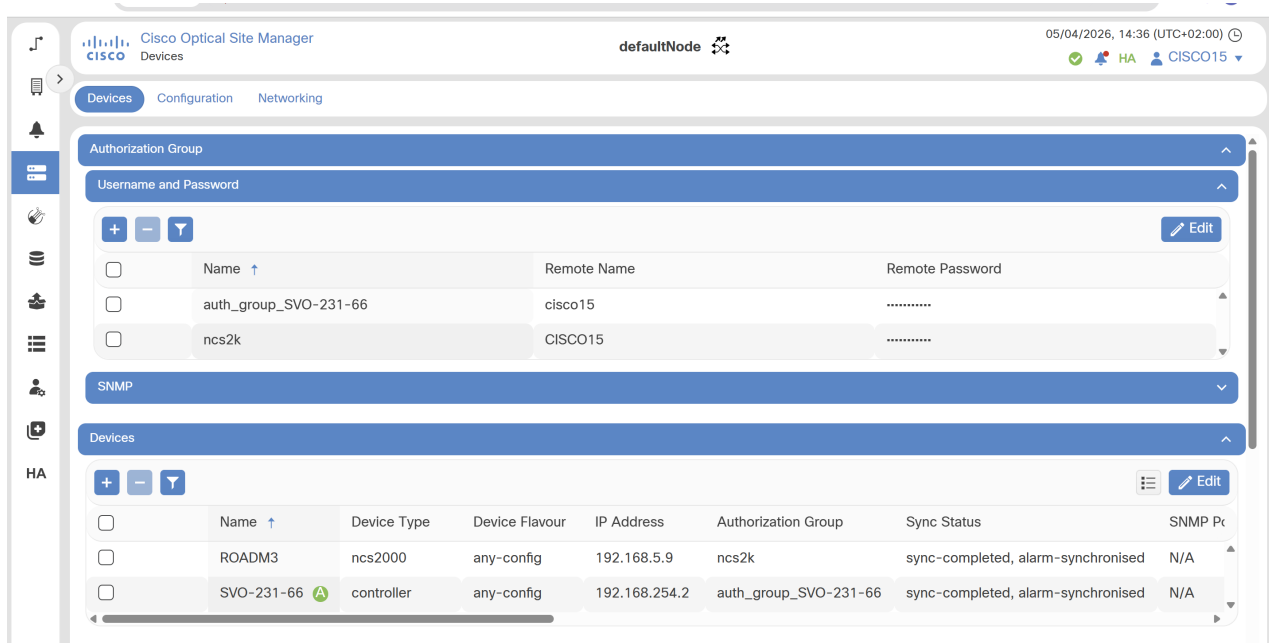
1. Choose **Devices** > **Authorization Group**.
2. Identify the SVO card Authorization Group.
Refer to the product procedure: [Create or edit an authorization group](#).
3. Edit the **Remote Name** and **Remote Password**. Password must match the admin plane credential configured during SVO setup.
4. Apply.

Figure 40: SVO card authorization group editing



The SVO card authorization group is correctly configured, and the Sync Status is "sync-completed, alarm-synchronized".

Figure 41: SVO card authorization group editing



Configure SVO card NTP servers

Configure NTP settings on SVO cards and Cisco Optical Site Manager instances to keep timestamps, logs, alarms, and HA operations aligned.

Configure Network Time Synchronization (NTP) on SVO cards and Cisco Optical Site Manager instances to ensure consistent system time across the network. Time synchronization is required to guarantee:

This procedure configures the NTP server address for the SVO card onboarded by the Cisco Optical Site Manager instance on which the procedure is performed.

In a Geo HA configuration, repeat the procedure on both Cisco Optical Site Manager instances that onboard the SVO cards because one SVO card does not automatically synchronize its NTP configuration with the other.

NTP server configuration is required only for Cisco Optical Site Manager instances that onboard SVO cards. The configuration is allowed on an instance that does not onboard an SVO card, but it has no effect.

Follow these steps to configure SVO card NTP servers.

Procedure

1. Access the node web UI.
 2. Choose **Settings > NTP**.
 3. Click **Edit** to enable configuration.
 4. Enter these parameters:
 - **Server Address:** IP address of the primary NTP server
 - **Backup Server Address:** IP address of the secondary NTP server
 5. Click **Apply**.
 6. Confirm the operation by clicking Yes.
 7. Repeat on both Cisco Optical Site Manager Instances in case of Geo HA.
-

The node successfully synchronizes its date and time with the configured NTP server.

NTP in NCS 2000/CTP

Setting of NTP server IP address configured in Cisco Optical Site Manager web UI, is not applied NCS 2000.

Key Points when NTP Server is configured in NCS 2000

- The NCS 2000 node always attempts synchronization with the primary NTP server first
- If the primary server is unreachable, the backup server is used
- If both servers are unreachable, an SNTP-FAIL alarm is raised
- The system retries synchronization periodically and updates the time at regular intervals
- The SNTP-FAIL alarm is automatically cleared once synchronization is restored

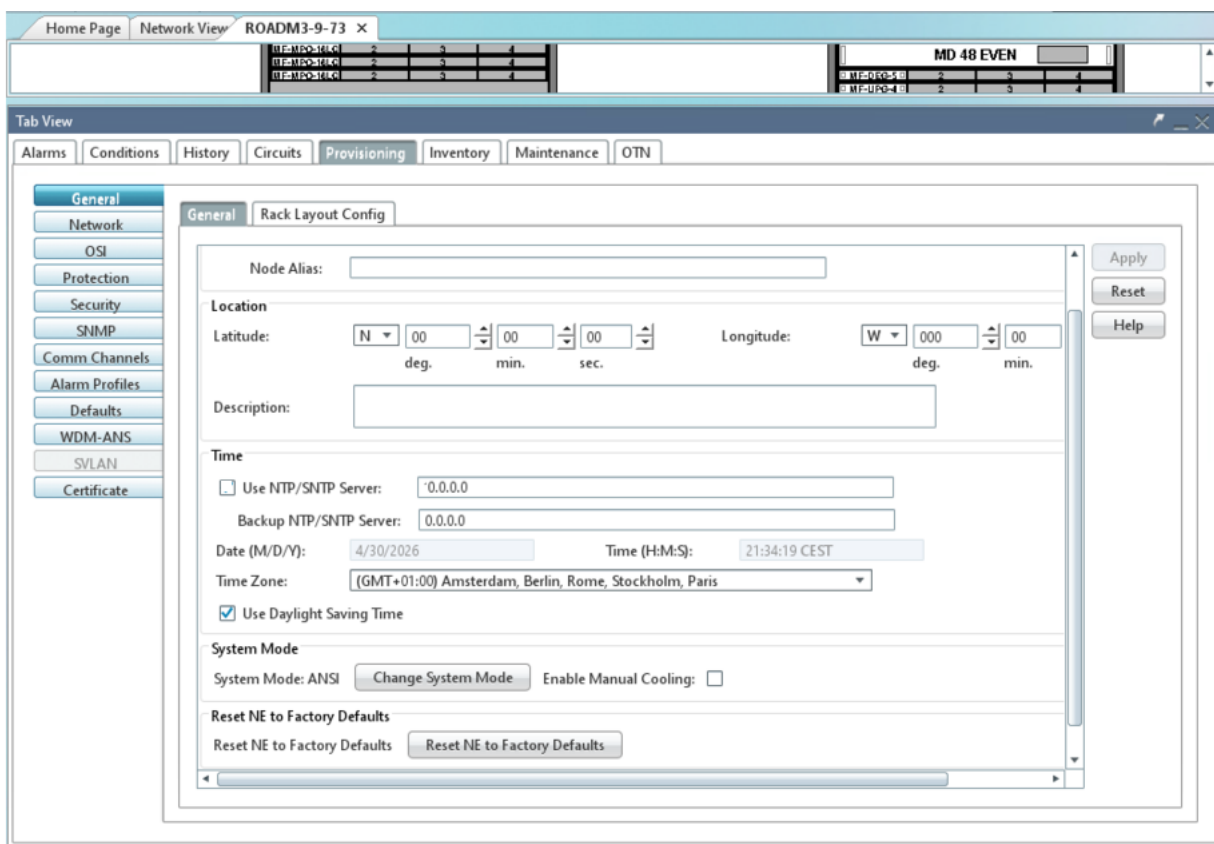
Accurate time synchronization is required for:

- Alarm correlation
- Log consistency
- Network-wide coordination

Key Points when NTP Server is NOT configured in NCS 2000

The NCS 2000 node does not contact any NTP server and receives time every 20 minutes from Cisco Optical Site Manager.

Figure 42: NCS 2000 NTP server not configured in CTC



Onboard devices in Cisco Optical Site Manager using XML

Use XML import to create authorization groups, assign UIDs, and onboard devices in Cisco Optical Site Manager from a prepared configuration file.

Prepare an XML configuration file and upload it to Cisco Optical Site Manager to create authorization groups, assign UIDs, and add devices. For details, see [XML examples for Cisco Optical Site Manager onboarding](#).

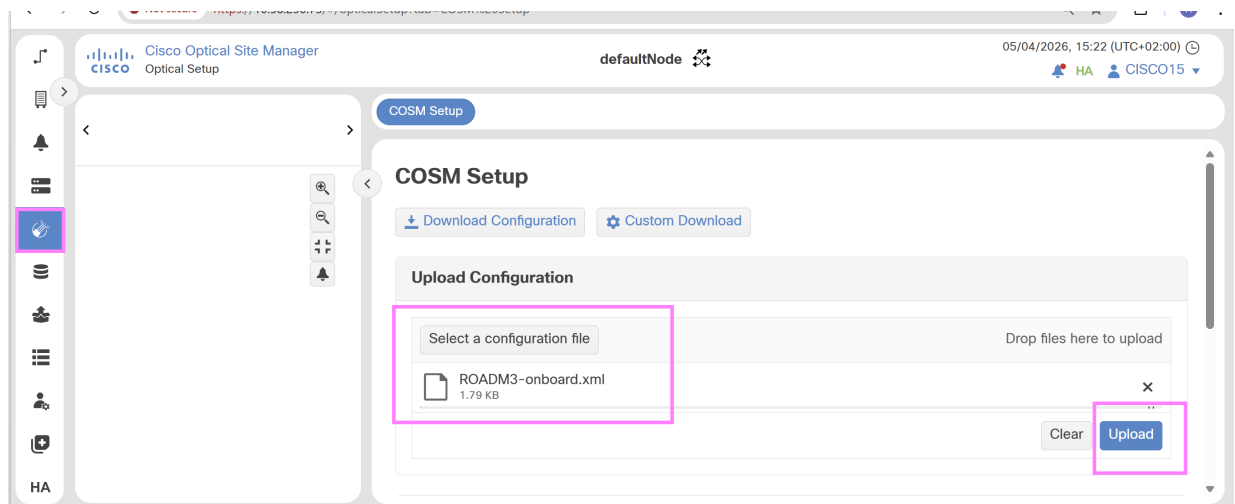
The XML file can include authorization groups such as `ncs2k` and `auth_group_SVO-231-66`, along with the device information required for onboarding.

Follow these steps to onboard devices in Cisco Optical Site Manager using XML.

Procedure

1. Access the node web UI.
2. Choose **Optical Setup > Cisco Optical Site Manager Setup**.
3. Select a configuration file.
4. Click **Upload**.

Figure 43: ROADM device XML onboarding upload



The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list. If a ROADM node hosts an SVO card, the device appears automatically in the list.

Figure 44: ROADM device XML onboarding upload completed

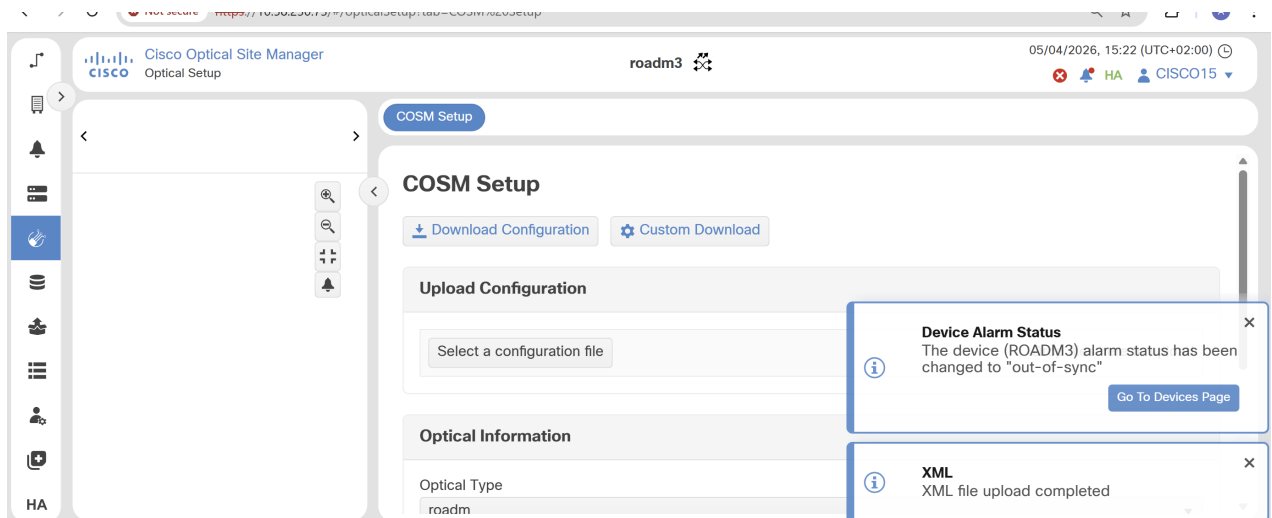
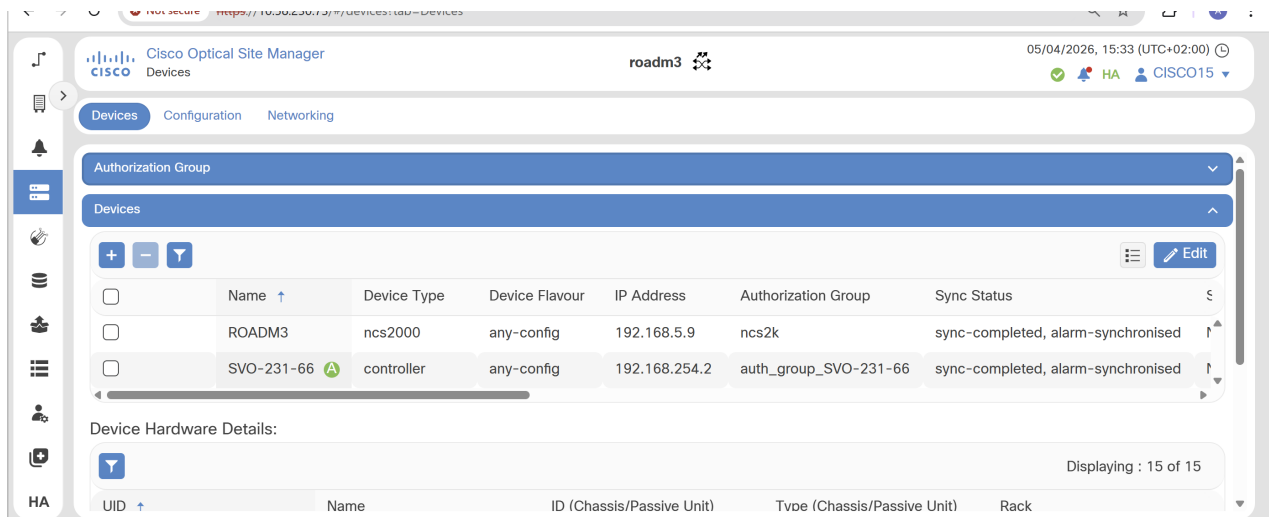


Figure 45: XML onboarding result



XML examples for Cisco Optical Site Manager onboarding

This XML example creates an authorization group and adds a ROADM device.

```
<config xmlns="http://tail-f.com/ns/config/1.0">
  <devices xmlns="http://tail-f.com/ns/ncs">
    <authgroups>
      <group>
        <name>ncs2k</name>
        <default-map>
          <remote-name>CISCO15</remote-name>
          <remote-password>otbu+123</remote-password>
        </default-map>
      </group>
    </authgroups>
  </devices>
  <nodes xmlns="http://cisco.com/yang/opt-node">
    <node>
      <id>0</id>
      <node-information>
        <name>roadm3</name>
        <optical-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:roadm</optical-type>

        <tdm-terminology-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:ansi</tdm-terminology-type>

      </node-information>
    </node>
    <devices>
      <device>ROADM3-9</device>
      <address>192.168.5.9</address>
      <admin-state>unlocked</admin-state>
      <authgroup>ncs2k</authgroup>
      <device-type
xmlns:cisco-ne-type="http://cisco.com/yang/ne-type">cisco-ne-type:ncs2000</device-type>

      <device-flavour
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:any-config</device-flavour>

      <first-active-chassis-uid>1</first-active-chassis-uid>
    </devices>
  </nodes>
</config>
```

This extended XML example includes authorization groups, a Cisco NCS 1000 device, and UID mappings for passive units.

```
<config xmlns="http://tail-f.com/ns/config/1.0">
  <devices xmlns="http://tail-f.com/ns/ncs">
    <authgroups>
      <group>
        <name>ncs2k</name>
        <default-map>
          <remote-name>CISCO15</remote-name>
          <remote-password>otbu+123</remote-password>
        </default-map>
      </group>
    </authgroups>
  </devices>
  <devices xmlns="http://tail-f.com/ns/ncs">
    <authgroups>
      <group>
        <name>ncslk</name>
        <default-map>
          <remote-name>sirius</remote-name>
          <remote-password>lablab</remote-password>
        </default-map>
      </group>
    </authgroups>
  </devices>
  <nodes xmlns="http://cisco.com/yang/opt-node">
    <node>
      <id>0</id>
      <node-information>
        <name>roadm3</name>
        <optical-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:roadm</optical-type>

          <tdm-terminology-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:ansi</tdm-terminology-type>

        </node-information>
      <devices>
        <device>ROADM3-9</device>
        <address>192.168.5.9</address>
        <admin-state>unlocked</admin-state>
        <authgroup>ncs2k</authgroup>
        <device-type
xmlns:cisco-ne-type="http://cisco.com/yang/ne-type">cisco-ne-type:ncs2000</device-type>

          <device-flavour
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:any-config</device-flavour>

          <first-active-chassis-uid>1</first-active-chassis-uid>
        </devices>
        <devices>
          <device>kepler49</device>
          <address>192.168.5.49</address>
          <admin-state>unlocked</admin-state>
          <authgroup>ncslk</authgroup>
          <device-type
xmlns:cisco-ne-type="http://cisco.com/yang/ne-type">cisco-ne-type:ncs1000</device-type>

            <device-flavour
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:txp-only</device-flavour>

            <first-active-chassis-uid>20</first-active-chassis-uid>
```

```

    <netconf-port>830</netconf-port>
    <ssh-port>22</ssh-port>
  </devices>
  <passive-unit xmlns="http://cisco.com/yang/optical/inventory">
    <uid>501</uid>
    <passive-unit-id>1</passive-unit-id>
    <device>ROADM3-9</device>
    <rack-id>2</rack-id>
    <ru-position>9</ru-position>
    <slot>1</slot>
    <passive-unit-type
xmlns:cet="http://cisco.com/yang/ncs2k/equipment-types">cet:NCS2K-MF-DEG-5</passive-unit-type>

  </passive-unit>
  <passive-unit xmlns="http://cisco.com/yang/optical/inventory">
    <uid>502</uid>
    <passive-unit-id>2</passive-unit-id>
    <device>ROADM3-9</device>
    <rack-id>2</rack-id>
    <ru-position>10</ru-position>
    <slot>1</slot>
    <passive-unit-type
xmlns:cet="http://cisco.com/yang/ncs2k/equipment-types">cet:NCS2K-MF-UPG-4</passive-unit-type>

  </passive-unit>
  <passive-unit xmlns="http://cisco.com/yang/optical/inventory">
    <uid>503</uid>
    <passive-unit-id>3</passive-unit-id>
    <device>ROADM3-9</device>
    <rack-id>1</rack-id>
    <ru-position>4</ru-position>
    <slot>1</slot>
    <passive-unit-type
xmlns:cet="http://cisco.com/yang/ncs2k/equipment-types">cet:NCS2K-MF-MPO-16LC</passive-unit-type>

  </passive-unit>
</node>
</nodes>
</config>

```

Upgrade and onboard NCS 2000 nodes that do not host SVO cards

Extend Cisco Optical Site Manager management to NCS 2000 ROADM and OLA nodes that do not host SVO cards after the first instances are operational.

Use this topic to extend Cisco Optical Site Manager management to NCS 2000 ROADM and OLA nodes that do not host SVO cards. Create the required instances, onboard devices, and verify synchronization after the initial SVO card host nodes are operational.

Remaining NCS 2000 node upgrade plan

This workflow is executed after the Cisco Optical Site Manager instances have been created and the ROADM nodes that host SVO cards have been successfully onboarded and synchronized. The objective of this phase is to extend Cisco Optical Site Manager management to all remaining NCS 2000 nodes in the network, including:

- A Cisco Optical Site Manager instance is created for each ROADM node that does not host an SVO card.
- A Cisco Optical Site Manager instance is created for each OLA node.

Upgrade NCS 2000 devices

Use the standard NCS 2000 ROADM and OLA software upgrade process.

Create Cisco Optical Site Manager instances for ROADM and OLA nodes

Create additional Cisco Optical Site Manager instances for ROADM or OLA nodes when the deployment design requires separate site management instances.

Create a Cisco Optical Site Manager instance for ROADM nodes that do not host SVO cards and for OLA nodes, if required by the deployment design.



Note

The instance type must match the node type, such as ROADM or OLA. Configure the instance parameters, including IP address, memory, and naming, according to the Cisco Optical Site Manager deployment plan.

Follow these steps to create Cisco Optical Site Manager instances for ROADM and OLA nodes.

Procedure

Create Cisco Optical Site Manager instances for ROADM and OLA nodes.

Use this reference section for the task: [Create a Cisco Optical Site Manager instance](#).

The Cisco Optical Site Manager instance is created and appears in RUNNING / UP state.

Figure 46: Instance added

COSM Admin Plane 26.1.1 (P2B0288) SVO-231-66

COSM Instances

Total Reserved Memory: 8.20 GB
COSM Instances: 3

Name	IP Address	SW Version	State	App State	Role	Up time	Type	Actions
ROADM4	10.58.230.74	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 41 minutes Up 41 minutes	ROADM (4 GB)	
ROADM3	10.58.230.73	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 37 minutes Up 37 minutes	ROADM (2.1 GB)	
OLA5	10.58.230.83	26.1.1.P2D0288 26.1.1.P2D0288	● RUNNING ● RUNNING	UP UP	ACTIVE STANDBY	Up 7 minutes Up 7 minutes	ROADM (2.1 GB)	

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Figure 47: Cisco Optical Site Manager instance creation form example (OLA)

The screenshot shows the COSM Admin Plane web interface. The top navigation bar includes the Cisco logo, 'COSM Admin Plane 26.1.1 (P2B0288)', 'SVO-231-66', a status indicator, and a user profile 'cisco15'. The left sidebar contains icons for Instances, Diagnostics, Networks, Certificates, Statistics, Tools, Scripts, and Users. The main content area is titled 'COSM Instance Configuration' and contains three sections:

- General Info:**
 - Name:
 - Software Version:
 - TDM Terminology:
 - Type:
 - Reserved Memory GB:
- Admin User:**
 - Username:
 - Password:
 - Retype Password:
- Management Network:**
 - IPv4 Address:

A blue 'Create' button is located at the bottom right of the form. At the bottom of the page, the Cisco logo and copyright notice 'Copyright© 2025 Cisco Systems, Inc. All rights reserved.' are displayed.

What to do next

Create a Cisco Optical Site Manager instance for each node that requires independent management.

Access the Cisco Optical Site Manager web UI

Access the Cisco Optical Site Manager web UI for additional instances before creating authorization groups or onboarding remaining NCS 2000 nodes.

Use this procedure to access the Cisco Optical Site Manager web UI.

Follow these steps to access the Cisco Optical Site Manager web UI.

Procedure

Open https://<COSM_IP> in a browser to access the Cisco Optical Site Manager web UI.

Create Cisco Optical Site Manager authorization groups

Create authorization groups for additional Cisco Optical Site Manager instances so remaining NCS 2000 devices can be onboarded with the correct credentials.

Use this procedure to create Cisco Optical Site Manager authorization groups.

Follow these steps to create Cisco Optical Site Manager authorization groups.

Procedure

Create authorization groups for the Cisco Optical Site Manager instance.

Use this Cisco procedure for the complete workflow: [Create or edit an authorization group](#).

Onboard devices in Cisco Optical Site Manager

Add ROADM and OLA nodes that do not host SVO cards to Cisco Optical Site Manager and allow device synchronization to complete.

Add ROADM and OLA nodes not hosting SVO cards to Cisco Optical Site Manager instances.

Follow these steps to onboard devices in Cisco Optical Site Manager.

Procedure

1. Onboard the ROADM or OLA node in Cisco Optical Site Manager with these settings.

Use the related Cisco task: [Add a device](#).

2. Device Type: ncs2000.
3. Device Flavour: any-config.
4. First Active Chassis UID: automatic for ROADM and OLA nodes.

Figure 48: Cisco Optical Site Manager add device (OLA)

Add Device

Device Type
ncs2000

Device Flavour
any-config

Device Name
OLA5

First Active Chassis UID
[1, 65535]

IP Address
192.168.5.193

Authorization Group
ncs2k

Reset Apply

The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list. Device synchronization may take several minutes (up to 30-40 minutes for large nodes). During this time, the Sync Status progresses until it reaches "sync-completed, alarm-synchronized". After onboarding, wait until the Sync Status is "sync-completed, alarm-synchronized".

Figure 49: OLA device

Cisco Optical Site Manager
defaultNode

05/04/2026, 19:32 (UTC+02:00)

HA CISCO15

Devices Configuration Networking

Authorization Group

Devices

	Name ↑	Device Type	Device Flavour	IP Address	Authorization Group	Sync Status	Netc
☐	OLA5	ncs2000	any-config	192.168.5.193	ncs2k	sync-completed, alarm-synchronised	N/A

Onboard devices in Cisco Optical Site Manager using XML

Use an XML configuration file as an alternative method to onboard devices for remaining ROADM and OLA nodes managed by Cisco Optical Site Manager.

Prepare an XML configuration file and upload it to Cisco Optical Site Manager to create authorization groups, assign UUIDs, and add devices. For details, see [XML examples for Cisco Optical Site Manager onboarding](#).

The XML file can include authorization groups such as `ncs2k` and `auth_group_SVO-231-66`, along with the device information required for onboarding.

Follow these steps to onboard devices in Cisco Optical Site Manager using XML.

Procedure

Import the XML configuration file in Cisco Optical Site Manager.

Use this reference section for the task: [Import a Cisco Optical Network Planner configuration file](#).

The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list.

Sample Cisco Optical Network Planner XML file

```
<config xmlns="http://tail-f.com/ns/config/1.0">
  <devices xmlns="http://tail-f.com/ns/ncs">
    <authgroups>
      <group>
        <name>ncs2k</name>
        <default-map>
          <remote-name>CISCO15</remote-name>
          <remote-password>otbu+123</remote-password>
        </default-map>
      </group>
    </authgroups>
  </devices>

  <nodes xmlns="http://cisco.com/yang/opt-node">
    <node>
      <id>0</id>
      <node-information>
        <name>ola5</name>
        <optical-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:roadm</optical-type>

          <tdm-terminology-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:ansi</tdm-terminology-type>

        </node-information>
      <devices>
        <device>OLA5</device>
        <address>192.168.5.193</address>
        <admin-state>unlocked</admin-state>
        <authgroup>ncs2k</authgroup>
        <device-type
xmlns:cisco-ne-type="http://cisco.com/yang/ne-type">cisco-ne-type:ncs2000</device-type>

          <device-flavour
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:any-config</device-flavour>

          <first-active-chassis-uid>1</first-active-chassis-uid>
        </devices>
      </node>
    </nodes>
  </config>
```

Verify remaining node upgrade and onboarding

Confirm that all remaining NCS 2000 nodes are upgraded, onboarded, synchronized, and ready before moving to optional remote transponder workflows.

Before proceeding to the next workflow, verify the remaining node upgrade and onboarding status.

Follow these steps to verify remaining node upgrade and onboarding.

Procedure

1. All NCS 2000 nodes are onboarded in Cisco Optical Site Manager.
 2. All devices are in **sync-completed** state.
 3. No device is in out-of-sync or degraded state.
 4. Cisco Optical Site Manager instances are operational and reachable.
-

Upgrade remote transponder nodes

Use this optional workflow when remote or standalone transponder nodes must be upgraded and associated with an existing Cisco Optical Site Manager instance.

Use this topic when remote or standalone transponder nodes must be upgraded and associated with an existing Cisco Optical Site Manager instance. Complete the required device upgrade and onboarding tasks only for networks that include these nodes.

Remote transponder node upgrade plan

This workflow is optional and applies when remote transponder nodes or standalone transponder nodes are present in the network. The objective is to add remote transponder nodes to an existing Cisco Optical Site Manager instance that hosts the corresponding ROADM, allowing them to be managed as part of the same Cisco Optical Site Manager instance. In Cisco Optical Site Manager, the ROADM and its associated remote transponder nodes are represented as a single logical node.

Upgrade NCS 2000 devices

Use the standard NCS 2000 remote transponder software upgrade process.

Onboard remote transponder nodes in Cisco Optical Site Manager

Onboard remote or standalone transponder nodes to the Cisco Optical Site Manager instance associated with the corresponding ROADM site and workflow.

Add remote transponder nodes or standalone transponder nodes to the Cisco Optical Site Manager instance.

Follow these steps to onboard remote transponder nodes in Cisco Optical Site Manager.

Procedure

1. Onboard the remote or standalone transponder node in Cisco Optical Site Manager with these settings.
See the Cisco documentation section: [Add a device](#).
2. Device Type: ncs2000.
3. Device Flavour: txp-only.

4. First Active Chassis UID: automatic for ROADM and OLA nodes.

Add Device

×

Device Type

ncs2000

Device Flavour

txp-only

Device Name

RTXP1

First Active Chassis UID

20

IP Address

192.168.5.33

Authorization Group

ncs2k

Reset

Apply

Figure 50: Cisco Optical Site Manager add device (RTXP)

Add Device
×

Device Type

ncs2000

Device Flavour

txp-only

Device Name

RTXP2

First Active Chassis UID

30
▲▼

IP Address

192.168.5.37

Authorization Group

ncs2k

Reset

Apply

The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list. After onboarding, wait until the Sync Status is "sync-completed, alarm-synchronized".

Figure 51: Remote transponder synchronization completed

	Name	Device Type	Device Flavour	IP Address	Authorization Group	Sync Status
☐	ROADM4	ncs2000	any-config	192.168.5.13	ncs2k	sync-completed, alarm-synchronized
☐	RTXP1	ncs2000	txp-only	192.168.5.33	ncs2k	sync-completed, alarm-synchronized
☐	RTXP2	ncs2000	txp-only	192.168.5.37	ncs2k	sync-completed, alarm-synchronized
☐	SVO-231-67	controller	any-config	192.168.254.3	auth_group_SVO-231-67	sync-completed, alarm-synchronized

Onboard devices in Cisco Optical Site Manager using XML

Use an XML configuration file as an alternative method to onboard devices for remaining ROADM and OLA nodes managed by Cisco Optical Site Manager.

Prepare an XML configuration file and upload it to Cisco Optical Site Manager to create authorization groups, assign UIDs, and add devices. For details, see [XML examples for Cisco Optical Site Manager onboarding](#).

The XML file can include authorization groups such as `ncs2k` and `auth_group_SVO-231-66`, along with the device information required for onboarding.

Follow these steps to onboard devices in Cisco Optical Site Manager using XML.

Procedure

Import the XML configuration file in Cisco Optical Site Manager.

Use this reference section for the task: [Import a Cisco Optical Network Planner configuration file](#).

The device is successfully added to the Cisco Optical Site Manager instance and appears in the device list.

Sample Cisco Optical Network Planner XML file

```
<config xmlns="http://tail-f.com/ns/config/1.0">
  <devices xmlns="http://tail-f.com/ns/ncs">
    <authgroups>
      <group>
        <name>ncs2k</name>
        <default-map>
          <remote-name>CISCO15</remote-name>
          <remote-password>otbu+123</remote-password>
        </default-map>
      </group>
    </authgroups>
  </devices>

  <nodes xmlns="http://cisco.com/yang/opt-node">
    <node>
      <id>0</id>
      <node-information>
        <name>ola5</name>
        <optical-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:roadm</optical-type>

        <tdm-terminology-type
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:ansi</tdm-terminology-type>

      </node-information>
      <devices>
        <device>OLA5</device>
        <address>192.168.5.193</address>
        <admin-state>unlocked</admin-state>
        <authgroup>ncs2k</authgroup>
        <device-type
xmlns:cisco-ne-type="http://cisco.com/yang/ne-type">cisco-ne-type:ncs2000</device-type>

        <device-flavour
xmlns:ccet="http://cisco.com/yang/optical/common-equipment-types">ccet:any-config</device-flavour>

        <first-active-chassis-uid>1</first-active-chassis-uid>
      </devices>
    </node>
  </nodes>
</config>
```

Install Cisco Optical Network Controller and onboard Cisco Optical Site Manager nodes

Install Cisco Optical Network Controller and onboard Cisco Optical Site Manager nodes so the transitioned network can be discovered and operated centrally.

Cisco Optical Network Controller can be deployed on supported virtualization platforms such as VMware vSphere or KVM using the provided installation images. For image details, see [Cisco software image purposes](#).

Although standalone and Geo HA deployments differ in architecture, the installation process follows the same general workflow.

This section provides a high-level overview of the process. Detailed Cisco Optical Network Controller installation procedures are available in the Cisco product documentation.

Prerequisites

Before starting the installation, ensure that these requirements are met:

Ensure that adequate compute, memory, and storage resources are available for the selected deployment size. For sizing details, see [Cisco Optical Network Controller deployment models and requirements](#).

- Supported virtualization platform on the server (VMware ESXi / vCenter or KVM)
- DNS and NTP services available (consistent across all nodes)

High-level installation workflow

Follow these steps to deploy Cisco Optical Network Controller:

- Deploy the Cisco Optical Network Controller virtual machine (OVA or QCOW2) on the virtualization platform
- Configure virtual machine resources (CPU, memory, storage) and networking
- Power on the virtual machine(s)
- Access the system via CLI or web UI
- Perform initial system configuration (credentials, NTP, DNS)
- Complete deployment-specific configuration:
 - SA: Basic system setup
 - GeoHA: Cluster formation, inter-node communication, and redundancy configuration
- Verify system and service status via CLI and web UI, ensuring that all services are running correctly.
- Create users and assign roles

After the installation or upgrade is complete, access the Cisco Optical Network Controller web UI using a web browser.

Open a browser and navigate to this URL:

`https://<Cisco Optical Network Controller_IP_address>:8443/`

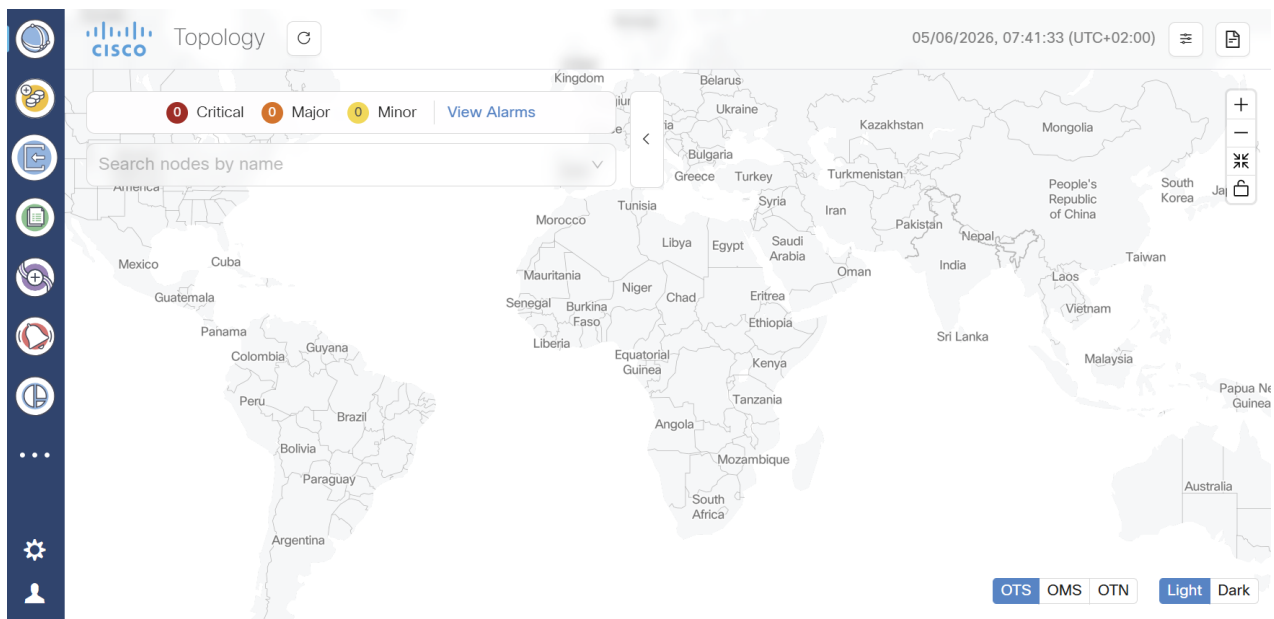
Log in using valid user credentials.

Figure 52: Cisco Optical Network Controller UI access



After successful authentication, the Cisco Optical Network Controller landing page is displayed.

Figure 53: Cisco Optical Network Controller landing page after installation



Required node information for Cisco Optical Network Controller

Provide this information for each node during onboarding:

Table 13: Cisco Optical Site Manager onboarding node information

Parameter	Description
Node Name	Name of the Cisco Optical Site Manager node in Cisco Optical Network Controller. If already configured, the existing name is retained.
Node IP	IP address of the Cisco Optical Site Manager instance
Username	Username used to access the node
Password	Password used to access the node
Connectivity Type	Protocol used for node communication (default: NETCONF)
Connectivity Port	Port used for communication (default: 830 for NCS 2000 nodes)
Site Name	Name of the site to which the node belongs
Site Description	Description of the site
Product Type	Default value: Cisco Optical Node
Latitude	Geographic latitude used for map visualization
Longitude	Geographic longitude used for map visualization

Onboard Cisco Optical Site Manager instances in Cisco Optical Network Controller

This section explains how Cisco Optical Network Controller represents Cisco Optical Site Manager instances as nodes and supports single or batch onboarding.

A node in Cisco Optical Network Controller represents a Cisco Optical Site Manager instance in the network.

Follow these steps to onboard Cisco Optical Site Manager instances in Cisco Optical Network Controller.

Procedure

1. Users can onboard a single node or multiple nodes in batch mode. Only users with administrative privileges are allowed to perform node onboarding operations.
2. Ensure that all Cisco Optical Site Manager instances are reachable from the Cisco Optical Network Controller server through the DCN network.
3. Review the Cisco Optical Network Controller node onboarding workflow.

For node onboarding steps and field details, see [Add nodes on Cisco Optical Network Controller](#).

Add a single node in Cisco Optical Network Controller

Add one Cisco Optical Site Manager node in Cisco Optical Network Controller when onboarding is performed manually instead of through Excel import.

Follow these steps to onboard a single node:

Procedure

1. Log in to Cisco Optical Network Controller as an administrator.
2. Click **Nodes** in the left panel.
3. Click **New** to open the node onboarding dialog.
4. Enter the required node information.

For node field descriptions and connectivity test behavior, see [Add nodes on Cisco Optical Network Controller](#).

5. Submit the configuration.

Figure 54: Cisco Optical Network Controller new node addition

The screenshot shows the Cisco Optical Network Controller interface. On the left, the 'Nodes' panel is visible with a '+ New' button highlighted by a pink box. The 'New Node' dialog box is open, displaying the following fields:

- Node Name***: roadm3
- Node IP***: 10.58.230.73
- Site Name***: Site3_roadm3
- Site Description**: roadm3_4deg
- Protocol***: NETCONF
- Username***: CISCO15
- Password***: [masked]
- Latitude**: -9.86
- Longitude**: -56.08

At the bottom of the dialog, there are three buttons: 'Test Connection', 'Cancel', and 'Save'. The 'Save' button is highlighted with a pink box.

Add nodes from an Excel file in Cisco Optical Network Controller

Use Excel-based import to add multiple Cisco Optical Site Manager nodes in Cisco Optical Network Controller with consistent node, site, and connectivity data.

You need an XLSX file that contains the information required to onboard the nodes in Cisco Optical Network Controller.

For more details about this task, see [Import multiple nodes into Cisco Optical Network Controller](#).

Before you begin

Follow these steps to add nodes from an Excel file in Cisco Optical Network Controller.

Procedure

1. Excel file related to our illustrative Network would be:

Node Name	Node IP	User Name	Password	Connectivity Type	Connectivity Port	Site Name	Site Description	Product Type	Latitude	Longitude
roadm1	105823071	CISCO15	***	NETCONF	830	roadm1	roadm1	Cisco Optical Node	-20460000	-54.62
roadm2	105823072	CISCO15	***	NETCONF	830	roadm2	roadm2	Cisco Optical Node	-23732037	-46681085
roadm3	105823073	CISCO15	***	NETCONF	830	roadm3	roadm3	Cisco Optical Node	-9.86	-56.08
roadm4	105823074	CISCO15	***	NETCONF	830	roadm4	roadm4	Cisco Optical Node	-12960000	-38240000
roadm5	105823075	CISCO15	***	NETCONF	830	roadm5	roadm5	Cisco Optical Node	-22069065	-42670522
roadm6	105823076	CISCO15	***	NETCONF	830	roadm6	roadm6	Cisco Optical Node	-3.765918	-38478671
roadm7	105823077	CISCO15	***	NETCONF	830	roadm7	roadm7	Cisco Optical Node	-20258614	-40375969
roadm8	105823078	CISCO15	***	NETCONF	830	roadm8	roadm8	Cisco Optical Node	-20140839	-56347917
ola1	105823079	CISCO15	***	NETCONF	830	ola9	ola9	Cisco Optical Node	-18950575	-57.49866
ola2	105823080	CISCO15	***	NETCONF	830	ola10	ola10	Cisco Optical Node	-21496557	-56.16204

ola3	105823081	CISCO15	***	NETCONF	830	ola11	ola11	Cisco Optical Node	-22213921	-54.77536
ola4	105823082	CISCO15	***	NETCONF	830	ola12	ola12	Cisco Optical Node	-25483241	-49.163148
ola5	105823083	CISCO15	***	NETCONF	830	ola13	ola13	Cisco Optical Node	-7.35	-54.82
ola6	105823084	CISCO15	***	NETCONF	830	ola14	ola14	Cisco Optical Node	-6.64	-51.97
ola7	105823085	CISCO15	***	NETCONF	830	ola15	ola15	Cisco Optical Node	-5.49	-48.14
ola8	105823086	CISCO15	***	NETCONF	830	ola16	ola16	Cisco Optical Node	-5.1	-42.49

2. Follow these steps:
3. Log in to Cisco Optical Network Controller as an administrator.
4. Click **Nodes** in the left panel.
5. Click **Add**, then click **Multiple Nodes**.
6. Click **Download** to download the template file.
7. Populate the node details in the downloaded excel file and upload the file.
8. Click **Import** to start the import process.

Cisco Optical Network Controller starts the import and adds the nodes to the **Nodes** table when the import completes.

Figure 55: Cisco Optical Network Controller node import using an Excel XML file

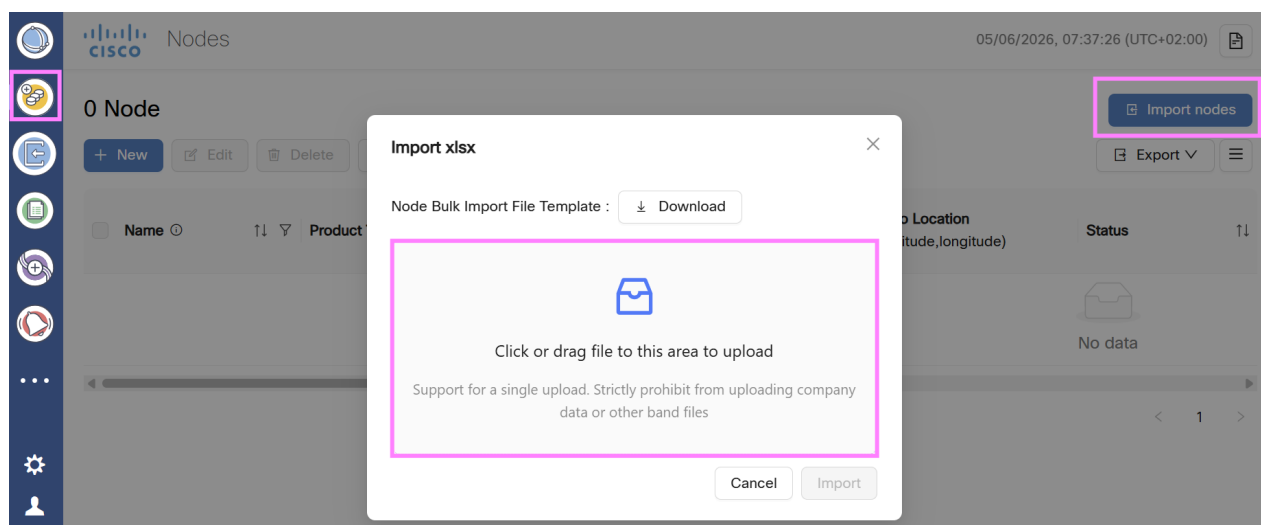
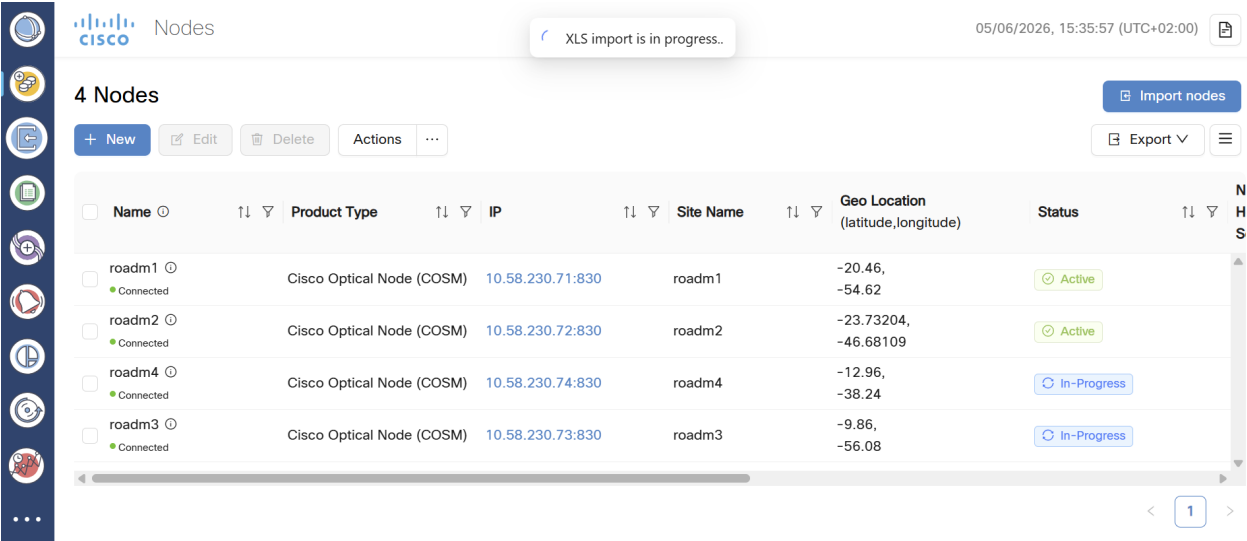


Figure 56: Cisco Optical Network Controller XML node import in progress



Nodes

05/06/2026, 15:35:57 (UTC+02:00)

XLS import is in progress..

4 Nodes

+ New Edit Delete Actions ...

Import nodes Export

Name	Product Type	IP	Site Name	Geo Location (latitude,longitude)	Status
roadm1 Connected	Cisco Optical Node (COSM)	10.58.230.71:830	roadm1	-20.46, -54.62	Active
roadm2 Connected	Cisco Optical Node (COSM)	10.58.230.72:830	roadm2	-23.73204, -46.68109	Active
roadm4 Connected	Cisco Optical Node (COSM)	10.58.230.74:830	roadm4	-12.96, -38.24	In-Progress
roadm3 Connected	Cisco Optical Node (COSM)	10.58.230.73:830	roadm3	-9.86, -56.08	In-Progress

1

What to do next

1. Monitor the import status in the system dialog.
2. Verify that all nodes are successfully added to the Nodes table.

Validate node addition in Cisco Optical Network Controller

Validate Cisco Optical Network Controller node discovery and topology display after onboarding Cisco Optical Site Manager instances into the controller.

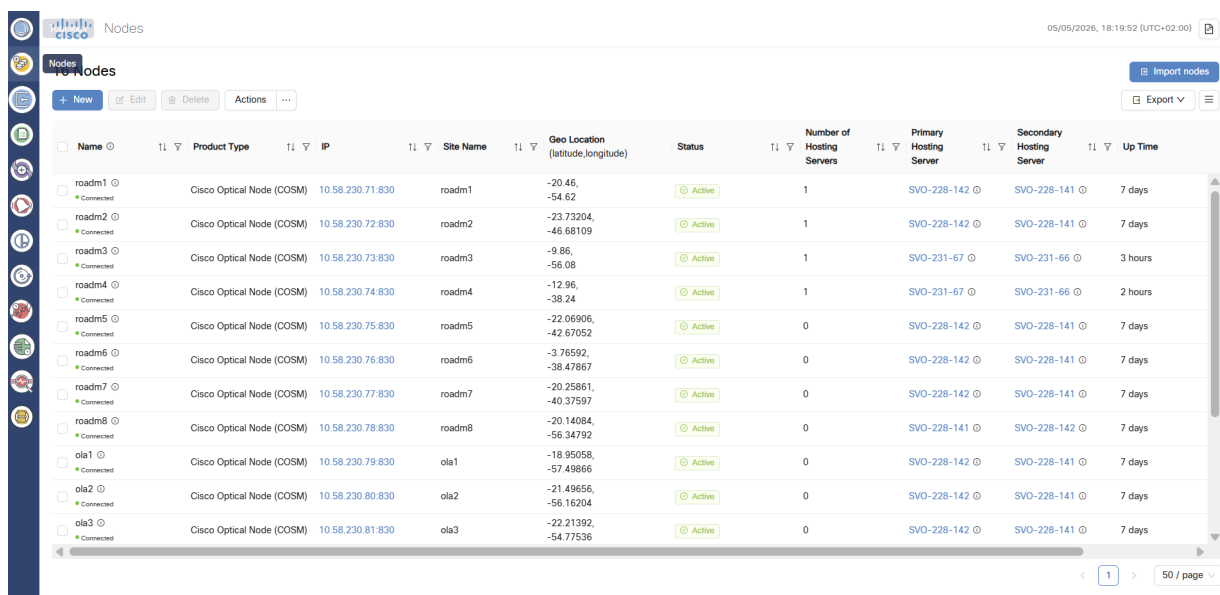
After onboarding, verify that all nodes are correctly discovered and operational:

Follow these steps to validate node addition in Cisco Optical Network Controller.

Procedure

1. Ensure the node status is **Active**.
2. Verify that the connectivity status is **Connected**.
3. Confirm that all nodes are visible in the Nodes view.

Figure 57: Cisco Optical Network Controller node list



Name	Product Type	IP	Site Name	Geo Location (latitude, longitude)	Status	Number of Hosting Servers	Primary Hosting Server	Secondary Hosting Server	Up Time
roadm1	Cisco Optical Node (COSM)	10.58.230.71.830	roadm1	-20.46, -54.62	Active	1	SVO-228-142	SVO-228-141	7 days
roadm2	Cisco Optical Node (COSM)	10.58.230.72.830	roadm2	-23.73204, -46.68109	Active	1	SVO-228-142	SVO-228-141	7 days
roadm3	Cisco Optical Node (COSM)	10.58.230.73.830	roadm3	-9.86, -56.08	Active	1	SVO-231-67	SVO-231-66	3 hours
roadm4	Cisco Optical Node (COSM)	10.58.230.74.830	roadm4	-12.96, -38.24	Active	1	SVO-231-67	SVO-231-66	2 hours
roadm5	Cisco Optical Node (COSM)	10.58.230.75.830	roadm5	-22.06906, -42.67052	Active	0	SVO-228-142	SVO-228-141	7 days
roadm6	Cisco Optical Node (COSM)	10.58.230.76.830	roadm6	-3.76592, -38.47867	Active	0	SVO-228-142	SVO-228-141	7 days
roadm7	Cisco Optical Node (COSM)	10.58.230.77.830	roadm7	-20.25861, -40.37597	Active	0	SVO-228-142	SVO-228-141	7 days
roadm8	Cisco Optical Node (COSM)	10.58.230.78.830	roadm8	-20.14064, -56.34792	Active	0	SVO-228-141	SVO-228-142	7 days
ola1	Cisco Optical Node (COSM)	10.58.230.79.830	ola1	-18.95058, -57.49866	Active	0	SVO-228-142	SVO-228-141	7 days
ola2	Cisco Optical Node (COSM)	10.58.230.80.830	ola2	-21.49656, -56.16204	Active	0	SVO-228-142	SVO-228-141	7 days
ola3	Cisco Optical Node (COSM)	10.58.230.81.830	ola3	-22.21392, -54.77536	Active	0	SVO-228-142	SVO-228-141	7 days

4. Verify the network topology.

For topology screen behavior, layer options, node and link details, and troubleshooting, see [Cisco Optical Network Controller topology details](#).

5. Access the Topology view.

6. Confirm that nodes and links are correctly displayed.

7. Verify the service status.

- Check that the number of **Services** matches the number in CTC/EPNM.
- Verify that circuits that are in service in EPNM are also in service in Cisco Optical Network Controller, except circuits that are not supported in the related Cisco Optical Network Controller release.
- Review circuits that show partial or missing nodes when only part of the network is onboarded in Cisco Optical Network Controller.

Figure 58: Cisco Optical Network Controller services after Cisco Optical Site Manager onboarding

Service Manager

05/06/2026, 18:59:21 (UTC+02:00)

DWDM OTN SLTE ASE

187 Services

Last Updated on 05/06/2026 at 18:58:43 (UTC+02:00) Refresh Export

+ New Service Delete Edit More

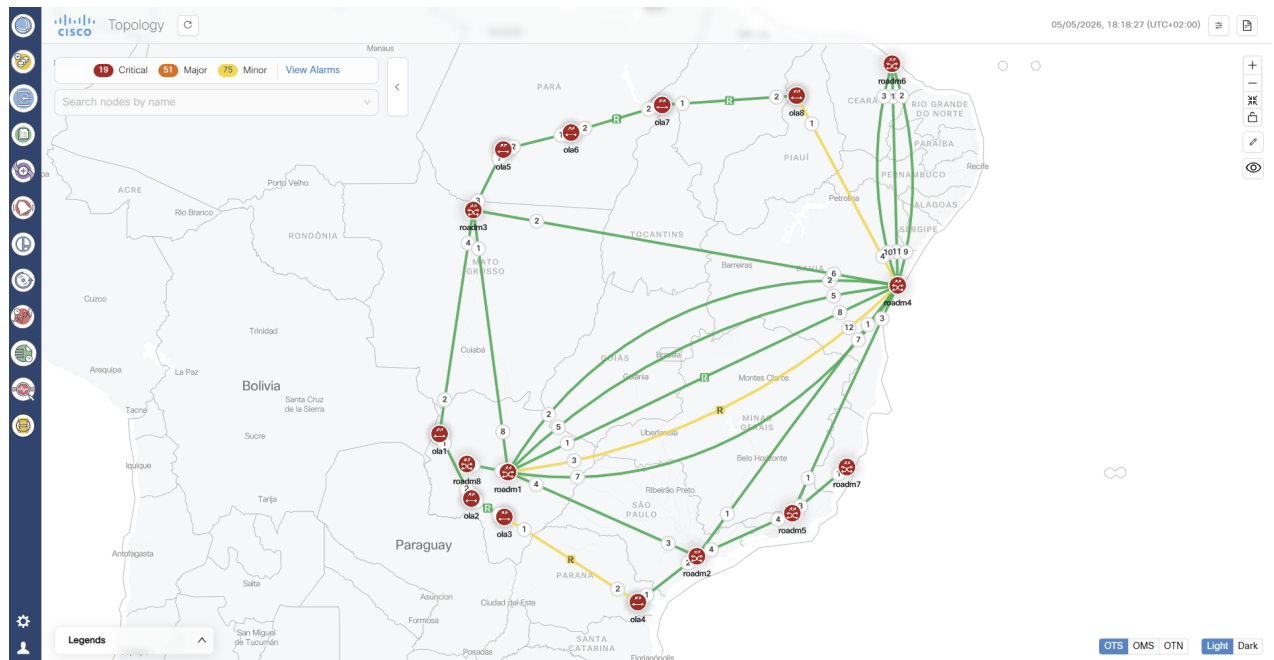
Service on top: Select multiple services:

Name	Type	Source	Destination	Description
+ OTNXC2	OCH-Trail	roadm2	roadm3	
+ tit1_carp	OCH-CC	roadm2 1/7/1	roadm1 5/7/1	
+ tit3_car_ar	OCH-CC	roadm1 5/3/1	roadm4 30/3/1	
+ OTNXC1	OCH-Trail	roadm1	roadm2	
+ OTNXC3	OCH-Trail	roadm1	roadm3	
+ psm	OCH-CC	roadm1 5/16/CLIENT	roadm5 1/5/CLIENT	
+ 1k_skinny	OCH-Trail	roadm3	roadm1	
+ tit5_10ge_11	OCH-CC			
+ tit3_slot6	OCH-CC			

Use these guidelines to interpret missing links and node placement in the topology view:

- If only part of the network is onboarded in Cisco Optical Network Controller, links to nodes that are not onboarded might be missing.
- If coordinates are not added during node onboarding in Cisco Optical Network Controller, manually place the nodes on the map before validating the topology.

Figure 59: Cisco Optical Network Controller topology



4 Upgrade your NCS 2000 network from 25.x to 26.x

Topics:

- [NCS 2000 network upgrade workflow](#)
- [Update Cisco Optical Network Controller from 25.x to 26.x](#)
- [Upgrade Cisco Optical Site Manager](#)
- [Upgrade NCS 2000 nodes from 25.x to 26.x](#)
- [Upgrade NCS 1000 devices](#)

This chapter guides the upgrade of an NCS 2000 network from release 25.x to 26.x through Cisco Optical Network Controller, Cisco Optical Site Manager, and device software workflows.

Upgrade your NCS 2000 network from 25.x to 26.x

NCS 2000 network upgrade workflow

This section summarizes the release 25.x to 26.x upgrade workflow and identifies how controller, site manager, and device upgrades fit together.

This chapter describes the end-to-end procedure to upgrade the optical network from software release 25.x to 26.x.

NCS 2000 upgrade components

The upgrade involves these components:

- Cisco Optical Network Controller
- Cisco Optical Site Manager
- NCS 2000 nodes
- NCS 1000 transponder devices

NCS 2000 upgrade workflow

Use this sequence to maintain management continuity and system consistency during the upgrade:

Upgrade component	Action
Cisco Optical Network Controller	Upgrade Cisco Optical Network Controller to the target release to ensure compatibility with the upgraded management layers.
Admin Plane, card controller, and Cisco Optical Site Manager	Upgrade Cisco Optical Site Manager to the target release using the Cisco Optical Site Manager web UI or SWIMU.
NCS 2000 devices, if required	Upgrade NCS 2000 devices to the target release using the Cisco Optical Site Manager web UI or SWIMU. Cisco Optical Site Manager 26.1.1 supports devices running 25.1.1 and 26.1.1, so you can keep NCS 2000 devices on 25.1.1 if the 26.1.1 fixes are not required.
NCS 1000 devices, if applicable	Upgrade NCS 1000 transponder devices using the same workflow applied to NCS 2000 devices.

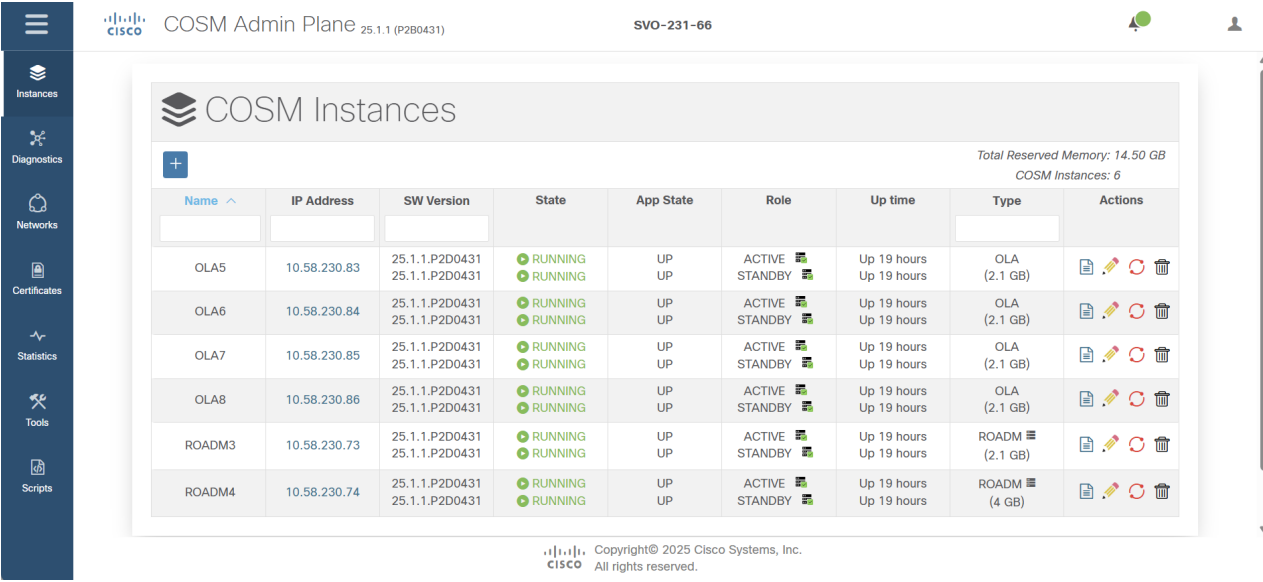
Cisco Optical Network Controller and Cisco Optical Site Manager health check

Before starting the upgrade, verify that the network is in a stable and consistent state:

- If any inconsistency is detected, resolve it before proceeding with the upgrade
- Starting the upgrade in an unstable state may lead to partial failures or inconsistent system behavior

To check the status of each upgrade component, perform these checks:

To check status of	Perform these checks
Software and repository readiness	• Verify that the correct Cisco Optical Site Manager software image (*.iso) is available on the SFTP server. • Verify that the SFTP server is reachable from Cisco Optical Network Controller or Cisco Optical Site Manager. • Validate the credentials and access permissions. Administrator privileges are required.
Backups	• Verify that a full Cisco Optical Network Controller backup is complete. • Verify that full Cisco Optical Site Manager instance backups, including device backups, are complete. • Verify that full Cisco Optical Site Manager XML configuration file backups are complete.
Network and system conditions	• Verify that no critical alarms are present in Cisco Optical Site Manager or Cisco Optical Network Controller. • Verify network connectivity between Cisco Optical Network Controller, Cisco Optical Site Manager, and devices. • Verify that system time is synchronized across all components through NTP.
Cisco Optical Network Controller node status	• Verify that all Cisco Optical Site Manager nodes are onboarded in Cisco Optical Network Controller. • Verify that node status is Active and connectivity status is Connected.
Admin Plane status	• Verify that all Cisco Optical Site Manager instances are in ACTIVE/STANDBY state. • Verify that Admin Plane status is UP/UP. • Verify that no high availability synchronization issues are present.
Cisco Optical Site Manager instance and device status	• Verify that all Cisco Optical Site Manager instances are reachable. • Verify that all managed devices are in sync-completed state. • Verify that no device is in out-of-sync or degraded state.



COSM Admin Plane 25.1.1 (P2B0431) SVO-231-66

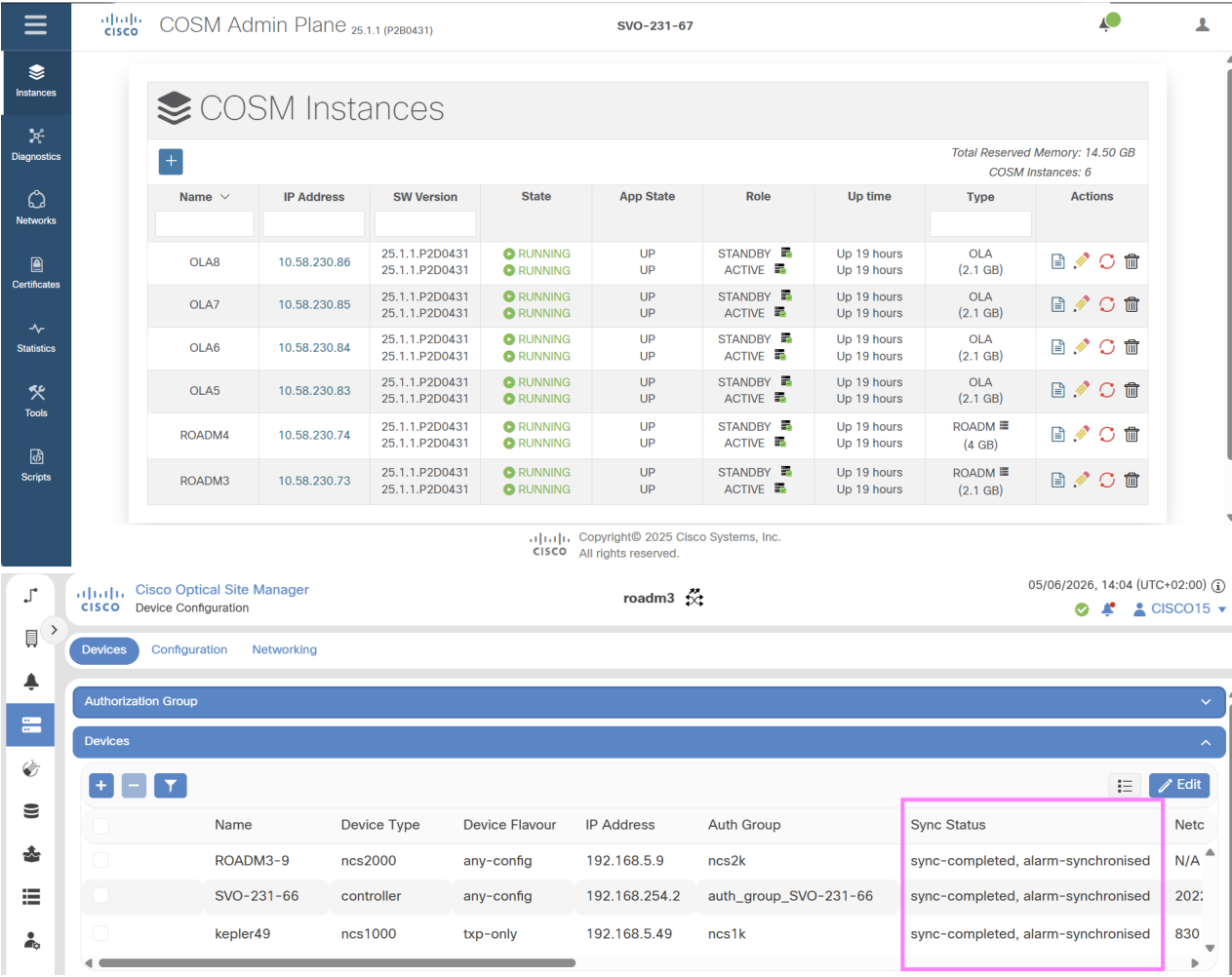
COSM Instances

Total Reserved Memory: 14.50 GB
COSM Instances: 6

Name	IP Address	SW Version	State	App State	Role	Up time	Type	Actions
OLA5	10.58.230.83	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA6	10.58.230.84	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA7	10.58.230.85	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA8	10.58.230.86	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
ROADM3	10.58.230.73	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	ROADM (2.1 GB)	[Icons]
ROADM4	10.58.230.74	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	ACTIVE STANDBY	Up 19 hours Up 19 hours	ROADM (4 GB)	[Icons]

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Figure 60: Admin Plane status check for 25.x



COSM Admin Plane 25.1.1 (P2B0431) SVO-231-67

COSM Instances

Total Reserved Memory: 14.50 GB
COSM Instances: 6

Name	IP Address	SW Version	State	App State	Role	Up time	Type	Actions
OLA8	10.58.230.86	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA7	10.58.230.85	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA6	10.58.230.84	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
OLA5	10.58.230.83	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	OLA (2.1 GB)	[Icons]
ROADM4	10.58.230.74	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	ROADM (4 GB)	[Icons]
ROADM3	10.58.230.73	25.1.1.P2D0431 25.1.1.P2D0431	RUNNING RUNNING	UP UP	STANDBY ACTIVE	Up 19 hours Up 19 hours	ROADM (2.1 GB)	[Icons]

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Cisco Optical Site Manager
Device Configuration

roadm3

05/06/2026, 14:04 (UTC+02:00)

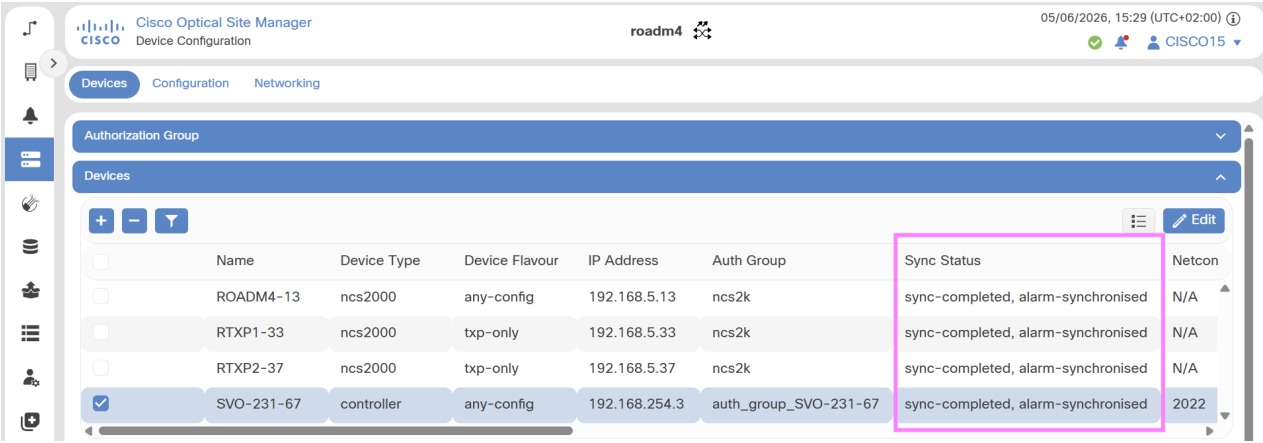
Devices Configuration Networking

Authorization Group

Devices

Name	Device Type	Device Flavour	IP Address	Auth Group	Sync Status	Netc
ROADM3-9	ncs2000	any-config	192.168.5.9	ncs2k	sync-completed, alarm-synchronised	N/A
SVO-231-66	controller	any-config	192.168.254.2	auth_group_SVO-231-66	sync-completed, alarm-synchronised	202:
kepler49	ncs1000	txp-only	192.168.5.49	ncs1k	sync-completed, alarm-synchronised	830

Figure 61: Cisco Optical Site Manager device health check



	Name	Device Type	Device Flavour	IP Address	Auth Group	Sync Status	Netcon
☐	ROADM4-13	ncs2000	any-config	192.168.5.13	ncs2k	sync-completed, alarm-synchronised	N/A
☐	RTXP1-33	ncs2000	txp-only	192.168.5.33	ncs2k	sync-completed, alarm-synchronised	N/A
☐	RTXP2-37	ncs2000	txp-only	192.168.5.37	ncs2k	sync-completed, alarm-synchronised	N/A
☒	SVO-231-67	controller	any-config	192.168.254.3	auth_group_SVO-231-67	sync-completed, alarm-synchronised	2022

Update Cisco Optical Network Controller from 25.x to 26.x

Update Cisco Optical Network Controller before the network upgrade continues so controller services, nodes, and topology views align with release 26.x workflows.

The Cisco Optical Network Controller update is the first step of the overall network 25.x to 26.x upgrade workflow. During this workflow, the Cisco Optical Network Controller system is upgraded to the target software release using a system pack TAR package.

The operation is service affecting at the management layer, as Cisco Optical Network Controller services may be temporarily unavailable during the update process. However, it does not impact the traffic in the optical network.

Cisco Optical Network Controller update deployment considerations

- In Cisco Optical Network Controller standalone deployments, the update is performed on the single node that hosts Cisco Optical Network Controller.
- In Geo HA deployments, execute the update on the active node and verify system synchronization after completion.

Cisco Optical Network Controller update recommendations

- Perform the update during a maintenance window.
- Ensure that sufficient system resources and connectivity are available.
- Allow a stabilization period after completion.

Cisco Optical Network Controller update requirements

Before starting the update, perform these actions:

- Back up the Cisco Optical Network Controller system database.
- Verify the Cisco Optical Network Controller and Cisco Optical Site Manager system health checks.

Update Cisco Optical Network Controller

Run the Cisco Optical Network Controller system-pack update from the CLI and monitor the service restart process during the release upgrade.

Run the release upgrade procedure from the CLI. The procedure requires secure access to the target system and includes validation and service restart operations.

Follow these steps to update Cisco Optical Network Controller.

Procedure

1. Connect to the Cisco Optical Network Controller node via SSH using the private key and the 'nxf' user:

Example

```
ssh -i <private-key_file> nxf@<node_ip>
```

2. Transfer the system pack file to the target system (e.g., /tmp directory):

Example

```
scp user@remote_server:/path/to/system-pack-file.tar.gz /tmp/
```

or

Example

```
curl -o /tmp/system-pack-file.tar.gz  
http://<server>/path/to/system-pack-file.tar.gz
```

3. Execute the update procedure from the CLI. Use root privileges or sudo for commands that require elevated access.
Use this Cisco procedure for the complete workflow: [Install Cisco Optical Network Controller service pack](#).
 4. Monitor system services during the process.
-

Verify Cisco Optical Network Controller update

Confirm that Cisco Optical Network Controller services, web UI access, node status, topology visualization, and service availability are stable after the update.

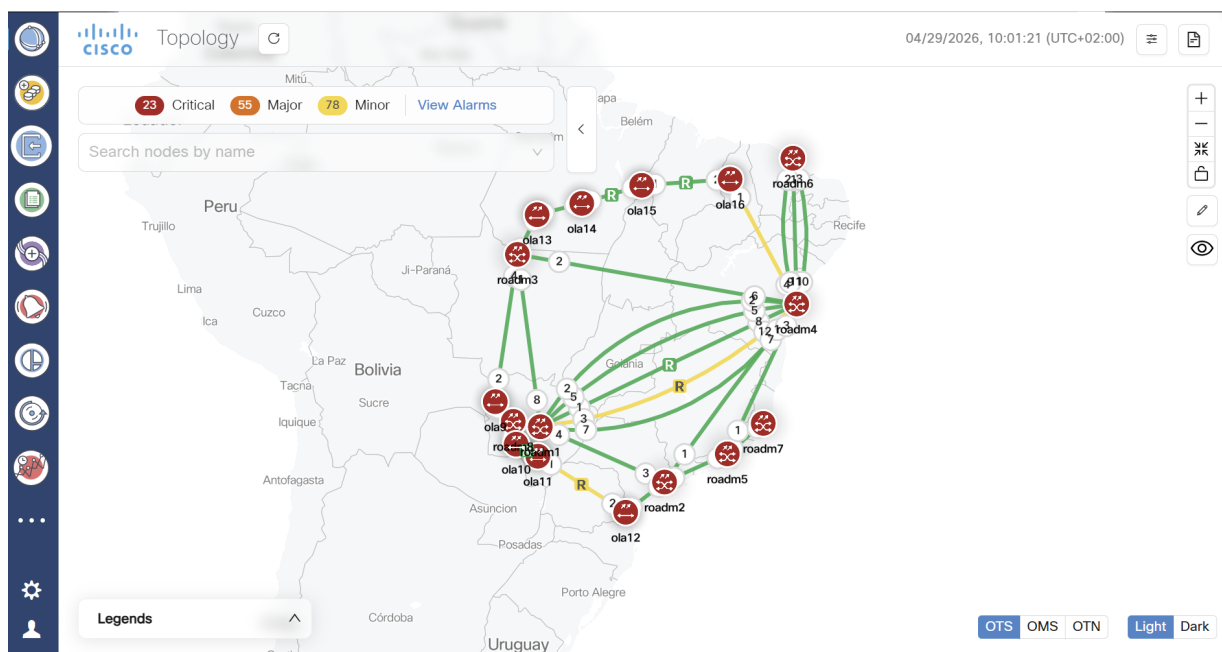
After the update is completed:

Follow these steps to verify the Cisco Optical Network Controller update.

Procedure

1. Verify via CLI that all services are in Running state.
2. Access the Cisco Optical Network Controller web UI: https://<virtual_ip>:8443.
3. Verify:
4. Nodes and sites status.
5. Topology visualization.
6. Service availability.
7. Allow a short stabilization period before resuming operations.

Figure 62: Cisco Optical Network Controller landing page 25.x/26.x



Upgrade Cisco Optical Site Manager

Upgrade Cisco Optical Site Manager components by distributing and activating the required images through Software Image Management and Upgrade and the web UI.

Use this topic to upgrade Cisco Optical Site Manager from 25.x to 26.x. Choose the Software Image Management and Upgrade workflow or the Cisco Optical Site Manager web UI workflow, then distribute and activate the required software images.

Cisco Optical Site Manager upgrade workflow

This section describes the procedure to upgrade Cisco Optical Site Manager from 25.x to 26.x.

The upgrade can be performed using two alternative methods:

- SWIMU (Software Image Management and Upgrade), using Cisco Optical Network Controller for centralized orchestration (preferred method)
- Cisco Optical Site Manager web UI, using the Software Manager for manual execution (alternative method)

Regardless of the selected method, the upgrade follows the same workflow:

- Software image distribution
- Admin Plane software activation
- Card Controller software activation
- Cisco Optical Site Manager instance software activation

These topics describe the prerequisites and detailed procedures for both execution methods.

Cisco Optical Site Manager upgrade using SWIMU

SWIMU upgrade functions

The Cisco Optical Site Manager software upgrade can be centrally orchestrated through Cisco Optical Network Controller using the Software Image Management and Upgrade (SWIMU) application.

SWIMU provides a unified interface to manage both software image distribution and activation across multiple Cisco Optical Site Manager instances and associated devices. This centralized approach enables consistent and scalable upgrade operations in large network deployments.

The upgrade workspace is accessible from the Cisco Optical Network Controller web UI by selecting the SWIMU application and navigating to the Upgrade Orchestrator.

The upgrade workflow in SWIMU is based on two main phases:

- **Image Distribution:** Cisco Optical Site Manager software images (*.iso) are transferred from the configured SFTP server to the selected Cisco Optical Site Manager instances and, optionally, to the underlying devices
- **Software Activation:** the distributed images are activated on the target Cisco Optical Site Manager nodes and related components

SWIMU uses grouping mechanisms to manage operations at scale:

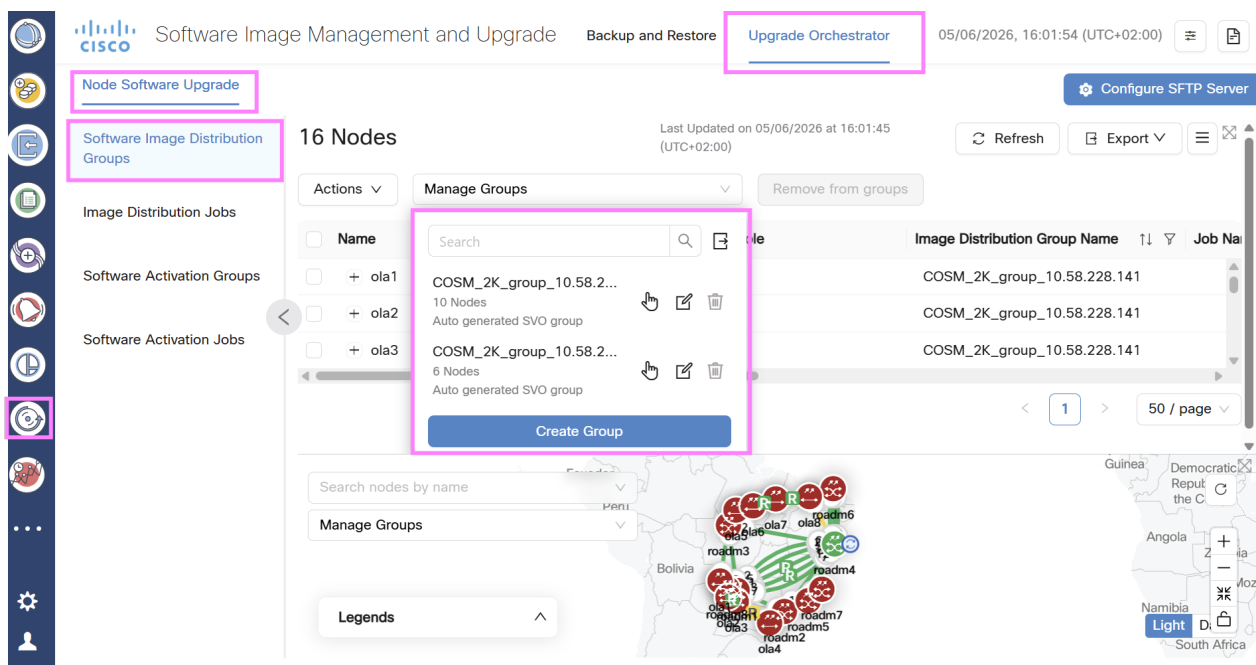
- **Software Image Distribution Groups**, used to define the set of nodes involved in the image transfer
- **Software activation groups**, used to define the scope of activation operations (not useful for NCS 2000 network)

These groups are automatically created for NCS 2000 nodes and can be used to execute bulk upgrade operations.

SWIMU also provides scheduling capabilities, allowing upgrade jobs to be executed immediately or during predefined maintenance windows.

These topics describe the configuration and execution of the upgrade workflow using SWIMU.

Figure 63: Cisco Optical Network Controller software upgrade orchestrator (image distribution group)



Cisco Optical Site Manager upgrade using the Cisco Optical Site Manager web UI

Cisco Optical Site Manager Software Manager web UI workflow

This section describes how to perform the Cisco Optical Site Manager and device software upgrade directly from the Cisco Optical Site Manager web UI using the Software Manager.

This method is typically used as an alternative to Cisco Optical Network Controller SWIMU when centralized orchestration through Cisco Optical Network Controller is not available, or for troubleshooting and recovery scenarios.

Unlike SWIMU, which provides centralized control, the web UI-based upgrade is executed locally on each Cisco Optical Site Manager instance and requires manual coordination of the upgrade steps.

The upgrade follows the same logical workflow used in SWIMU:

- [Download the ISO software package to Cisco Optical Site Manager.](#)
- [Activate Admin Plane in Cisco Optical Site Manager web UI.](#)
- [Activate card controller software in Cisco Optical Site Manager web UI.](#)
- [Activate Cisco Optical Site Manager software.](#)

Execute these steps sequentially to ensure a consistent and successful upgrade.

If multiple Cisco Optical Site Manager instances or SVO card pairs are present, repeat the procedure for each pair.

These topics describe the detailed execution of each step using the Cisco Optical Site Manager web UI.

Configure an SFTP server in SWIMU

Configure the SFTP server in Software Image Management and Upgrade so Cisco Optical Network Controller can access software images for distribution jobs.

Configure an external SFTP server in Cisco Optical Network Controller to store and provide access to Cisco Optical Site Manager software images required for the upgrade process.

Before you begin

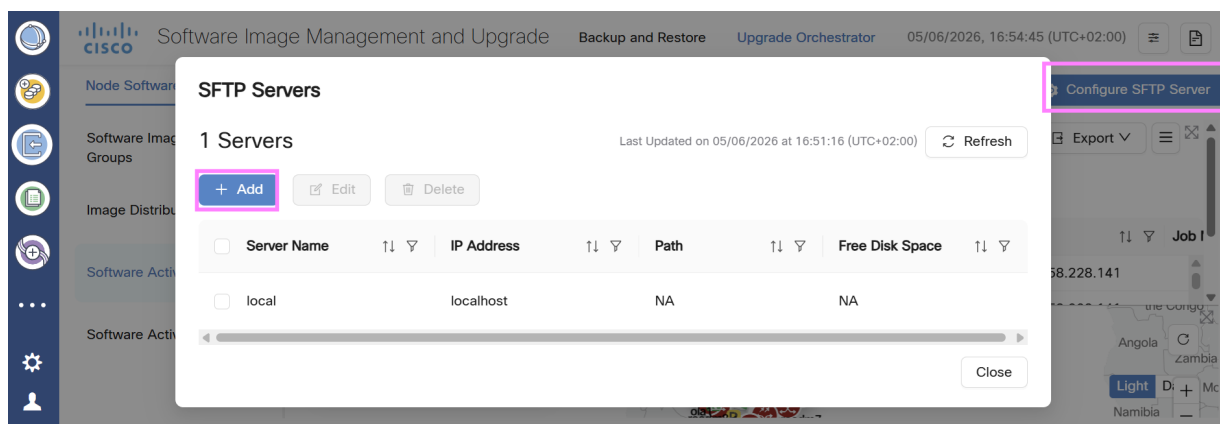
- The Cisco Optical Site Manager software image (*.iso) is available on the SFTP server.
- The SFTP server is reachable from Cisco Optical Network Controller.

Follow these steps to configure an SFTP server in SWIMU.

Procedure

1. In Cisco Optical Network Controller, open the SWIMU application.
2. Open **Upgrade Orchestrator**.
3. Click **Configure SFTP Server**.
4. Click **Add** to create a new SFTP server entry.

Figure 64: Cisco Optical Network Controller SFTP server configuration: start



5. Enter these parameters:

For the complete SFTP server configuration workflow, see [Configure an SFTP server](#).

- **SFTP Server Name:** logical name of the server
- **IP Address / FQDN:** SFTP server address
- **Username / Password:** credentials for authentication
- **Remote Path:** directory where software images are stored

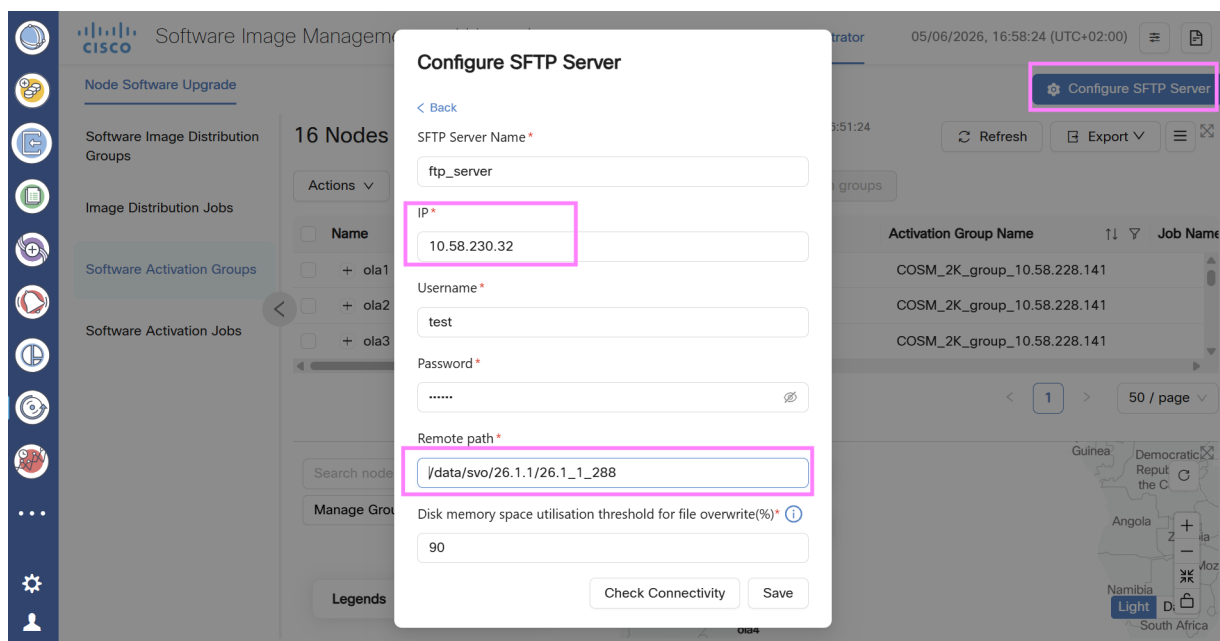
6. Disk Utilization Threshold (%): threshold for automatic cleanup.

7. Click **Check Connectivity Status**.

8. Verify that the connection is successfully established.

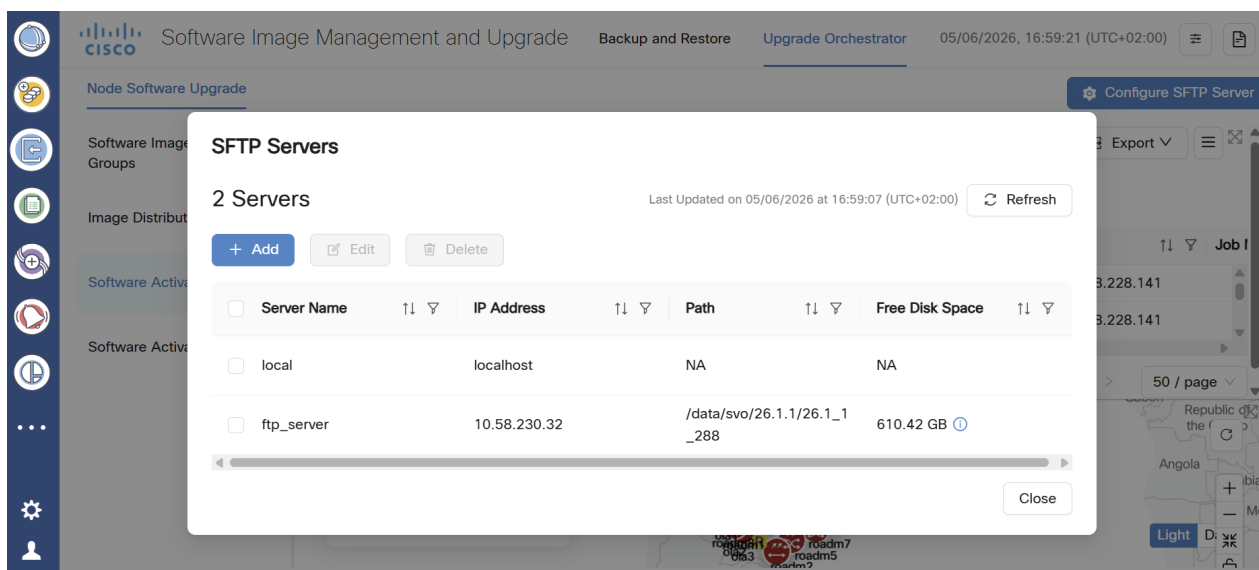
9. Save the configuration.

Figure 65: Cisco Optical Network Controller SFTP server: parameters



The SFTP server is successfully configured and available for software image distribution.

Figure 66: Cisco Optical Network Controller SFTP server: parameters



Create a Cisco Optical Site Manager image distribution job in SWIMU

Create a Cisco Optical Site Manager image distribution job to copy the ISO image to the selected instances and related device targets.

Distribute the Cisco Optical Site Manager software image (*.iso) from the configured SFTP server to the target Cisco Optical Site Manager instances and associated devices.

Before you begin

- The SFTP server is configured in Cisco Optical Network Controller.
- The Cisco Optical Site Manager software image is available on the SFTP server.
- Target Cisco Optical Site Manager nodes are correctly grouped in the distribution group.
- For NCS 2000, distribution groups cannot be modified or created by design.
- Network connectivity between Cisco Optical Network Controller, Cisco Optical Site Manager, and nodes is verified.
- Sufficient disk space is available on target systems before starting the job.

Follow these steps to create a Cisco Optical Site Manager image distribution job in SWIMU.

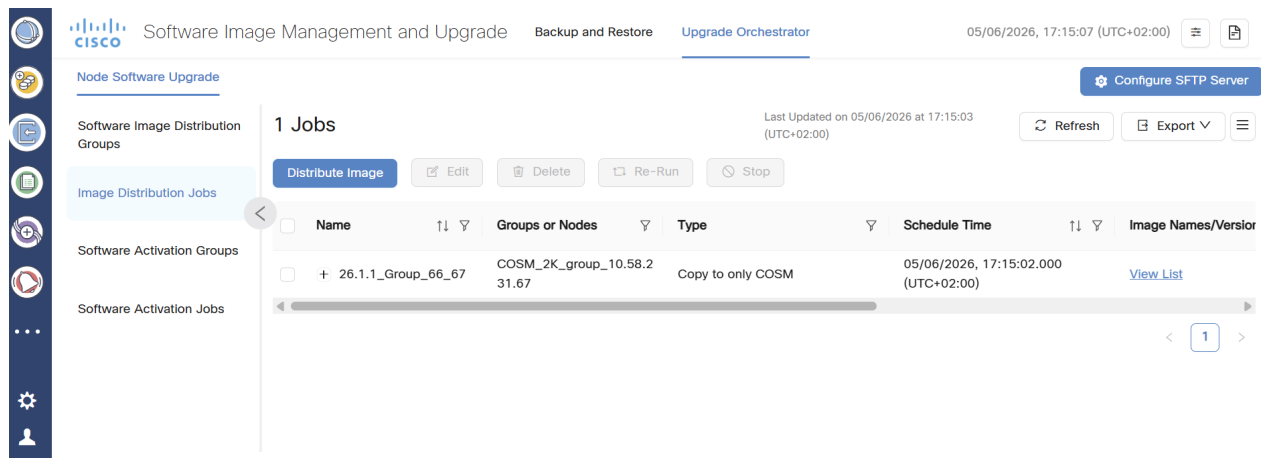
Procedure

1. In Cisco Optical Network Controller, open the SWIMU application.
2. Open **Upgrade Orchestrator**.
3. Choose **Node Software Upgrade > Image Distribution Jobs**.
4. Click **Distribute Image**.
5. Choose whether to copy the image to Cisco Optical Site Manager only or to both Cisco Optical Site Manager and the devices.
6. Select the target distribution group.
7. Select the configured SFTP server.
8. Select the required software image (*.iso).
9. Configure the job scheduling:
10. Confirm and start the job.

For image distribution and scheduling details, see [Orchestrate software upgrades](#).

The job appears in the Image Distribution Jobs panel.

Figure 67: Cisco Optical Network Controller software image distribution: Job status



Monitor Cisco Optical Site Manager image distribution jobs in SWIMU

Monitor Cisco Optical Site Manager image distribution jobs to confirm download progress, group behavior, and completion before activation starts for the group.

Monitor the progress and status of the software image distribution to Cisco Optical Site Manager instances within the selected group.

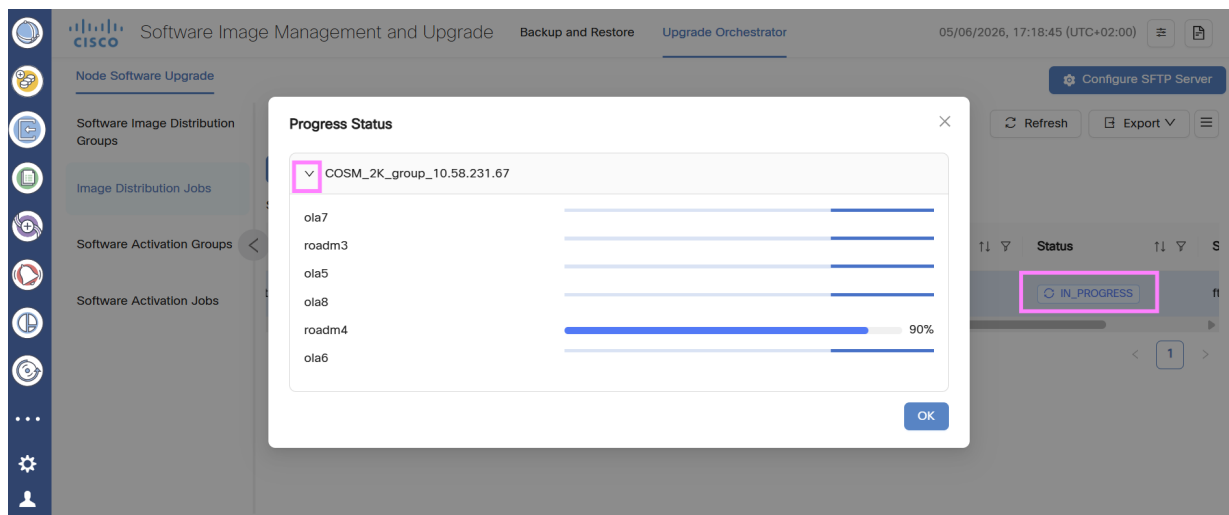
Follow these steps to monitor Cisco Optical Site Manager image distribution jobs in SWIMU.

Procedure

1. Access the SWIMU application in Cisco Optical Network Controller.
2. Choose **Upgrade Orchestrator > Image Distribution Jobs**.
3. Locate the running job in the job list.
4. Double click IN_PROGRESS in the Status Column.
5. Monitor the job status and progress indicators.

For image distribution job status and recovery actions, see [Orchestrate software upgrades](#).

Figure 68: Cisco Optical Network Controller software image distribution job progress



6. Within an NCS 2000 distribution group:
7. The software download is initiated on one node, where the progress percentage is displayed.
8. The progress is automatically propagated and reflected across the other nodes in the same group.
9. (Optional) Access the individual Cisco Optical Site Manager web UI instances to verify the download status at node level.

The image distribution is completed successfully on all nodes in the group, and the job status is updated accordingly.



Note

A **PARTIAL** status indicates that the job succeeded on some nodes and failed on others.

Figure 69: Cisco Optical Network Controller software image distribution final progress

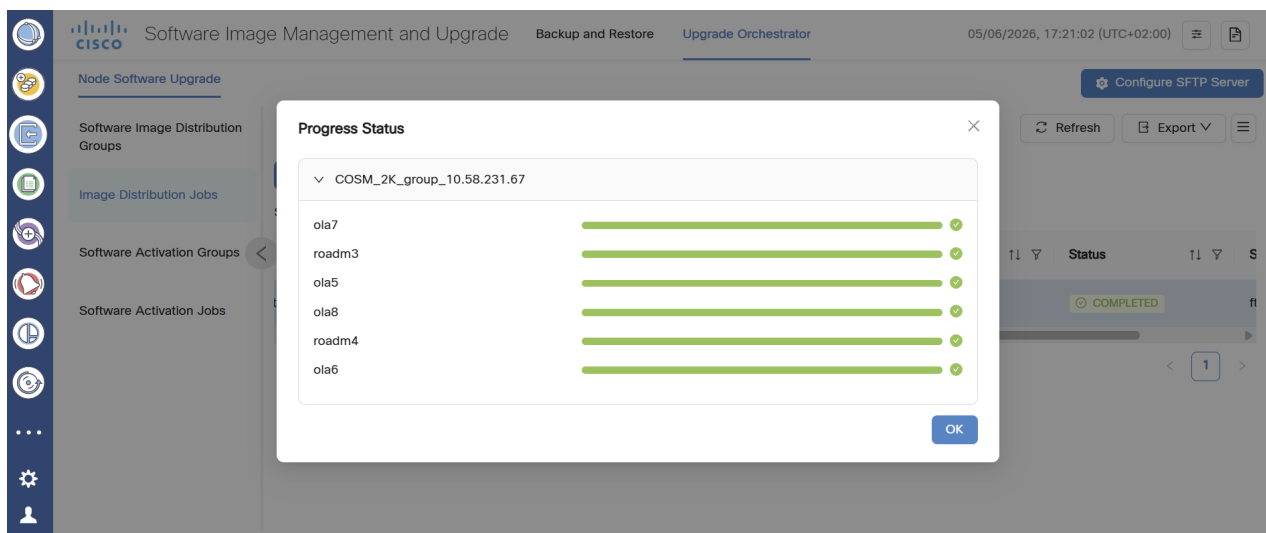
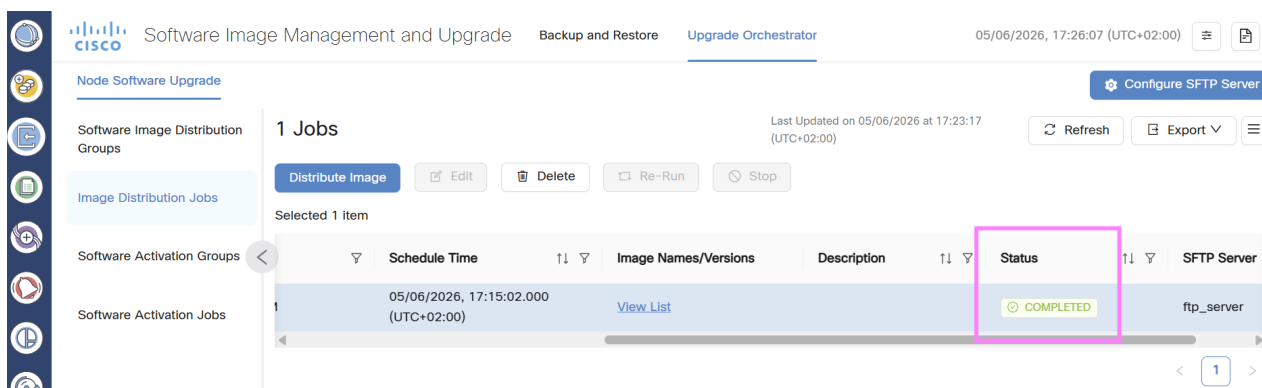


Figure 70: Cisco Optical Network Controller software image distribution final job status



What to do next

- Resolve the issue and use the **Re-Run** option if the job fails.
- Monitor distribution progress from Cisco Optical Network Controller and from the Cisco Optical Site Manager web UI.
- Verify network connectivity and SFTP availability if the download does not progress.

Create Cisco Optical Site Manager image activation jobs in SWIMU

Create activation jobs for previously distributed Cisco Optical Site Manager images and schedule the upgrade for the selected nodes or groups.

Activate the previously distributed software image on the target Cisco Optical Site Manager instances and associated components, completing the upgrade process.



Note

Activation can temporarily impact system manageability and services. The activation process is executed at group level.

Before you begin

- The software image is distributed to all target nodes.
- No critical alarms are present on Cisco Optical Site Manager instances.
- Target nodes are operationally stable.
- A maintenance window is defined, if required.

Follow these steps to create Cisco Optical Site Manager image activation jobs in SWIMU.

Procedure

1. In Cisco Optical Network Controller, open the SWIMU application.
2. Choose **Upgrade Orchestrator > Software Activation Jobs**.
3. Click **Create Activation Job** (or equivalent action).
4. Although the image can be activated on Cisco Optical Site Manager only, on the device(s) only, or on both, selecting Activate Cisco Optical Site Manager only is strongly recommended.

5. Select the target Cisco Optical Site Manager node or activation group.
For software activation group and job details, see [Orchestrate software upgrades](#).
6. Select the previously distributed software image.
7. Configure job scheduling:
8. Run immediately.
9. Schedule for a maintenance window.

The software activation process is successfully initiated on all target Cisco Optical Site Manager instances.

Figure 71: Cisco Optical Network Controller software activation: Active job

What to do next

- Monitor the activation job continuously until completion.
- Resolve the issue and rerun the job if activation fails.

Monitor Cisco Optical Site Manager software activation jobs in SWIMU

Track Cisco Optical Site Manager software activation jobs and verify the controlled sequence across Admin Plane, Card Controller, and instance upgrades.

Monitor the execution and progress of the software activation process across Cisco Optical Site Manager instances within the selected group.

Follow these steps to monitor Cisco Optical Site Manager software activation jobs in SWIMU.

Procedure

1. Access the SWIMU application in Cisco Optical Network Controller.
2. Choose **Upgrade Orchestrator > Software Activation Jobs**.
3. Locate the running activation job.
4. Monitor the job status and progress indicators.
For software activation job status and recovery actions, see [Orchestrate software upgrades](#).
5. (Optional) Access the Cisco Optical Site Manager web UI to verify activation status at the instance level.

 Note

If you upgrade all Cisco Optical Site Manager instances simultaneously, the process attempts to update the Admin Plane on all nodes, including nodes without SVO cards. This action can show a misleading status *Activation of software to version XXX has failed* for nodes that do not host SVO cards.

6. Within an NCS 2000 activation group, SWIMU executes the upgrade workflow in a controlled sequence:
7. Admin Plane Activation.
8. Card Controller Activation (if present).
9. Cisco Optical Site Manager Instance Upgrade.
10. The Cisco Optical Site Manager instances are upgraded sequentially, one instance at a time, to ensure controlled execution and system stability.

The activation process progresses through all phases and completes successfully for all Cisco Optical Site Manager instances in the group.

 Note

Activation is executed at group level, not per individual node. Temporary loss of manageability can occur during Admin Plane or Cisco Optical Site Manager activation. A **PARTIAL** status indicates that the job succeeded on some nodes and failed on others.

 Note

Known failure: The card controller might be updated on only one SVO card.

Figure 72: SWIMU activation job monitoring with Cisco Optical Site Manager activation completed

The screenshot displays the Cisco Optical Site Manager (COSM) Admin UI. The left pane shows the 'Node Software Upgrade' section with a table of jobs. The right pane shows the 'COSM Instances' section with a table of instances.

Node Software Upgrade Jobs:

Groups or Nodes	Type	Schedule Time	Version being upgraded to	Running SW Version	Status
COSM_2K_grou p_10.58.231.67	Activate only COSM	05/06/2026, 19:16:45.00 (UTC+02:00)			COMPLETED
COSM_2K_grou p_10.58.231.67					
ola8			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED
roadm4			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED
roadm3			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED
ola7			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED
ola5			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED
ola6			26.1.1.P2D0288	26.1.1.P2D0288	COMPLETED

COSM Instances:

Name	IP Address	SW Version	State	App State	Role	Up ti
ROADM3	10.58.230.73	26.1.1.P2D0288	RUNNING	UP	STANDBY	Up 17 m
ROADM4	10.58.230.74	26.1.1.P2D0288	RUNNING	UP	STANDBY	Up 24 m
OLA8	10.58.230.86	26.1.1.P2D0288	RUNNING	UP	ACTIVE	Up 4 m
OLA5	10.58.230.83	26.1.1.P2D0288	RUNNING	UP	STANDBY	Up 13 m
OLA7	10.58.230.85	26.1.1.P2D0288	RUNNING	UP	ACTIVE	Up 10 m
OLA6	10.58.230.84	26.1.1.P2D0288	RUNNING	UP	STANDBY	Up 11 m

What to do next

- Resolve the issue and use the **Re-Run** option if the job fails.
- Monitor progress from Cisco Optical Network Controller and from the Cisco Optical Site Manager web UI.
- Rerun the job to complete the update on the peer SVO card if the card controller is updated on only one SVO card.
- Update the card controller directly from Cisco Optical Site Manager if rerunning the job does not complete the peer-card update.

Download the ISO software package to Cisco Optical Site Manager

Download the Cisco Optical Site Manager ISO package into the Software Manager repository so it is available for activation or later maintenance actions.

Download the Cisco Optical Site Manager software package (*.iso) from the SFTP server to the Cisco Optical Site Manager Software Manager repository.

Before you begin

- The SFTP server is reachable from Cisco Optical Site Manager.
- The Cisco Optical Site Manager 2000 software image (*.iso) is available on the SFTP server.
- The Cisco Optical Site Manager health check is complete.

Follow these steps to download the ISO software package to Cisco Optical Site Manager.

Procedure

1. Access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Download**.
3. Choose **SFTP** as the protocol.
4. Enter the software package path in the **Remote File Path** field.
5. Select the authentication method:

Use this Cisco procedure for the complete workflow: [Download GISO image](#).

- **Username/Password, or**
- **Auth Group** (if previously configured)

6. Click Download.

7. Monitor the download progress in the **Status column until the package reaches 100 percent.**

The download of package is completed and package appears in the Software Packages tab with status Available.



Note

Multiple software packages can coexist in the repository. Download time depends on image size and network bandwidth, and typically takes 1 to 10 minutes.

Figure 73: ISO image download success

SW Component	File Name	Version	CRC Valid	Size (Bytes)
AdminPlane	es-admin-plane.tgz	26.1.1.P2B0288	true	512798253
Aggregator	svo-dos.tgz	26.1.1.P2D0288	true	795827954
CardController	svo_card_controller-26.1.1.P2D0288.x86_64.rpr	26.1.1.P2D0288	true	28848353
NCS2K	NCS2K-S-2611-026C-0501.pkg	2611.026C.0501	true	531849725
NCS2K-L	NCS2K-L-2611-026C-0501.pkg	2611.026C.0501	true	504295114
OS	ncs2k-foundation-25.1.1.211-REL.zip	25.2.1.211	true	485941100

Activate Admin Plane in Cisco Optical Site Manager web UI

Activate Admin Plane software from the Cisco Optical Site Manager web UI and monitor progress until the target release is active.

Activate the software on the Admin Plane and SVO card system components.

 Note

Temporary loss of Admin Plane web UI access and manageability is expected during the upgrade. Activate the Admin Plane before you activate other components.

Before you begin

- The Cisco Optical Site Manager software package is downloaded.
- The Cisco Optical Site Manager health check is complete.
- No critical alarms are present.
- A maintenance window is available.

Follow these steps to activate the Admin Plane in Cisco Optical Site Manager web UI.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Admin Plane Software**.
3. Select the **Admin Plane** component.
4. Click **Activate**.
5. Select the target software image.

Use the related Cisco task: [Activate Cisco Optical Site Manager and Admin Plane image for the SVO-LC](#).

6. Confirm the activation.
7. Monitor the activation progress from the Software Manager.

The Admin Plane software is successfully upgraded, and the system returns to operational state.

Figure 74: Admin Plane software activation post-check



What to do next

- Log in again after Admin Plane web UI access is restored.
- Verify that both SVO cards are updated in HA configurations.

Activate card controller software in Cisco Optical Site Manager web UI

Activate Card Controller software on SVO cards from Cisco Optical Site Manager and repeat the workflow for HA deployments when required.

Activate the Card Controller software on the SVO cards.

Note

Temporary loss of manageability can occur during activation.

Before you begin

- The Cisco Optical Site Manager software package is downloaded.
- The Admin Plane upgrade is complete.
- SVO cards are reachable and operational.
- No critical alarms are present.

Follow these steps to activate card controller software in Cisco Optical Site Manager web UI.

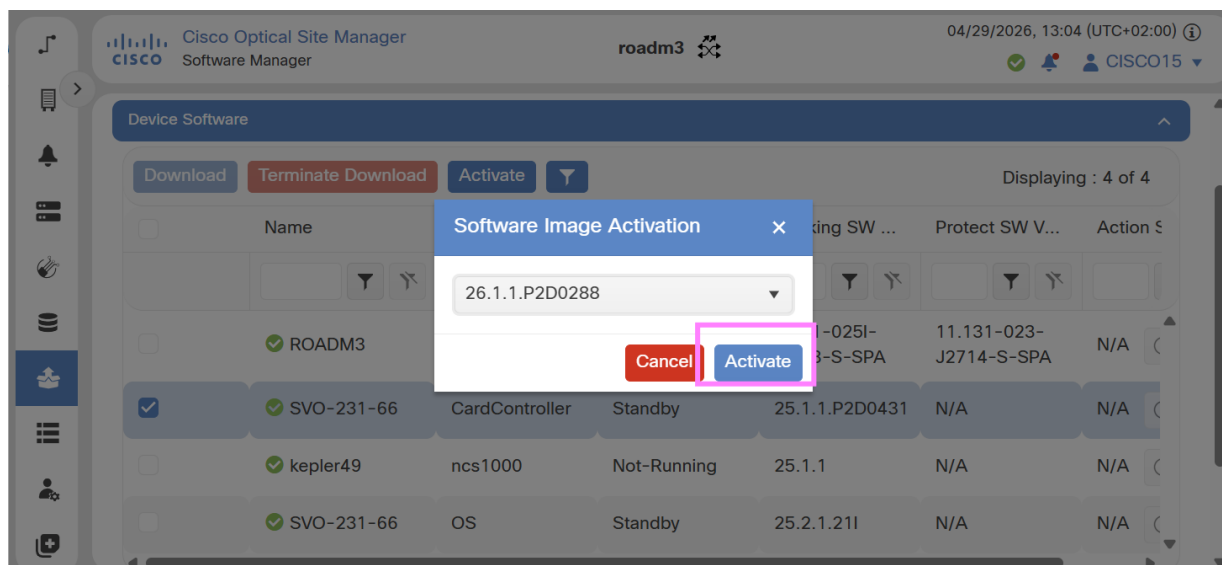
Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Device Software**.
3. Select the **Card Controller** component.
4. Click **Activate**.
5. Select the target software image.

See the Cisco documentation section: [Activate Cisco Optical Site Manager and Admin Plane image for the SVO-LC](#).

6. Confirm the activation.
7. Monitor the activation progress.
8. Repeat the procedure for the second SVO card (if HA is deployed).

Figure 75: Activate card controller preliminary



The Card Controller software is successfully updated on all SVO cards.

What to do next

- Verify that both SVO cards are updated in HA deployments.
- Proceed with Cisco Optical Site Manager instance activation after the upgrade is complete on both cards.

Activate Cisco Optical Site Manager software

Activate Cisco Optical Site Manager instance software from the web UI and verify the upgrade status during the transition to the target release.

Activate the software on Cisco Optical Site Manager instances and verify successful completion of the upgrade.

Before you begin

- Admin Plane and card controller software are upgraded.
- The Cisco Optical Site Manager software package is available in Software Manager.
- Cisco Optical Site Manager instances are stable and no critical alarms are present.

Follow these steps to activate Cisco Optical Site Manager software.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Cisco Optical Site Manager Software**.
3. Select the target Cisco Optical Site Manager instance.
4. Click **Activate**.
5. Select the required software version.

The product workflow is documented in: [Activate Cisco Optical Site Manager and Admin Plane image for the SVO-LC](#).

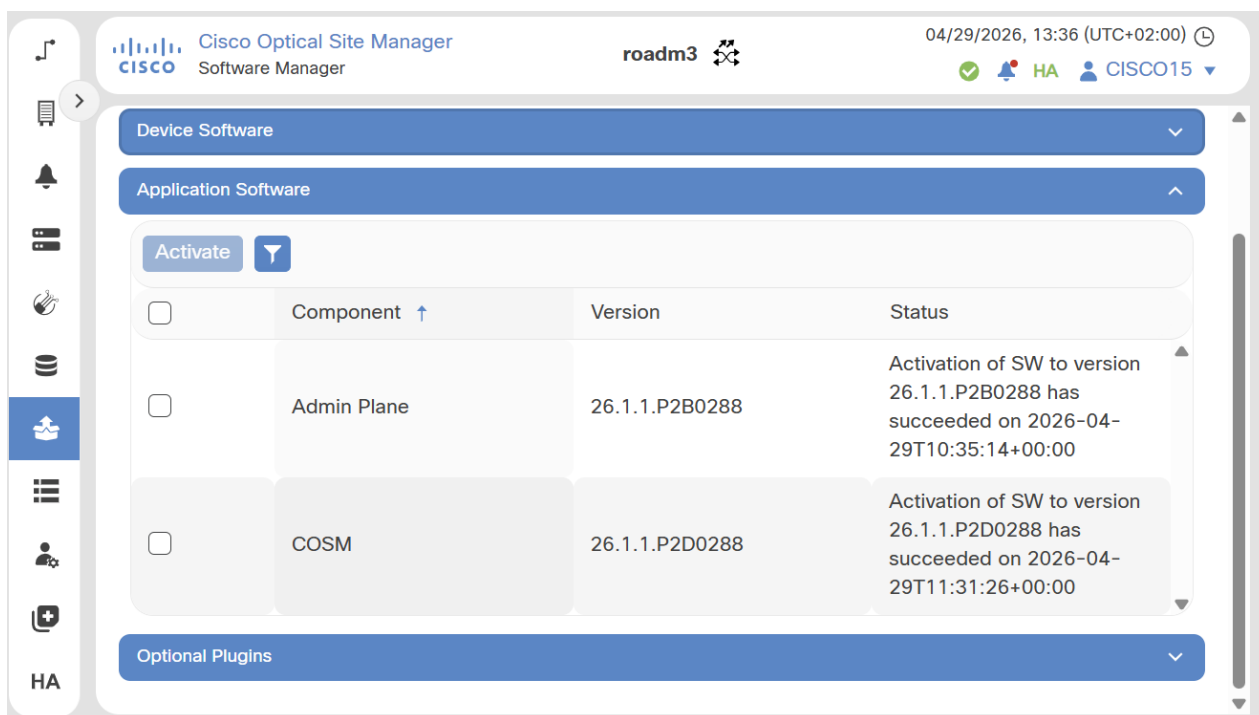
6. Confirm the activation.
7. Monitor the instance status during the upgrade.

The Cisco Optical Site Manager instance upgrade completes successfully, and each instance returns to the RUNNING state with the application state UP.

The software version is updated, and the devices are in the sync-completed state.

No critical alarms are present.

Figure 76: Activate Cisco Optical Site Manager instance success



Upgrade NCS 2000 nodes from 25.x to 26.x

Upgrade NCS 2000 node software after Cisco Optical Site Manager is ready so device packages can be distributed, activated, and verified through managed workflows.

Use this topic to upgrade NCS 2000 node software from 25.x to 26.x after Cisco Optical Site Manager is ready. Use Software Image Management and Upgrade or Cisco Optical Site Manager web UI workflows to distribute, activate, and verify the device software.

NCS 2000 node upgrade workflow

This table helps you choose the workflow for upgrading NCS 2000 device software after Cisco Optical Site Manager is upgraded and operational.

Upgrade scenario	Upgrade approach	Required tasks
NCS 2000 upgrade using SWIMU	Distribute the NCS 2000 software package to the target group and activate the package from Cisco Optical Network Controller.	Create an NCS 2000 image distribution job in SWIMU. Create NCS 2000 image activation jobs in SWIMU.
NCS 2000 upgrade using the Cisco Optical Site Manager web UI	Download and activate the NCS 2000 software package directly from Cisco Optical Site Manager.	Download the device software package to NCS 2000 devices from the Cisco Optical Site Manager. Activate NCS 2000 software in Cisco Optical Site Manager web UI.

Create an NCS 2000 image distribution job in SWIMU

Create a device image distribution job to copy the NCS 2000 software package to the selected target group before activation.

Distribute the NCS 2000 software package from Cisco Optical Site Manager to the target NCS 2000 node group before activation.

Before you begin

- Verify that the Cisco Optical Site Manager 2000 26.x ISO image is available on the Cisco Optical Site Manager instance.
- Verify that the Cisco Optical Site Manager 2000 .iso contains the NCS 2000 software package.

Follow these steps to create an NCS 2000 image distribution job in SWIMU.

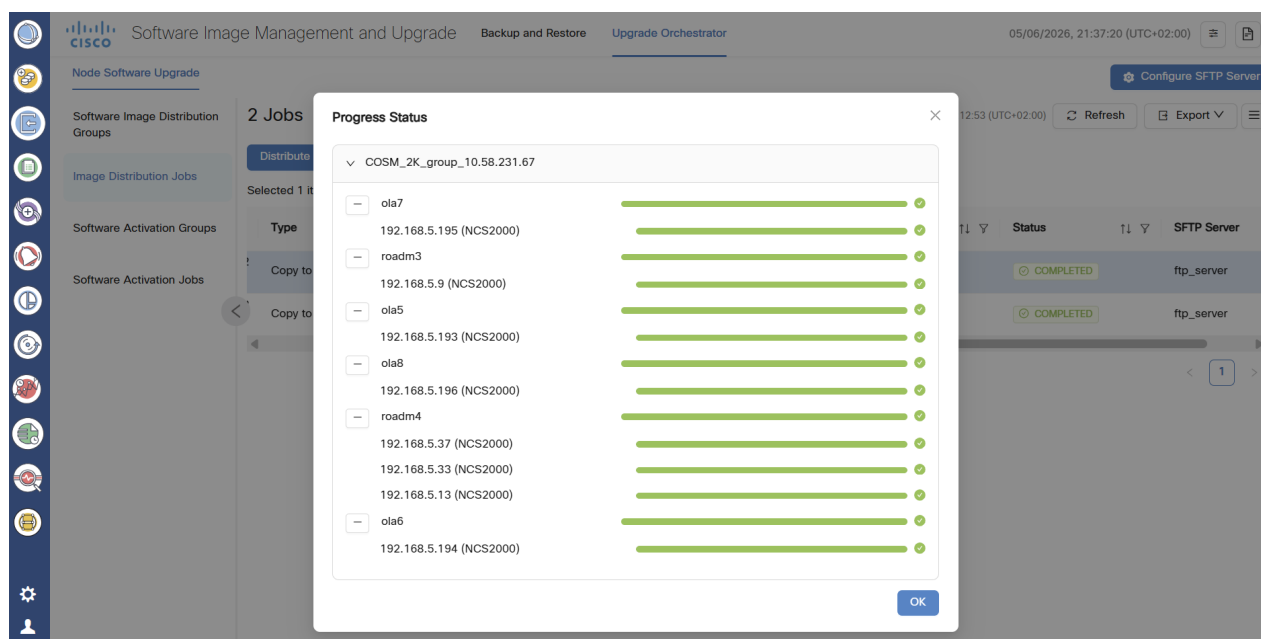
Procedure

1. In Cisco Optical Network Controller, open the SWIMU application.
2. Open **Upgrade Orchestrator**.
3. Choose **Node Software Upgrade > Image Distribution Jobs**.
4. Click **Distribute Image**.
5. Select the target Group (only group is possible, single Cisco Optical Site Manager instance can't be selected).
6. Confirm and start the job.

For image distribution group and job details, see [Orchestrate software upgrades](#).

Job start and ends with COMPLETED

Figure 77: Cisco Optical Network Controller SWIMU image distribution: Job completed



Create NCS 2000 image activation jobs in SWIMU

Create activation jobs for NCS 2000 device images and schedule activation for selected devices or planned maintenance windows during network upgrades.

Activate the previously distributed *.pkg software image on the target NCS 2000 Device.



Note

Activation can temporarily impact system manageability and services. The activation process can be executed for a single node or at group level.

Before you begin

- The software image is distributed to all target nodes.
- No critical alarms are present on Cisco Optical Site Manager instances.
- Target nodes are operationally stable.
- A maintenance window is defined, if required.

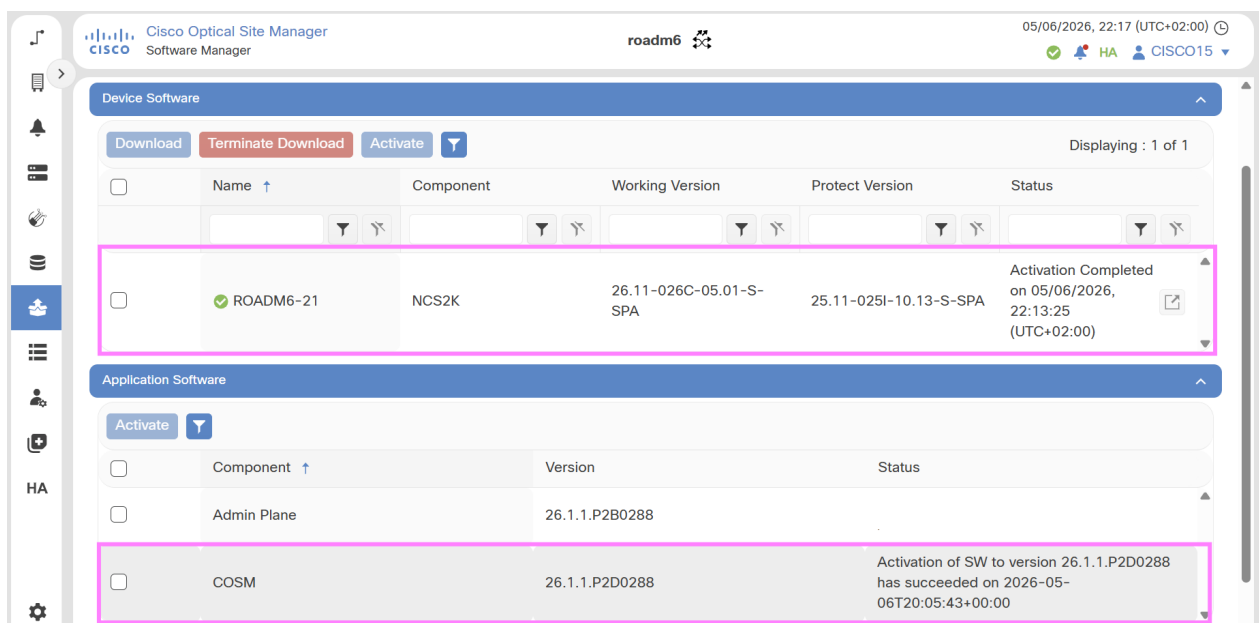
Follow these steps to create NCS 2000 image activation jobs in SWIMU.

Procedure

1. In Cisco Optical Network Controller, open the SWIMU application.
2. Choose **Upgrade Orchestrator > Software Activation Jobs**.
3. Click **Create Activation Job** (or equivalent action).
4. Select the target NCS 2000 Device (recommended to activate one by one).
For software activation group and job details, see [Orchestrate software upgrades](#).
5. Select the previously distributed software image.
6. Configure job scheduling:
7. Run immediately.
8. Schedule for a maintenance window.

The software activation process is successfully initiated on target NCS 2000 device.

Figure 78: SWIMU NCS 2000 software activation success



What to do next

- Monitor the activation job continuously until completion.
- Resolve the issue and rerun the job if activation fails.

Download the device software package to NCS 2000 devices from the Cisco Optical Site Manager

Transfer the software package from the Cisco Optical Site Manager repository to selected NCS 2000 devices before software activation begins.

Transfer the software package from the Cisco Optical Site Manager Software Manager repository to the target NCS 2000 devices.

Before you begin

- The Cisco Optical Site Manager software package (*.iso) is downloaded to Cisco Optical Site Manager.
- The Cisco Optical Site Manager instance and devices are reachable.
- Devices are in the **sync-completed** state.
- No critical alarms are present.

Follow these steps to download the device software package to NCS 2000 devices from Cisco Optical Site Manager.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Device Software**.
3. Identify the target NCS 2000 devices in the device list.
4. Select one or more target devices.
5. Click **Download**.
6. Select the desired software package from the list.

For the supporting workflow, see: [Download software package on device](#).

7. Confirm the operation.

8. Monitor the download progress in the **Status** column until the package reaches 100 percent.

The software package is successfully transferred to the selected NCS 2000 devices.

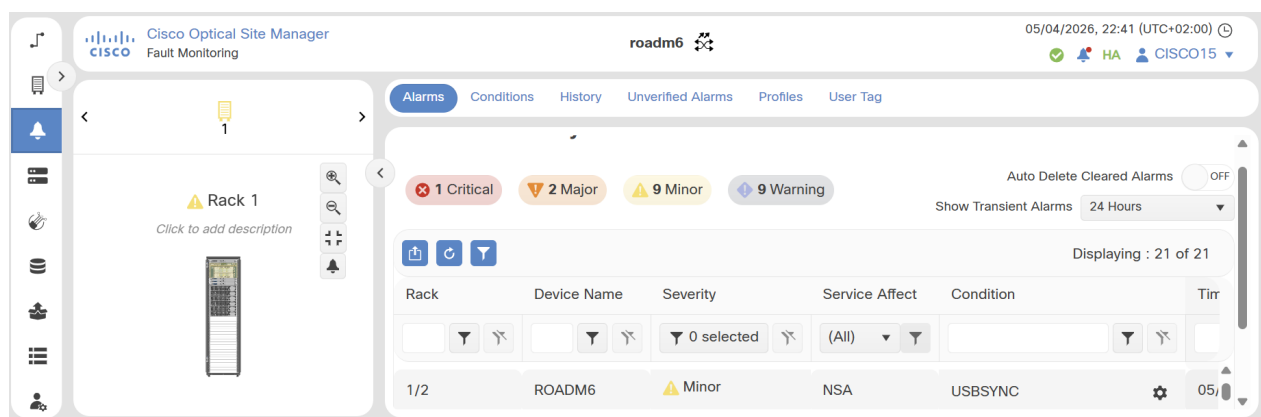
Download completed means that software is transferred to NCS 2000, but USBSYNC is still outstanding



Note

Download progress is displayed for each device. Download time depends on image size and network conditions.

Figure 79: Cisco Optical Site Manager web UI NCS 2000 software download completed



What to do next

- Verify that the software package is downloaded from Cisco Optical Site Manager to each selected device.
- Verify that all relevant devices were selected in HA configurations.
- Verify connectivity and retry the operation if the download fails.

Activate NCS 2000 software in Cisco Optical Site Manager web UI

Activate the downloaded software package on NCS 2000 devices and monitor the operation until device upgrade status is complete in the workflow.

Activate the software on NCS 2000 devices to complete the upgrade process.

Before you begin

- The software package is downloaded to the target NCS 2000 devices.
- Devices are reachable and stable.
- No critical alarms are present.
- A maintenance window is available.

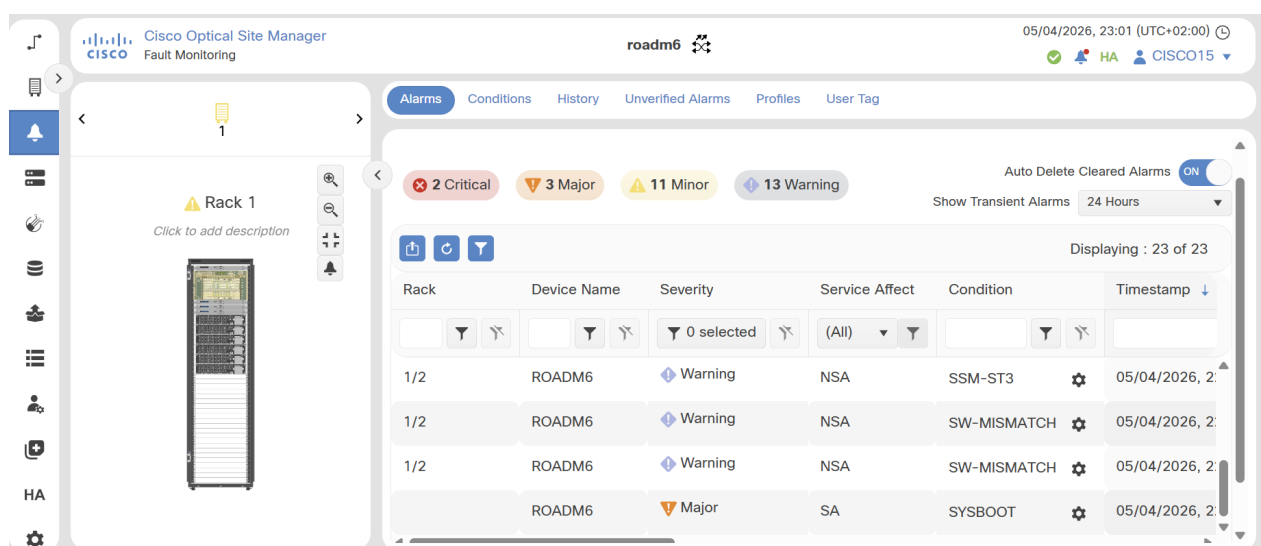
Follow these steps to activate NCS 2000 software in Cisco Optical Site Manager web UI.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Device Software**.
3. Select the target NCS 2000 devices.
4. Click **Activate**.
5. Select the software image to be activated.
Use this reference section for the task: [Activate NCS 1000 and NCS 2000 device software](#).
6. Confirm the activation.
7. Monitor the activation status in the **Status** column.

Cisco Optical Site Manager shows that the software update is complete. The node is not ready for further commands. Wait until the status changes to **SYSBOOT CLEAR**.

Figure 80: Activate NCS 2000 software: Complete



What to do next

- Verify that the device software version is updated correctly.
- Verify that the devices return to the operational state.
- Verify that the device status is **sync-completed** in Cisco Optical Site Manager.
- Verify that no critical alarms are present.

Upgrade NCS 1000 devices

Review how NCS 1000 transponder upgrades fit into an NCS 2000 network managed through Cisco Optical Site Manager during upgrade planning.

Use this topic to plan NCS 1000 transponder upgrades in an NCS 2000 network managed through Cisco Optical Site Manager. Review when to use the same software distribution and activation workflows used for NCS 2000 devices.

NCS 1000 device upgrade workflow

In an NCS 2000 network, NCS 1000 transponder devices are managed through the Cisco Optical Site Manager instance associated onboarding its ROADM.

The NCS 1000 upgrade can be performed using the same workflow adopted for NCS 2000 devices. This requires downloading the Cisco Optical Site Manager 1000 software package and executing the software distribution and activation steps on the target NCS 1000 devices.

The upgrade can be performed using:

- SWIMU, for centralized orchestration via Cisco Optical Network Controller.
- Cisco Optical Site Manager web UI, for manual execution.

5 Manage NCS 1000 transponders in an NCS 2000 GMPLS network

Topics:

- [NCS 1000 transponder management workflow](#)
- [Prepare NCS 1000 transponders](#)
- [Onboard NCS 1000 transponders in Cisco Optical Site Manager](#)
- [Configure IPC and LMP connectivity](#)

This chapter describes how NCS 1000 transponders are prepared, onboarded, connected through IPC and LMP, and managed in an NCS 2000 GMPLS network.

Manage NCS 1000 transponders in an NCS 2000 GMPLS network

NCS 1000 transponder management workflow

This section introduces the workflow for integrating NCS 1000 transponder devices into an NCS 2000 network managed by Cisco Optical Site Manager GMPLS.

This section provides the procedures to integrate NCS 1000 transponders, such as Cisco NCS 1014 and Cisco NCS 1004 devices, into an existing NCS 2000 network managed by Cisco Optical Site Manager GMPLS.

NCS 1000 transponder integration context



Note

This chapter describes how to manage GMPLS circuits in an NCS 2000 network with NCS 1000 transponders using Cisco Optical Network Controller/Cisco Optical Site Manager.

In this 26.x architecture:

- Cisco Optical Site Manager runs only on the SVO card installed in the NCS 2000 ROADM
- NCS 1000 devices are added as additional devices within the Cisco Optical Site Manager instance onboarding its ROADM
- Cisco NCS 1014 requires at least XR Release 25.1.1 and Cisco NCS 1004 at least 24.3.1.

The procedures apply to these scenarios:

- network transition (11.x -> 26.x)
- addition of NCS 1000 transponder nodes after initial Cisco Optical Site Manager deployment in 26.x

The NCS 1000 device integration includes these workflows:

- Prepare the device by verifying software and connectivity.
- Onboard the device in Cisco Optical Site Manager by configuring the authentication group, adding the device, and configuring device networking.
- Configure internal connectivity by setting up IPC and LMP.

Cisco NCS 1004 and Cisco NCS 1014 operate with different transponder working modes:

- Cisco NCS 1004 operates in RSVP mode, where NCS 2000 directly interacts with Cisco NCS 1004 for frequency configuration.
- Cisco NCS 1014 operates in controller mode. In this mode, there is no direct interaction between the NCS 2000 ROADM and Cisco NCS 1014, and Cisco Optical Site Manager is responsible for circuit frequency configuration.

These line cards are supported for every chassis type.

Table 14: NCS 1000 transponder support per chassis type

Line Cards	Cisco NCS 1014	Cisco NCS 1004
Transponder working mode	Controller	RSVP
NCS 10004-1.2T-K9		X
NCS 10004-2-QDD-C-K9		X

NCS 10004-OTN-XP		X
NCS 10004-QXP-K9	X	X
NCS 100014-2.4T-X-K9	X	

Prepare NCS 1000 transponders

Prepare NCS 1000 transponders by verifying software, line card state, IP reachability, SSH access, and NETCONF access before onboarding activities.

Use this topic to prepare NCS 1000 transponders before onboarding. Verify software, line card state, IP reachability, SSH access, and NETCONF access so Cisco Optical Site Manager can manage the devices.

Verify NCS 1000 TXP software and line card configuration

Verify that Cisco NCS 1004 or Cisco NCS 1014 devices run supported software and have operational line card configuration before onboarding.

Verify that the Cisco NCS 1014/Cisco NCS 1004 device is operational and running a supported software release before onboarding into Cisco Optical Site Manager.



Note

For Cisco NCS 1004 transponders, trunk ports must be in the **In-Service** state instead of the **Shutdown** state when you create OCH-Trail or OCH-CC circuits. If the ports are in the **Shutdown** state, the provisioning process fails to bring up the trunk. Deleting the circuit does not automatically revert the ports to **Shutdown** state. This behavior is tracked with CSCwv28271.

Before you begin

- The NCS 1000 TXP device is powered on and accessible.
- CLI access to the device is available.

Follow these steps to verify NCS 1000 TXP software and line card configuration.

Procedure

1. Verify software version.
2. Access the device via CLI.
3. Execute the appropriate command (e.g., show version).
4. Confirm that: Cisco NCS 1014 is running a supported release (at least XR release 25.1.1) or Cisco NCS 1004 is running a supported release (e.g., 24.3.x or later).

Figure 81: Cisco NCS 1014 software version verification

```

RP/0/RP0/CPU0:NCS1014_61#show ver
Wed Apr 22 12:54:29.996 UTC
Cisco IOS XR Software, Version 25.1.1 LNT
Copyright (c) 2013-2025 by Cisco Systems, Inc.

Build Information:
  Built By       : sajjshah
  Built On       : Wed Apr 02 03:08:47 UTC 2025
  Build Host     : iox-ucs-037
  Workspace      : /auto/srcarchive12/prod/25.1.1/ncs1010/ws
  Version        : 25.1.1
  Label          : 25.1.1

cisco NCS1010 (C3758R @ 2.40GHz)
cisco NCS1014 (C3758R @ 2.40GHz) processor with 32GB of memory
NCS1014_61 uptime is 15 weeks, 4 hours, 8 minutes
NCS 1014 - Chassis
RP/0/RP0/CPU0:NCS1014_61#

```

5. Verify device and line card operational status.
6. Ensure the device is fully operational.
7. Verify that no critical alarms are present.
8. Verify that all line cards are in OPERATIONAL state.
9. Verify line card configuration.
10. Confirm that the required line cards are correctly configured.

This figure shows an example of Cisco NCS 1014 NCS 10004-QXP-K9 line card configuration.

Figure 82: Line card configuration verification

```

hw-module location 0/0/NXR0
mxponder-slice 0
  trunk-rate 400G
  client-port-rate 1 client-type 400GE
!
!

```

-
- Device is reachable via CLI
 - Software version is compliant with Cisco Optical Site Manager requirements
 - All hardware components are operational
 - Line cards are correctly configured

What to do next

- Configure card mode in the Cisco Optical Site Manager web UI after NCS 1000 onboarding, if needed.
- Verify that Cisco NCS 1004 trunk ports are not shut down.
- Put the trunk controller in the **IS** or **OOS** state from the Cisco Optical Site Manager web UI after NCS 1000 onboarding, if needed.

Configure connectivity and access

Check management reachability and enable SSH and NETCONF access so Cisco Optical Site Manager can onboard and synchronize the NCS 1000 device.

Verify IP reachability of the NCS 1000 device and enable required access protocols (SSH and NETCONF) for Cisco Optical Site Manager onboarding.

 Note

NETCONF on port 830 is mandatory for Cisco Optical Site Manager onboarding.

Before you begin

- The device is powered on and operational.
- The management IP address is configured.

Follow these steps to configure connectivity and access.

Procedure

1. Verify IP Reachability.
2. From the Cisco Optical Site Manager management network, verify that the device IP address is reachable (e.g., ping test).
3. Enable SSH access and NETCONF access.
4. Access the device via CLI.
5. Configure SSH access if not already enabled.
6. Enable NETCONF if not already enabled.
7. Refer to the Cisco Optical Site Manager Installation Guide for NETCONF over SSH configuration on host devices.

Use this reference section for the task: [Enable NETCONF over SSH for secure host device communication](#).

```
netconf-yang agent
ssh
!
yang-server
module-set all
!
```

```
ssh server rate-limit 600
```

Figure 83: NCS 1000 TXP ssh/NETCONF configuration

```
ssh server v2
ssh server netconf vrf default
```

- Device responds to ping from Cisco Optical Site Manager network
- SSH access is available
- NETCONF access is reachable (port 830)
- The device is reachable from Cisco Optical Site Manager and ready for onboarding

What to do next

Verify that firewall rules do not block SSH port 22 and NETCONF port 830.

Onboard NCS 1000 transponders in Cisco Optical Site Manager

Onboard NCS 1000 transponders in Cisco Optical Site Manager by preparing credentials, configuring device gateway access, adding devices, and verifying synchronization.

Use this topic to onboard NCS 1000 transponders in Cisco Optical Site Manager after the devices are prepared. Configure credentials and gateway access, add devices, and verify synchronization with the associated ROADM instance.

NCS 1000 transponder onboarding overview

This workflow describes the onboarding of NCS 1000 transponder devices into an existing Cisco Optical Site Manager instance. The onboarding process includes:

- Configure the authentication group, if required.
- Add the device in Cisco Optical Site Manager.
- Configure device networking.
- Verify device synchronization.

The NCS 1000 device is added as an additional device within the Cisco Optical Site Manager instance onboarding its ROADM.

Perform this workflow after device preparation is complete.

Create NCS 1000 TXP authorization groups

Create authorization groups for NCS 1000 transponder devices so Cisco Optical Site Manager can authenticate during onboarding and later synchronization.

Create an authorization group for the NCS 1000 device.

This procedure is required only if the NCS 1000 device uses credentials that are different from the credentials already configured in Cisco Optical Site Manager.

Before you begin

- The Cisco Optical Site Manager instance is operational.
- Device credentials are available.

Follow these steps to create NCS 1000 TXP authorization groups.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Devices > Devices > Authorization Group**.
3. Open **Username and Password**.
4. Click **+**.
5. Enter:

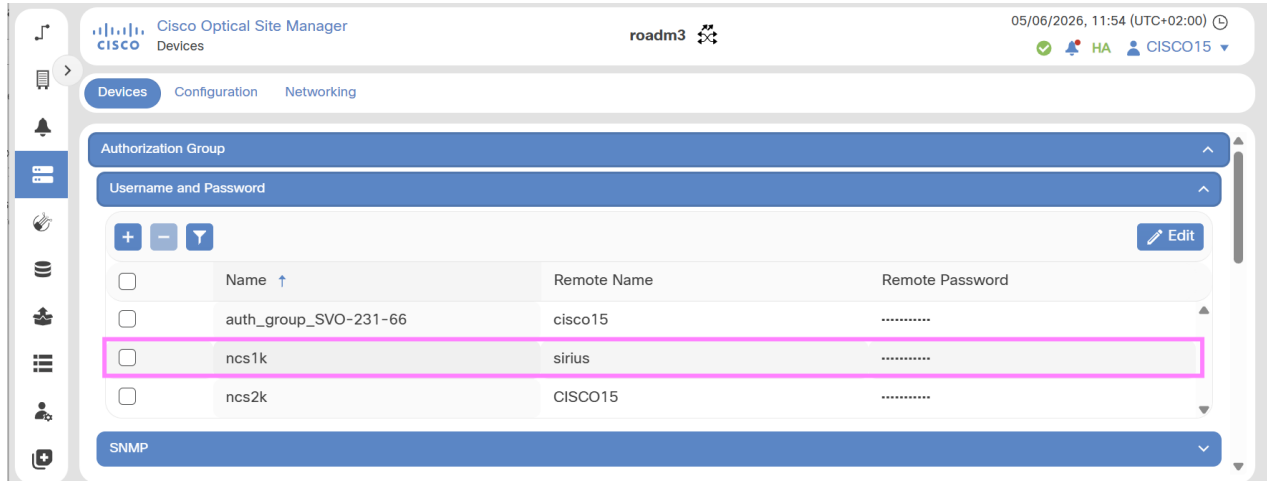
For the supporting workflow, see: [Create or edit an authorization group](#).

- **Auth Group Name**
- **Remote Username**
- **Remote Password**

- **Save the configuration**

The authorization group is created and visible in the Cisco Optical Site Manager Authorization Group list

Figure 84: Cisco Optical Site Manager web UI - authorization group list



Configure NCS 1000 TXP device networking

Configure the NCS 1000 device gateway in Cisco Optical Site Manager to support management connectivity between the site manager and transponder device.

Configure device gateway parameters to enable communication between Cisco Optical Site Manager and the NCS 1000 device.

This optional setting depends on the DCN. Because enabling the setting has no adverse effect when it is not required, Cisco recommends enabling it as a best practice.

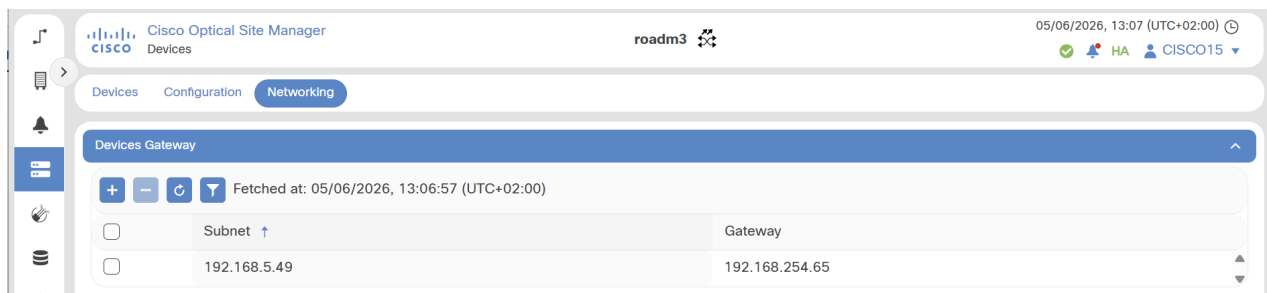
Follow these steps to configure NCS 1000 TXP device networking.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Device > Networking > Devices Gateway**.
3. Click the + button.
4. Enter the required parameters:
 - **Subnet:** <Device IP>
 - **Gateway:** 192.168.254.65 Fixed value

The device gateway is visible in the Cisco Optical Site Manager web UI.

Figure 85: web UI - NCS 1000 TXP device gateway



Onboard NCS 1000 devices

Add Cisco NCS 1004 or Cisco NCS 1014 devices to an existing Cisco Optical Site Manager instance using the planned device type, flavor, and UID values.

Add a Cisco NCS 1014 or Cisco NCS 1004 device to an existing Cisco Optical Site Manager instance. This procedure follows the same onboarding flow as [Onboard devices in Cisco Optical Site Manager](#).



Note

If the first active chassis UID is not specified, Cisco Optical Site Manager automatically assigns the first available UID.

Before you begin

- The Cisco Optical Site Manager instance that onboards the related ROADM is operational.
- The ROADM device is in the **sync-completed, alarm-synchronized** state.
- The NCS 1000 device gateway setting is configured.
- UID planning is complete.

Follow these steps to onboard NCS 1000 devices.

Procedure

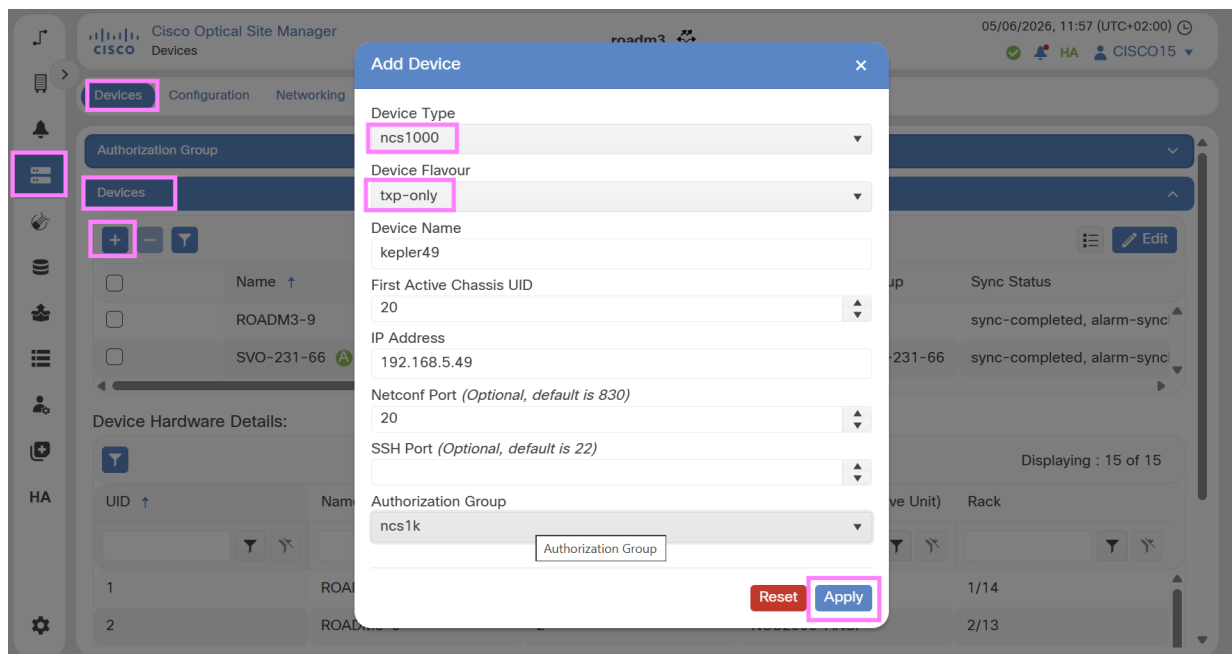
1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Devices** > **Devices**.
3. Click the + button.
4. Enter the required parameters:

Use this Cisco procedure for the complete workflow: [Add a device](#).

- **Device Type:** ncs1000
- **Device Flavour:** txp-only
- **NCS 1000 Device Name**
- **NCS 1000 IP Address**
- **NCS 1000 Authorization Group**
- **First Active Chassis UID as per UID planning**

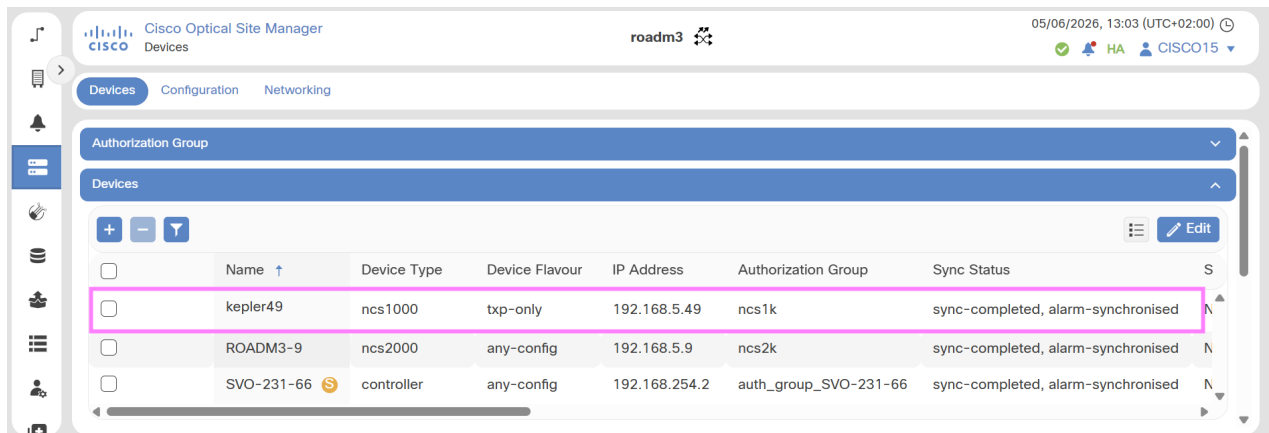
5. Click **Add** to start the onboarding process.

Figure 86: Cisco Optical Site Manager web UI - add NCS 1000 device



Device appears in the Cisco Optical Site Manager device list

Figure 87: Cisco Optical Site Manager web UI - NCS 1000 "sync-not-started"



What to do next

- Delete and add the device again if the device type, device flavor, device name, or UID is incorrect.
- Adjust the device placement in the rack from the Cisco Optical Site Manager web UI, if needed.

Verify device synchronization

Verify that the NCS 1000 device reaches synchronized status in Cisco Optical Site Manager before configuring optical connectivity or circuit workflows.

Verify that the NCS 1000 device is correctly onboarded and synchronized.

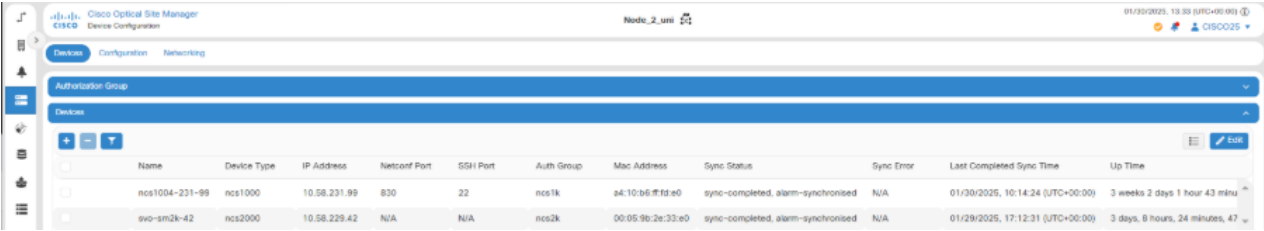
Follow these steps to verify device synchronization.

Procedure

- 1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
- 2. Choose **Devices > Devices > Devices**.
- 3. Check Sync Status column.

The device is fully synchronized and operational in Cisco Optical Site Manager with Sync Status = "sync-completed, alarm-synchronized"

Figure 88: NCS 1000 synchronized



What to do next

- Verify the credentials, connectivity, and NETCONF configuration if synchronization fails.

Configure IPC and LMP connectivity

Configure internal patch cords and Link Management Protocol settings to establish optical connectivity between NCS 1000 transponders and their ROADM sites.

Use this topic to configure IPC and LMP connectivity between NCS 1000 transponders and the hosting NCS 2000 ROADM site. Use the scenario matrix to select the required internal patch cord and LMP actions.

IPC and LMP connectivity overview

This workflow enables internal optical connectivity between the NCS 1000 transponder and the hosting ROADM node by configuring IPC and LMP. Incorrect configuration may result in connectivity or circuit provisioning issues.

Deployment scenarios and configuration matrix

The IPC and LMP configuration depend on:

- device type (Cisco NCS 1014 or Cisco NCS 1004)
- deployment scenario (upgrade from 11.x or new deployment in 26.x)

This table summarizes the required IPC and LMP actions for each deployment scenario.

Table 15: NCS 1000 IPC and LMP deployment scenarios

Device Type	Scenario	IPC Action	LMP Action
Cisco NCS 1014	Upgrade 11.x	Create	Modify Controller mode

Cisco NCS 1004	Upgrade 11.x	Automatic (no action required)	No action required
Cisco NCS 1014	New (26.x)	Create	Create (Controller mode)
Cisco NCS 1004	New (26.x)	Create	Create (RSVP mode)

Configure internal patch cords to NCS 1000 TXPs in Cisco Optical Site Manager web UI

Create internal patch cords between ROADM add/drop ports and NCS 1000 trunk ports so Cisco Optical Site Manager can model the optical connection.

Configure internal patchcords (IPC) between the ROADM and the Cisco NCS 1004/Cisco NCS 1014 transponder to enable optical connectivity.

This procedure applies to Cisco NCS 1004 and Cisco NCS 1014 devices for the scenarios listed in the [NCS 1000 IPC and LMP deployment scenarios](#) table.

Before you begin

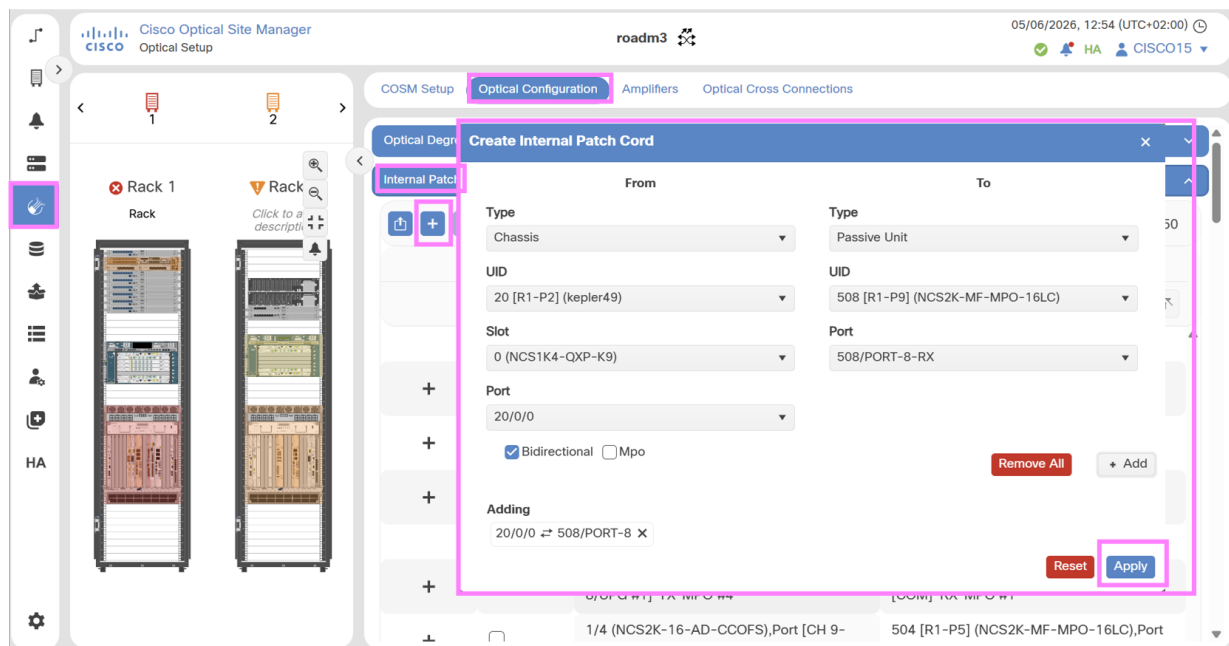
- The NCS 1000 device is onboarded and in the **sync-completed** state.
- The ROADM node is fully configured and synchronized.
- Line card configuration and card mode verification are complete.
- The deployment scenario has been identified.

Follow these steps to configure internal patch cords to NCS 1000 TXPs in Cisco Optical Site Manager web UI.

Procedure

1. Access the Cisco Optical Site Manager web UI.
2. Choose **Optical Setup > Optical Configuration**.
3. Choose **Optical Configuration > Internal Patchcords**.
4. Click + to create a new IPC.
5. Select the endpoints:
6. ROADM add/drop port.
7. NCS 1000 trunk port.
8. Confirm the configuration.

Figure 89: IPC configuration



- IPC connections are visible in Cisco Optical Site Manager
- Optical connectivity between ROADM and NCS 1000 is established
- No connectivity-related alarms are present

Figure 90: Cisco Optical Site Manager web UI - IPC connection list

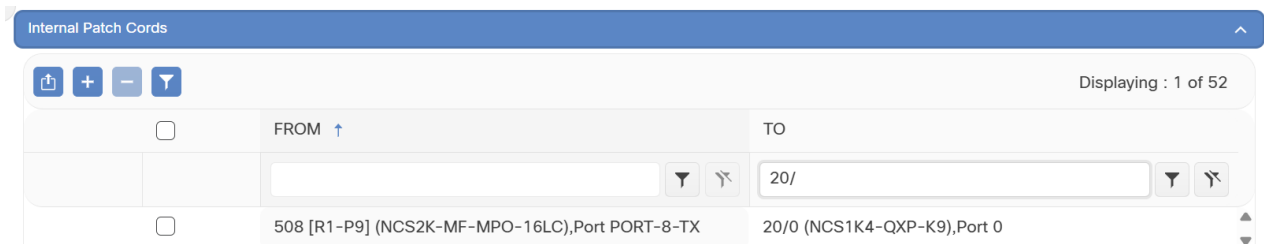
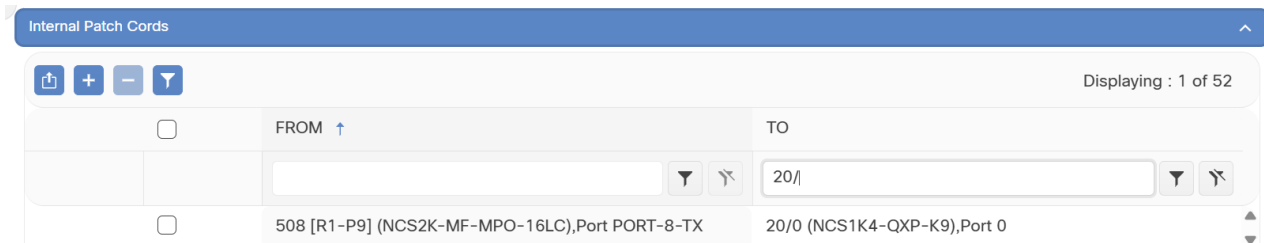


Figure 91: Cisco Optical Site Manager web UI - IPC Cisco Optical Site Manager



Edit LMP for Cisco NCS 1014 after upgrade from 11.x to 26.x

Update existing Cisco NCS 1014 LMP settings after an 11.x to 26.x upgrade so controller-mode circuit management is available after synchronization.

Update the existing LMP configuration for Cisco NCS 1014 devices after upgrade from release 11.x to enable circuit management in Cisco Optical Site Manager.

This procedure applies only to Cisco NCS 1014 devices upgraded from release 11.x.

Before you begin

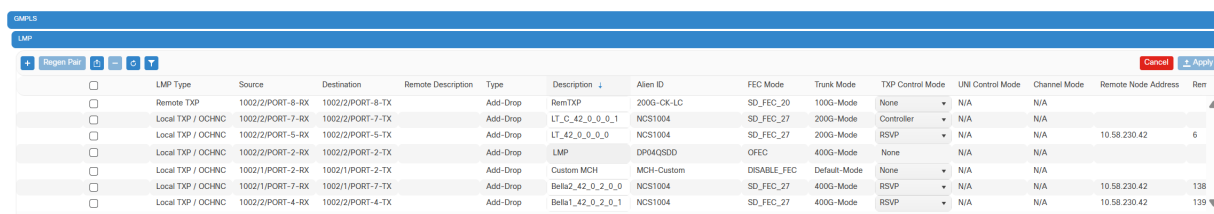
- An OCHNC circuit is already present.
- The associated LMP is discovered with **TXP Control Mode** set to **None**.
- The NCS 1000 device is onboarded and in the **sync-completed** state.
- The existing LMP is visible in Cisco Optical Site Manager.

Follow these steps to edit LMP for Cisco NCS 1014 after upgrade from 11.x to 26.x.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Optical Setup > Optical Configuration**.
3. Choose **GMPLS > LMP**.
4. Identify the existing LMP associated with the Cisco NCS 1014 device.

Figure 92: LMP automatic created with TXP control mode "none"



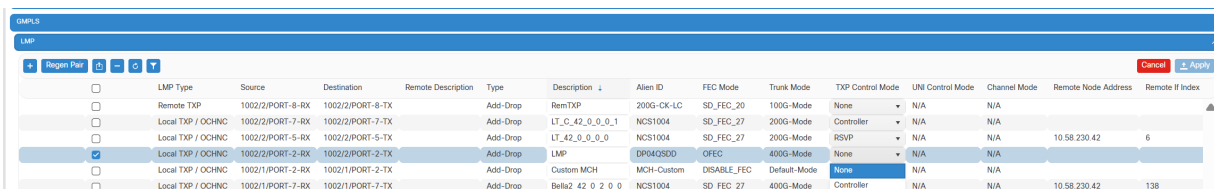
	LMP Type	Source	Destination	Remote Description	Type	Description	Alias ID	FEC Mode	Trunk Mode	TXP Control Mode	UNI Control Mode	Channel Mode	Remote Node Address	Rem
☐	Remote TXP	1002/2/PORT-8-RX	1002/2/PORT-8-TX		Add-Drop	RemTXP	200G-CK-LC	SD_FEC_20	100G-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/2/PORT-7-RX	1002/2/PORT-7-TX		Add-Drop	LT_C_42_0_0_0_1	NCS1004	SD_FEC_27	200G-Mode	Controller	N/A	N/A		
☐	Local TXP / OCHNC	1002/2/PORT-5-RX	1002/2/PORT-5-TX		Add-Drop	LT_42_0_0_0_0	NCS1004	SD_FEC_27	200G-Mode	RSVP	N/A	N/A	10.58.230.42	6
☐	Local TXP / OCHNC	1002/2/PORT-2-RX	1002/2/PORT-2-TX		Add-Drop	LMP	DP0402SD0	OFEK	400G-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/1/PORT-2-RX	1002/1/PORT-2-TX		Add-Drop	Custom MCH	MCH-Custom	DISABLE_FEC	Default-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/1/PORT-7-RX	1002/1/PORT-7-TX		Add-Drop	Bella2_42_0_2_0_0	NCS1004	SD_FEC_27	400G-Mode	RSVP	N/A	N/A	10.58.230.42	138
☐	Local TXP / OCHNC	1002/2/PORT-4-RX	1002/2/PORT-4-TX		Add-Drop	Bella1_42_0_2_0_1	NCS1004	SD_FEC_27	400G-Mode	RSVP	N/A	N/A	10.58.230.42	139

5. Edit the LMP configuration.

The product workflow is documented in: [Static Link Management Protocol link for GMPLS](#).

6. Change TXP Control Mode from **None** to **Controller**.
7. Apply the configuration.

Figure 93: LMP TXP control mode editing from "none" to "controller"



	LMP Type	Source	Destination	Remote Description	Type	Description	Alias ID	FEC Mode	Trunk Mode	TXP Control Mode	UNI Control Mode	Channel Mode	Remote Node Address	Remote If Index
☐	Remote TXP	1002/2/PORT-8-RX	1002/2/PORT-8-TX		Add-Drop	RemTXP	200G-CK-LC	SD_FEC_20	100G-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/2/PORT-7-RX	1002/2/PORT-7-TX		Add-Drop	LT_C_42_0_0_0_1	NCS1004	SD_FEC_27	200G-Mode	Controller	N/A	N/A		
☐	Local TXP / OCHNC	1002/2/PORT-5-RX	1002/2/PORT-5-TX		Add-Drop	LT_42_0_0_0_0	NCS1004	SD_FEC_27	200G-Mode	RSVP	N/A	N/A	10.58.230.42	6
☒	Local TXP / OCHNC	1002/2/PORT-2-RX	1002/2/PORT-2-TX		Add-Drop	LMP	DP0402SD0	OFEK	400G-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/1/PORT-2-RX	1002/1/PORT-2-TX		Add-Drop	Custom MCH	MCH-Custom	DISABLE_FEC	Default-Mode	None	N/A	N/A		
☐	Local TXP / OCHNC	1002/1/PORT-7-RX	1002/1/PORT-7-TX		Add-Drop	Bella2_42_0_2_0_0	NCS1004	SD_FEC_27	400G-Mode	Controller	N/A	N/A	10.58.230.42	138

- LMP is updated and visible in Cisco Optical Site Manager
- TXP Control Mode is set to "Controller"

Run LMP auto discovery for Cisco NCS 1004 after upgrade from 11.x to 26.x

Run or verify LMP auto discovery for Cisco NCS 1004 devices after upgrade so RSVP mode connectivity is available for circuit operations.

Check that Cisco NCS 1004 devices LMP are auto discovered after upgrade from release 11.x

This procedure applies only to Cisco NCS 1004 devices upgraded from release 11.x.

- Line card configuration and card mode verification are complete.
- IPC configuration is complete.
- Required design parameters, such as Alien ID, trunk mode, and FEC mode, are available.

Follow these steps to create LMP for Cisco NCS 1014 in controller mode.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Optical Setup > Optical Configuration**.
3. Choose **GMPLS > LMP**.
4. Click **+** and select **Local TXP / OCHNC**.
5. Set these parameters:

Use the related Cisco task: [Static Link Management Protocol link for GMPLS](#).

- **TXP Control Mode:** Controller
- **Alien ID**
- **Trunk Mode**
- **FEC Mode**

6. Select ROADM add/drop ports corresponding to the Cisco NCS 1014 trunk ports.
7. Review optical parameters and endpoints, and click **Finish** to complete the configuration.

The LMP is successfully created in Controller mode

Figure 95: LMP create success

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What to do next

- Align the IPC configuration with the LMP configuration.

Create LMP for Cisco NCS 1004 in RSVP mode

Create an LMP configuration for Cisco NCS 1004 RSVP mode so the transponder can be associated with the correct ROADM add/drop ports.

Create an LMP (Link Management Protocol) configuration with TXP Control Mode = RSVP Mode for Cisco NCS 1004.

Use this procedure for Cisco NCS 1004 devices in new deployment scenarios for release 25.1.1 or later.

The procedure applies to these line cards: NCS 10004-1.2T-K9, NCS 10004-2-QDD-C-K9, NCS 10004-OTN-XP, and NCS 10004-QXP-K9.

Note

This procedure is not applicable to Cisco NCS 1014 devices. Incorrect parameters can prevent circuit establishment.

Before you begin

- The NCS 1000 device is onboarded and in the **sync-completed** state.
- Required design parameters, such as Alien ID, trunk mode, and FEC mode, are available.
- NCS 1000 remote node information, such as IP address and interface index, is available.
- The interface index is available. To retrieve it, use the `show snmp interface Optics 0/0/0/0 ifindex` command.

Follow these steps to create LMP for Cisco NCS 1004 in RSVP mode.

Procedure

1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Optical Setup > Optical Configuration**.
3. Choose **GMPLS > LMP**.
4. Click **+** and select **Local TXP / OCHNC**.
5. Set these parameters:

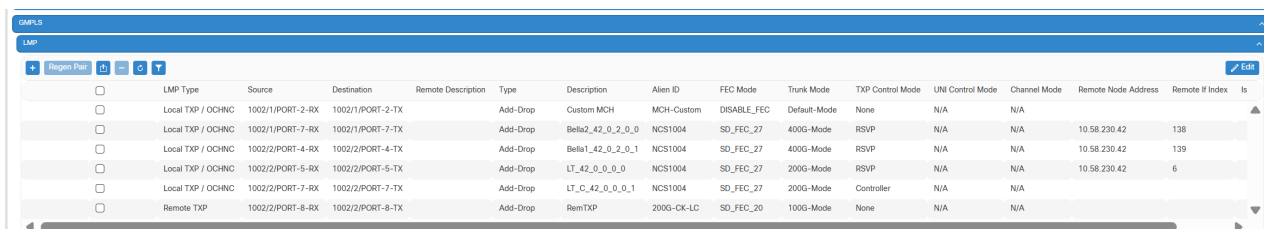
See the Cisco documentation section: [Static Link Management Protocol link for GMPLS](#).

- **TXP Control Mode:** RSVP (GMPLS)
- **Alien ID**
- **Trunk Mode**
- **FEC Mode**
- **Remote Node Address** (Cisco NCS 1004 IP address)
- **Remote Interface Index** (e.g., 0/0/0/0)

6. Select ROADM add/drop ports corresponding to the Cisco NCS 1004 trunk ports.
7. Review optical parameters and endpoints, and click **Finish** to complete the configuration.

A new LMP entry is visible in the LMP panel

Figure 96: LMP create success



	LMP Type	Source	Destination	Remote Description	Type	Description	Alien ID	FEC Mode	Trunk Mode	TXP Control Mode	UNI Control Mode	Channel Mode	Remote Node Address	Remote If Index	Is
☐	Local TXP / OCHNC	1002/1/PORT-2-RX	1002/1/PORT-2-TX		Add-Drop	Custom MCH	MCH-Custom	DISABLE_FEC	Default-Mode	None	N/A	N/A			
☐	Local TXP / OCHNC	1002/1/PORT-7-RX	1002/1/PORT-7-TX		Add-Drop	Bella2_42_0_2_0_0	NCS1004	SD_FEC_27	400G-Mode	RSVP	N/A	N/A	10.58.230.42	138	
☐	Local TXP / OCHNC	1002/2/PORT-4-RX	1002/2/PORT-4-TX		Add-Drop	Bella1_42_0_2_0_1	NCS1004	SD_FEC_27	400G-Mode	RSVP	N/A	N/A	10.58.230.42	139	
☐	Local TXP / OCHNC	1002/2/PORT-5-RX	1002/2/PORT-5-TX		Add-Drop	LT_42_0_0_0_0	NCS1004	SD_FEC_27	200G-Mode	RSVP	N/A	N/A	10.58.230.42	6	
☐	Local TXP / OCHNC	1002/2/PORT-7-RX	1002/2/PORT-7-TX		Add-Drop	LT_C_42_0_0_0_1	NCS1004	SD_FEC_27	200G-Mode	Controller	N/A	N/A			
☐	Remote TXP	1002/2/PORT-8-RX	1002/2/PORT-8-TX		Add-Drop	RemTXP	200G-CK-LC	SD_FEC_20	100G-Mode	None	N/A	N/A			

On Cisco NCS 1004 the command "show run lmp" shows that LMP has been correctly configured.



Note

After creating a GMPLS circuit through Cisco Optical Network Controller, the expected `dwdm-carrier 100MHz frequency . . .` line does not appear in the IOS XR CLI `show running-config` output, even though the frequency is correctly applied. This behavior is by design for GMPLS circuits.

What to do next

- Verify that **Remote Node Address** and **Interface Index** are correctly configured.

6 Maintain Cisco Optical Site Manager for NCS 2000 networks

Topics:

- [Cisco Optical Site Manager maintenance scope](#)
- [Cisco Optical Site Manager maintenance guidelines](#)
- [Recover Cisco Optical Site Manager](#)
- [Modify NCS 2000 networks managed by Cisco Optical Site Manager](#)
- [Troubleshoot Cisco Optical Site Manager onboarding issues](#)

This chapter supports maintenance of Cisco Optical Site Manager-managed NCS 2000 networks through recovery, re-onboarding, lock/unlock, network modification, and troubleshooting procedures.

Maintain Cisco Optical Site Manager for NCS 2000 networks

Cisco Optical Site Manager maintenance scope

This section defines the scope of Cisco Optical Site Manager maintenance tasks for NCS 2000 networks after deployment and onboarding are complete.

This section provides maintenance procedures for managing the NCS 2000 network after deployment.

Maintenance operation scope

It includes operations related to:

- recovery (Cisco Optical Site Manager rollback and re-creation)
- device deletion and re-onboarding
- network expansion and modification
- troubleshooting of common issues

These procedures should be performed only when necessary and with proper validation, as they may impact system stability and network management.

Cisco Optical Site Manager maintenance guidelines

Review maintenance prerequisites and operating guidelines before changing Cisco Optical Site Manager instances or managed NCS 2000 devices during maintenance activities.

Review these prerequisites and guidelines before executing maintenance procedures.

Cisco Optical Site Manager maintenance prerequisites

Satisfy these prerequisites before executing any maintenance procedures:

- Always preserve a valid backup of the 25.x database before upgrading to release 26.x.
- In release 26.x, maintain regularly updated backups of both the Cisco Optical Site Manager database and XML configuration files.

General guidelines

Follow these guidelines during maintenance operations:

- Execute maintenance procedures during a planned maintenance window.
- Ensure network connectivity between Cisco Optical Site Manager, Cisco Optical Network Controller, and all managed devices.
- Verify that no critical alarms are present in Cisco Optical Site Manager or Cisco Optical Network Controller.
- Follow the deployment design defined during the planning phase (e.g., Cisco Optical Site Manager instance mapping, UID allocation).
- Validate each step before proceeding to the next one.
- In case of failure, stop the procedure and resolve the issue before continuing.
- Avoid performing multiple operations in parallel on the same Cisco Optical Site Manager instance.

Recover Cisco Optical Site Manager

This section describes recovery options for Cisco Optical Site Manager, including rollback, re-creation, device re-onboarding, and database restore planning considerations.

Use this topic to recover Cisco Optical Site Manager when rollback, re-creation, re-onboarding, or database restore activities are required. Review the available recovery paths before performing maintenance tasks.

Roll back Cisco Optical Site Manager from 26.x to 25.x

Roll back Cisco Optical Site Manager and related components to release 25.1.1 when a controlled recovery scenario requires the earlier release.

Restore the system to release 25.1.1 by rolling back Cisco Optical Site Manager instances and related components.

Important

- Temporary inconsistencies may appear in Cisco Optical Network Controller during the rollback. A manual synchronization may be required.
- Do not attempt to activate Cisco Optical Site Manager 25.1.1 on an instance that is already running 26.x. The operation may fail and leave the system in an inconsistent state.
- Perform this procedure only in controlled conditions, such as lab or recovery scenarios.

Before you begin

- A valid backup of the Cisco Optical Site Manager database from release 25.1.1 is available.
- Valid Cisco Optical Site Manager XML configuration files for releases 25.1.1 and 26.x are available.
- The 25.1.1 package is available in the **Software Package** section.
- The 26.1.1 package is available in the **Software Package** section. This package is required before you activate the card controller to release 25.1.1.

Follow these steps to roll back Cisco Optical Site Manager from 26.x to 25.x.

Procedure

1. (Optional) Access the Cisco Optical Site Manager web UI and activate the Admin Plane to release 25.1.1.
Refer to the product procedure: [Activate Cisco Optical Site Manager and Admin Plane image for the SVO-LC](#).
2. (Optional) Activate the Card Controller to release 25.1.1.
Cisco documents the workflow in: [Activate Cisco Optical Site Manager and Admin Plane image for the SVO-LC](#).
This step to be done in the container with SVO card plugged in.
3. Open https://<ADMIN_PLANE_IP> in a browser to access the Admin Plane web UI.
4. Delete existing Cisco Optical Site Manager instance(s).
Use the related Cisco task: [Delete a Cisco Optical Site Manager instance](#).
5. Create new Cisco Optical Site Manager instance(s) using release 25.1.1.
See the Cisco documentation section: [Create a Cisco Optical Site Manager instance](#).

6. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
7. Upload the XML configuration file (Devices and UID mapping).

The product workflow is documented in: [Import a Cisco Optical Network Planner configuration file](#).

8. Restore the Cisco Optical Site Manager database backup.

Use this reference section for the task: [Upload database](#) and [Restore database](#).

Cisco Optical Site Manager instances are restored to release 25.1.1 and all NCS 2000 and NCS 1000 devices are reachable and in "sync-completed" state.

What to do next

Verify that all devices are synchronized after the restore operation.

Re-create Cisco Optical Site Manager in 26.x

Re-create Cisco Optical Site Manager instances in release 26.1.1 when recovery requires a clean instance with restored configuration and database data.

Re-create Cisco Optical Site Manager instance(s) in release 26.1.1 in case of corruption, misconfiguration, or recovery scenarios.



Note

- This procedure does not change the software release. The Cisco Optical Site Manager instance remains at release 26.1.1.
- Temporary inconsistencies may appear in Cisco Optical Network Controller. A manual synchronization may be required.
- Perform this procedure only in controlled conditions.

Before you begin

- A valid backup of the Cisco Optical Site Manager database from release 26.1.1 is available.
- XML configuration files for devices and UID mapping are available for the target deployment.

Follow these steps to re-create Cisco Optical Site Manager in 26.x.

Procedure

1. Open `https://<ADMIN_PLANE_IP>` in a browser to access the Admin Plane web UI.
2. Delete the existing Cisco Optical Site Manager instance(s).

The product workflow is documented in: [Delete a Cisco Optical Site Manager instance](#).

3. Create new Cisco Optical Site Manager instance(s) using release 26.1.1.

Use this reference section for the task: [Create a Cisco Optical Site Manager instance](#).

4. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.

5. Upload the XML configuration file (devices and UID mapping).

For the supporting workflow, see: [Import a Cisco Optical Network Planner configuration file](#).

6. Restore the Cisco Optical Site Manager database backup.

Use this Cisco procedure for the complete workflow: [Upload database](#) and [Restore database](#).

Cisco Optical Site Manager instance(s) are successfully re-created and all devices are reachable and in "sync-completed" state.

What to do next

Re-synchronize all devices after the restore operation.

Delete and re-onboard NCS 2000 devices

Delete and re-onboard NCS 2000 devices in Cisco Optical Site Manager when configuration errors or synchronization issues require device recreation.

Delete and re-onboard an NCS 2000 device in Cisco Optical Site Manager in case of configuration errors or synchronization issues.



Note

Device deletion removes the device from Cisco Optical Site Manager but does not affect the physical node. Device name, device flavor, and UID cannot be modified after creation.

Before you begin

- Cisco Optical Site Manager instance is reachable
- Device credentials and IP address are available
- XML configuration file (if used) is available

Follow these steps to delete and re-onboard NCS 2000 devices.

Procedure

1. Follow these steps to delete a device:

- Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
- Choose **Devices > Devices**.
- Select the device to be deleted.
- Click the - icon.
- Confirm the deletion and verify that Cisco Optical Site Manager Instance is successfully deleted.

Figure 97: Cisco Optical Site Manager web UI - delete device

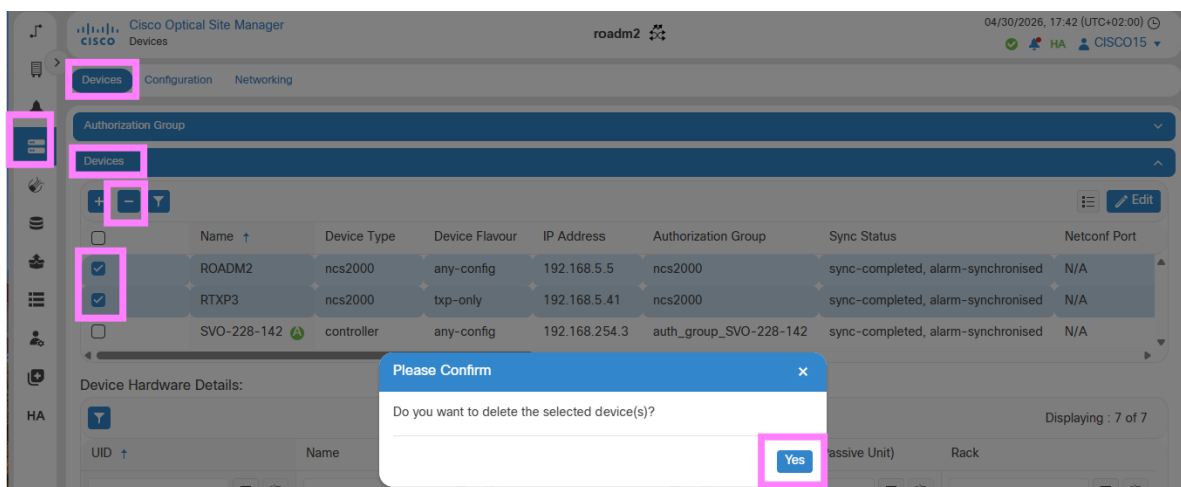
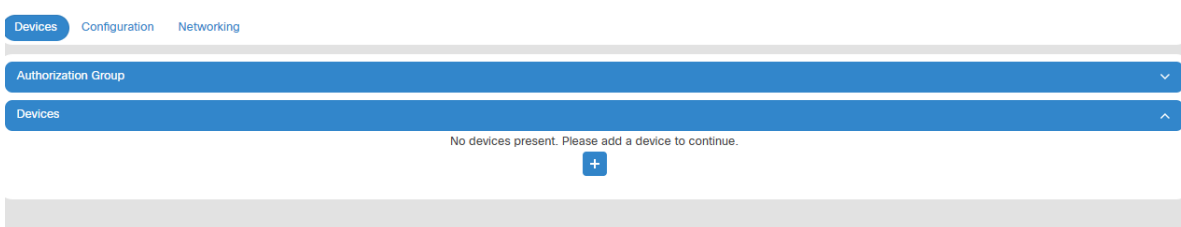


Figure 98: Devices are removed from the Cisco Optical Site Manager instance



2. Follow these steps for device onboarding:

- a) Re-add the device using the applicable device onboarding procedure.
 - For manual onboarding, see [Onboard devices in Cisco Optical Site Manager](#).
 - For XML-based onboarding, see [Onboard devices in Cisco Optical Site Manager using XML](#).
- b) Restore the Cisco Optical Site Manager database backup.

Cisco documents the workflow in: [Upload database](#) and [Restore database](#).

The device is successfully re-added and appears in the Cisco Optical Site Manager instance with status "sync-completed, alarm-synchronized".

What to do next

- Delete all associated devices together when a Cisco Optical Site Manager instance contains multiple devices, such as a ROADM with a remote transponder or NCS 1000 device.
- Delete and add the device again if the device name, device flavor, or UID is incorrect.
- Synchronize Cisco Optical Network Controller manually if temporary inconsistencies appear.

Lock and unlock NCS 2000 devices

Use Cisco Optical Site Manager to change the management state of NCS 2000 devices and restore synchronization when the device and Cisco Optical Site Manager states are misaligned.

Restore the synchronized, alarm-synchronized state of an NCS 2000 device by locking and then unlocking the device in Cisco Optical Site Manager.

Before you begin

- Ensure that the Cisco Optical Site Manager instance is reachable.
- Ensure that the device is in the unlocked state before you begin.

Procedure

1. Lock the device.

- Access the Cisco Optical Site Manager web UI at `https://<COSM_IP>`.
- Choose **Device > Devices > Devices**.
- Choose **Edit > Lock**.
- Click **Apply**.
- Confirm the lock operation.

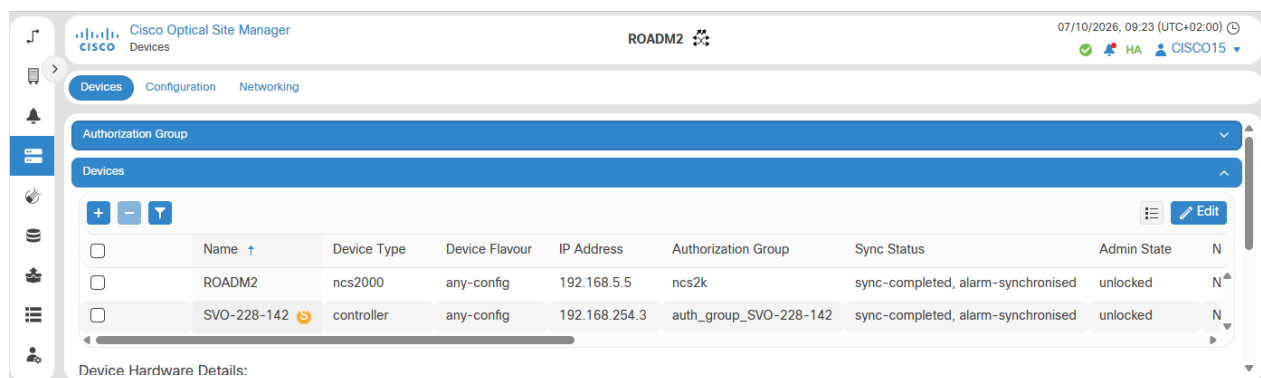
2. Unlock the device.

- Access the Cisco Optical Site Manager web UI at `https://<COSM_IP>`.
- Choose **Device > Devices**.
- Choose **Edit > Unlock**.
- Click **Apply**.
- Confirm the unlock operation.

After you complete the lock and unlock procedure, the device returns to the **Sync Completed** and **Alarm Synchronized** states.

No critical alarms are present.

Figure 99: Cisco Optical Site Manager web UI - device sync-completed after lock and unlock



Modify NCS 2000 networks managed by Cisco Optical Site Manager

This section describes how to modify an NCS 2000 network already managed by Cisco Optical Site Manager, including degree addition and node expansion.

Use this topic to modify an NCS 2000 network that is already managed by Cisco Optical Site Manager. Use the related tasks to add degrees, add nodes, and keep the management view synchronized after the change.

Add a degree in a 26.x device managed by Cisco Optical Site Manager

Add an optical degree to a release 26.x NCS 2000 device and align fiber, patch cord, amplifier, span loss, and OSC settings.

Configure a new optical degree (side) on an existing NCS 2000 node using the Cisco Optical Site Manager web UI.

If a CTP design file (.mpz) is available, import it into Cisco Optical Network Planner to define the new degree and generate the corresponding **Per-SideANS** XML file. Starting from release 25.1.1, the **Provisioning > WDM-ANS** panel is no longer available in CTC, and the XML file cannot be uploaded directly to the node.

Before you begin

- Required design parameters, such as degree configuration, fiber type, and span loss, are available from the Cisco Optical Network Planner design.
- The node is already onboarded and in the **sync-completed** state.

Follow these steps to add a degree in a 26.x device managed by Cisco Optical Site Manager.

Procedure

1. Create the new degree and configure fiber attributes.
 - a) Choose **Optical Configuration > Optical Degrees**.
 - b) Add the new degree.
 - c) Configure the specific fiber type and characteristics.

Figure 100: Optical degrees panel - add new degree

2. Configure internal patch cords.
 - a) Create internal patch cords between the TNC OSC pluggable and the SMR-20 OSC-RX/TX ports.
 - b) Create internal patch cords between the SMR-20 MPO and the MF-DEG-5 MPO #4.
3. Configure SMR-20 amplifier PSD and gain values.
 - a) Choose **Optical Setup > Amplifiers > Amplifier**.
 - b) Set **PSD Setpoint** on COM-TX and COM-RX.
 - c) Set **Gain Range** on LINE-RX.
4. Configure interface parameters.
 - a) Choose **Optical Setup > Amplifiers > Interface**.
 - b) Set **Optical PSD Setpoint** on COM-TX and all relevant expansion ports, such as 2/4/[EXP 1-8]-1-TX and 2/4/[EXP 1-8]-2-TX.
 - c) Set **OSC Power Threshold** on LINE-RX.
 - d) Set **Optical Power Threshold Low** on LINE-RX.

5. Configure span loss.

- a) Choose **Optical Setup > Span Loss**.
- b) Configure the **Min Expected Span Loss** and **Max Expected Span Loss** values to define the operational window for the new degree.

6. Create OSC termination.

- a) Choose **Optical Setup > OSC**.
- b) Create the OSC termination.

-
- The new degree is visible in the **Optical Degrees** list and on NFV.
 - No critical alarms are present.

**Note**

Incorrect ANS configuration can impact optical performance. Additional tuning might be required depending on network conditions.

What to do next

- Align the ANS configuration with the optical design.
- Use the Cisco NCS 2000 configuration guide for detailed parameter configuration if additional tuning is required.

Add a new NCS 2000 node to an existing network

Add a new NCS 2000 node to an existing Cisco Optical Site Manager-managed network while preserving topology consistency and onboarding requirements.

Add a new NCS 2000 node to an existing network that is already managed by Cisco Optical Site Manager. Use this procedure when Cisco Optical Site Manager is already deployed and operational, and a new NCS 2000 node must be integrated into the existing network.

**Note**

Starting with release 25.1.1, the **Provisioning > WDM-ANS** panel is no longer available in CTC. Perform the initial node configuration in release 11.x.

Before you begin

The new NCS 2000 node is physically installed according to the Cisco NCS 2000 Series Hardware Installation Guide. Follow these steps to add a new NCS 2000 node to an existing network.

Procedure

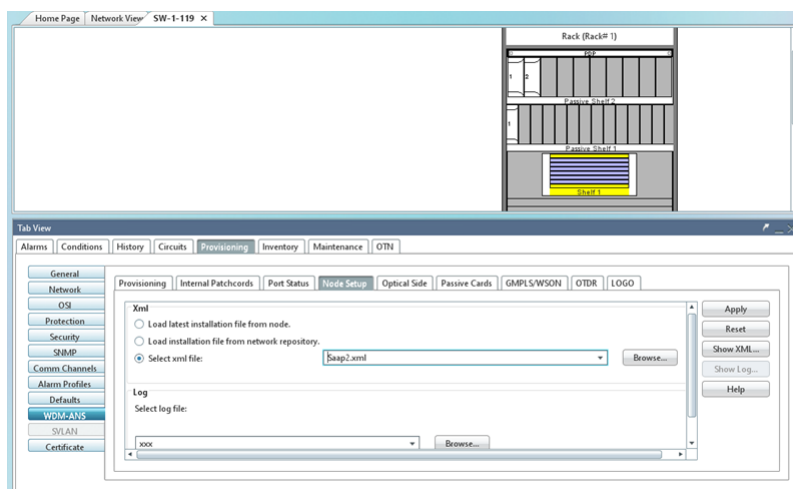
-
1. Initial node configuration (Release 11.x).
 2. Configure the new node using standard NCS 2000 procedures as described in Cisco NCS 2000 Configuration Guide(NTP-G129 Add a DWDM Node).

The product workflow is documented in: [NTP-G129 add a DWDM node](#).

- The new NCS 2000 node is successfully added to the existing network and fully managed by Cisco Optical Site Manager.
- Device status is "sync-completed, alarm-synchronized".

No critical alarms are present.

Figure 101: CTC 11.x node setup via XML



What to do next

- Configure the SOCKS proxy before onboarding the node.
- Configure OSPF on LAN when the deployment requires it.
- Upgrade the node to release 25.1.1 or later before onboarding it.
- Create the Cisco Optical Site Manager instance from the Admin Plane web UI.
- Use the instance parameters defined in the Cisco Optical Site Manager deployment plan.
- Access the Cisco Optical Site Manager web UI and perform device onboarding.
- Verify that synchronization completes after onboarding.

Troubleshoot Cisco Optical Site Manager onboarding issues

This reference summarizes common Cisco Optical Site Manager onboarding issues and points operators to the checks needed for recovery or escalation.

Common issues during NCS 2000 upgrade and onboarding to Cisco Optical Site Manager are:

Common onboarding issues

Common issues during NCS 2000 upgrade and onboarding to Cisco Optical Site Manager include:

- wrong device user password
- wrong IP address

- remote TXP rack overlaps in the UI
- incorrect device name
- incorrect device flavor configuration

Table 16: Cisco Optical Site Manager - common onboarding issues and their resolutions

Issue	description	Resolution
Wrong authentication group associated to the device.	Device Sync Status is OUT-OF-SYNC	Edit the device authentication group.
Wrong IP address		Edit the device authentication group.
Wrong device user name password in the authentication group		
Incorrect device name	The device name is used as a key in the device YANG models and cannot be modified after the device is added.	Delete the device and add it again with the correct device name.
Incorrect device flavor	The selected device flavor does not match the actual node type, affecting device behavior in Cisco Optical Site Manager.	Delete the device and add it again with the correct device flavor.
remote transponder nodes overlap in the UI	The Rack Number of the remote TXP matches an existing rack number, causing the chassis to appear in an occupied rack.	Delete the remote TXP device, correct the Rack Number in CTC, and add the device again.

7 Install the Cisco Optical Site Manager 2000 service pack

Topics:

- [Cisco Optical Site Manager 2000 service pack installation overview](#)
- [Retrieve the Cisco Optical Site Manager 2000 service pack package from CCO](#)
- [Check Cisco Optical Site Manager health before service pack installation](#)
- [Download the Cisco Optical Site Manager 2000 service pack package](#)

This chapter covers preparation and installation for a Cisco Optical Site Manager 2000 service pack, including package retrieval, health checks, and web UI download steps.

Install the Cisco Optical Site Manager 2000 service pack

Cisco Optical Site Manager 2000 service pack installation overview

This section introduces the Cisco Optical Site Manager 2000 service-pack workflow and identifies the preparation and download tasks required before installation.

Use this topic to review the Cisco Optical Site Manager 2000 service pack update workflow and the tasks required before package installation.

Service pack update workflow

The workflow includes these tasks:

- [Retrieve the Cisco Optical Site Manager 2000 service pack package from CCO.](#)
- [Check Cisco Optical Site Manager health before service pack installation.](#)
- [Download the Cisco Optical Site Manager 2000 service pack package.](#)
- [Activate Cisco Optical Site Manager software.](#)

Retrieve the Cisco Optical Site Manager 2000 service pack package from CCO

This reference explains where to retrieve the Cisco Optical Site Manager 2000 service-pack TAR package before making it available to the upgrade workflow.

Retrieve the Cisco Optical Site Manager 2000 service pack image (.tar) from the Cisco Software Download page. For image details, see [Cisco software image purposes](#).

Check Cisco Optical Site Manager health before service pack installation

Check Cisco Optical Site Manager health, backups, software readiness, and managed-node state before installing a service pack in the workflow.

Verify that Cisco Optical Site Manager, Cisco Optical Network Controller, repositories, backups, and managed devices are ready for service pack installation.



Note

Starting the update while the system is unstable can cause partial failures or inconsistent system behavior.

Before you begin

Before you start the service pack update, check Cisco Optical Site Manager health. If any inconsistency is detected, resolve it before proceeding with the update.

Follow these steps to check Cisco Optical Site Manager health before service pack installation.

Procedure

1. Verify software and repository readiness.

- Correct Cisco Optical Site Manager software image (*.tar) is available on the SFTP server

- SFTP server is reachable from Cisco Optical Network Controller and/or Cisco Optical Site Manager
- Credentials and access permissions are validated (admin is needed)

2. Verify backup completion.

Refer to the product procedure: [Upload database](#) and [Restore database](#).

- Full backup of Cisco Optical Site Manager Instances (including devices backup) have been completed
(Access Cisco Optical Site Manager web UI and Navigate to Database -> Create Backup).
- Full backup of Cisco Optical Site Manager xml configuration files have been completed
(Access Cisco Optical Site Manager web UI and Navigate to Optical Configuration -> Cisco Optical Site Manager Setup tab -> Download Configuration)

3. Verify network and system conditions.

- No critical alarms are present in Cisco Optical Site Manager or Cisco Optical Network Controller
- Network connectivity between Cisco Optical Network Controller, Cisco Optical Site Manager, and devices is verified
- System time is synchronized across all components (NTP aligned)

4. Verify Cisco Optical Network Controller node status when Cisco Optical Site Manager instances are onboarded in Cisco Optical Network Controller.

For more details, see [Cisco Optical Network Controller nodes details](#).

- All Cisco Optical Site Manager nodes are correctly onboarded in Cisco Optical Network Controller
- Nodes status is Active / Connected

5. Verify Admin Plane status.

- All Cisco Optical Site Manager instances are in ACTIVE/STANDBY state
- Admin Plane status is UP/UP
- No HA synchronization issues are present

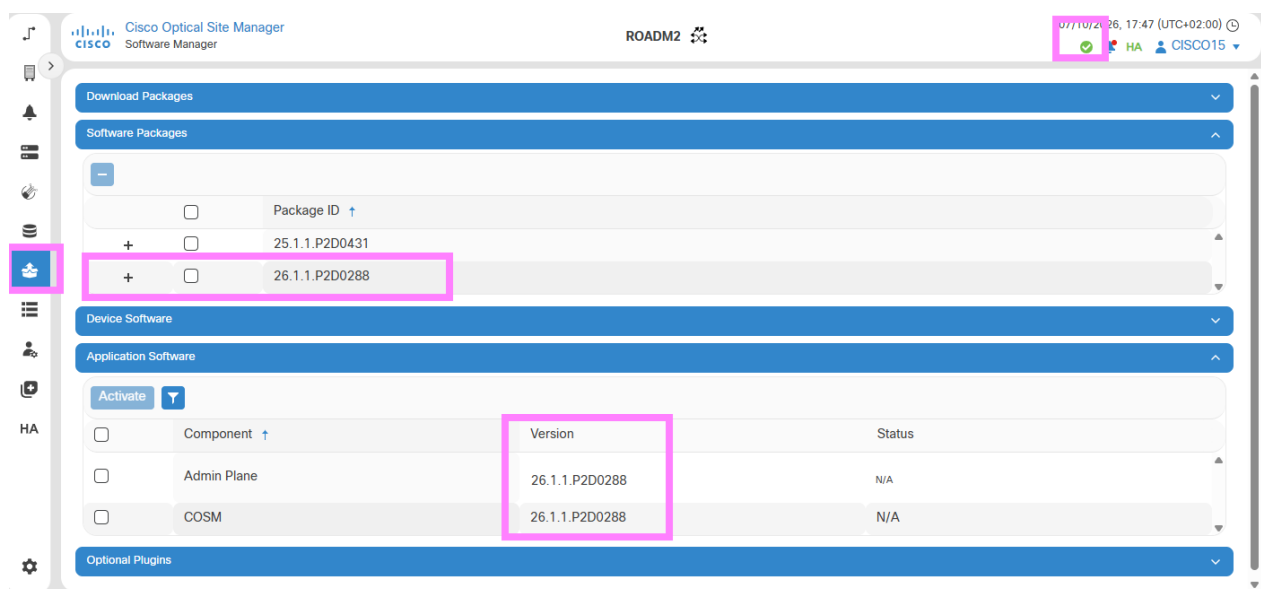
6. Verify Cisco Optical Site Manager instance and device status.

Use the related Cisco task: [Add a device](#).

- All Cisco Optical Site Manager instances are reachable
- All managed devices are in sync-completed, alarm-synchronized state

Cisco Optical Site Manager health is verified before service pack installation.

Figure 102: Cisco Optical Site Manager web UI - software check before SP installation



Download the Cisco Optical Site Manager 2000 service pack package

Download the Cisco Optical Site Manager service-pack TAR package into the Software Manager repository so it is ready for the installation workflow.

Download the Cisco Optical Site Manager software package (*.tar) from the SFTP server to the Cisco Optical Site Manager Software Manager repository.

Before you begin

- SFTP server reachable from Cisco Optical Site Manager
- Cisco Optical Site Manager 2000 service pack software image (*.tar) available on the SFTP server
- Cisco Optical Site Manager health check is complete.

Follow these steps to download the Cisco Optical Site Manager 2000 service pack package.

Procedure

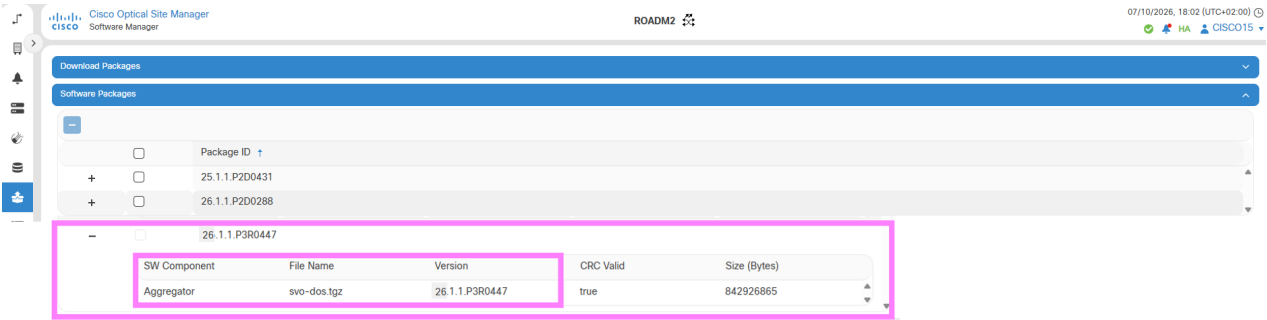
1. Open `https://<COSM_IP>` in a browser to access the Cisco Optical Site Manager web UI.
2. Choose **Software Manager > Download**.
3. Choose **SFTP** as the protocol.
4. Enter the software package path in the **Remote File Path** field.
5. Select the authentication method:
 - Username/Password, or
 - Auth Group (if previously configured)
6. Click **Download**.
7. Monitor the download progress in the **Status** column until the package reaches 100 percent.

The package download completes, and the package appears in the Software Packages tab with the Available status.

 **Note**

Multiple software packages can coexist in the repository. Download time depends on image size and network bandwidth.

Figure 103: Cisco Optical Site Manager web UI - download tar image success



What to do next

Verify that only the **Aggregator** component is present in the service pack.

