



# Manage Passive Devices

This chapter describes the passive devices used in Cisco NCS 2000 SVO and its related tasks.

- [Overview, on page 1](#)
- [Manage Passive Devices, on page 7](#)
- [Associate a Passive Chassis or a Passive Device to a USB Port, on page 10](#)
- [View the Passive Device LED Status, on page 11](#)
- [View Passive Device Port Settings, on page 12](#)
- [View Insertion Loss, on page 14](#)
- [Provision FPD Upgrade for Passive Chassis, on page 15](#)

## Overview

**Table 1: Feature History**

Feature Name	Release Information	Description
Managing 15216-FLD-4 in SVO	Cisco NCS 2000 Release 12.3.1	You can now manage ten new Cisco ONS 15216 4 Channel Optical Add/Drop Multiplexers (OADMs), which are passive FLD units in a 100-GHz channel plan.  These passive FLD units in SVO provide Multiservice Transport Platform (MSTP) to address the edge of the optical network in a cost-effective manner.
NCS2K-MF-8x10G-FO	Cisco NCS 2000 Release 12.3	The MPO-12 to 8-LC fan-out module is a double slot module with two MPO-12 connector (COM) and eight LC duplex connectors (Port-i-TX/RX). It contains 16 photodiodes to monitor the power of the channel input ports.

Feature Name	Release Information	Description
_15216-PP-4-SMR	Cisco NCS 2000 Release 12.3	The _15216-PP-4-SMR patch panel connects up to four 40-SMR2-C cards in a four-degree mesh node. The optical splitters inside the patch panel forward the output signal (EXP-TX port) of the 40-SMR2-C card on each side of the mesh node to the input port of the 40-SMR2-C cards on the other three sides of the mesh node.
NCS2K-MF-CL-SC	Cisco NCS 2000 Release 12.2	A new passive module, the C and L-band combiner and splitter, is introduced.  The L-band addition for non-Raman assisted optical links requires a C and L optical combiner for expansion. The NCS2K-MF-CL-SC module allows Cisco to introduce any future L-band transmission system onto the existing NCS 2000 deployments.

Passive devices are used to build the optical network system. You can install them on:

- 19 inch (482.6 mm) or 23 inch (584.2 mm) EIA standard racks
- 19 inch (482.6 mm) IEC rack
- 600 mm x 600 mm or 600 mm x 300-mm ETSI rack

The following table lists the supported passive chassis and passive devices:

Passive Chassis and Passive Devices	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
NCS2K-MF-6RU	You can install a combination of 14 single-slot passive devices in this chassis.	✓	
NCS2K-MF10-6RU	You can install a combination of 10 double-slot passive devices in this chassis.	✓	
NCS2K-MF-DEG-5	5-degree mesh module.	✓	
NCS2K-MF-UPG-4	4-degree upgrade module.	✓	

Passive Chassis and Passive Devices	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
NCS2K-MF-MPO-16LC	MPO-16 to 16-LC fan-out module.	✓	
NCS2K-MF-2MPO-ADP	Double MPO-16 to two MPO-8 adapter module.	✓	
15216-MD-48-EVEN	Multiplexer/demultiplexer patch panels of 48-channels on the even ITU grid.	✓	✓ (only as inventory)
15216-MD-48-ODD	Multiplexer/demultiplexer patch panels of 48-channels on the odd ITU grid.	✓	✓ (only as inventory)
15216-MD-40-EVEN	Multiplexer/demultiplexer patch panels of 40-channels on the even ITU grid.		✓
15216-MD-40-ODD	Multiplexer/demultiplexer patch panels of 40-channels on the odd ITU grid.		✓
NCS1K-MD-64-C	Multiplexer/demultiplexer patch panels of 64-channels.  <b>Note</b> Blink LED and status are not supported.	✓	
15216-MD-48-CM	Interleaver and deinterleaver pluggable that operates inside ONS 15216-MD-48 odd/even patch panels and 15216-MD-40 odd/even patch panels.	✓	✓ (only as inventory)
NCS2K-PPMESH8-5AD	8-degree mesh patch panel module with 16 MPO-16 connectors and 10 MPO-8 connectors.	✓	

Passive Chassis and Passive Devices	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
NCS2K-MF-6AD-CFS	Six ports add/drop single slot module. It contains a 6x1 combiner and a 1x6 splitter.	✓	
NCS2K-MF-DEG-5-CV	5-degree mesh connection verification module with MPO-8 loopback caps.	✓	
NCS2K-MF-UPG-4-CV	4-degree upgrade connection verification module with MPO-8 loopback caps.	✓	
NCS2K-MF-MPO-8LC	MPO-APC to eight LC-PC fan-out module.	✓	
NCS2K-MF-M16LC-CV	MPO-16 to 16-LC fan-out connection verification double slot module based on the NCS2K-MF-MPO-16LC. It has eight LC loopback caps (NCS2K-LC-LBK=) on all LC dual ports.	✓	
NCS2K-MF-10AD-CFS	10 port add/drop double slot module. It contains a 10x1 combiner and a 1x10 splitter.	✓	
NCS2K-MF-16AD-CFS	16-channel colorless omnidirectional add/drop passive module.	✓	
NCS2K-MF-4X4-COFS	4-channel colorless omnidirectional add/drop passive module.	✓	
NCS2K-MF-CL-SC	The NCS2K-MF-CL-SC is a passive unit splitter that splits the C+L composite signal into individual C and L bands. The module can fit into a single slot (1/2 RU) of the NCS2K-MF-6RU shelf.	✓	

Passive Chassis and Passive Devices	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
15216-MD-ID-50	The ONS 15216-MD-ID-50 is a C-band 50 GHz/100 GHz module that operates inside the patch panel. The ONS 15216-MD-ID-50 module interfaces between the 15216-MD-40-ODD and 15216-MD-40-EVEN patch panels, and 80 channels of wavelengths.		✓
15216-PP-MESH-4	Cisco 15454-PP-MESH-4 2RU 4-Degree mesh patch panel		✓
15216-PP-MESH-8	Cisco 15454-PP-MESH-8 2RU 8-Degree mesh patch panel		✓
NCS2K-MF-8x10G-FO	MPO-12 to 8-LC fan-out module. The MPO-12 to 8-LC fan-out module is a double slot module with two MPO-12 connector (COM) and eight LC duplex connectors (Port-i-TX/RX). Insertion loss, power monitoring, and attenuator settings are not supported.	✓	✓

Passive Chassis and Passive Devices	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
15216-PP-4-SMR	<p>15216-PP-4-SMR 4-degree mesh patch panel. The patch panel interconnects up to four 40-SMR2-C cards in a mesh node. The patch panel splits light coming from each direction into four and forwards it to the 40-SMR2-C cards in the other directions.</p> <p>The supported cables are:</p> <ul style="list-style-type: none"> <li>• 15454-MPO-MPO-2= is used for the PP-MESH interconnection</li> <li>• 15454-MPO-XMPO-2= is used for back-to-back 40-SMR2-C interconnections</li> </ul>		✓

The following table lists the supported passive FLD units:

Passive FLD Units	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
_15216-FLD4-30-3	Passive FLD Unit with 30 and 3 channels.	Not Supported	✓
_15216-FLD4-33-4	Passive FLD Unit with 33 and 4 channels.	Not Supported	✓
_15216-FLD4-36-6	Passive FLD Unit with 36 and 6 channels.	Not Supported	✓
_15216-FLD4-39-7	Passive FLD Unit with 39 and 7 channels.	Not Supported	✓
_15216-FLD4-42-9	Passive FLD Unit with 42 and 9 channels.	Not Supported	✓
_15216-FLD4-46-1	Passive FLD Unit with 46 and 1 channel.	Not Supported	✓
_15216-FLD4-49-3	Passive FLD Unit with 49 and 3 channels.	Not Supported	✓

Passive FLD Units	Description	SSON Package (12.xx-xxxx-xx.xx-S-SPA)	MSTP Package (12.xx-xxxx-xx.xx-L-SPA)
_15216-FLD4-52-5	Passive FLD Unit with 52 and 5 channels.	Not Supported	✓
_15216-FLD4-55-7	Passive FLD Unit with 55 and 7 channels.	Not Supported	✓
_15216-FLD4-58-9	Passive FLD Unit with 58 and 9 channels.	Not Supported	✓

The 15216-MD-48-ODD and 15216-MD-48-EVEN patch panels can be installed directly in the rack and require two Rack Units (RU). You can connect the patch panels to the NCS 2006 ECU or NCS 2015 ECU.

The NCS2K-MF passive devices can be installed in a one-Rack Unit (RU) high mechanical frame (NCS2K-MF-1RU) and can be directly connected to the NCS 2006 ECU or NCS 2015 ECU. You can also install the NCS2K-MF passive devices in the passive chassis. There are two types of passive chassis—NCS2K-MF-6RU and NCS2K-MF10-6RU. You can connect the passive chassis to the USB 3.0 port in the NCS 2006 ECU-S or NCS 2015 ECU.

## Laser Radiation Emission Restrictions

The Class 1M Laser safety and warning label affixed to the passive optical modules indicate that the product should never be used or installed in an optical network with emissions higher than Class 1M.



**Warning** Class 1M laser radiation when open. Do not view directly with optical instruments. Statement 281

## Laser Safety During Operation



**Warning** Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

## Electrical Safety

The passive optical modules are optically and electrically passive and require no electrical connections. No electrostatic discharge (ESD) or other electrical safety considerations apply.

## Manage Passive Devices

Use this task to add or delete a passive device.

**Before you begin**

[Log into the SVO Web Interface](#)

**Procedure**


---

Perform these tasks, as needed:

- a) [Add a Passive Device to a Rack, on page 8.](#)
  - b) [Add a Passive Device to a Passive Chassis, on page 9.](#)
  - c) [Delete a Passive Device, on page 10.](#)
- 

## Add a Passive Device to a Rack

Use this task to add a passive device to a rack.




---

**Note** The NCS2K-MF-1RU chassis is a four -slot one rack unit mechanical frame that is auto-provisioned when a NCS2K-MF passive device is provisioned in the rack.

---

**Before you begin**

[Log into the SVO Web Interface](#)

**Procedure**


---

**Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.

The SVO Topology page appears.

**Step 2** Click the Rack in the left panel.

The Rack view appears.

**Step 3** Click an empty slot in the Rack.

**Step 4** Click **Add Passive Device**.

**Step 5** Select the node from the **Select Device** drop-down list.

**Step 6** Select the passive device from the **Select Passive** drop-down list.

**Step 7** Select the passive ID from **Enter Passive ID** drop-down list.

**Note** The 15216-MD-48-EVEN and 15216-MD-48-ODD devices are prefixed with a "\_" in the SVO web interface.

**Step 8** Select the slot number from **Select Slot** drop-down list.

**Step 9** (Optional) Enter a device name in the **Display Name** field.

**Step 10** Click **Provision**.



The passive device is provisioned and is listed in the Provisioning > Passives tab in the Rack view.

---

## Add a Passive Device to a Passive Chassis

Use this task to add a passive device to a passive chassis. The following devices can be added to a passive chassis.

The following devices can be added to a NCS2K-MF-6RU chassis.

- NCS2K-MF-UPG-4
- NCS2K-MF-UPG-4-CV
- NCSK-MF-4x4-COFS
- NCS2K-MF-MPO-ADP
- NCS2K-MF-6AD-CFS
- NCS2K-MF-DEG-5
- NCS2K-MF-DEG-5-CV
- NCS2K-MF-MPO-8LC
- NCS2K-MF-CL-SC

The following device can be added to a NCS2K-MF10-6RU chassis.

- NCS2K-MF-MPO-16LC
- NCS2K-MF-M16LC-CV
- NCS2K-MF-10AD-CFS
- NCS2K-MF-16AD-CFS
- NCS2K-MF-8x10G-FO



---

**Note** To provision a CV passive device you must provision the respective non-CV passive device and associate it to a USB port. The PID of the CV passive device is then visible in the Provisioning > Passives tab in the chassis view.

---

### Before you begin

- [Log into the SVO Web Interface](#)
- [Add a Chassis](#)

### Procedure

---

- Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.  
The SVO Topology page appears.
- Step 2** Click the rack in the left panel.  
The rack view appears.
- Step 3** Left-click an empty slot in the passive chassis.
- Step 4** Select the passive device from the **Select** drop-down list.
- Step 5** Enter a passive ID in the **Passive ID** field.
- Step 6** Click **Provision**.  
The passive device is provisioned and is listed in the Provisioning > Passives tab in the chassis view.
- 

## Delete a Passive Device

Use this task to delete a passive device from a rack or a passive chassis.

### Before you begin

[Log into the SVO Web Interface](#)

### Procedure

---

- Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.  
The SVO Topology page appears.
- Step 2** Click the Rack in the left panel.  
The Rack view appears.
- Step 3** Left-click the passive device to be deleted in the rack or in the passive chassis, and select **Delete**.
- 

## Associate a Passive Chassis or a Passive Device to a USB Port

Use this task to associate a passive chassis or a passive device to a USB port.

### Before you begin

[Log into the SVO Web Interface](#)

## Procedure

---

- Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.  
The SVO Topology page appears.
- Step 2** Click the Rack in the left panel.  
The Rack view appears.
- Step 3** Perform these steps, as needed:
- a) For a passive chassis or a passive device provisioned on the rack, perform these steps:
    1. Click the **Provisioning > Passives** tabs.
    2. Check the check box of the passive chassis or passive device you want to associate.
  - b) For a passive device provisioned in the passive chassis, perform these steps:
    1. Left-click the passive chassis in the rack, and select **Open**.
    2. Click the **Provisioning > Passives** tabs.
    3. Check the check box of the passive device you want to associate.
- Step 4** Click **Edit**.  
The **Associate USB Port** dialog box appears.
- Step 5** Select the **USB port** from the drop-down list.
- Step 6** Click **Apply**.
- Note** When a passive chassis is associated to a USB port, all the passive devices that are provisioned on that passive chassis are automatically associated to the USB port.
- 

## View the Passive Device LED Status

Use this task to identify a specific passive device that is associated to a USB port by using the LED blink function.



---

**Note** This task does not apply to the 15216-MD-48-EVEN and 15216-MD-48-ODD devices.

---

### Before you begin

- [Log into the SVO Web Interface](#)
- [Associate a Passive Chassis or a Passive Device to a USB Port, on page 10](#)

## Procedure

---

- Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.  
The SVO Topology page appears.
- Step 2** Click the Rack in the left panel.  
The Rack view appears.
- Step 3** Perform these steps, as needed:
- a) For a passive device provisioned on the rack, perform these steps:
    1. Click the **Provisioning > Passives** tabs.
  - b) For a passive device provisioned in the passive chassis, perform these steps:
    1. Click the passive chassis in the rack, and select **Open**.
    2. Click the **Provisioning > Passives** tabs.
- Step 4** Check the checkbox of the passive device.
- Step 5** Click **LED Status** to know the LED status of the associated device.  
The message, **LED Status of the device connected to selected USB port is solid-green** is displayed.
- Step 6** Click **LED Blink** to start blinking the LED of the passive device.  
The message, **Blink-LED action succeed** is displayed. The LED blinks in blue color helping the operator to identify a specific passive device.
- Step 7** Click **LED Status** again.  
The message, **LED Status of device connected to selected USB port is blinking-blue** is displayed.
- Step 8** Click **LED Blink** again to stop the blinking.  
The message, **Blink LED action succeed** is displayed.
- Step 9** Click **LED Status** again.  
The message, **LED Status of device connected to selected USB port is solid-green** is displayed.
- 

## View Passive Device Port Settings

Use this task to view the details of the passive device ports. You can modify the attenuator value, if needed.




---

**Note** This task does not apply to NSC2K-MF-8x10G-FO modules.

---

## Before you begin

[Log into the SVO Web Interface](#)

## Procedure

---

**Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.

The SVO Topology page appears.

**Step 2** Click the Rack in the left panel.

The Rack view appears.

- a) For a passive device provisioned on the rack, perform these steps:
  1. Left-click the passive device, and click **Open**.
  2. Click the **Maintenance > OTS Passives** tab.
- b) For a passive device provisioned in the passive chassis, perform these steps:
  1. Left-click the passive device in the passive chassis, and select **Open**.
  2. Click the **Maintenance > OTS Passives** tabs.

The following information is displayed:

**Note** You can specify an attenuator value if an attenuator is connected to the related port.

- **Port Label**—Displays the port name of the connector.
- **Port Type**—Displays the passive port type. Values can be OCH-PORT or OTS-PORT.
- **MPO ID**—Displays the MPO index as seen on the front panel if the port is related to an MPO connector, such as MPO-8 (8 fibers) or MPO-24 (24 fibers)
- **MPO Port Position**—Displays the position according to the pinout scheme of the MPO connectors if the port is related to an MPO connector, such as MPO-8 (8 fibers) or MPO-24 (24 fibers)
- **Attenuator Value (dB)**—Displays the attenuator value.
- **Optical Power (dBm)**—Displays measured power if the port has an associated photodiode and the passive device is associated to a USB port.
- **Optical Threshold Low (dBm)**—Displays the threshold for minimum optical power. When the Optical Power value is lower than the Optical Threshold Low value, the node raises an alarm.

**Note** If an attenuator is added on the related port, specify value in the **Attenuator Value** field, and click **Apply**.

---

# View Insertion Loss

Use this task to view the insertion loss on the passive device.



---

**Note** This task does not apply to NSC2K-MF-8x10G-FO modules.

---

## Before you begin

[Log into the SVO Web Interface](#)

## Procedure

---

**Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.

The SVO Topology page appears.

**Step 2** Click the Rack in the left panel.

The Rack view appears.

**Step 3** Perform these steps, as needed:

a) For a passive device provisioned on the rack, perform these steps:

1. Left-click the passive device, and click **Open**.
2. Click the **Insertion Loss** tab.

b) For a passive device provisioned in the passive chassis, perform these steps:

1. Click the passive device in the passive chassis, and select **Open**.
2. Click the **Maintenance > Insertion Loss** tabs.

The following information is displayed:

- **Insertion Loss Path**—Displays the path between two passive ports.
- **IL Value (dB)**—Displays the insertion loss that is related to the path specified in the Insertion Loss Path field.

**Note** When the passive device is disassociated, the last retrieved Insertion Loss values are displayed in the SVO web UI. When the the passive device is replaced, the Insertion Loss values are updated in the SVO web UI.

---

# Provision FPD Upgrade for Passive Chassis

*Table 2: Feature History*

Feature	Release Information	Description
FPD Upgrade for Passive Chassis	Cisco NCS 2000 Release 12.3.1	The SVO web interface allows you to make an FPD upgrade for the passive chassis NCS2K-MF-6RU and NCS2K-MF10-6RU to the latest version released as part of the NCS 2000 software release. You can selectively upgrade the versions of BOOTROM, OS_BOOT, and OS_KERNEL, one by one, directly from SVO.

Use this task to upgrade the passive chassis NCS2K-MF-6RU and NCS2K-MF10-6RU with the latest firmware released as part of the NCS 2000 software release.

## Before you begin

[Log into the SVO Web Interface](#)

## Procedure

- 
- Step 1** Click the hamburger icon at the top-left of the page, and select **SVO Topology**.  
The SVO Topology page appears.
- Step 2** Click the Rack in the left panel.  
The Rack view appears.
- Step 3** Click the NCS2K-MF-6RU and NCS2K-MF10-6RU chassis and select **Open**.  
The chassis view appears.
- Step 4** Click the **Maintenance > FPD Upgrade** tabs.
- Step 5** Check the **BOOTROM**, **OS\_BOOT**, and **OS\_KERNEL** check boxes, and click **FPD Upgrade** to upgrade the versions of Boot ROM, operating system boot, and kernel versions necessary for the new software release.
- Step 6** Click **Yes** to confirm.
- After successful upgrade you can see the upgraded version of Boot ROM, OS\_BOOT, and OS\_Kernel in the FPD Upgrade table.

**Note** The **Running FW Version** is displayed as NA for OS\_BOOT, if the Boot ROM is not upgraded to the latest version.

You can also perform the upgrade of Boot ROM, OS boot, and kernel one by one.

---