# Install Cisco NCS 1000 32-Channel Mux/Demux Patch Panel - Enhanced

This chapter contains tasks to install Cisco NCS 1000 32-Channel Mux/Demux Patch Panels.

- NCS1K-MD-32E-CE
- NCS1K-MD-32O-CE

**Note** The tasks in this chapter also apply to the **N1K-MD-32E-C=** patch panel in the Cisco NCS 1000 Series Mux/Demux Patch Panels, unless otherwise specified.

**Note** In this chapter, "patch panel" refers to the "Cisco NCS 1000 32-Channel Mux/Demux Patch Panel".

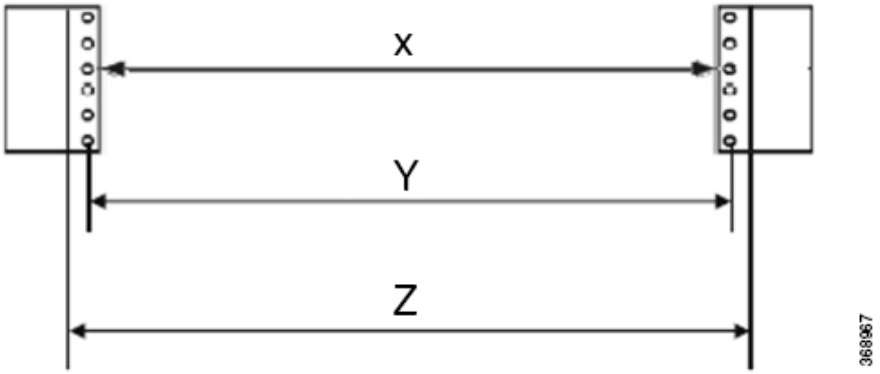


# Rack Compatibility

The mux/demux panels can be installed in a standard ANSI/EIA (19"), ANSI (23"), or ETSI (21") rack.

- The rack can be two post type or four post type rack.
- The 19" and 23" racks must be compliant with "EIA Universal" holes.
- The ETSI rack must be compliant with "ETSI Universal" holes.

*Figure 1: Rack Specification*




| Rack Type | Rack Front Opening X | Rack Mounting Hole Center-Center Y | Mounting Flange Dimension Z |
|---|---|---|---|
| ANSI 19" racks | 450.8mm (17.75") | 465mm (18.312") | 482.6mm (19") |
| ANSI 23" racks | 552.45mm (21.75") | 566.7mm (22.312") | 584.2mm (23") |
| ETSI 21" racks | 500.0mm(19.68") | 515.0mm(20.276") | 533.4mm(21") |

# Ground Description

The NCS 1000 32-channel mux/demux patch panels have two grounding options on the left and right rear side. You can choose from the two grounding options to ground the patch panels. The rear side of the patch panels, adapter brackets, the straight adapter brackets, and the Z-shaped adapter brackets are unpainted and treated with conductive finishing. The grounding lug has provisions for connecting a minimum ground cable of 14 AWG.

## Ground Connection Warnings

Take note of the following ground connection warnings:

**Warning** **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

**Warning** **Statement 1101—**Connected To Grounded Outlet

In the Scandinavian countries (Denmark, Finland, Iceland, Norway, and Sweden) the appliance must be connected to a grounded outlet.

# Ground NCS 1000 32-Channel Mux/Demux Patch Panels - Enhanced

**Caution** When terminating the frame ground, do not use soldering lug connectors, screwless (push-in) connectors, quick connect connectors, or other friction-fit connectors.

This task describes the steps to ground the patch panel.

## Procedure

**Step 1** Verify that the office ground cable is connected to the top of the rack and the office ground, according to local site practice.

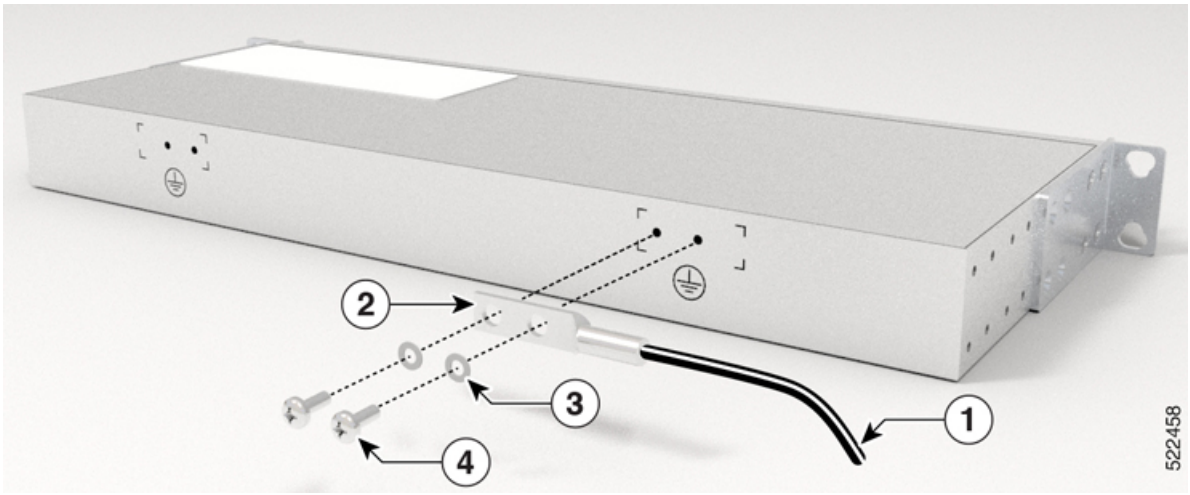
**Step 2** Remove any paint and other nonconductive coatings from the surfaces between the patch panel ground and bay frame ground point. Clean the mating surfaces and apply appropriate antioxidant compound to the bare conductors.

**Step 3** Identify the ground stamp on the patch panel to attach the ground lug.

**Step 4** Crimp a #14 AWG or thicker ground cable to the dual-hole ground lug.

**Step 5** Align the dual-hole ground lug to the patch panel.

***Figure 2: Grounding the Patch Panel***




| | |
|---|---|
| 1 | Ground Lug Cable |
| 2 | Ground Lug |
| 3 | Lock Washers |
| 4 | M4 Pan Head Phillips Screws |

**Step 6** Tighten the M4 pan head screw to torque value of 1.3 N-m (11.5 lbs-in).

**Step 7** Terminate the other end of the ground cable either at the office ground point or the rack ground point.

### What to do next

- Install NCS 1000 32-Channel Mux/Demux Patch Panels - Enhanced, on page 7

# Rack Mount Warnings

Take note of the following rack-mount safety warnings.

**Warning** **Statement 1006—**Chassis Warning for Rack-Mounting and Servicing

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

**Warning** **Statement 1032—**Lifting the Chassis

To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules, such as power supplies, fans, or cards. These types of handles are not designed to support the weight of the unit.

**Warning** **Statement 1098—**Lifting Requirement

Two people are required to lift the heavy parts of the product. To prevent injury, keep your back straight and lift with your legs, not your back.

# Attach the Mounting Brackets

This task explains how to attach the mounting brackets to the ANSI or ETSI standard equipment rack.

**Note** The patch panels come preinstalled with the 19-inch mounting brackets.

### Before you begin

Ensure you completed the following tasks:

- Unpack and Verify NCS 1000 32-Channel Mux/Demux Patch Panel - Enhanced

- Check for rack compatibility. See Rack Compatibility.

## SUMMARY STEPS

1. To attach the mounting bracket for each standard equipment rack, perform one of the following actions:
2. Align the mounting bracket screw holes against the patch panel screw holes.
3. Insert the screws and tighten them.
4. Repeat steps 2 through 3 to attach the mounting bracket on the opposite side.

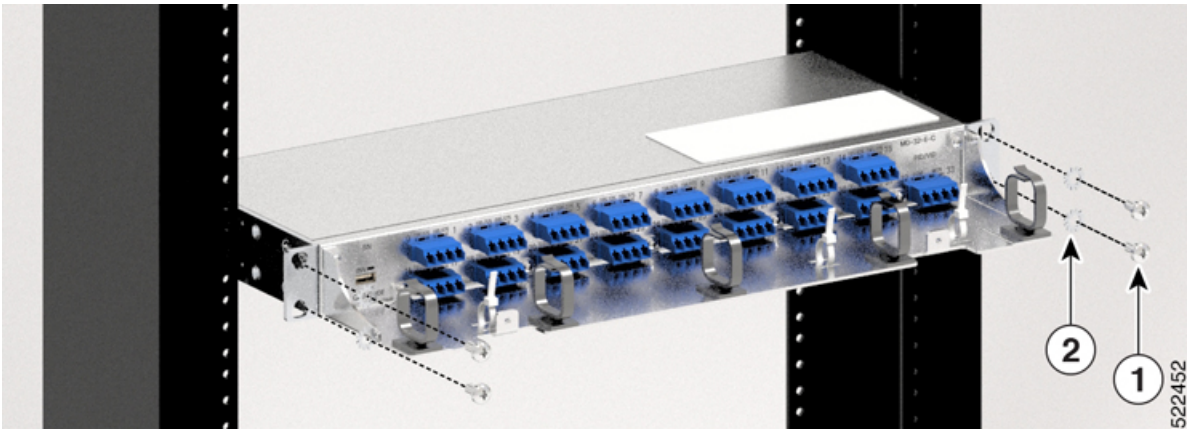
## DETAILED STEPS

### Procedure

**Step 1** To attach the mounting bracket for each standard equipment rack, perform one of the following actions:

- For a 19 inch (482.6 mm) ANSI or IEC configuration, align the screw holes of the patch panel against the rack.

***Figure 3: Installing the Adapter Bracket on a 19-inch Rack***

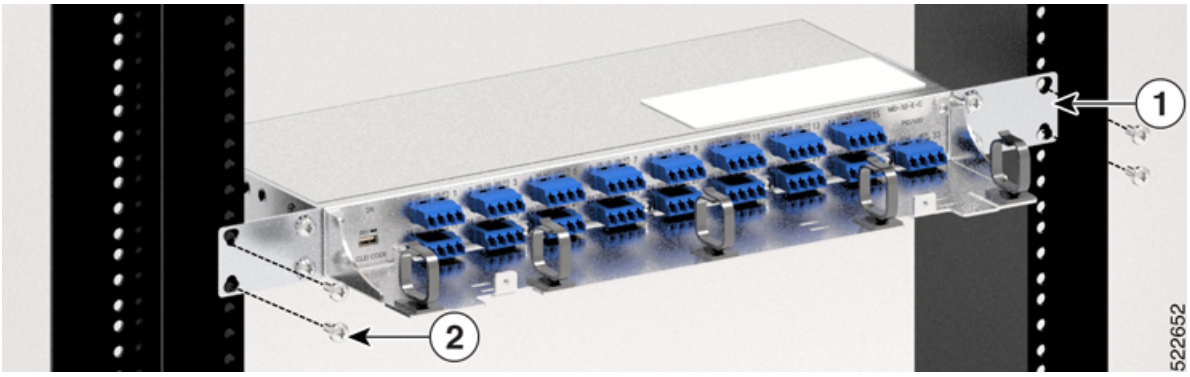



**Note**
The cable ties shown in the image are optional. Use the cable ties to route the USB 3.0 cable to right side of the patch panel to the NCS 1010 EITU.

| | | | |
|---|---|---|---|
| 1 | 12-24x 0.5-Inch Phillips Pan Head Screws | 2 | #12 Lock Washers |

- For a 23 inch (584.2 mm) ANSI configuration, remove the preinstalled brackets and place the 23-inch mounting bracket against one side of the patch panel.

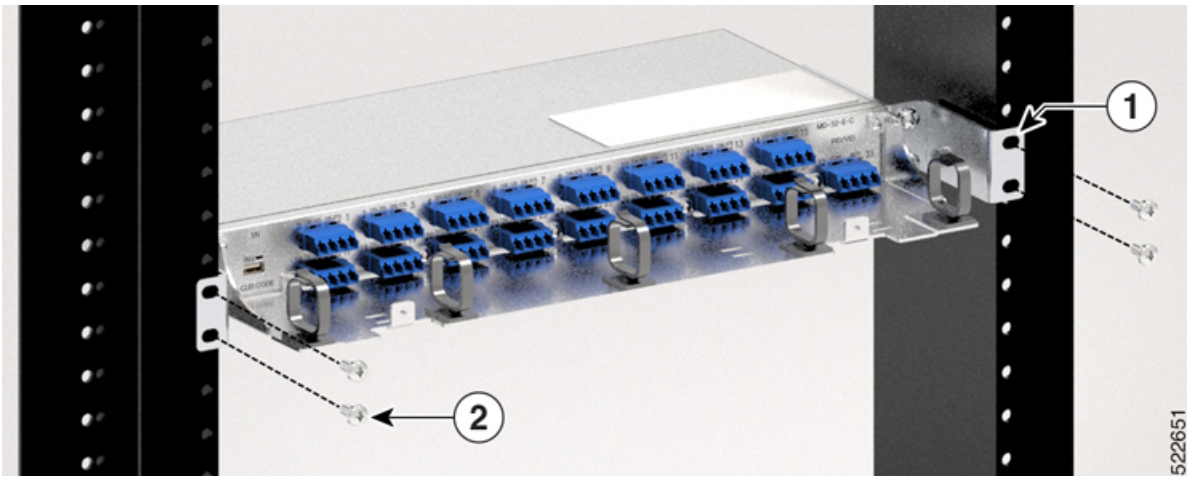
*Figure 4: Installing the Mounting Bracket on a 23-inch Rack*




| | | | |
|---|---|---|---|
| 1 | 23-Inch Mounting Bracket | 2 | 12-24x 0.5-Inch Phillips Pan Head Screws |

- For an ETSI configuration, remove the preinstalled brackets and place the Z-shaped bracket against one side of the patch panel.

*Figure 5: Installing the Mounting Bracket on an ETSI Rack*




| | | | |
|---|---|---|---|
| 1 | ETSI Bracket | 2 | M6 x 12mm Phillips Pan Head Screws |

**Step 2** Align the mounting bracket screw holes against the patch panel screw holes.

**Step 3** Insert the screws and tighten them.

**Step 4** Repeat steps 2 through 3 to attach the mounting bracket on the opposite side.

### What to do next

- Install NCS 1000 32-Channel Mux/Demux Patch Panels - Enhanced, on page 7

# Install NCS 1000 32-Channel Mux/Demux Patch Panels - Enhanced

The patch panel is a NCS 1000 32-Channel Mux/Demux - Enhanced that can be installed either above or below the DWDM generating equipment according to the local site practice.

The patch panel is 1 rack unit (RU) high. Each package includes one set of the following brackets:

- 19 inch (482.6 mm) or 23 inch (584.2 mm) reversible (two-way) mounting brackets that can be rotated to fit either rack size. These reversible brackets are used for EIA and IEC standard racks.
- ETSI brackets that are used for ETSI standard racks.

**Note** The unit is shipped with the mounting brackets in the 19 inch (482.6 mm) position.

The patch panel is passive and requires no power cabling or connections. All connectors are on the front panel and are equipped with LC/MPO bulkhead adapters and with a USB Type A receptacle connector for Inventory purpose. Fiber-optic cables equipped with the corresponding (LC/MPO) connector type are used. The module ports are labeled on the front panel.

**Caution** Use only the fastening hardware provided with the patch panel to prevent loosening, deterioration, and electromechanical corrosion of the hardware and joined material.

**Caution** When mounting the patch panel in a frame with a nonconductive coating (such as paint, lacquer, or enamel) use either the thread-forming screws that are provided with the shipping kit or remove the coating from the threads to ensure electrical continuity.

This task describes the steps to install the patch panels.

### Before you begin

Ensure the rack is compatible. See the Rack Compatibility, on page 1 section.

## Procedure

**Step 1** Set the mounting brackets to the rack you are using. See Attach the Mounting Brackets, on page 4.

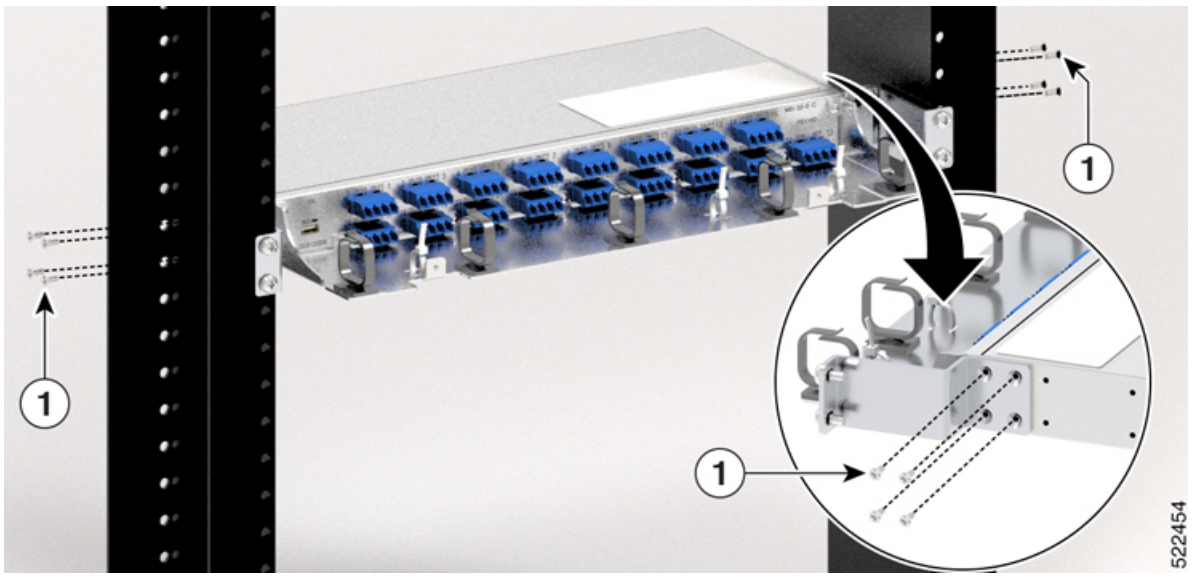
**Note**
The patch panels can be mounted on 19 inch (482.6 mm), 23 inch (584.2 mm) EIA standard racks, on a 19 inch (482.6 mm) IEC rack, or on a 600 x 600 mm or 600 x 300 mm ETSI racks.

A single patch panel is 17.21 inches (437.1 mm) wide and occupies 1 RU in a rack.

The patch panel mounting brackets can be mounted such that the patch panels project either 2.25, 5, 6, or 6.5 inches from the front of the EIA standard racks fixing plane, or 40 mm from the front of the IEC or ETSI standard racks fixing plane.

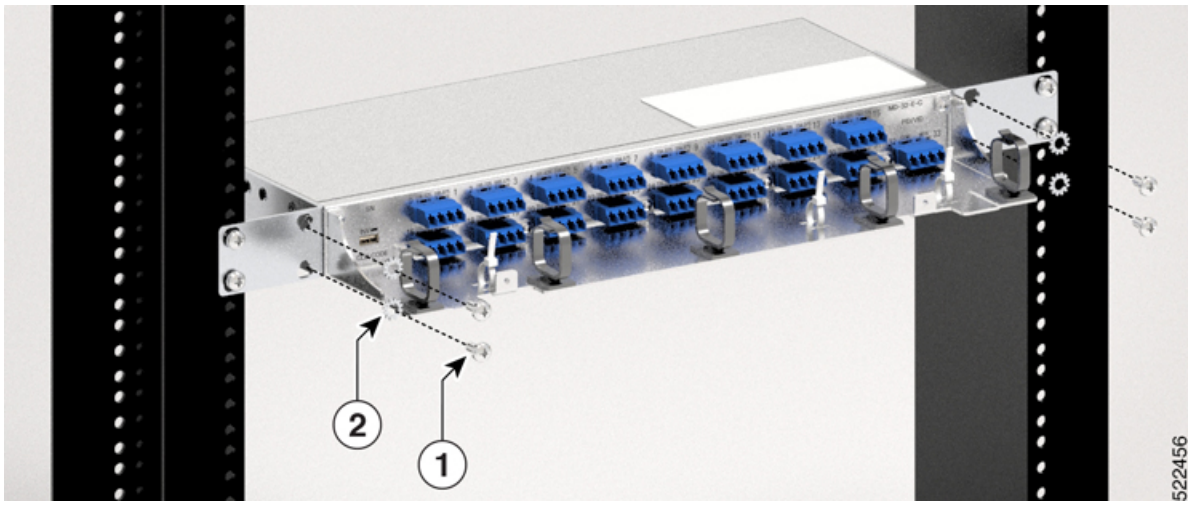
**Step 2** Secure the unit to the rack using the mounting screws.

***Figure 6: Mounting the Patch Panel on the ETSI Rack***




| | |
|---|---|
| 1 | M4 Phillips Flat Screw |

***Figure 7: Mounting the Patch Panel on the 23-Inch Rack***




| | | | |
|---|---|---|---|
| 1 | 12-24x0.5" Phillips Pan Head Screw | 2 | #12 Lock Washer |

**Step 3** Using a screwdriver, tighten the screws to a torque of 4.65 N-m (41 lbs-in).

**Step 4** Establish grounding for the patch panel. The ground position is present on the rear side of the patch panel. For more information, see Ground NCS 1000 32-Channel Mux/Demux Patch Panels - Enhanced, on page 3.

**Note**
When the patch panel is installed in the ETSI 600x300 cabinet, only the lateral ground position must be used.

# Install and Route Fiber-Optic and USB Cables

All connectors are on the front of the patch panel and are equipped with LC bulkhead adapters and with a USB Type A receptacle connector for inventory purpose. For port label description, see NCS1K-MD-32x-CE Mux/Demux Passive Patch Panels. The LC-LC patch cords are used to connect the patch panel to the NCS 1010 chassis.

**Warning** **Statement 1051—**Laser Radiation

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

**Note** Always clean all fiber connectors thoroughly before making the connection with the mating adapter. Very small particles can permanently damage the end of the mating fiber inside the patch panel, which makes regular cleaning imperative. For cleaning instructions see Clean Fiber-Optic Cable Connectors, on page 11.

**Caution** The patch panel has LC bulkhead adapters for optical connections. Always use fiber-optic cables equipped with the corresponding LC connector type. Using any other type of connector results in damage to the connector or adapter, or both.

This task describes the steps to install and route the fiber-optic and USB cables from the patch panel.

## Procedure

**Step 1** To connect the fibers as appropriate, perform the following:

a) Remove the LC adapter cap from the LC-LC adapter of the patch panel.
b) Place the LC/UPC cable connector in front of the corresponding bulkhead adapter on the front panel of the patch panel.
c) Align the keyed ridge of the cable connector with the slot in the receiving adapter.
d) Gently push the cable connector into the adapter until you hear a click, which indicates that the latching system is engaged.
e) Route the cables through the left or right fiber holder clip.
f) (Optional) Secure the fibers further by placing them into one or more adhesive clips. The adhesive clips can be placed on the fiber management plate as per the actual installation conditions.
g) Place the extra fiber length of the two LC-LC patch cords used to connect the patch panel with its plugged patch panel.

**Step 2** To secure the fibers, bundle the fibers using one of the four Velcro strips that is provided.

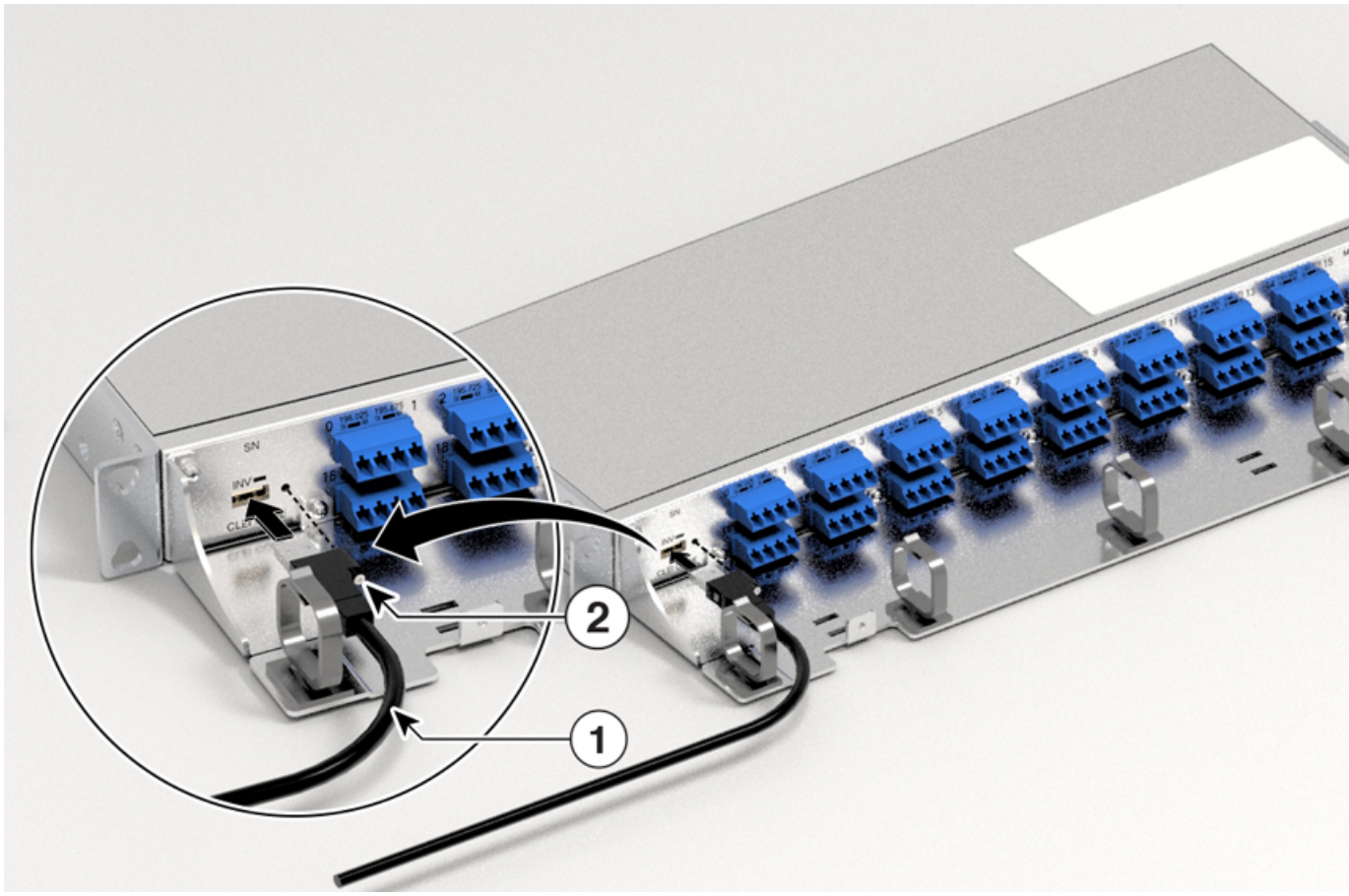
**Step 3**

**Note**
This step is not applicable for the **N1K-MD-32E-C=** patch panel, you can skip this step.

To connect and secure the inventory USB Type A plug connector to the inventory USB Type A receptacle connector, perform the following:

a) Route the inventory USB cable through the left fiber holder clip from NCS 1010 EITU.
b) Connect the USB Type A plug connector to the USB Type A receptacle connector.
c) Tighten the captive screw on top of the USB connector to secure the USB plug.

***Figure 8: Connecting USB Cable***




| | |
|---|---|
| 1 | USB 3.0 Cable |
| 2 | USB 3.0 Cable Screw |

d) (Optional) Secure the USB cable with a tie-wrap at one of the three available locations on the patch panel.

**Note**
Perform Step d if you are routing the USB cable to the right side of the patch panel to the NCS 1010 EITU.

# Cleaning and Maintaining Fiber-Optic Connectors

Connector cleaning is required to maintain the performance of fiber-optic circuits. It is important that both the LC/UPC connector at the end of the fiber-optic cable and the optical mating adapter on the front panel of the device are clean before the connection is made.

**Warning** **Statement 1051—**Laser Radiation

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

The following warning applies to disposal of chemicals and other materials used to clean connectors and adapters:

**Warning** **Statement 9001—**Product Disposal

Ultimate disposal of this product should be handled according to all national laws and regulations.

**Note** Before installing the fiber-optic cable, always perform the cleaning procedure for cable connectors described in the following section. Whenever possible, inspect each connector before connecting it to the optical mating adapter on the front panel.

**Note** The LC optical mating adapter on the faceplate of the device is less likely to get dirty if it is capped when not in use. On some devices, the optical mating adapter has a shutter. The shutter automatically closes when the LC/UPC connector is disconnected. This prevents entry of dirt.

The procedure for a thorough cleaning of these adapters is complicated. Use a commercially available cleaning kit and closely follow the instructions included with the kit.

## Clean Fiber-Optic Cable Connectors

This task describes the steps to clean the fiber-optic cable connectors.

The tools required to clean fiber connectors are:

- Inspection microscope
- Type A fiber-optic connector cleaner (CLETOP reel)
- Optical swab
- Optical receiver cleaning stick

**Procedure**

**Step 1** Using an inspection microscope, inspect each fiber connector for dirt, cracks, or scratches.

**Step 2** Replace any damaged fiber connectors.

**Note**
Replace all dust caps whenever the equipment is unused for 30 minutes or more.

**Note**
Do not reuse optical swabs. Keep unused swabs away from work surfaces.

**Step 3** Clean the fiber connectors with CLETOP reel:

**a.** Remove the dust cap from the fiber connector.

**b.** Press the lever down to open the shutter door. Each time you press the lever, you expose a clean wiping surface.

**c.** Insert the connector into the CLETOP cleaning cassette slot, rotate one-quarter turn, and gently swipe downwards.

**d.** Use an inspection microscope to inspect each fiber connector for dirt, cracks, or scratches. If the connector is not clean, repeat the above substeps.

**e.** Insert the fiber connector into the applicable adapter or attach a dust cap to the fiber connector.

**Note**
If you must replace a dust cap on a connector, first verify that the dust cap is clean. To clean the dust cap, wipe the outside of the cap using a dry lint-free wipe and the inside it using a CLETOP stick swab (14100400).

# Customer-supplied Cleaning Materials

The Type A fiber optic connector cleaners (for example, CLETOP reel) are recommended to clean the cable connectors, but are not supplied with the device.

If properly maintained (only used with clean, defect-free fiber connectors and capped when not in use), the mating adapter would not require cleaning. However, if you suspect the adapter is dirty, clean it by using the CLETOP stick swab.

**Note** For multifiber cable assemblies, use specific cleaning tools or materials designed for the assembly type.

# Cleaning the Optical Mating Adapter

This task describes the steps to clean the optical mating adapters.

**SUMMARY STEPS**

1. Read the cartridge cleaning instructions (provided by the manufacturer) to insert the cartridge cleaning tip into the optical mating adapter.

2. Slide the lever on the cartridge to swipe the mating surface.

## DETAILED STEPS

### Procedure

**Step 1** Read the cartridge cleaning instructions (provided by the manufacturer) to insert the cartridge cleaning tip into the optical mating adapter.

**Step 2** Slide the lever on the cartridge to swipe the mating surface.

**Note**
Always keep unused adapter ports and fiber connectors capped with a clean dust cap. The optical mating adapters that have shutter need not be capped.