Installing the Cisco Remote PHY Solution

Installation Methods

The Cisco Remote-PHY Compact Device Shelf are designed for standalone, 2-rail 19-inch rack-mount installations.

Note Proceed with the installation if you have already unpacked your chassis and read all the site requirements for your new equipment.

Guidelines for Rack Installation

The Cisco Remote-PHY Compact Device Shelf can be installed in two-post rack. Inner clearance (the width between the inner sides of the two posts or rails) must be at least 19 inches (48.26 cm). Airflow through the chassis is from front to back.

The Cisco Remote-PHY Compact Device Shelf can be installed with both front or rear rack-mount brackets.

When planning your rack installation, consider the following guidelines:

- The Cisco Remote-PHY Compact Device Shelf requires a minimum of 1.75 inches or 4.45 cm rack units of vertical rack space. Measure the proposed rack location before mounting the chassis in the rack.
- Before using a particular rack, check for obstructions (such as a power strip) that could impair rack-mount installation. If a power strip does impair a rack-mount installation, remove the power strip before installing the chassis, and then replace it after the chassis is installed.

- Allow sufficient clearance around the rack for maintenance. If the rack is mobile, you can push it back near a wall or cabinet for normal operation and pull it out for maintenance (installing or moving cards, connecting cables, or replacing or upgrading components). Otherwise, allow 19 inches (48.3 cm) of clearance to remove field-replaceable units.
- Maintain a minimum clearance of 3 inches on the front and back sides of the chassis for the cooling air inlet and exhaust ports, respectively. Avoid placing the chassis in an overly congested rack or directly next to another equipment rack; the heated exhaust air from other equipment can enter the inlet air vents and cause an overtemperature condition inside the device.

Caution To prevent chassis overheating, never install a Cisco Remote-PHY Compact Device Shelf in an enclosed space that is not properly ventilated or air conditioned.

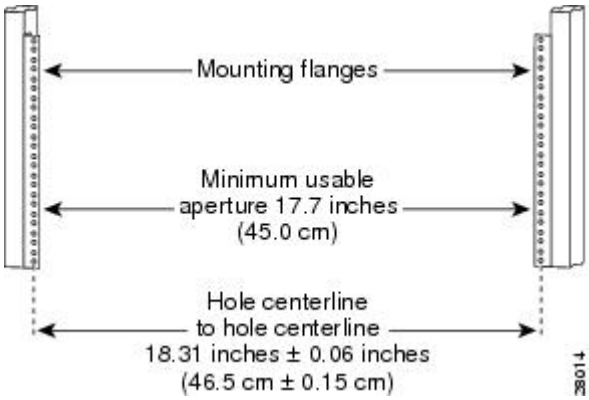
- Always install heavier equipment in the lower half of a rack to maintain a low center of gravity to prevent the rack from falling over.
- Ensure that cables from other equipment already installed in the rack do not impair access to the cards or require you to disconnect cables unnecessarily to perform equipment maintenance or upgrades.
- Provide an adequate chassis ground (earth) connection for your chassis.

In addition to the preceding guidelines, review the precautions for avoiding excessive temperature conditions in the "Physical Characteristics" section and the "Site Environmental Requirements" section.

Verifying Rack Dimensions

Before you install the chassis, measure the space between the vertical mounting flanges (rails) on your equipment rack to verify that the rack conforms to the measurements shown in the following figure.

Figure 1: Verifying Equipment Rack Dimensions



Procedure

Step 1 Mark and measure the distance between two holes on the left and right mounting rails.

The distance should measure 18.31 inches ± 0.06 inches (46.5 cm ± 0.15 cm).

Note Measure for pairs of holes near the bottom, middle, and top of the equipment rack to ensure that the rack posts are parallel.

Step 2 Measure the space between the inner edges of the left front and right front mounting flanges on the equipment rack.

The space must be at least 17.7 inches (45 cm) to accommodate the chassis that is 17.25 inches (43.8 cm) wide and fits between the mounting posts on the rack.

Attaching the Front Rack-Mount Brackets

Before you begin

Before installing the chassis in the rack, you must install the rack-mount brackets on each side of the chassis.

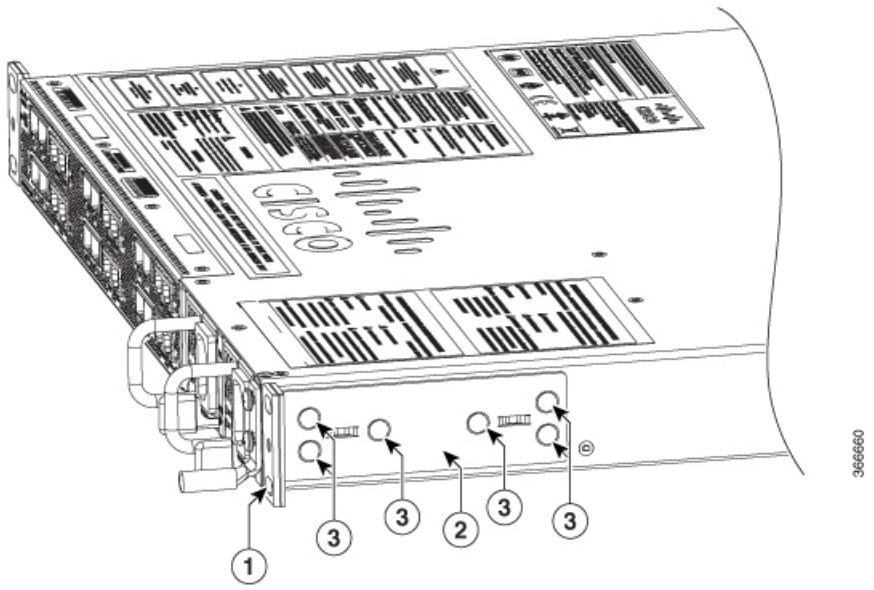
Determine where in the rack you want the chassis to be mounted. If you are mounting more than one chassis in the rack, then start from the bottom up or the center of the rack. The following figure shows the brackets attached to the chassis. Depending on the bracket holes you use, the chassis may protrude in the rack.

Procedure

Step 1 Locate the threaded holes on the side of the chassis. Ensure that you hold the front rack-mount bracket with the ear and holes facing outward and towards the front of the chassis.

The following figures show where to attach the front rack-mount brackets to the Cisco Remote-PHY Compact Device Shelf.

Figure 2: Attaching the Front Rack-Mount Brackets to the Cisco Remote-PHY Compact Device Shelf



1	Front rack-mount bracket ear and holes	3	Front rack-mount bracket screws
2	Front rack-mount bracket		

Step 2 Position the front rack-mount bracket top hole with the chassis, first top hole behind the side vent holes.

Step 3 Insert and tighten the black screws on one side.

Step 4 Repeat Step 1 through Step 3 on the other side of the chassis. Use black screws to secure the rack-mount brackets to the chassis.

Attaching the Rear Rack-Mount Brackets

Before you begin

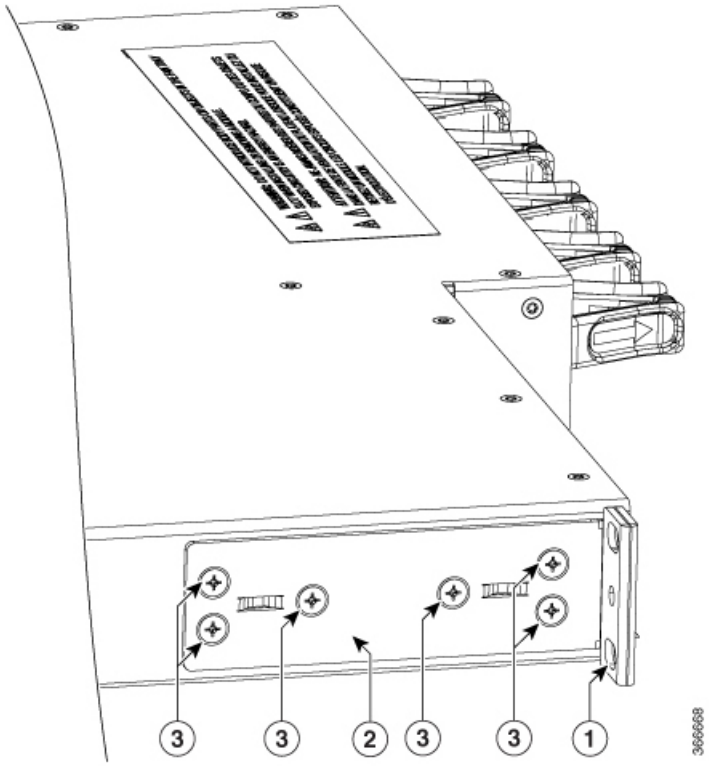
Determine where in the rack you want the chassis to be mounted. If you are mounting more than one chassis in the rack, then start from the bottom up or the center of the rack. The following figure shows the brackets attached to the chassis.

Procedure

Step 1 Locate the threaded holes on the side of the chassis. Ensure that you hold the rear rack-mount bracket with the ear and holes facing outward and towards the rear of the chassis.

The following figures show where to attach the rear rack-mount brackets to the Cisco Remote-PHY Compact Device Shelf.

Figure 3: Attaching the Rear Rack-Mount Brackets to the Cisco Remote-PHY Compact Shelf



1	Rear rack-mount bracket ear and holes	3	Rear rack-mount bracket screws
2	Rear rack-mount bracket		

Step 2 Position the rear rack-mount bracket with the chassis.

Step 3 Insert and tighten the black screws on one side.

Step 4 Repeat Step 1 through Step 3 on the other side of the chassis. Use black screws to secure the rack-mount brackets to the chassis.

Mounting the Cisco Remote-PHY Compact Shelf in the Rack

After installing the rack-mount brackets on the chassis, mount the chassis by securing the rack-mount brackets to two posts or mounting strips in the rack using the screws provided. Because the rack-mount brackets support the weight of the entire chassis, ensure that you use all the screws to fasten the two rack-mount brackets to the rack posts.

The Cisco Remote-PHY Compact Device Shelf can be installed on a 19 inch two-post rack. We recommend that you allow at least 1 or 2 inches (2.54 or 5.08 cm) of vertical clearance between the Cisco Remote-PHY Compact Shelf and any equipment directly above and below it.

Procedure

Step 1 On the chassis, ensure that all the screw fasteners on the installed components are securely tightened.

Step 2 Make sure that your path to the rack is unobstructed. If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

Step 3 With two people, lift the chassis into position between the rack posts.

Step 4 Align the mounting bracket holes with the rack post holes and attach the chassis to the rack.

Step 5 Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.

Step 6 Hold the chassis in position against the mounting rails in the equipment rack and follow these steps:

a) Insert the bottom screw into the second hole up from the bottom of the rack-mount ear and use a hand-held screwdriver to tighten the screw to the rack rail.

Tip To make installation easier, insert one screw at the bottom of the chassis and the next screw at the top of the chassis diagonally from the first screw.

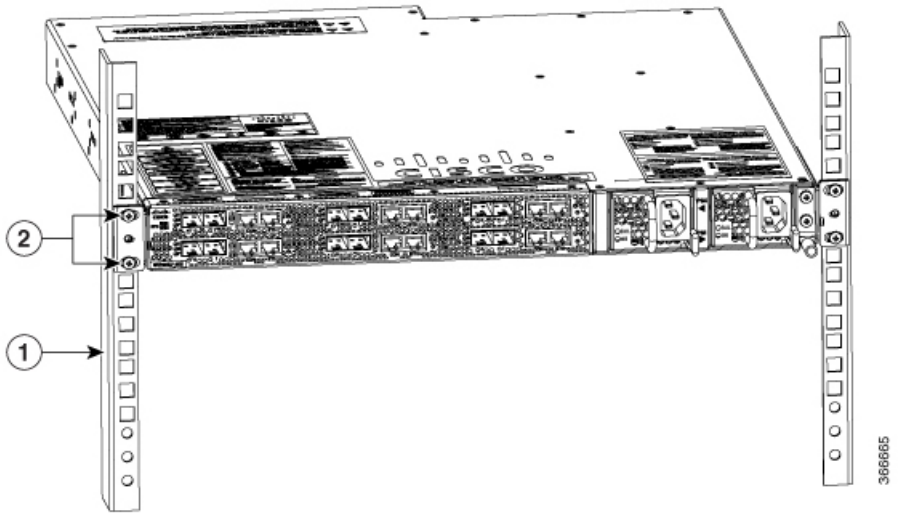
b) Insert the top screw into the second hole from the top of the rack-mount ear diagonally from the bottom screw and tighten the screw to the rack rail.

c) Insert the rest of the screws to secure the chassis to the rack equipment.

Step 7 Tighten all the screws on each side to secure the chassis to the equipment rack.

The following figures show the Cisco Remote-PHY Compact Device Shelf on a two-post equipment rack.

Figure 4: Cisco Remote-PHY Compact Shelf Installed on a Two-Post Equipment Rack



1	Rack equipment rail	2	Rack mount bracket ear and screws

Chassis Ground Connection

Double hole Ground Lug connection is mandatory for both AC and DC chassis.

Before you connect power or turn on power to your chassis, you must provide an adequate chassis ground (earth) connection for the chassis. A chassis ground connector is provided on each Cisco Remote-PHY Compact Device Shelf. There is a stud on the rear left side of the chassis.

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Caution The grounding wire should always be the first to be installed or connected and the last to be removed or disconnected. Use copper wire only.

Have the recommended tools and supplies available before you begin this procedure.

Recommended Tools and Supplies

The following tools, equipment, and supplies are necessary to connect the system ground to the chassis:

- Phillips screwdriver
- 3.5-mm flat blade screwdriver (Phoenix # 1205053 or equivalent 3.5-mm flat blade)
- Dual-lug chassis ground component
- Grounding wire

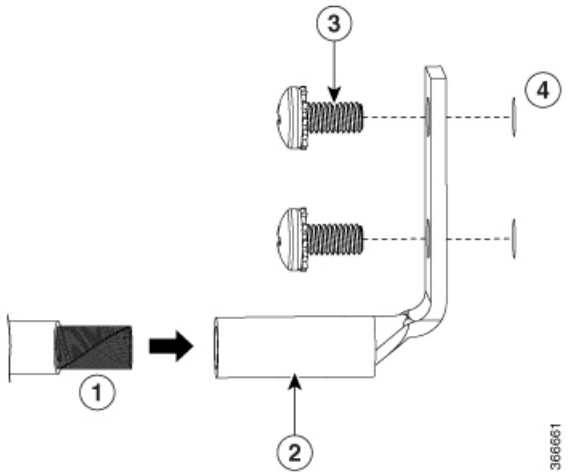
Attaching a Chassis Ground Connection

Procedure

Step 1 Use the wire stripper to strip one end of the AWG #6 wire approximately 0.75 inches (19.05 mm).

Step 2 Insert the AWG #6 wire into the open end of the grounding lug.

Figure 5: Attaching a Grounding Lug to the Chassis Ground Connector



1	Chassis ground lead wire	3	Ground screws
2	Grounding lug	4	Chassis ground connector holes

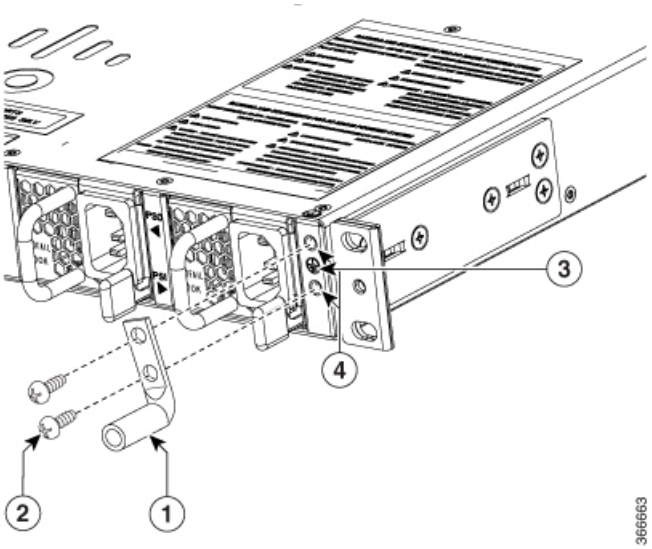
Step 3 Use the crimping tool to carefully crimp the wire receptacle around the wire. This step is required to ensure a proper mechanical connection.

Step 4 Locate the chassis ground connector on the side of your chassis.

Step 5 Insert the two screws through the holes in the grounding lug.

The following figures show how to attach a grounding lug to the chassis ground connector.

Figure 6: Attaching the Grounding Lug to the Ground Connector of the Cisco Remote-PHY Compact Shelf



1	Chassis ground lug	3	Ground symbol
2	Grounding screws	4	Ground connector on the chassis

Step 6 Use the Number 2 Phillips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not over tighten the screws.

Step 7 Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

Connecting Cables

Keep the following guidelines in mind when connecting any external cable to the Cisco Remote-PHY Compact Device Shelf:

- To reduce the chance of interference, avoid crossing high-power lines with any interface cables.
- Verify all the cabling limitations (particularly distance) before powering on the system.

Connecting the Console Port Cable

Cisco Remote-PHY Compact Device Shelf uses RJ-45 ports for console ports to attach a console terminal. It has an asynchronous serial (EIA/TIA-232) RJ-45 console port labeled CON on its front panel. You can connect this port to most types of video terminals with a console cable kit which contains:

- One RJ-45-to-RJ-45 crossover cable
- One RJ-45-to-DB-9 (female) adapter

A crossover cable reverses pin connections from one end to the other. In other words, it connects pin 1 (at one end) to pin 8 (at the other end), pin 2 to pin 7, pin 3 to pin 6, and so on. You can identify a crossover cable by comparing the two modular ends of the cable. Hold the cable ends in your hand, side-by-side, with the tabs at the back. Ensure that the wire connected to the outside (left) pin of the left plug (pin 1) is the same color as the wire connected to the outside (right) pin of the right plug (pin 8).

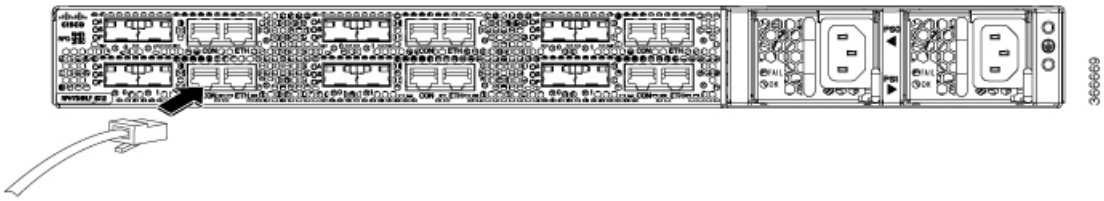
Both the console and auxiliary ports are asynchronous serial ports; devices connected to these ports must be capable of asynchronous transmission.

Before connecting to the console interface on the Cisco Remote-PHY Compact Device Shelf using a terminal or PC, perform the following steps:

Procedure

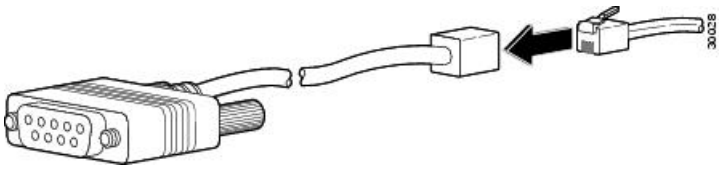
Step 1 Connect one end of the RJ-45 cable to the console port on the Cisco Remote-PHY Compact Device Shelf.

Figure 7: Connecting Console Port



Step 2 Connect the other end of the RJ-45 cable to the RJ-45-to-DB-9 adapter.

Figure 8: Connecting an RJ-45-to-DB-9 Adapter



Step 3 Connect the RJ-45-to-DB-9 adapter to the appropriate serial port on the PC or terminal.

Step 4 Power up the PC or terminal.

Step 5 Configure the PC terminal emulation software or the terminal with the following settings:

- 115200 baud
- 8 data bits
- No parity generation or checking
- 1 stop bit
- No flow control

Connecting Management Ethernet Port Cable

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Caution To comply with Class A emission requirements, a shielded Ethernet cable must be used for the connection.

Procedure

Step 1 Insert an Ethernet RJ-45 cable into the MGMT port.

Step 2 Insert the other end of the RJ-45 cable to your management device or network.

Installing the SFP+ Modules

Before you begin

Caution Do not install or remove the SFP+ module with fiber-optic cables still attached to it. Doing so may damage cables, cable connectors, or the optical interfaces and may interfere with the SFP+ module latching properly into its socket connector. Disconnect all cables before removing or installing an SFP transceiver module.

- Attach an ESD-preventive wrist strap to your wrist and connect the other end to the grounding lug connected to the chassis.
- You must use the supported SFP+ modules. The following SFP+ modules are supported on the Cisco Remote-PHY Compact Device Shelf:
  - SFP-10G-SR
  - SFP-10G-LR
  - SFP-10G-ER
  - SFP-10G-ZR
  - SFP-10G-LRM
  - SFP-10G-AOC3M
  - SFP-10G-LR-S
  - DWDM-SFP10G-C (User needs to configure the operating wavelength to a certain ITU channel after installing this tunable SFP+ module for the first time.)

Required Tools and Equipment

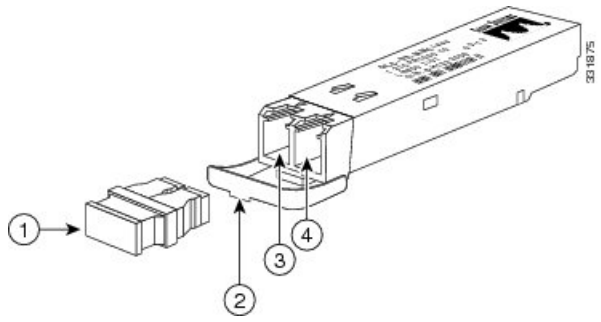
- ESD-preventive wrist strap
- SFP+ module

Procedure

Step 1 Remove the SFP+ module from its protective packaging.

Note Do not remove the optical bore dust plugs.

Figure 9: SFP+ Module with Dust Plugs



1	Dust plug	3	Transmit bore
2	Bail clasp with clasp tab	4	Receive bore

Step 2 Check the label on the SFP+ module to verify that you have the correct model for your network.

Step 3 Find the send (TX) and receive (RX) markings that identify the top side of the SFP+ module.

Note On some SFP modules, the TX and RX marking might be replaced by arrowheads pointing from the SFP+ module connector (transmit direction or TX) and towards the connector (receive direction or RX).

Step 4 Align the SFP+ module in front of the socket opening.

Step 5 Carefully insert the SFP+ module into the socket until you feel the connector latch into place.

Step 6 Press the SFP+ module into the slot firmly with your thumb until it is latched securely into the socket.

Step 7 Repeat step 1 to 6 for each SFP+ module.

What to do next

- Verify if the SFP+ module is seated and latched properly. Grasp the SFP+ module and try to remove it without releasing the latch. If the SFP+ module cannot be removed, it is installed and seated properly. If the SFP+ module can be removed, reinstall it.

Using the SFP+ Ports

Before you begin

- Do not remove the protective dust plugs on the unplugged fiber-optic cable connectors and the SFP+ optical bores until you are ready to make a connection.

Required Tools and Equipment

- Fiber-optic cable with the LC connector

Procedure

Step 1 Remove the dust plugs from the network interface cable LC connectors. Save the dust plugs for future use.

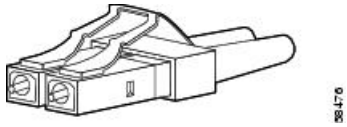
Step 2 Inspect and clean the LC connector end-faces.

Step 3 Remove the dust plug from the SFP+ module optical.

Step 4 Immediately connect the fiber-optic cable with cable LC connector to the SFP+ port.

Important Grasp the LC connector housing to connect the fiber-optic cable to the SFP+ ports.

Figure 10: LC fiber-optic connector



Using UCH.8 Connectors

The back faceplate of the Cisco Remote-PHY Compact Device Shelf has one downstream port cluster and two upstream port clusters. Three cable assemblies with UCH.8 connectors are used, one for each cluster, to connect the Cisco Remote-PHY Compact Device Shelf.

Connect the cable assemblies in the following order:

1. Red cable assembly to the downstream port cluster.
2. One blue cable assembly to upstream port cluster with the ports US0 to US7.
3. Other blue cable assembly to upstream port cluster with the ports US8 to US15.

The following steps describe how to connect one UCH.8 connector. Repeat the procedure to connect all the three UCH.8 connectors.

Before you begin

- Attach an ESD-preventive wrist strap to your wrist and connect the other end to the grounding lug connected to the chassis.

Required Tools and Equipment

- ESD-preventive wrist strap.
- 3/16" flat-blade torque screwdriver.
- Cable Bundle containing the following cable assemblies:
  - One cable assembly with red colored cables connected to one UCH.8 connector.
  - Two cable assemblies with blue colored cables connected to one UCH.8 connector each.

Procedure

Step 1 Align the small and large guide pins in the UCH.8 connector with the small and large guide pin holes on the Cisco Remote-PHY Compact Device Shelf.

Step 2 Insert the guide pins of the UCH.8 connector into the guide pin holes in the Cisco Remote-PHY Compact Device Shelf.

Step 3 Hold the UCH.8 connector in place and tighten the lead screw using the 3/16" flat-head torque screwdriver, with a torque of 10-12 in-lbs.