



Connect Router to the Network

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Port Connection Guidelines

Depending on the chassis , you can use optical modules and RJ-45 connectors to connect the ports to other network devices.

To prevent damage to the fiber-optic cables, we recommend that you keep the transceivers disconnected from their fiber-optic cables when installing the transceiver in the line card. Before removing a transceiver from the router, remove the cable from the transceiver.

To maximize the effectiveness and life of your transceivers and optical cables, ensure the following:

- Wear an ESD-preventative wrist strap that is connected to an earth ground whenever you handle transceivers.
- Do not remove and insert a transceiver more often than is necessary. Repeated removals and insertions can shorten its useful life.
- Keep the transceivers and fiber-optic cables clean and dust free to maintain high signal accuracy and to prevent damage to the connectors. Attenuation (loss of light) is increased by contamination. Connector loss should be kept below 0.35 dB.
 - Clean these parts before installation to prevent dust from scratching the fiber-optic cable ends.
 - Clean the connectors regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors when they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to your site's fiber-optic connection cleaning procedures.
 - Do not touch the ends of connectors. Touching the ends can leave fingerprints and cause other contamination.

- Inspect routinely for dust and damage. If you suspect damage, clean and then inspect fiber ends under a microscope to determine if damage has occurred.

Transceiver and Cable Specifications

To determine which transceivers and cables are supported by this router, refer to the Transceiver Module Group (TMG) Compatibility Matrix Tool:

<https://tmgmatrix.cisco.com>

- For QSFP28 data sheets, refer to the [Cisco 100GBASE QSFP-100G Modules Data Sheet](#).
- For QSFP+ data sheets, refer to the [Cisco 40GBASE QSFP Modules Data Sheet](#).

Connecting a Console to the Router

Before you create a network management connection for the router or connect the router to the network, you must create a local management connection through a console terminal and configure an IP address for the router. The router can be accessed using remote management protocols, such as SSH and Telnet. By default, SSH is included in the software image. But telnet is not part of the software image. You must manually install the telnet optional package to use it.

You also can use the console to perform the following functions, each of which can be performed through the management interface after you make that connection:

- configure the router using the command-line interface (CLI)
- monitor network statistics and errors
- configure Simple Network Management Protocol (SNMP) agent parameters
- initiate software download updates via console

You make this local management connection between the asynchronous serial port on a console device capable of asynchronous transmission. Typically, you can use a computer terminal as the console device.



Note Before you can connect the console port to a computer terminal, make sure that the computer terminal supports VT100 terminal emulation. The terminal emulation software makes communication between the router and computer possible during setup and configuration.

Before you begin

- The router must be fully installed in its rack. The router must be connected to a power source and grounded.
- The necessary cabling for the console, management, and network connections must be available.
 - An RJ45 rollover cable and a DB9F/RJ45 adapter.
 - Network cabling should already be routed to the location of the installed router.

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- Step 1** Configure the console device to match the following default port characteristics:
- 115200 baud
 - 8 data bits
 - 1 stop bit
 - No parity
- Step 2** Connect an RJ45 rollover cable to a terminal, PC terminal emulator, or terminal server.
The RJ45 rollover cable is not part of the accessory kit.
- Step 3** Route the RJ45 rollover cable as appropriate and connect the cable to the console port on the chassis.
If the console or modem cannot use an RJ45 connection, use the DB9F/RJ45F PC terminal adapter. Alternatively, you can use an RJ45/DSUB F/F or RJ45/DSUB R/P adapter, but you must provide those adapters.
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What to do next

You are ready to create the initial router configuration.

Connect the Management Interface

The management port (MGMT ETH) provides out-of-band management, which lets you to use the command-line interface (CLI) to manage the router by its IP address. This port uses a 10/100/1000 Ethernet connection with an RJ-45 interface.



Caution To prevent an IP address conflict, do not connect the MGMT 100/1000 Ethernet port until the initial configuration is complete.

Before you begin

You must have completed the initial router configuration.

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- Step 1** Connect a modular, RJ-45, UTP cable to the MGMT ETH port.
- Step 2** Route the cable through the central slot in the cable management system.
- Step 3** Connect the other end of the cable to a 100/1000 Ethernet port on a network device.
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What to do next

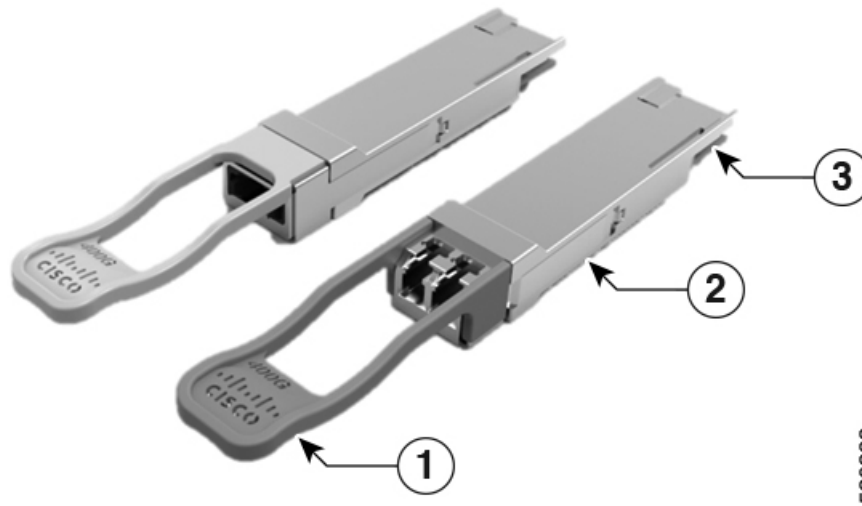
You are ready to connect the interface ports to the network.

Install and Remove QSFP Transceiver Modules

This section provides the installation, cabling, and removal instructions for the Quad Small Form-Factor Pluggable transceiver modules. Refer to the [Cisco Optical Transceiver Handling Guide](#) for additional details on optical transceivers.

The following figure shows a 400-Gigabit QSFP-DD optical transceiver.

Figure 1: 400-Gigabit QSFP-DD Transceiver Module



520383

1	Pull-tab	2	QSFP-DD transceiver body
3	Electrical connection to the module circuitry		



Warning Statement 1079—Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



Installing the Transceiver Module



Warning Statement 1079—Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



Caution The transceiver module is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling transceiver modules or coming into contact with system modules.



Caution Protect the transceiver ports by inserting clean dust caps (8000-QSFP-DCAP) into any ports not in use and do not have optical modules plugged in. If optical modules are plugged in but not in use, the dust caps that were supplied with the optical modules, should be used to protect the TX and RX surfaces of the optical module.

Be sure to clean the optic surfaces of the fiber cables before you plug them back into the optical ports of another module.

The router ships with dust caps plugged in. We highly recommend you to keep the dust caps plugged in until you are ready to plug an optic.

The dust caps protect the ports from possible EMI interference and also avoid contamination due to dust collection. To meet the EMI interference requirements, you must use the metal dust caps when the ports are not in use by optical modules.

The following table provides the supported port details and operating temperature of the QDD-400G-ZR-S and QDD-400G-ZRP-S optical modules when port side exhaust or port side intake fans and power supplies are used.

Table 1: Supported Ports and Operating Temperature of QDD-400G-ZR-S and QDD-400G-ZRP-S Optical Modules

Fixed-Port Routers	Port Side Intake Fans and Power Supplies	Port Side Exhaust Fans and Power Supplies	Port Side Intake Operating Temperature
8101-32FH	<ul style="list-style-type: none"> QDD-400G-ZR-S – supported on all 400G ports QDD-400G-ZRP-S – supported on even-numbered 400G ports 	<ul style="list-style-type: none"> QDD-400G-ZR-S – not supported QDD-400G-ZRP-S – not supported 	40° C at sea level or 35° C at 1500 meter

8111-32EH-O	<ul style="list-style-type: none"> • QDD-400G-ZR-S – supported on all 400G ports • QDD-400G-ZRP-S – supported on even-numbered 400G ports 	Not Applicable	40° C at sea level or 35° C at 1500 meter
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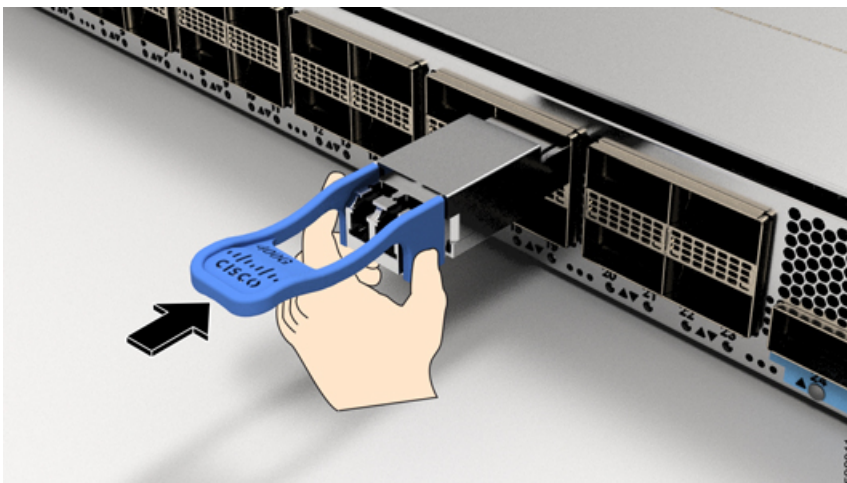
**Note**

- The Cisco 8101-32FH fixed-port router must be operated only with 2kW power supplies while using the QDD-400G-ZR-S and QDD-400G-ZRP-S optical modules. These optical modules are not supported when 1.4KW power supplies are used.
- The Cisco 8111-32EH-O fixed-port router must be operated only with 3kW power supplies while using the QDD-400G-ZR-S and QDD-400G-ZRP-S optical modules. These optical modules are not supported when 2KW power supplies are used.

The QSFP transceiver module has a pull-tab latch. To install a transceiver module, follow these steps:

- Step 1** Attach an ESD wrist strap to yourself and a properly grounded point on the chassis or the rack.
- Step 2** Remove the transceiver module from its protective packaging.
- Step 3** Check the label on the transceiver module body to verify that you have the correct model for your network. Do not remove the dust plug until you're ready to attach the network interface cable. Dust plug is not shown in the images.
- Step 4** Hold the transceiver by the pull-tab so that the identifier label is on the top.
- Step 5** Align the transceiver module in front of the module's transceiver socket opening and carefully slide the transceiver into the socket until the transceiver contact with the socket electrical connector.

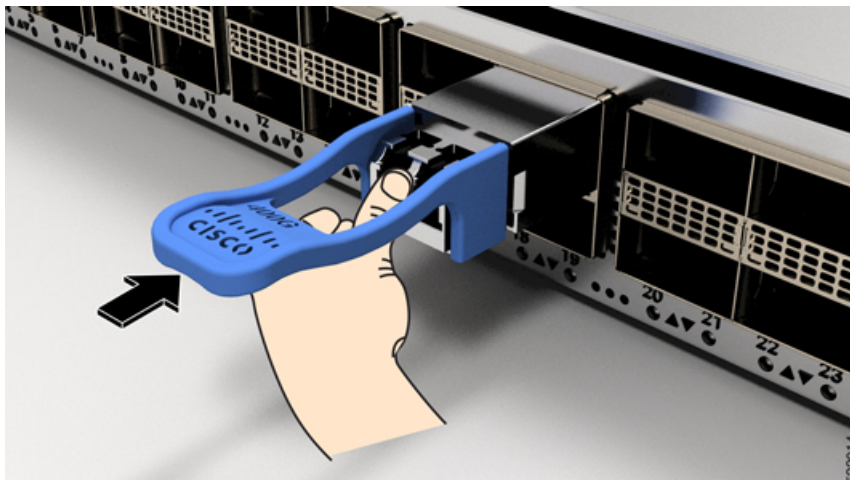
Figure 2: Installing the QSFP Transceiver Module



- Step 6** Press firmly on the front of the transceiver module with your thumb to fully seat the transceiver in the module's transceiver socket (see the below figure).

Caution If the latch isn't fully engaged, you might accidentally disconnect the transceiver module.

Figure 3: Seating the QSFP Transceiver Module



Connect Interface Ports

You can connect optical interface ports with other devices for network connectivity.

Connect a Fiber-Optic Port to the Network

40G, or 100G transceivers are supported on Cisco 8100 series routers. Some transceivers work with fiber-optic cables that you attach to the transceivers and other transceivers work with pre-attached copper cables. You must install a transceiver in the port before installing the fiber-optic cable in the transceiver.



Caution

Removing and installing a transceiver can shorten its useful life. Do not remove and insert transceivers any more than is absolutely necessary. We recommend that you disconnect cables before installing or removing transceivers to prevent damage to the cable or transceiver.

Disconnect Optical Ports from the Network

When you need to remove fiber-optic transceivers, you must first remove the fiber-optic cables from the transceiver before you remove the transceiver from the port.

Maintain Transceivers and Optical Cables

Refer to [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) document for inspection and cleaning processes for fiber optic connections.

