# Installing a Network Module

Network Module Overview

Network Module[1]	Description
C3850-NM-4-1G	This module has four 1 G SFP module slots. Any combination of standard SFP modules are supported. SFP+ modules are not supported.
	If you insert an SFP+ module in the 1 G network module, the SFP+ module does not operate, and the switch logs an error message.
	Note This is supported on the following switch models:
	• WS-C3850-24T/P/U
	• WS-C3850-48T/F/P/U
	• WS-C3850-12X48U
	• WS-C3850-24XU
	• WS-C3850-12S
	• WS-C3850-24S

| Network Module[1]	Description

C3850-NM-2-10G	This module has four slots:
	
	Two slots (left side) support only 1 G SFP modules and two slots (right side) support either 1 G SFP or 10 G SFP modules.
	
	Note This is supported on the following switch models:
	
	    • WS-C3850-24T/P/U
	
	    • WS-C3850-48T/F/P/U
	
	    • WS-C3850-12X48U
	
	    • WS-C3850-24XU
	
	    • WS-C3850-12S
	
	    • WS-C3850-24S

C3850-NM-4-10G	This module has four 10 G slots or four 1 G slots.
	
	Note This is supported on the following switch models:
	
	    • WS-C3850-48T/F/P/U
	
	    • WS-C3850-12X48U
	
	    • WS-C3850-24XU
	
	    • WS-C3850-12XS
	
	    • WS-C3850-24XS

C3850-NM-8-10G	This module has eight 10 G slots with an SFP+ port in each slot. Each port supports a 1 G or 10 G connection
	
	Note This is supported on the following switch models:
	
	    • WS-C3850-12X48U
	
	    • WS-C3850-24XU
	
	    • WS-C3850-24XS

C3850-NM-2-40G	This module has two 40 G slots with a QSFP+ connector in each slot.
	
	Note This is supported on the following switch models:
	
	    • WS-C3850-12X48U
	
	    • WS-C3850-24XU
	
	    • WS-C3850-24XS

C3850-NM-BLANK	Insert this blank module when the switch has no uplink ports (this is required for sufficient air flow).

[1] All network modules are hot-swappable.

Figure 1: C3850-NM-4-1G Network Module
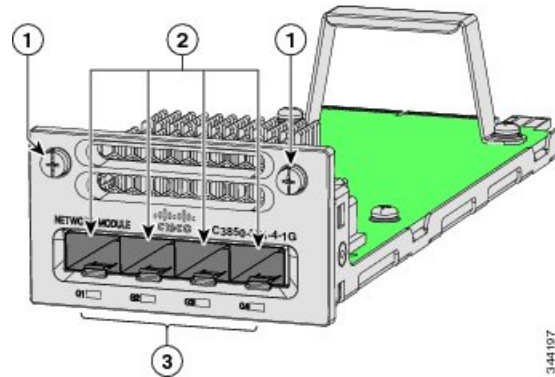
1	Captive screws	3	LEDs
2	1 G Ethernet SFP slots		

Figure 2: C3850-NM-2-10G Network Module
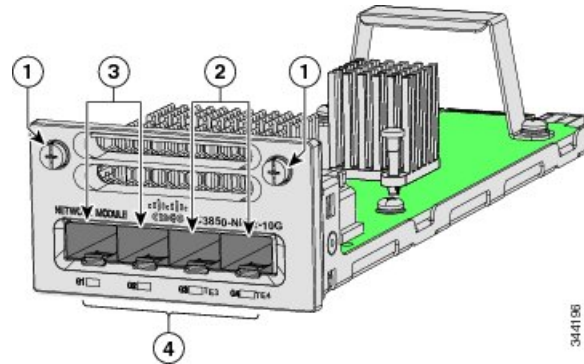
1	Captive screws	3	1 G Ethernet SFP slots
2	1 G or 10 G Ethernet SFP+ slots	4	LEDs

Figure 3: C3850-NM-4-10G Network Module
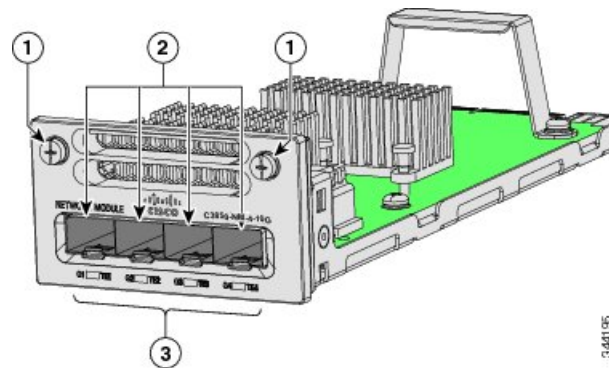
1	Captive screws	3	LEDs
2	10 G slots or 1 G Ethernet SFP slots		

Figure 4: C3850-NM-8-10G Network Module
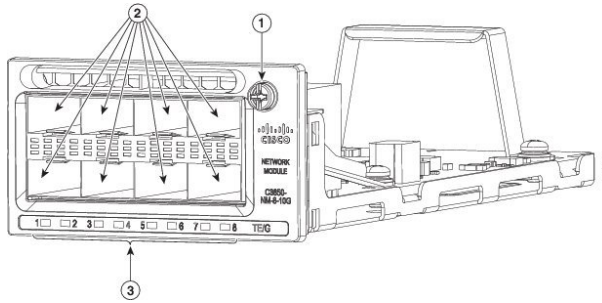
1	Captive screw **Note** This network module has only one screw. You must fasten the screw completely to secure the module, and loosen the screw first so that the module may be removed.	3	LEDs
2	10 G or 1 G SFP+ slots		

Figure 5: C3850-NM-2-40G Network Module
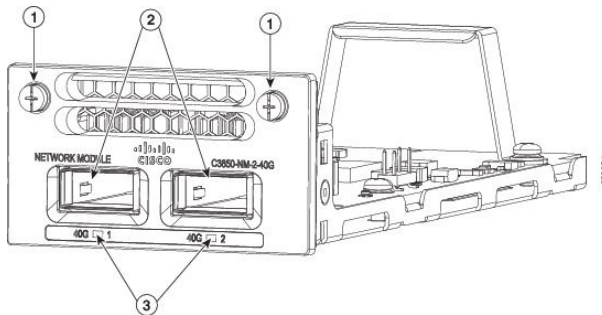
1	Captive screws	3	LEDs
2	40 G QSFP+ slots		

Figure 6: Blank Network Module

1	Blank module	2	Captive screws

Network Module LEDs

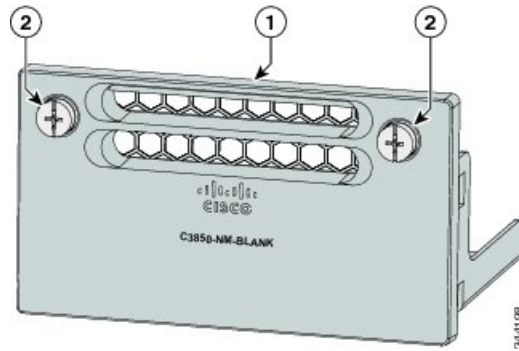Figure 7: Network Module LEDs
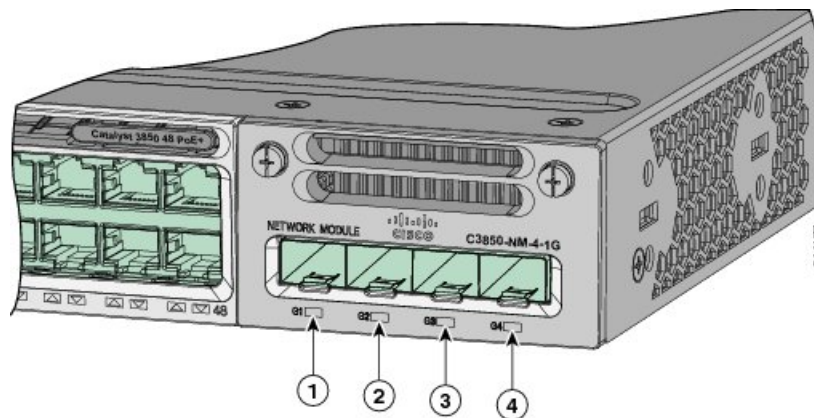
1	G1 LED	3	G3 LED
2	G2 LED	4	G4 LED

Color	Network Module Link Status
Off	Link is off.
Green	Link is on; no activity.
Blinking green	Activity on a link; no faults. **Note** The LED will blink green even when there is very little control traffic.

Color	Network Module Link Status
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. Caution Link faults occur when noncompliant cabling is connected to an SFP/SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP/SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP/SFP+ has been disabled.

Installing a Network Module in the Switch

Safety Warnings

This section includes the installation cautions and warnings. Translations of the safety warnings appear in the *Regulatory Compliance and Safety Information for the Catalyst 3850 Switches* on Cisco.com: http://www.cisco.com/go/cat3850_hw .

Read this section before you install a network module.

⚠

Caution Proper ESD protection is required whenever you handle equipment. Installation and maintenance personnel should be properly grounded by grounding straps to eliminate the risk of ESD damage to the equipment. Equipment is subject to ESD damage whenever you remove it.

⚠

Warning Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

⚠

Warning Do not reach into a vacant slot or chassis while you install or remove a module. Exposed circuitry could constitute an energy hazard. Statement 206

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure.

- Panduit crimping tool with optional controlled-cycle mechanism (model CT-720, CT-920, CT-920CH, CT-930, or CT-940CH).

- Wire-stripping tools.

- 12-gauge copper ground wire (insulated or not) for the single-hole ground connection.

- 8-gauge copper ground wire (insulated or not) for the dual-hole ground connection.

- Dual-hole ground lug and two screws (included in the DC power supply accessory kit) and single-hole ground lug and screw (included in the switch accessory kit). The dual-hole lug is required for the grounding of the switch in a NEBS installation where the DC supply is the only NEBS compliant power supply option.

- Four leads of 14-gauge copper wire.

- Four fork-type terminals from the DC power supply accessory kit. The terminals must be the proper size for M3 screws in a Dinkle DT-35-B25-style terminal block.

Installing Network Modules

Note The switch can operate without a network module, but a blank module (with no ports or SFP slots) is available and should be installed when uplink ports are not required.

Note The switch generates logs when you insert or remove a network module with SFP slots.

Use only supported network modules and SFP or SFP+ modules. Each module has an internal serial EEPROM that is encoded with security information. For information about supported SFP modules, see SFP and SFP+ Modules.

The network module is hot-swappable. If you remove a module, replace it with another network module or a blank module.

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Before you begin

When installing network modules, observe these precautions:

- Do not remove the blank module from the slot unless you are installing an SFP or SFP+ module. Either a module or a dust plug must be in the slot at all times.

- Do not remove the dust plugs from the fiber-optic SFP modules or the rubber caps from the fiber-optic cable until you connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.

- Removing and installing a network module can shorten its useful life. Do not remove and insert a network module more often than is necessary.

- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

Procedure

Step 1   Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2   Remove the module from the protective packaging.

**Step 3**   Remove the blank module from the switch and save it.

> **Caution** Verify the correct orientation of your module before installing it. Incorrect installation can damage the module.

> **Caution** Do not install the network module with connected cables or installed SFP modules. Always remove any cables and modules before you install the network module.

> **Caution** A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 4   Position the module face up to install it in the module slot. Slide the module into the slot until the back of the module faceplate is flush with the switch faceplate. Fasten the captive screws to secure the network module in place.

Figure 8: Installing the Network Module in the Switch
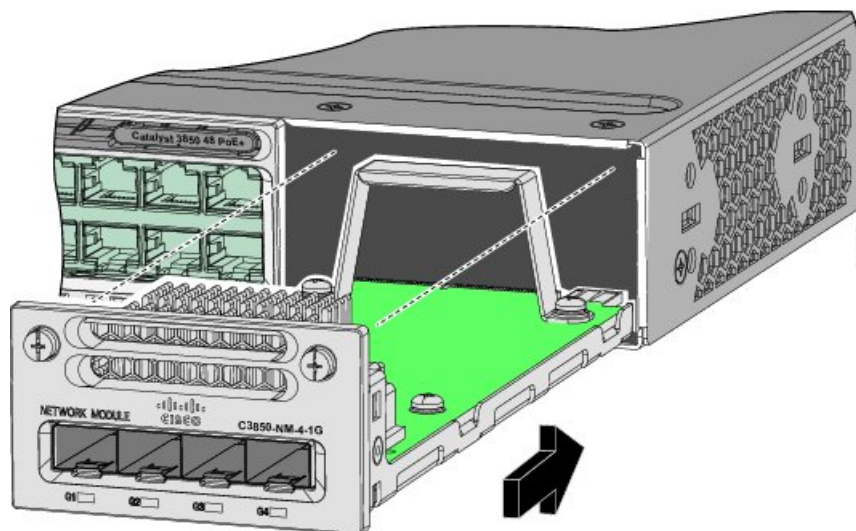
> **Note** Unlike other network modules, the C3850-NM-8-10G cannot be fully inserted and secured until the jackscrew is properly tightened.

    a. Push the module into the uplink slot until the jackscrew connects with the rightmost tab.

    b. You will feel some light resistance, because a spring-loaded tab inside the slot will push back against the C3850-NM-8-10G module

    c. Continue to tighten the jackscrew while gently pushing the front panel of the network module into the slot.

Network Module Port Configurations

C3850-NM-4-1G Module

All ports in the C3850-NM-4-1G module are natively GigabitEthernet and are configured GigabitEthernet1/1/1 though GigabitEthernet1/1/4. There are only four interfaces that are valid, and the other four should not be used even though they still show up in the CLI.

Table 1: C3850-NM-4-1G Module

Interface	Action
GigabitEthernet1/1/1	Configure this interface
GigabitEthernet1/1/2	Configure this interface
GigabitEthernet1/1/3	Configure this interface
GigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Disregard
TenGigabitEthernet1/1/4	Disregard

C3850-NM-4-10G Module

All ports in the C3850-NM-4-10G module default to 10 G and should be configured as TenGigabitEthernet1/1/1 through TenGigabitEthernet1/1/4, even when you are operating them as 1 G using SFPs. Only four interfaces are valid; the other four should not be used even though they still show up in the CLI.

Table 2: C3850-NM-4-10G Module

Interface	Action
GigabitEthernet1/1/1	Disregard
GigabitEthernet1/1/2	Disregard
GigabitEthernet1/1/3	Disregard
GigabitEthernet1/1/4	Disregard
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface

C3850-NM-2-10G Module

In the C3850-NM-2-10G module, the first two parts are natively 1-G ports and the last two ports are natively 10-G ports. So, you configure the 1-G posts as GigabitEthernet1/1/1 through GigabitEthernet1/1/2, and configure the last two ports as TenGigabitEthernet1/1/3 through TenGigabitEthernet1/1/4, even when you are operating the last two ports as 1-G. Only four interfaces are valid, and the other four should not be used even though they still show up in the CLI.

Table 3: C3850-NM-2-10G Module

Interface	Action
GigabitEthernet1/1/1	Configure this interface
GigabitEthernet1/1/2	Configure this interface
GigabitEthernet1/1/3	Disregard
GigabitEthernet1/1/4	Disregard
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Configure this interface, even when operating as 1-G
TenGigabitEthernet1/1/4	Configure this interface, even when operating as 1-G

C3850-NM-8-10G Module

All ports in the C3850-NM-8-10G module default to 10 G and should be configured as TenGigabitEthernet1/1/1 through TenGigabitEthernet1/1/8, even when you are operating them as 1 G using SFP.

Table 4: C3850-NM-8-10G Module

Interface	Action
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/5	Configure this interface
TenGigabitEthernet1/1/6	Configure this interface
TenGigabitEthernet1/1/7	Configure this interface
TenGigabitEthernet1/1/8	Configure this interface

C3850-NM-2-40G Module

The default port connections for the C3850-NM-2-40G module depends on whether you use a 40 G QSFP module or a 4x10G breakout cable.

If you use a 40 G QSFP module, the ports default to 40 G interfaces. In this case, the 10 G interfaces are displayed but not used.

Table 5: C3850-NM-2-40G Module with 40 G QSFP Module

Interface	Action
FortyGigabitEthernet1/1/1	Configure this interface
FortyGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/1	Disregard
TenGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/3	Disregard
TenGigabitEthernet1/1/4	Disregard
TenGigabitEthernet1/1/5	Disregard
TenGigabitEthernet1/1/6	Disregard
TenGigabitEthernet1/1/7	Disregard
TenGigabitEthernet1/1/8	Disregard

If you use a 4x10G breakout cable, the ports default to 10 G interfaces.

Table 6: C3850-NM-2-40G Module with 4x10G breakout cable

Interface	Action
FortyGigabitEthernet1/1/1	Disregard
FortyGigabitEthernet1/1/2	Disregard
TenGigabitEthernet1/1/1	Configure this interface
TenGigabitEthernet1/1/2	Configure this interface
TenGigabitEthernet1/1/3	Configure this interface
TenGigabitEthernet1/1/4	Configure this interface
TenGigabitEthernet1/1/5	Configure this interface
TenGigabitEthernet1/1/6	Configure this interface
TenGigabitEthernet1/1/7	Configure this interface
TenGigabitEthernet1/1/8	Configure this interface

Removing a Network Module

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Note To avoid authentication failure and non-detection of modules, wait for a minimum of five seconds between the online insertion and removal (OIR) of network modules.

Procedure

Step 1 Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface

Caution Do not remove the network module with connected cables or installed SFP modules. Always remove any cables and modules before you remove the network module.

Caution A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 2 Disconnect the cables from the SFP modules.

Step 3 Remove the SFP modules from the network module.

Step 4 Loosen the captive screws that hold the network module in place.

Note The C3850-NM-8-10G module is held secure in the switch by only one jackscrew. This screw also helps to eject the module from its connector interface. Before the module can be removed completely, the screw must be unscrewed all the way out. When removing the screw, a spring pushes the module out when the screw is completely disengaged. Ensure that you hold the module securely until it is completely removed.

Step 5 Grasp the captive screws, and carefully slide it out of the slot.

Step 6 Install a replacement network module or a blank module in the slot.

Step 7 Place the module that you removed in an antistatic bag or other protective environment.

Installing SFP and SFP+ Modules

Before you begin

You must have an installed network module to use SFP and SFP+ modules (except for the Catalyst WS-C3850-12S and WS-C3850-24S). The downlink ports on the Catalyst WS-C3850-12S and WS-C3850-24S

switch models support standard SFP modules, and the downlink ports on the Catalyst WS-C3850-12XS and WS-C3850-24XS switch models support standard SFP+ modules.

See the switch release notes on Cisco.com for the list of supported SFP and SFP+ modules. Use only supported SFP modules on the switch. For the latest information about supported SFP and SFP+ modules, refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

For information about installing, removing, cabling, and troubleshooting SFP modules, see the module documentation that shipped with your device.

Observe these precautions:

> **Warning**   Class 1 laser product. Statement 1008

- Do not remove the dust plugs from the SFP modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.
- Removing and installing an SFP module can shorten its useful life. Do not remove and insert any SFP module more often than is necessary.
- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.
- When you insert several SFPs in multiple switch ports, wait for 5 seconds between inserting each SFP. This will prevent the ports from going into error disabled mode. Similarly, when you remove an SFP from a port, wait for 5 seconds before reinserting it.

Procedure

Step 1   Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2   Find the send (TX) and receive (RX) markings that identify the top of the SFP module.

On some SFP modules, the send and receive (TX and RX) markings might be shown by arrows that show the direction of the connection.

Step 3   If the SFP module has a bale-clasp latch, move it to the open, unlocked position.

Step 4   Align the module in front of the slot opening, and push until you feel the connector snap into place.

Figure 9: Installing an SFP Module in the Network Module
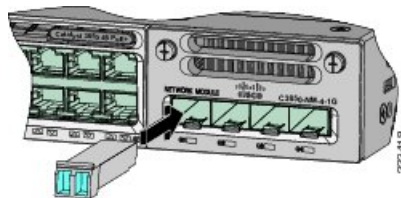
Step 5   If the module has a bale-clasp latch, close it to lock the SFP module in place.

Step 6   Remove the SFP dust plugs and save.

Step 7   Connect the SFP cables.

Figure 10: Network Module with SFP Modules Installed
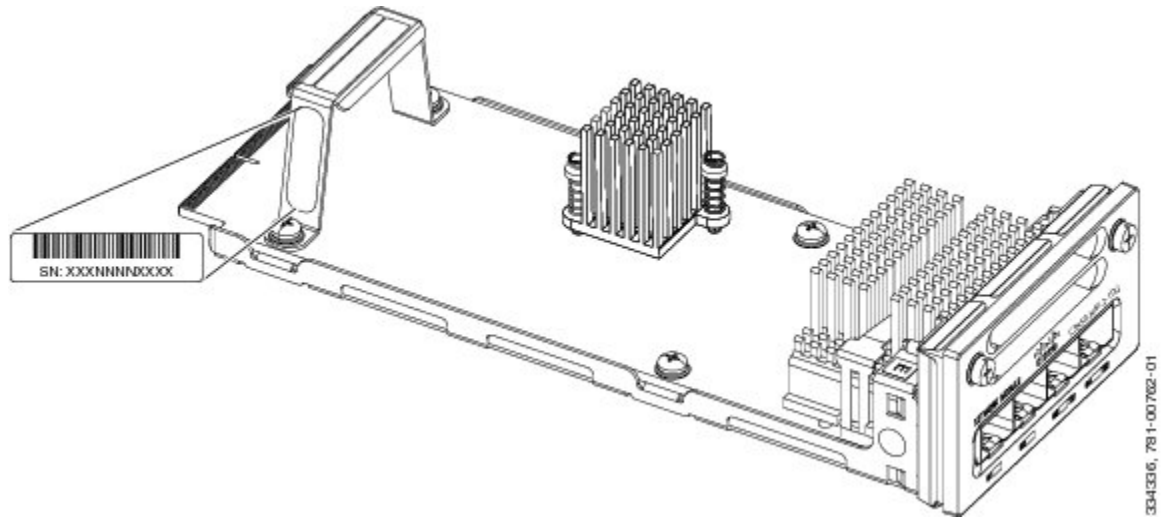

Removing Cisco Pluggable Transceiver Modules

Procedure

Step 1	Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.
Step 2	Disconnect the cable from the transceiver module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).
Step 3	Insert a dust plug into the optical ports of the transceiver module to keep the optical interfaces clean.
Step 4	If the transceiver module has a bale-clasp latch, pull the bale out and down to eject the module. If you cannot use your finger to open the latch, use a small, flat-blade screwdriver or other long, narrow instrument to open it.
Step 5	Grasp the transceiver module, and carefully remove it from the slot.
Step 6	Place the transceiver module in an antistatic bag or other protective environment.

Finding the Network Module Serial Number

If you contact Cisco Technical Assistance regarding a network module, you need to know its serial number.

Figure 11: Network Module Serial Number Location

SN: XXXNNNNXXXX