



# Installing the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs

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July 21, 2014  
OL-31532-01

This document provides information that you should know before and during the installation of the Cisco 1-, 2-, and 4-port Network Interface Modules (Cisco 1-, 2-, and 4-port Serial NIMs) in the Cisco 4400 Series Integrated Services Routers (ISRs). This document contains the following sections:

- [About the Cisco 1-, 2-, and 4-port Serial NIMs, page 1](#)
- [Recommended Practices for Cisco 1-, 2-, and 4-port Serial NIMs, page 4](#)
- [Installing the Cisco 1-, 2-, and 4-port Serial NIMs in the Cisco 4400 Series ISRs, page 8](#)
- [Related Documents, page 11](#)

## About the Cisco 1-, 2-, and 4-port Serial NIMs

The Cisco 1-, 2-, and 4-port Serial NIMs are multi-protocol synchronous serial network interface modules (NIMs) supported on the Cisco 4400 Series ISRs. The Cisco 1-port, 2-port, and 4-port Serial NIMs expand the capabilities of the router to provide connectivity for synchronous interfaces in a wide range of applications including up to 8Mbps data rate for high speed high-level data link control (HDLC). These capabilities can be utilized as Point-to-Point Cisco HDLC WAN interface or frame relay interface. The Cisco 1-, 2-, and 4-port Serial NIMs have their own serial communication controllers (SCC) and they do not rely on the host router for SCCs.

[Table 1](#) lists the Cisco 1-, 2-, and 4-port Serial NIMs SKUs.

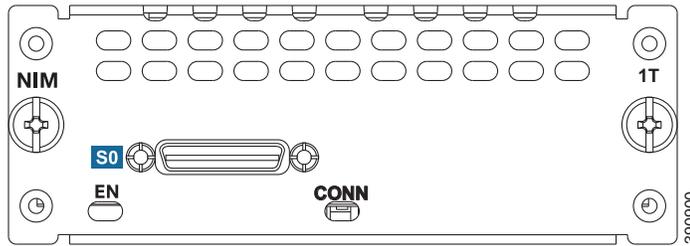


**Table 1 Cisco 1-port, 2-port, and 4-port Serial NIMs**

SKUs	Description	Supported Interfaces
NIM-1T	1 port multi-protocol Synchronous Serial NIM	V.35, RS232, X.21, RS449, RS530, RS530A
NIM-2T	2 port multi-protocol Synchronous Serial NIM	V.35, RS232, X.21, RS449, RS530, RS530A
NIM-4T	4 port multi-protocol Synchronous Serial NIM	V.35, RS232, X.21, RS449, RS530, RS530A

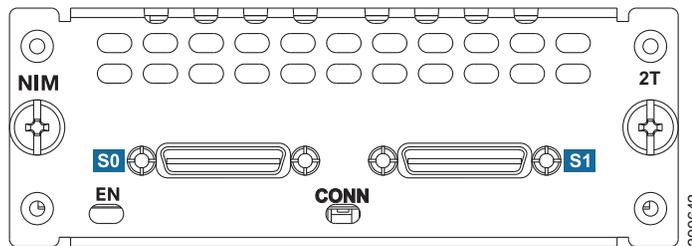
The Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs family consists of 3 compact serial NIM SKUs in single-wide NIM form factor. [Figure 1](#) shows the front panel of the 1-port serial NIM, [Figure 2](#) shows the front panel of the 2-port serial NIM, and [Figure 3](#) show the front panel of the 4-port serial NIM, respectively. The LEDs for each port can be located at the bottom of the port. The EN and COMM LEDs are a bi-color LEDs. The LEDs are described in [Table 1 on page Reference 2](#)

**Figure 1 1-port NIM: Front Panel**



<b>1</b>	EN LED	<b>2</b>	PORT (COMM) LED
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**Figure 2 2-port NIM: Front Panel**



**Figure 3** 4-port NIM: Front Panel

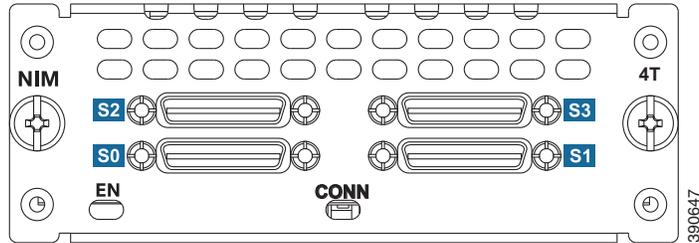
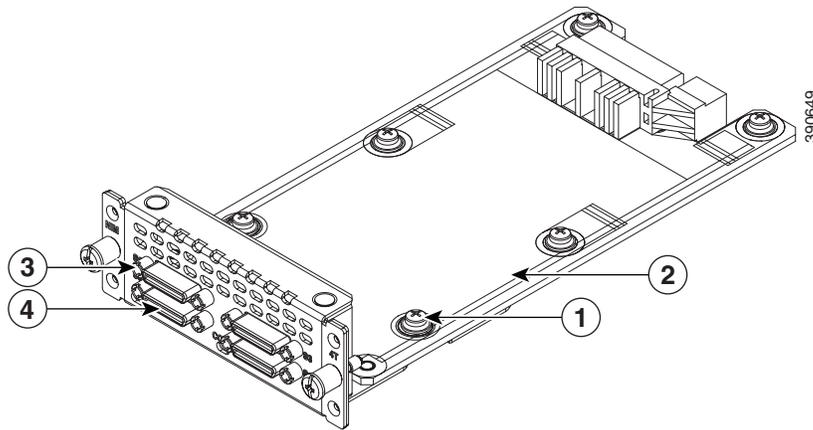


Figure 4 shows the exploded view of the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs

**Figure 4** Exploded View of the Serial Network Interface Module



<b>1</b>	Screws	<b>2</b>	Network Interface Module
<b>3</b>	Connector Mounting Screws	<b>4</b>	Serial Connectors.

## LEDs

The Cisco 1-, 2-, and 4-port Serial NIMs have 2 LEDs to display module and port statuses respectively. The single port LED is applicable to all versions of the Serial NIMs.

The LEDs for each port are located on the front panel and are described in [Table 1](#).

**LEDs**

<b>LED</b>	<b>Color</b>	<b>Description</b>
EN	Green or Amber	<p>Off: Default state when the module is powered on for the first time.</p> <p>Green: The module is powered on and is functioning correctly</p> <p>Amber: The module has some failure. You can also set this state when the module is powered down.</p>
Port (CONN) LED	Green or Amber	<p>Off: No port is configured.</p> <p>Green On: All ports are configured.</p> <p>Blinking Green: At least one of the port is passing traffic.</p> <p>Amber On: At least on port is in loopback mode.</p> <p>Blinking Amber: At least one port has failed to configure.</p>

## Recommended Practices for Cisco 1-, 2-, and 4-port Serial NIMs

This section describes recommended practices for safe and effective installation of the hardware described in this document.

- [Safety Recommendations, page 4](#)
- [Preventing Electrostatic Discharge Damage, page 5](#)
- [General Maintenance Guidelines, page 5](#)
- [Safety Warnings, page 6](#)

Safety warnings included in this section apply to the Cisco 1-, 2-, and 4-port Serial NIMs that are used on the Cisco 4400 Series ISRs.

### Safety Recommendations

To prevent hazardous conditions, follow these safety recommendations while working with this equipment:

- Keep tools away from walk areas where you or others could fall over them.
- Do not wear loose clothing around the router. Fasten your tie or scarf and roll up your sleeves to prevent clothing from being caught in the chassis.
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.

- Locate the emergency power-off switch in the room before you start working. If an electrical accident occurs, shut the power off.
- Before working on the router, turn off the power and unplug the power cord.
- Disconnect all power sources before doing the following:
  - Installing or removing a router chassis
  - Working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Always check that power is disconnected from a circuit.
- Remove possible hazards from your work area, such as damp floors, ungrounded power extension cables, or missing safety grounds.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn off power to the room using the emergency power-off switch.
  - Determine the condition of the victim and send another person to get medical aid or call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

## Preventing Electrostatic Discharge Damage

Electrostatic discharge can damage equipment and electrical circuitry. Electrostatic discharge occurs when electronic printed circuit cards, such as those used in Installing the Cisco Multiprotocol Synchronous Serial NIM, are improperly handled and can result in complete or intermittent equipment failure. Always observe the following electrostatic discharge damage (ESD) prevention procedures when installing, removing, or replacing any electronic printed circuit cards:

- Make sure that the router chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, and make sure that it makes good contact with your skin.
- Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.



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**Caution**

The wrist strap and clip must be used correctly to ensure proper ESD protection. Periodically confirm that the resistance value of the ESD-preventive wrist strap is between 1 and 10 megohms (Mohm).

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- If no wrist strap is available, ground yourself by touching the metal part of the router chassis.

## General Maintenance Guidelines

The following maintenance guidelines apply to the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs:

- Keep the router chassis area clear and dust-free during and after installation.
- If you remove the chassis cover for any reason, store it in a safe place.

- Do not perform any action that creates a hazard to people or makes equipment unsafe.
- Keep walk areas clear to prevent falls or damage to equipment.
- Follow installation and maintenance procedures as documented by Cisco Systems, Inc.

## Safety Warnings

The following safety warning statements apply to all hardware procedures involving the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs for Cisco 4400 Series ISRs. Translations of these warnings are available in the *Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information* document, which ships with all individual Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs orders, and is also available on Cisco.com.



Warning

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### IMPORTANT SAFETY INSTRUCTIONS

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.**  
Statement 1071

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### SAVE THESE INSTRUCTIONS



Warning

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**Read the installation instructions before connecting the system to the power source.** Statement 1004



Warning

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**This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028



Warning

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



Warning

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**Do not use this product near water; for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.** Statement 1035



Warning

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**Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.** Statement 1036



Warning

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**Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.** Statement 1037

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**Warning**

**Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.** Statement 1038

  
**Warning**

**To report a gas leak, do not use a telephone in the vicinity of the leak.** Statement 1039

  
**Warning**

**Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

  
**Warning**

**When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

The following warnings apply in Australia:

  
**Warning**

**Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

  
**Warning**

**Because invisible laser radiation may be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to laser radiation and do not stare into open apertures.** Statement 125

  
**Warning**

**Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

  
**Warning**

**To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Both LAN and WAN ports may use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

  
**Warning**

**Hazardous network voltages are present in WAN ports regardless of whether power to the router is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the router first.** Statement 1026

  
**Warning**

**Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.** Statement 1041

  
**Warning**

**The telecommunications lines must be disconnected 1) before unplugging the main power connector and/or 2) while the housing is open.** Statement 1043

# Installing the Cisco 1-, 2-, and 4-port Serial NIMs in the Cisco 4400 Series ISRs

This section describes the following installation tasks for Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs.

- [Tools and Equipment Required During Installation](#)
- [Installing the Cisco 1-, 2-, and 4-port Serial NIMs in the Cisco 4400 Series ISRs](#)
- [Removing the Cisco 1-, 2-, and 4-port Serial NIMs from the Cisco 4400 Series ISRs](#)
- [Connecting the Cisco 1-, 2-, and 4-port Serial NIMs to a Network](#)

## Tools and Equipment Required During Installation

You will need the following tools and equipment while working with the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs:

- Number 1 Phillips screwdriver or a small flat-blade screwdriver
- ESD-preventive wrist strap



**Warning**

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**No user-serviceable parts inside. Do not open.** Statement 1073

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**Warning**

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

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## Installing the Cisco 1-, 2-, and 4-port Serial NIMs in the Cisco 4400 Series ISRs

**Step 1** Shut down the electrical power to the slot in the router either by turning off the electrical power to the router or by issuing the online insertion and removal (OIR) commands. Leave the power cable plugged in to channel ESD voltages to ground. For more information on OIR, see the “Managing Cisco Enhanced Services and Network Interface Modules” chapter in the *Software Configuration Guide for the Cisco 4400 Series Integrated Services Routers*.

**Step 2** Remove all network cables from the rear panel of the router.

**Step 3** Remove the blank faceplates installed over the network interface module slot that you intend to use.



**Tip**

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Save blank faceplates for future use.

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**Step 4** Align the module with the guides in the chassis walls or slot divider and slide it gently into the NIM slot on the router.

**Step 5** Push the module into place until you feel the edge connector seat securely into the connector on the router backplane. The module faceplate should contact the chassis rear panel.

**Step 6** Using a number 1 Phillips or flat-blade screwdriver, tighten the captive screws on the network interface module.

**Step 7** Connect the module to the network and re-enable the power to the slot in the router.



**Warning**

To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs only to intra-building or unexposed wiring or cable. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. The intrabuilding cable must be shielded and the shield must be grounded at both ends.

## Removing the Cisco 1-, 2-, and 4-port Serial NIMs from the Cisco 4400 Series ISRs

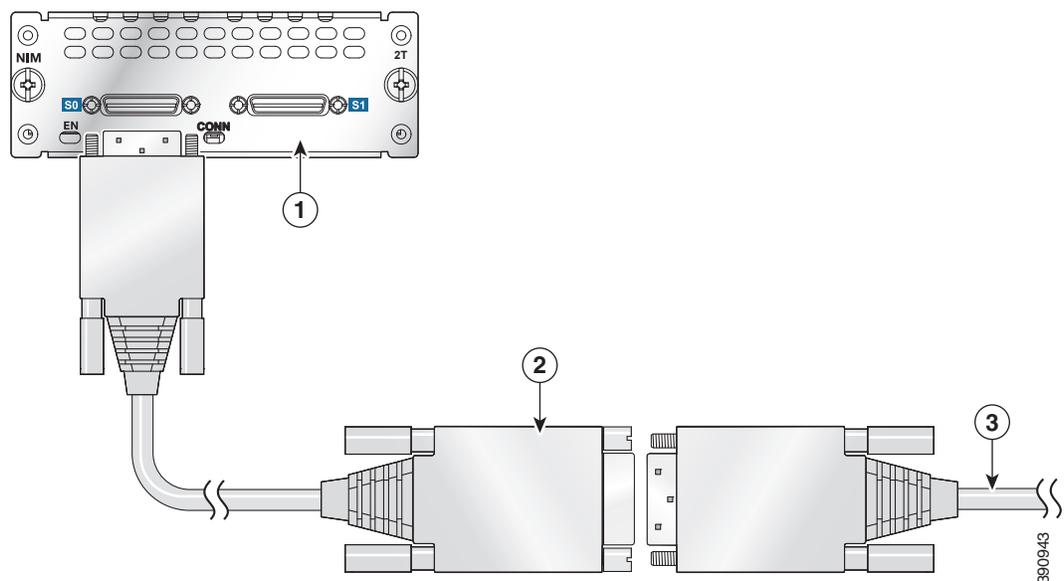
- Step 1** Shut down the electrical power to the slot in the router either by turning off the electrical power to the router or by issuing the online insertion and removal (OIR) commands. Leave the power cable plugged in to channel ESD voltages to ground. For more information on OIR, see the “Managing Cisco Enhanced Services and Network Interface Modules” chapter in the *Software Configuration Guide for the Cisco 4451-X Integrated Services Router*.
- Step 2** Remove all network cables from the rear panel of the router.
- Step 3** Using a number 1 Phillips or flat-blade screwdriver, loosen the captive screws on the NIM.
- Step 4** Slide the network interface module out.
- Step 5** If you are not replacing the module, install a blank faceplate over the empty slot to ensure proper air flow.

## Connecting the Cisco 1-, 2-, and 4-port Serial NIMs to a Network

To connect the Cisco 1-, 2-, and 4-port Serial NIMs to the network, follow these steps:

- Step 1** Connect the serial cable to the connector on the NIM faceplate.
- Step 2** Connect the female end of the serial cable to the male end of the other serial connector for back-to-back connectivity. (See [Figure 5](#) on page 10)

**Figure 5** Connecting the Cisco 1-, 2-, and 4-port Serial NIMs



<b>1</b>	Serial interface	<b>2</b>	Female serial cable
<b>3</b>	Male serial cable		

- Step 3** Connect one end of the appropriate serial cable to the connector on the card faceplate.
- Step 4** Connect the other end of the cable to the DTE or DCE.
- Step 5** Turn on power to the router by pressing the power switch to the ON ( | ) position.
- Step 6** Check that the CONN LED goes on, which indicates that the serial port detects the WAN serial connection.

## Related Documents

Related Topic	Document Title
Information on the Cisco 4451-X Integrated Services Router	<i>Hardware Installation Guide for the Cisco 4451-X Integrated Services Router</i>
Information on configuring Cisco 4451-X Integrated Services Routers	<i>Software Configuration Guide for the Cisco 4451-X Integrated Services Router</i>
Information about configuring the Cisco 1-, 2-, and 4-Port Serial Network Interface Modules for Cisco 4400 Series ISRs.	<i>Configuring the Cisco 1-port, 2-port, and 4-port Serial High-Speed WAN Interface Cards for Cisco 4400 Series ISRs</i>
Regulatory compliance and safety information	<i>Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information</i>

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