



Removing and Installing the ISA and the ISM

This chapter describes how to remove the ISA or ISM from supported platforms and also how to install a new or replacement ISA or ISM. This chapter contains the following sections:

- [Handling the ISA or the ISM, page 3-1](#)
- [Online Insertion and Removal, page 3-2](#)
- [Warnings and Cautions, page 3-3](#)
- [ISA or ISM Removal and Installation, page 3-4](#)

The ISA and the ISM circuit boards are mounted to metal carriers and are sensitive to electrostatic discharge (ESD) damage.



Note

When a port adapter slot or service module slot is not in use, a blank port adapter or service module must fill the empty slot to allow the router to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow. If you plan to install a new ISA or ISM in a slot that is not in use, you must first remove the blank port adapter or blank service module.



Caution

When powering off the router, wait a minimum of 30 seconds before powering it on again.

Handling the ISA or the ISM



Caution

Always handle the ISA or the ISM by the carrier edges and handle; never touch the components or connector pins. (See [Figure 3-1](#) and [Figure 3-2](#).)

Figure 3-1 Handling the ISM

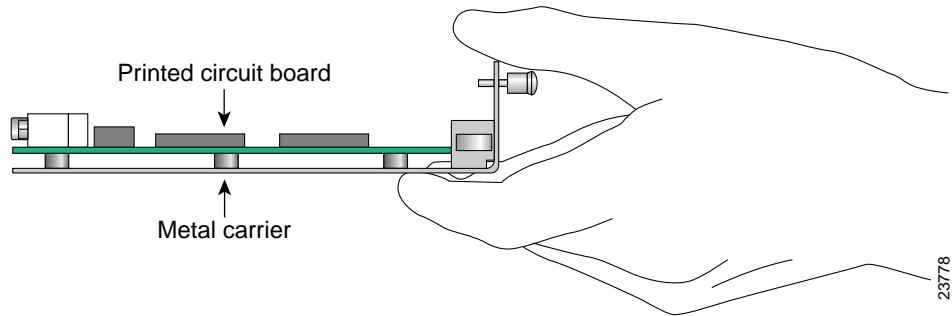
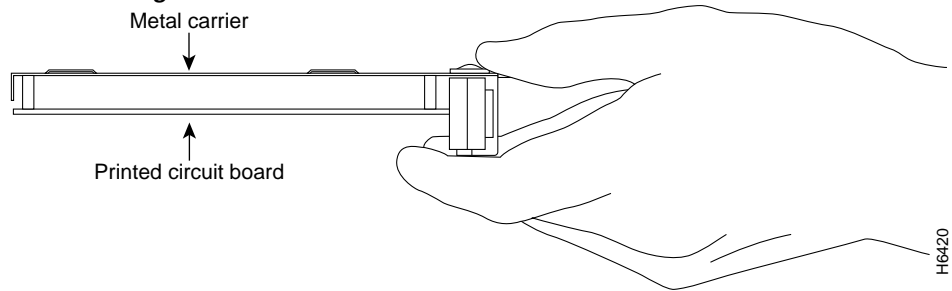


Figure 3-2 Handling the ISA



Online Insertion and Removal

Several platforms support online insertion and removal (OIR); therefore, you do not have to power down the router when removing and replacing an ISA on Cisco 7200 series routers.



Warning

Cisco 7100 series routers *do not* support OIR for the service module slot (slot 5); therefore, you must power down the router when removing or replacing an ISM in Cisco 7100 series routers.

It is wise to gracefully shut down the system before removing a port adapter that has active traffic moving through it. Removing a module while traffic is flowing through the ports can cause system disruption. Once the module is inserted, the ports can be brought back up.



Note

As you disengage the module from the router or switch, online insertion and removal (OIR) administratively shuts down all active interfaces in the module.

OIR allows you to install and replace modules while the router is operating; you do not need to notify the software or shut down the system power, although you should not run traffic through the module you are removing while it is being removed. OIR is a method that is seamless to end users on the network, maintains all routing information, and preserves sessions.

The following is a functional description of OIR for background information only; for specific procedures for installing and replacing a module in a supported platform, refer to the [“ISA or ISM Removal and Installation”](#) section on page 3-4.

Each module has a bus connector that connects it to the router. The connector has a set of tiered pins in three lengths that send specific signals to the system as they make contact with the module. The system assesses the signals it receives and the order in which it receives them to determine if a module is being removed from or introduced to the system. From these signals, the system determines whether to reinitialize a new interface or to shut down a disconnected interface.

Specifically, when you insert a module, the longest pins make contact with the module first, and the shortest pins make contact last. The system recognizes the signals and the sequence in which it receives them.

When you remove or insert a module, the pins send signals to notify the system of changes. The router then performs the following procedure:

1. Rapidly scans the system for configuration changes.
2. Initializes newly inserted port adapters or administratively shuts down any vacant interfaces.
3. Brings all previously configured interfaces on the module back to their previously installed state. Any newly inserted interface is put in the administratively shutdown state, as if it was present (but not configured) at boot time. If a similar module type is reinserted into a slot, its ports are configured and brought online up to the port count of the originally installed module of that type.

**Note**

Before you begin installation, read [Chapter 2, “Preparing for Installation,”](#) for a list of parts and tools required for installation.

Warnings and Cautions

Observe the following warnings and cautions when installing or removing service adapters and service modules.

**Note**

If a port adapter lever or other retaining mechanism does not move to the locked position, the service adapter is not completely seated in the midplane. Carefully pull the service adapter out of the slot, reinsert it, and move the port adapter lever or other mechanism to the locked position.

**Caution**

To prevent jamming the carrier between the upper and the lower edges of the service module slot, and to ensure that the edge connector at the rear of the ISM mates with the connection at the rear of the service module slot, make certain that the carrier is positioned correctly, as shown in the cutaway in the [“Cisco 7100 Series—Removing and Installing the ISM”](#) section on page 3-5

**Warning**

When performing the following procedures, wear a grounding wrist strap to avoid ESD damage to the card. Some platforms have an ESD connector for attaching the wrist strap. Do not directly touch the midplane or backplane with your hand or any metal tool, or you could shock yourself.

**Warning**

Cisco 7100 series routers do not support OIR of the ISM. Failure to power down the router when removing or replacing the ISM could cause serious equipment damage or electrical shock.

ISA or ISM Removal and Installation

In this section, the illustrations that follow give step-by-step instructions on how to remove and install the ISA or the ISM. This section contains the following illustrations:

- [Cisco 7100 Series—Removing and Installing the ISM, page 3-5](#)
- [Cisco 7200 Series—Removing and Installing the ISA, page 3-6](#)



Note

The Cisco 7100 series VPN routers do not support an ISM and an ISA in the same chassis.

Cisco 7100 Series—Removing and Installing the ISM

Step 1

To remove the ISM, use a number 2 Phillips screwdriver to loosen the captive installation screws.

Step 2

Grasp the captive installation screws of the ISM to pull it from the router.

Note: When inserting the ISM, hold the ISM up at a slight angle to engage the carrier guides. Completely seating the ISM in the slot may require several attempts.

Step 3

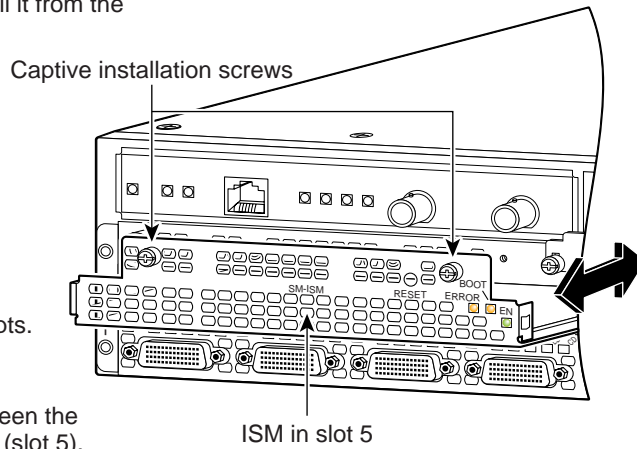
To insert the ISM, carefully align the ISM carrier between the upper and the lower edges of the service module slot (slot 5).

Step 4

Carefully slide the ISM all the way into the slot until it is seated in the router midplane.

Step 5

After the ISM is properly seated, tighten the captive installation screws.



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Cisco 7200 Series—Removing and Installing the ISA

Step 1

To remove the service adapter, place the port adapter lever in the unlocked position. (See A.) The port adapter lever remains in the unlocked position.

Step 2

Grasp the handle of the service adapter and pull the service adapter from the router. If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis slot.

Step 3

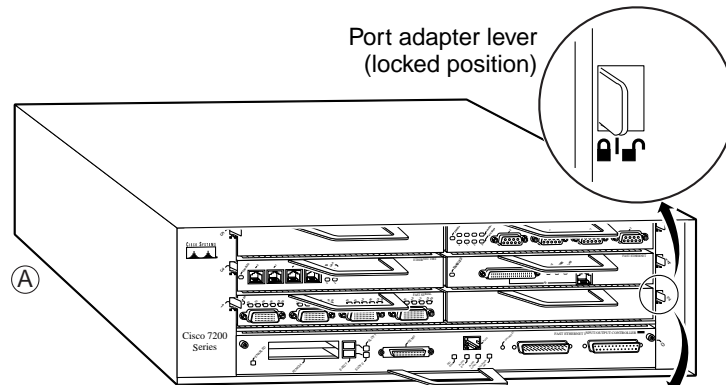
To insert the service adapter, carefully align the service adapter carrier between the upper and the lower edges of the port adapter slot. (See B.)

Step 4

Carefully slide the new service adapter into the port adapter slot until the service adapter is seated in the router midplane.

Step 5

After the service adapter is properly seated, lock the port adapter lever. (See A.)



Note: This adapter removal applies to any port or service adapter.

Port adapter lever (unlocked position)

