Removing and Installing the PA-A2 ATM CES Port Adatper

This chapter describes how to remove PA-A2 ATM CES port adapters from supported platforms and also how to install new or replacement modules. This chapter contains the following sections:

Each PA-A2 ATM CES port adapter circuit board is mounted to a metal carrier and is sensitive to electrostatic discharge (ESD) damage. Before you begin installation, read Chapter 2, "Preparing to Install the <XXXXX Module>," for a list of parts and tools required for installation.

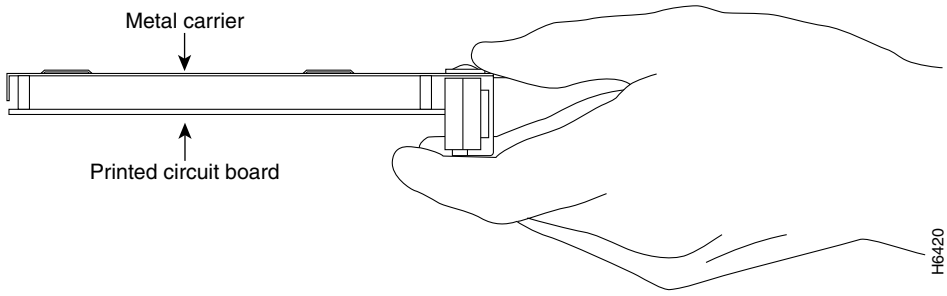
Note When a slot is not in use, a blank must fill the empty slot to allow the router or switch to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow across the installed modules. If you plan to install a new module in a slot that is not in use, you must first remove the blank.

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

Handling Port Adapters

Warning **Always handle the port adapter by the carrier edges and handle; never touch the port adapter components or connector pins. (See Figure 3-1.)**

Figure 3-1 Handling a Port Adapter



Online Insertion and Removal

The Cisco 7200 series routers, Cisco 7200 VXR router, and Cisco uBR7246 router support the OIR of all module types. Therefore, you do not have to power down routers when removing and replacing modules in these chassis.

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 "Port Adapter Removal and Installation" section on page 3-6.

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 perfoms 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.

Warnings and Cautions

Observe the following warnings and cautions when installing or removing modules:

- Do not slide a module all the way into the slot until you have connected all required cables. Trying to do so disrupts normal operation of the router or switch.
- If a module lever or other retaining mechanism does not move to the locked position, the module is not completely seated in the midplane. Carefully pull the module halfway out of the slot, reinsert it, and move the module lever or other mechanism to the locked position.
- To prevent jamming the carrier between the upper and the lower edges of the module slot, and to ensure that the edge connector at the rear of the module mates with the connection at the rear of the module slot, make certain that the carrier is positioned correctly, as shown in the cutaway in the following illustrations.

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.**

Port Adapter Slot Divider

If you are replacing two single-width modules with a dual-width module, you first need to remove the slot divider. The following sections describe how to remove the slot divider:

- Cisco 7200 Series Routers—Removing the Slot Divider, page 3-4
- Cisco uBR7200 Series Routers—Removing the Slot Divider, page 3-5

Cisco 7200 Series Routers—Removing the Slot Divider

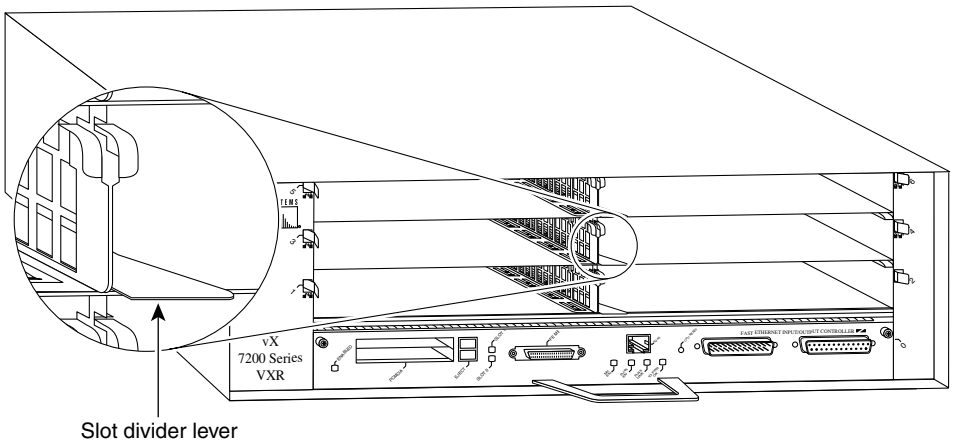
To install a dual-width module in Cisco 7200 series routers or in Cisco 7200 VXR routers that have two single-width modules installed, first remove the slot divider. Follow this procedure:

Step 1

Remove installed single-width port adapters from the slots on both sides of the port adapter slot divider.

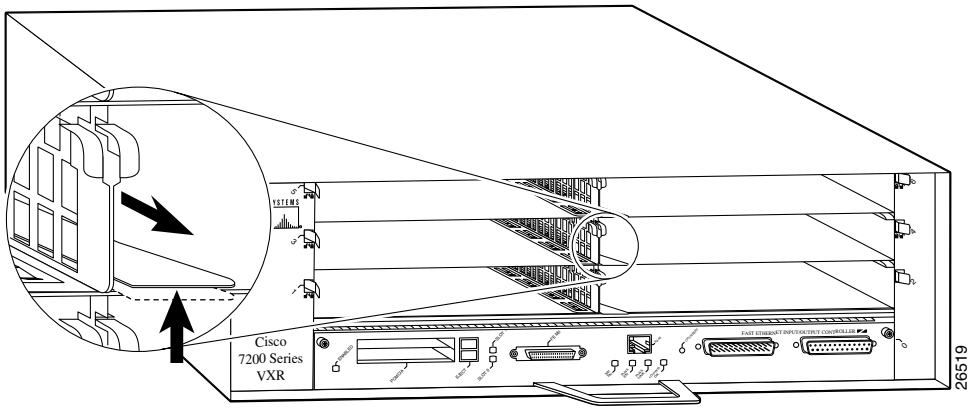
Step 2

With one hand, raise the slot divider lever to unlock the slot divider from the chassis.



Step 3

With the slot divider lever still raised, use your other hand to pull the slot divider from the chassis.



Step 4

Store the slot divider in a location where you can retrieve it for use later.

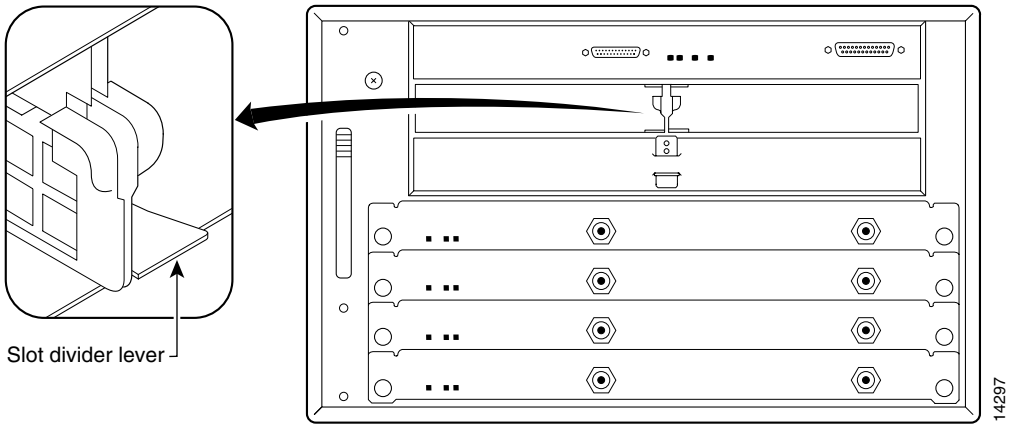
Cisco uBR7200 Series Routers—Removing the Slot Divider

If you are installing a dual-width module in a Cisco uBR7200 router that has two single-width modules installed, you must first remove the slot divider that is located between the two slots. Follow this procedure:

Step 1 Remove installed single-width port adapters from the slots on both sides of the port adapter slot divider.

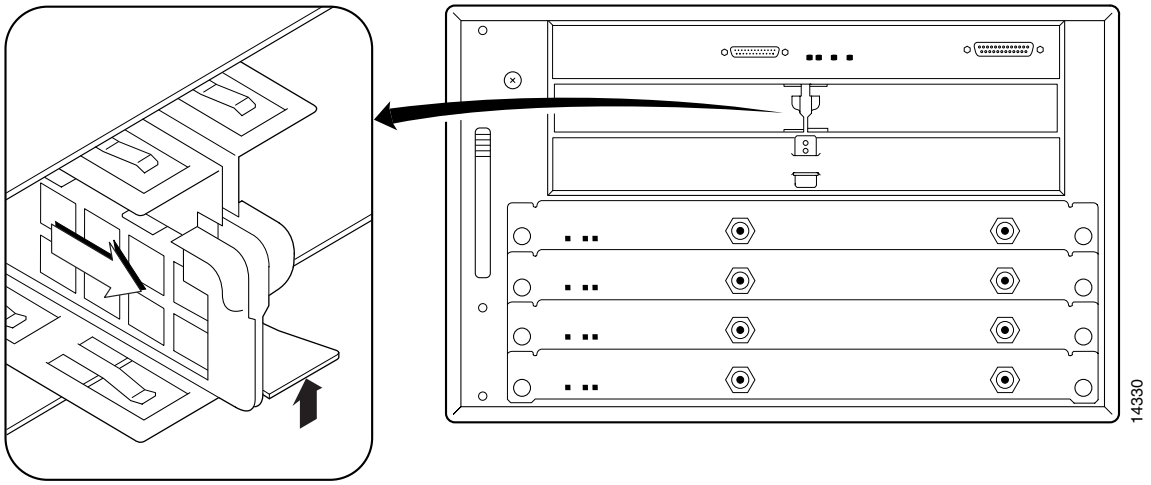
Step 2 With one hand, raise the slot divider lever to unlock the slot divider from the chassis. (See Figure 3-2.)

Figure 3-2 Slot Divider Lever—Cisco uBR7246 Shown



Step 3 With the slot divider lever still raised, use your other hand to pull the slot divider from the chassis. (See Figure 3-3.)

Figure 3-3 Removing the Slot Divider from the Chassis—Cisco uBR7246 Shown



Step 4 Store the slot divider in a location where you can retrieve it for use later.

Port Adapter Removal and Installation

In this section, the illustrations that follow give step-by-step instructions on how to remove and install modules. Although the procedures may refer to a particular type of module, the steps are the same for installing and removing all types of modules. This section contains the following illustrations:

Cisco 7200 Series Routers and Cisco 7200 VXR Routers—Removing and Installing a Module

Step 1

To remove the port 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 port adapter and pull the port adapter from the router, about halfway out of its slot. If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis slot.

Step 3

With the port adapter halfway out of the slot, disconnect all cables from the port adapter. After disconnecting the cables, pull the port adapter from its chassis slot.

Step 4

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

Step 5

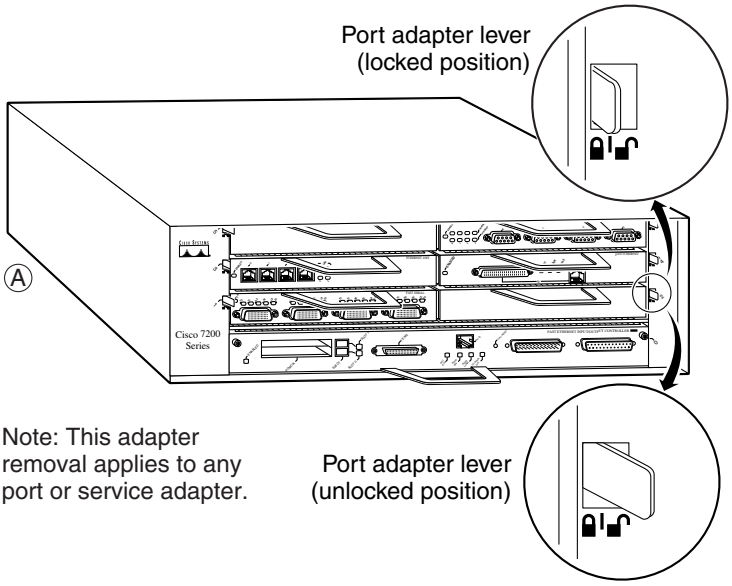
Carefully slide the new port adapter halfway into the port adapter slot. (See B.)

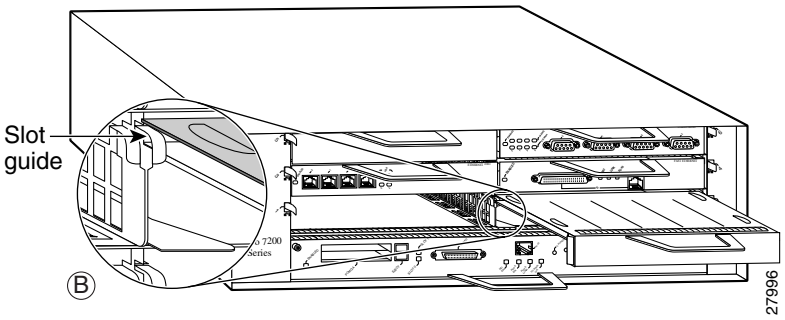
Step 6

With the port adapter halfway into the slot, connect all required cables to the port adapter. After connecting all required cables, carefully slide the port adapter all the way into the slot until the port adapter is seated in the router midplane.

Step 7

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

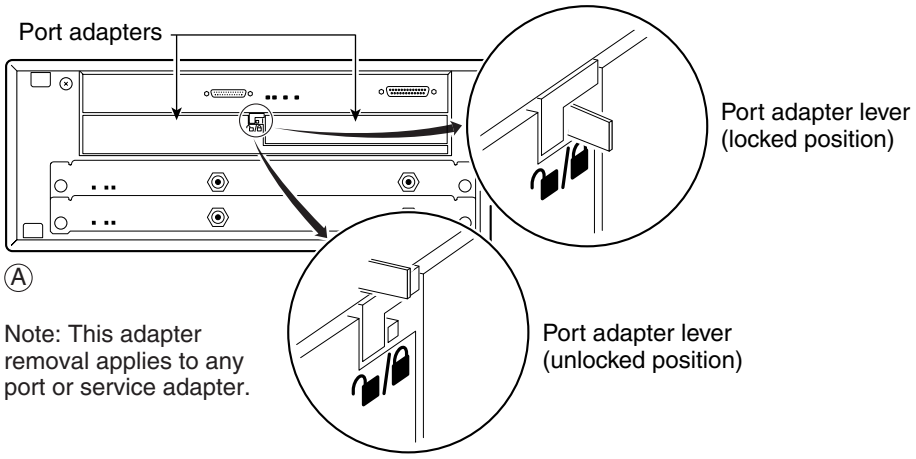




Cisco uBR7200 Series Routers—Removing a Module

Step 1

To remove the port adapter, unlock the port adapter retaining mechanism. The port adapter lever remains in the unlocked position.



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

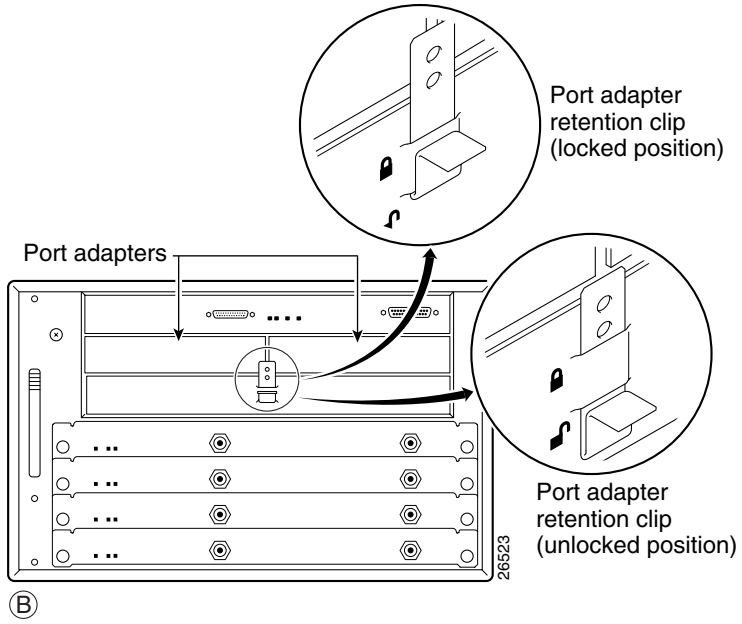
Place the port adapter lever (Cisco uBR7223, see A), or the port adapter retention clip (Cisco uBR7246 and Cisco uBR7246 VXR, see B) in the unlocked position. Either mechanism remains in the unlocked position.

Step 2

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

Step 3

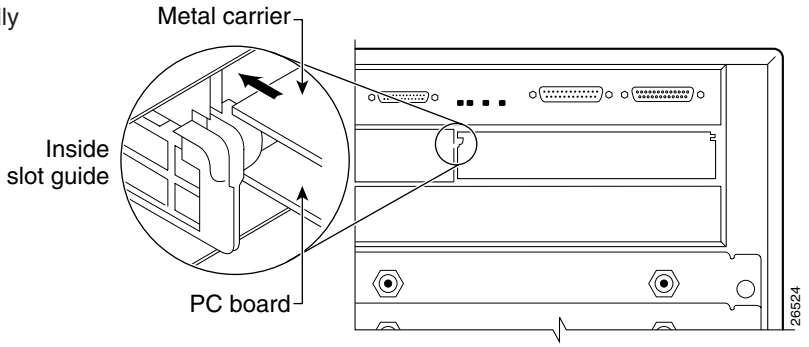
With the port adapter halfway out of the slot, disconnect all cables from the port adapter. After disconnecting the cables, pull the port adapter from its chassis slot.



Cisco uBR7200 Series Routers—Installing a Module

Step 1

To insert the port adapter, carefully align the port adapter carrier between the upper and the lower edges of the port adapter slot.



Step 2

Carefully slide the new port adapter halfway into the port adapter slot.

Step 3

With the port adapter halfway into the slot, connect all required cables to the port adapter. After connecting all required cables, carefully slide the port adapter all the way into the slot until the port adapter is seated in the router midplane.

Step 4

After the port adapter is properly seated, lock the port adapter lever or retention clip, depending on your system. (See illustration on preceding page.)