



Removing and Installing the PA-FC-1G

This chapter describes how to remove the PA-FC-1G from supported platforms and also how to install new or replacement port adapters. This chapter contains the following sections:

- [Handling Port Adapters, page 3-1](#)
- [Online Insertion and Removal, page 3-2](#)
- [Warnings and Cautions, page 3-3](#)
- [PA-FC-1G Removal and Installation, page 3-3](#)
- [SFP Removal and Installation, page 3-6](#)

Each PA-FC-1G 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 PA-FC-1G,”](#) 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 port adapters. If you plan to install a new port adapter in a slot that is not in use, you must first remove the blank.



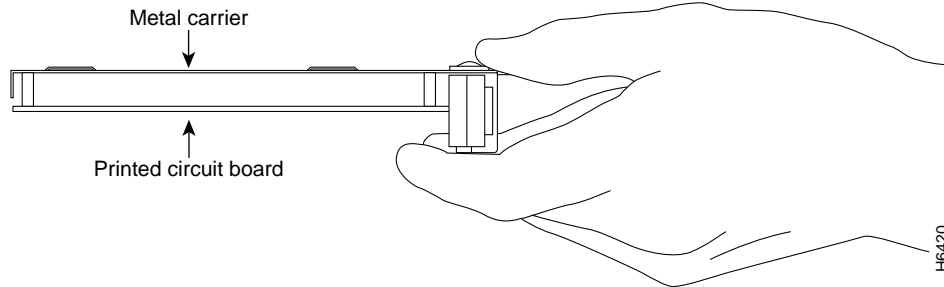
Caution

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

Handling Port Adapters

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 VXR routers and the Cisco 7404ASR router support the online insertion and removal (OIR) of all port adapter types. Therefore, you do not have to power down routers when removing and replacing port adapters in these chassis. However, it is wise to gracefully shut down the system before removing a port adapter that has active traffic moving through it. Removing a port adapter while traffic is flowing through the ports can cause system disruption. Once the port adapter is inserted, the ports can be brought back up.



Note

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

OIR allows you to install and replace port adapters and service adapters 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 port adapter 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 PA-FC-1G in a supported platform, refer to the [“PA-FC-1G Removal and Installation”](#) section on page 3-3.

Each PA-FC-1G has a PCI bus connector that connects it to the router. The PCI bus connector has a set of tiered pins in three lengths that send specific signals to the system as they make contact with the port adapter. The system assesses the signals it receives and the order in which it receives them to determine if a port adapter 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 port adapter, the longest pins make contact with the port adapter 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 port adapter, 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 port adapter 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 port adapter type is reinserted into a slot, its ports are configured and brought online up to the port count of the originally installed port adapter of that type.

Warnings and Cautions

Observe the following warnings and cautions when installing or removing port adapters:

- Do not slide a port adapter 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 port adapter lever or other retaining mechanism does not move to the locked position, the port adapter is not completely seated in the midplane. Carefully pull the port adapter halfway out of the slot, reinsert it, and move the port adapter lever or other mechanism to the locked position.
- To prevent jamming the carrier between the upper and the lower edges of the port adapter slot, and to ensure that the edge connector at the rear of the port adapter mates with the connection at the rear of the port adapter 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.

PA-FC-1G Removal and Installation

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

- [Cisco 7200 VXR Routers—Removing and Installing a Port Adapter, page 3-4](#)
- [Cisco 7401ASR Router—Removing and Installing a Port Adapter, page 3-5](#)

Cisco 7200 VXR Routers—Removing and Installing a Port Adapter

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

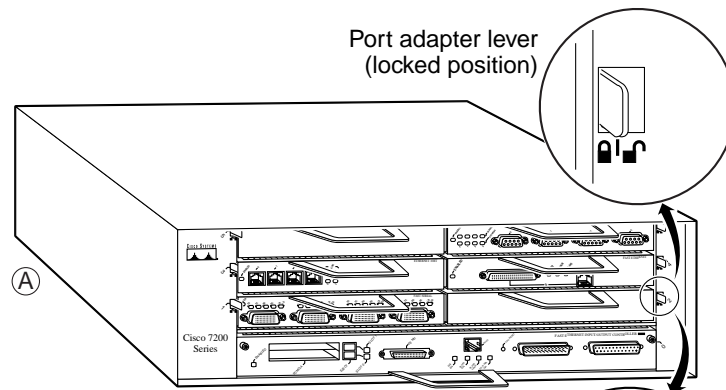
Carefully slide the new port adapter halfway into the port adapter slot. (See B.)

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.

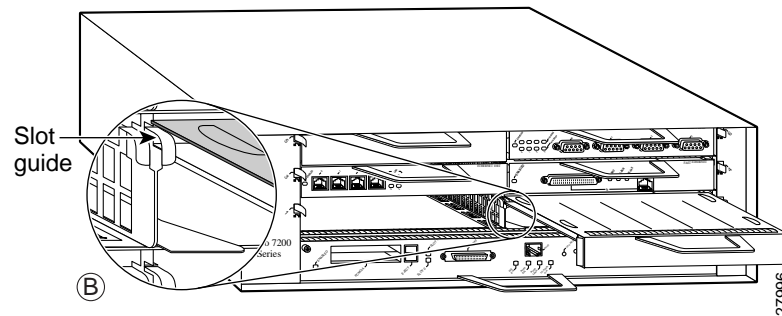
Step 7

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



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

Port adapter lever (unlocked position)

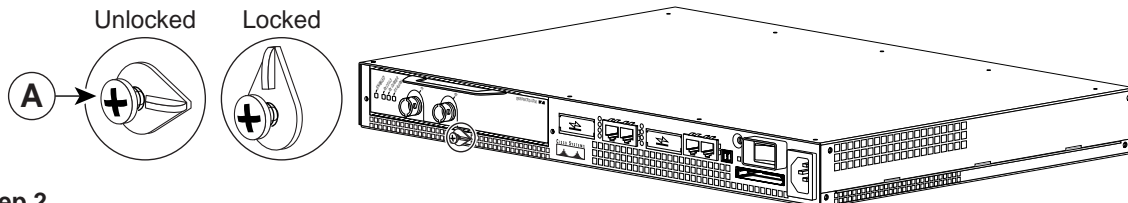


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Cisco 7401ASR Router—Removing and Installing a Port Adapter

Step 1

To remove the port adapter, use a number 2 Phillips screwdriver to loosen the screw on the port adapter latch. Rotate the port adapter latch until it clears the faceplate of the port adapter. (See A.) The latch can rotate 360°.



Step 2

Pull the port adapter from the router, about halfway out of its slot. (If you remove a blank port adapter, keep the blank port adapter for use in the router if you should ever remove the port adapter. The port adapter slot must always be filled.)

Step 3

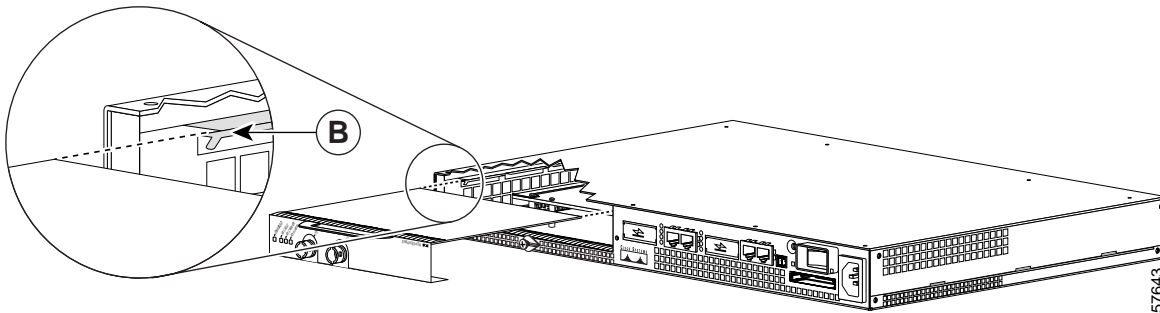
With the port adapter halfway out of the slot, disconnect all cables from the port adapter. After disconnecting the cables, pull the port adapter completely out of the chassis slot.

Step 4

To insert the port adapter, locate the port adapter slot guides inside the Cisco 7401ASR router. They are near the top, and are recessed about 1/2 inch. (See B.)

Caution

The port adapter must slide into the slot guides under the chassis lid. Do not allow the port adapter components to come in contact with the system board, or the port adapter could be damaged.



Step 5

Insert the port adapter in the slot guides halfway, and then reconnect the port adapter cables.

Step 6

After the cables are connected, carefully slide the port adapter all the way into the slot until the port adapter is seated in the router midplane. When installed, the port adapter input/output panel should be flush with the face of the router.

Step 7

After the port adapter is properly seated, rotate the port adapter latch to the upright locked position and use a number 2 Phillips screwdriver to tighten the latch screw. If needed, loosen the latch screw to rotate the latch over the port adapter. Finish the installation by tightening the latch screw.

SFP Removal and Installation

A small form-factor pluggable (SFP) module plugs into the FC port on the PA-FC-1G. A fibre-optic cable connects the PA-FC-1G through the SFP to a fibre channel switch.

The SFP ships installed in the PA-FC-1G and supports online insertion and removal (OIR).



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.



Warning

Class 1 laser product.



Warning

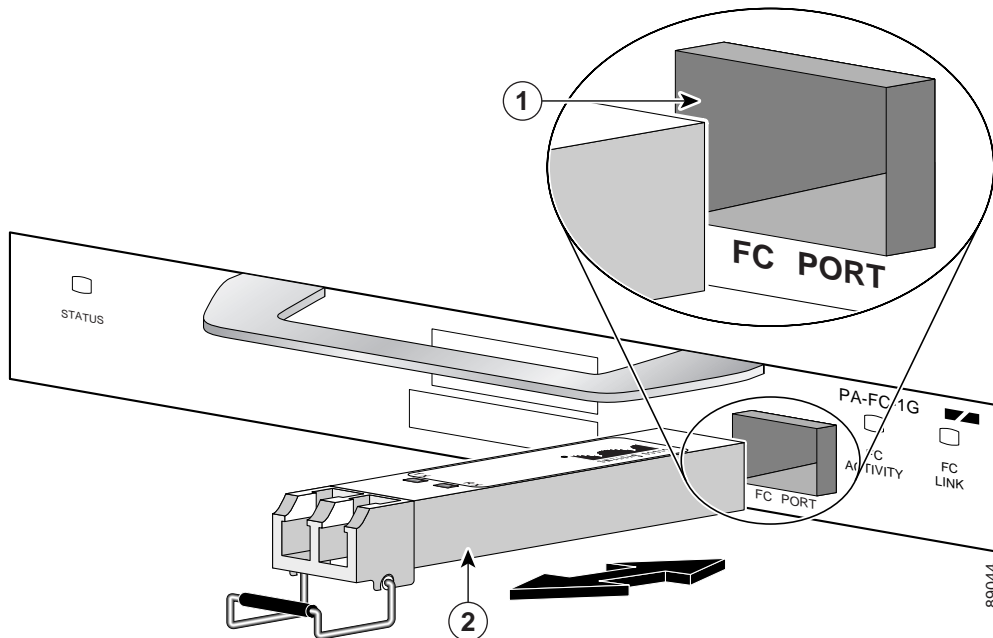
Class 1 LED product.



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 system board with your hand or any metal tool, or you could shock yourself.

Figure 3-2 Removing and Installing an SFP



1	FC Port	2	SFP
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To replace an SFP, do the following:

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- Step 1** To remove an SFP, disconnect the fibre optic cable from the SFP.
 - Step 2** Pull the swing latch outward. This releases the SFP from the PA-FC-1G and allows you to remove the SFP.
 - Step 3** To install an SFP, turn the SFP so the latch is on the bottom, as shown in [Figure 3-2](#). The SFP is keyed so that it cannot be inserted incorrectly.
 - Step 4** Push the SFP in the FC Port of the PA-FC-1G. Lift the swing latch up and over the top of the SFP. The SFP snaps into place when you have completely and properly inserted it.
 - Step 5** Attach the fibre optic cable to the SFP.
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