



Removing and Installing the VPN Acceleration Module

This chapter describes how to remove the VPN acceleration module (VAM) from the supported platforms and how to install a new or replacement VAM.

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

This chapter contains the following sections:

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

The VAM is a single-width circuit board mounted on a metal carrier. In the SA-VAM, the printed circuit board is mounted to the bottom of the metal carrier (see [Figure 3-1](#)) and in the SM-VAM, the printed circuit board is mounted to the top of the metal carrier (see [Figure 3-2](#)).



Note

To ensure proper airflow in the router and compliance with EMI prevention standards, an empty port adapter slot must have a blank port adapter installed in it.



Note

The VAM circuit board is sensitive to ESD damage.



Caution

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

Handling the VAM


Caution

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

Figure 3-1 Handling the SA-VAM

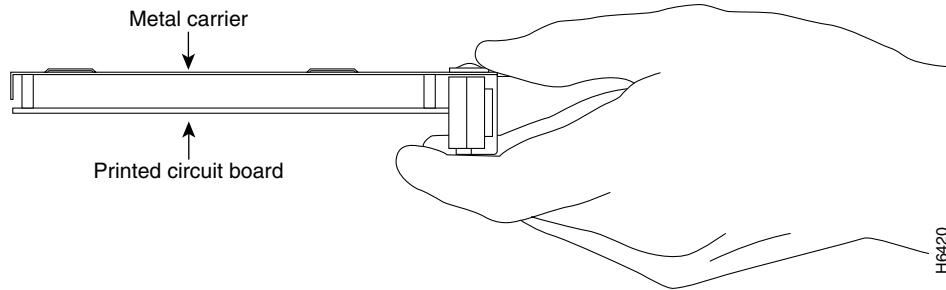
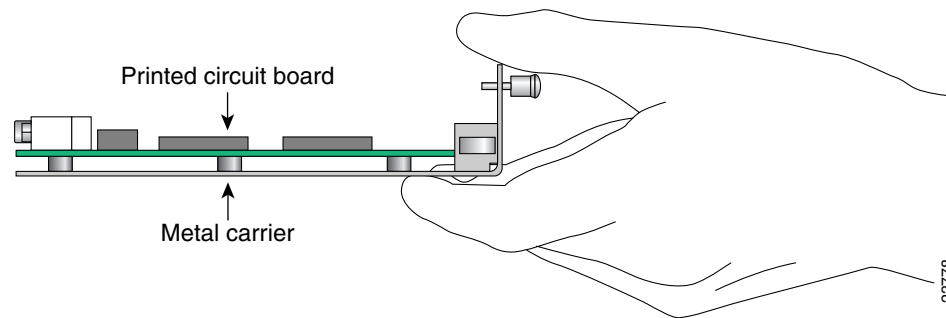


Figure 3-2 Handling the SM-VAM



Online Insertion and Removal

The SA-VAMs support online insertion and removal (OIR) in the Cisco 7100 series routers, Cisco 7200 series routers, and the Cisco 7401ASR router. You do not need to power routers down when removing and replacing the SA-VAMs.

However, the SM-VAM on the Cisco 7100 series routers does not support OIR. You need to power down the Cisco 7100 series router when removing and replacing the SM-VAM.

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 “[VAM 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.

**Caution**

Online removal will disrupt existing tunnels. You will need to re-establish your tunnels. See [Site-to-Site and Extranet VPN Business Scenarios](#) for additional information on configuring tunnels.

Warnings and Cautions

Observe the following warnings and cautions when installing or removing VPN acceleration modules.

**Warning**

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

**Warning**

The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.

**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.

**Warning**

Keep hands and fingers out of the power supply bays. High voltage is present on the power backplane when the system is running.

**Caution**

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

VAM Removal and Installation

In this section, the illustrations that follow give step-by-step instructions to remove and install the VAM. This section contains the following illustrations:

- [Cisco 7100 Series—Removing and Installing the VAM, page 3-5](#)
- [Cisco 7200 Series—Removing and Installing the SA-VAM, page 3-6](#)
- [Cisco 7401ASR Router—Removing and Installing the SA-VAM, page 3-7](#)

**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.

**Note**

If a VPN acceleration 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 out of the slot, reinsert it, and move the VPN accelerator module lever or other mechanism to the locked position.

Cisco 7100 Series—Removing and Installing the VAM

SM-VAM

Step 1

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

Step 2

Grasp the SM-VAM captive installation screws and pull the SM-VAM from the router.

Note: Hold the SM-VAM up at a slight angle to engage the carrier guides. Completely seating the SM-VAM in the slot may require several attempts.

Step 3

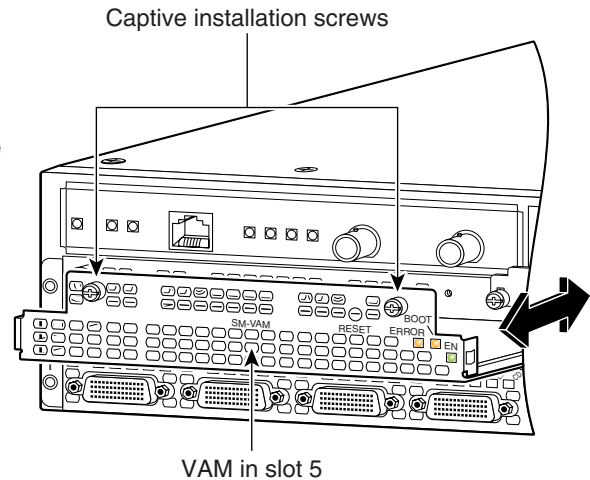
Carefully align the SM-VAM carrier between the upper and the lower edges of the service module slot (slot 5).

Step 4

Slide the SM-VAM all the way into the slot until it is seated in the router midplane.

Step 5

After the SM-VAM is properly seated, tighten the captive installation screws.



SA-VAM

Step 1

Use a number 2 Phillips screwdriver to loosen the screws on the locking tab. Then, slide the tab down to the unlocked position.

Step 2

Pull the SA-VAM out of the port adapter slot. If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis slot.

Step 3

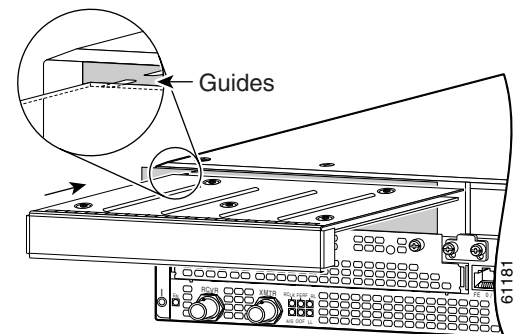
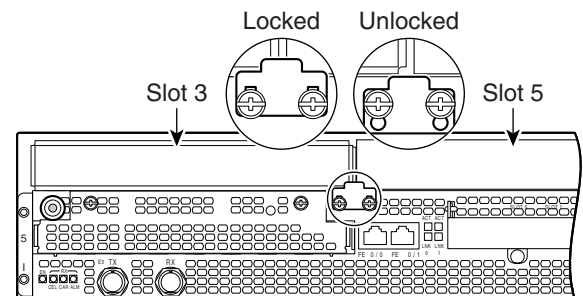
To insert the SA-VAM, carefully align the SA-VAM carrier between the upper and lower edges of the port adapter slot.

Step 4

Carefully slide the SA-VAM all the way into the slot until the SA-VAM is seated in the router midplane.

Step 5

After the SA-VAM is properly seated, lock the port adapter retaining mechanism.



Cisco 7200 Series—Removing and Installing the SA-VAM

Step 1

To remove the SA-VAM from the port adapter slot, 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 SA-VAM and pull the SA-VAM from the router. If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis slot.

Step 3

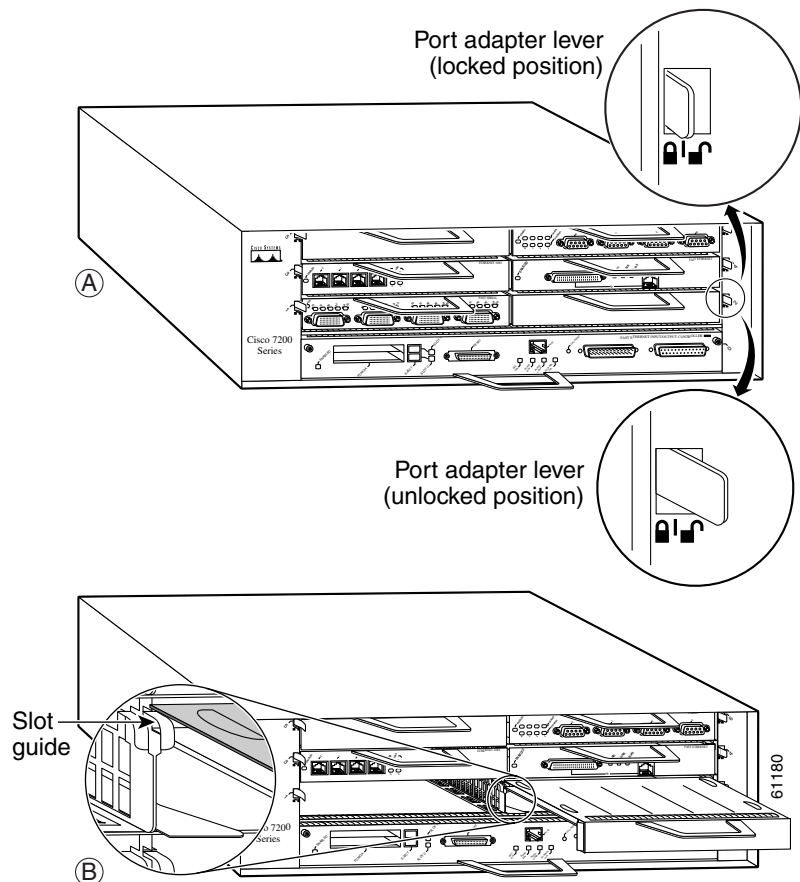
To insert the SA-VAM, carefully align the VAM carrier between the upper and the lower edges of the port adapter slot. (See B.)

Step 4

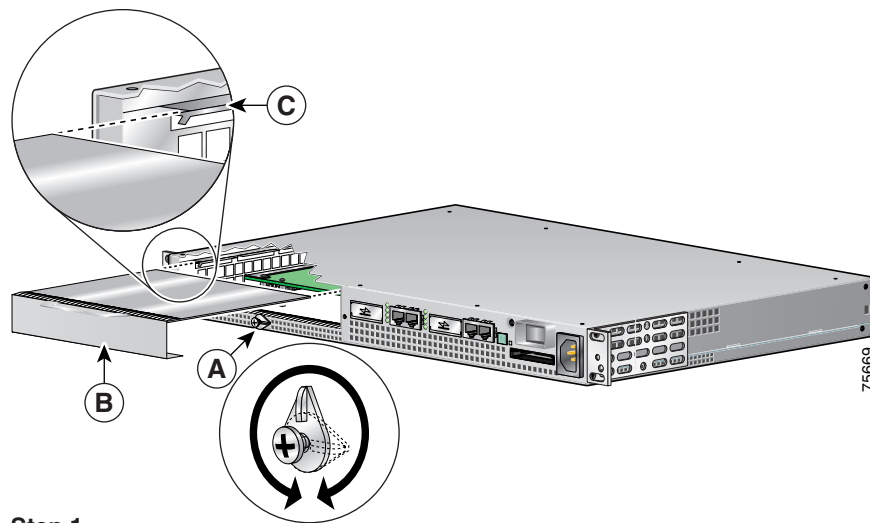
Carefully slide the new SA-VAM into the port adapter slot until it is seated in the router midplane.

Step 5

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



Cisco 7401ASR Router—Removing and Installing the SA-VAM



Step 1

Using a Phillips screwdriver, loosen the screw of the port adapter latch, and rotate the latch until it clears the faceplate of the SA-VAM. (See A.) The latch rotates 360°.

Step 2

Pull the SA-VAM about halfway out of the port adapter slot. (See B.) If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis.

Step 3

Locate the port adapter slot guides inside the chassis. They are near the top, and are recessed about one-half inch.

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

Step 4

Insert the SA-VAM in the slot guides. (See C.)

Step 5

Carefully slide the SA-VAM into the port adapter slot until the SA-VAM is seated in the router midplane.

Step 6

After the SA-VAM is properly seated, rotate the latch to the upright locked position and use a Phillips screwdriver to tighten the latch screw. Loosen the latch screw, if needed, to be able to rotate the latch over the SA-VAM. Then tighten the latch screw.

