



Installing and Removing a Carrier Card

This chapter describes how to install or remove carrier cards on the Cisco 7304 router. This chapter contains the following sections:

- [Handling MSCs, page 5-1](#)
- [Online Insertion and Removal, page 5-2](#)
- [MSC Installation and Removal, page 5-3](#)

Handling MSCs

Each MSC circuit board is mounted to a metal carrier and is sensitive to electrostatic discharge (ESD) damage. Before you begin installation, read [Chapter 4, “Preparing to Install a Modular Services Card or a Shared Port Adapter,”](#) for a list of parts and tools required for installation.

When a slot is not in use, a blank module filler plate 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 an MSC in a slot that is not in use, you must first remove the blank module filler plate.



Caution

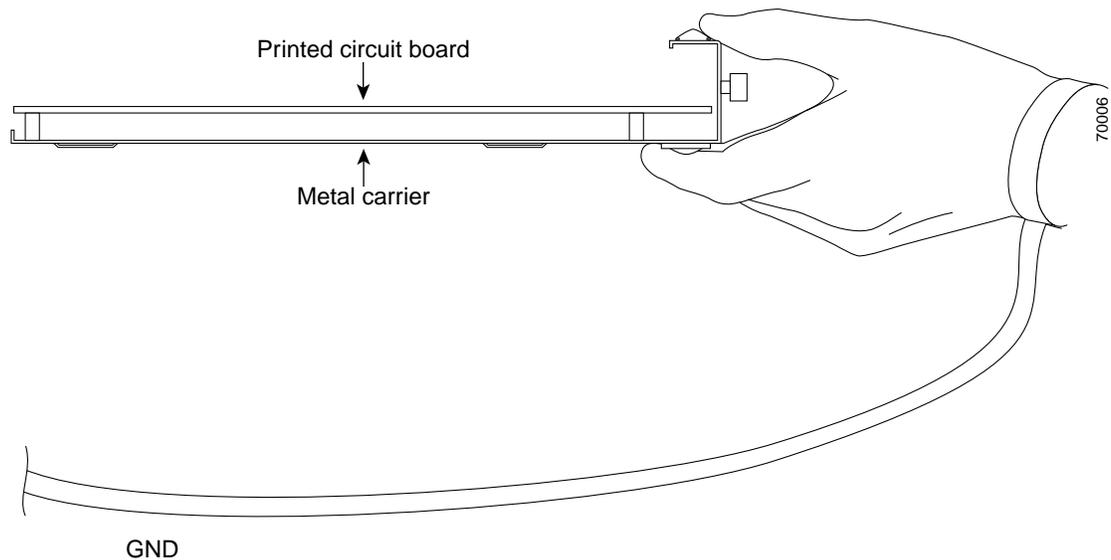
Always handle the MSC by the carrier edges and handle; never touch the MSC components or connector pins. (See [Figure 5-1](#).)



Caution

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

Figure 5-1 Handling an MSC



Online Insertion and Removal

OIR allows you to install and replace MSCs 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 Cisco 7304 router supports OIR of the MSC. To do this, you can stop an MSC (which automatically deactivates any installed SPAs) and remove the MSC with the SPAs still intact.

If you plan to remove an MSC, we recommend that you deactivate the MSC first using the **hw-module slot** privileged EXEC command. When you deactivate an MSC using this command, it automatically deactivates each of the SPAs that are installed in that MSC and allows for the completion of data traffic before the active interfaces are shut down. Therefore, it is not necessary to deactivate each of the SPAs prior to deactivating the MSC.

Although graceful deactivation of an MSC is preferred using the **hw-module slot stop** command, the Cisco 7304 router does not support removal of the MSC without deactivating it first.



Note

CLI-controlled OIR using the **hw-module slot stop** command is the recommended way of performing OIR on this platform.



Note

As you disengage the MSC from the router, online insertion and removal (OIR) administratively shuts down all active interfaces on the MSC.

MSC Installation and Removal

This section provides step-by-step instructions for installing and removing an MSC.

**Caution**

Insert or remove only one MSC at a time. Inserting or removing more than one MSC at a time can cause the system to detect spurious hardware failures.

**Warning**

When performing the following procedures, wear a grounding wrist strap to avoid ESD damage to the MSC. 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.

To install and remove an MSC, refer to [Figure 5-2](#) and [Figure 5-3](#) and do the following:

Step 1 To insert the MSC, carefully align the edges of the MSC between the upper and lower edges of the module slot, as shown in A of [Figure 5-2](#).

Step 2 Ensuring that the MSC is properly aligned in the router slot, carefully slide the MSC into the module slot until the MSC makes contact with the backplane.

**Note**

The MSC ejector levers must be positioned at a 45-degree angle before the MSC makes contact with the backplane.

Step 3 Push the MSC ejector levers in until the MSC is fully seated in the router backplane.

**Note**

When the router chassis is fully populated, seating an MSC can be difficult. To properly seat the MSC and avoid physical damage, loosen the locking captive installation screws on the neighboring MSCs or line cards.

**Caution**

Use of excessive force can damage the router or MSC.

Step 4 Tighten the locking captive installation screws on both sides of the MSC, using a screwdriver. The MSC is now installed in the router module slot.

Step 5 To remove the MSC, loosen the locking captive installation screws using a screwdriver on both sides of the MSC, as shown in A of [Figure 5-3](#).

Step 6 Pull out the MSC ejector levers, as shown in B of [Figure 5-3](#), and carefully slide the MSC out of the module slot. If you are removing a blank module filler plate, pull the blank module filler plate completely out of the module slot.

Figure 5-3 MSC Removal

