C H A P T E R **3**

Installing and Removing the Services SPA Carrier-600

This chapter describes how to install or remove the SSC-600 on the Catalyst 6500 Series switch. This chapter contains the following sections:
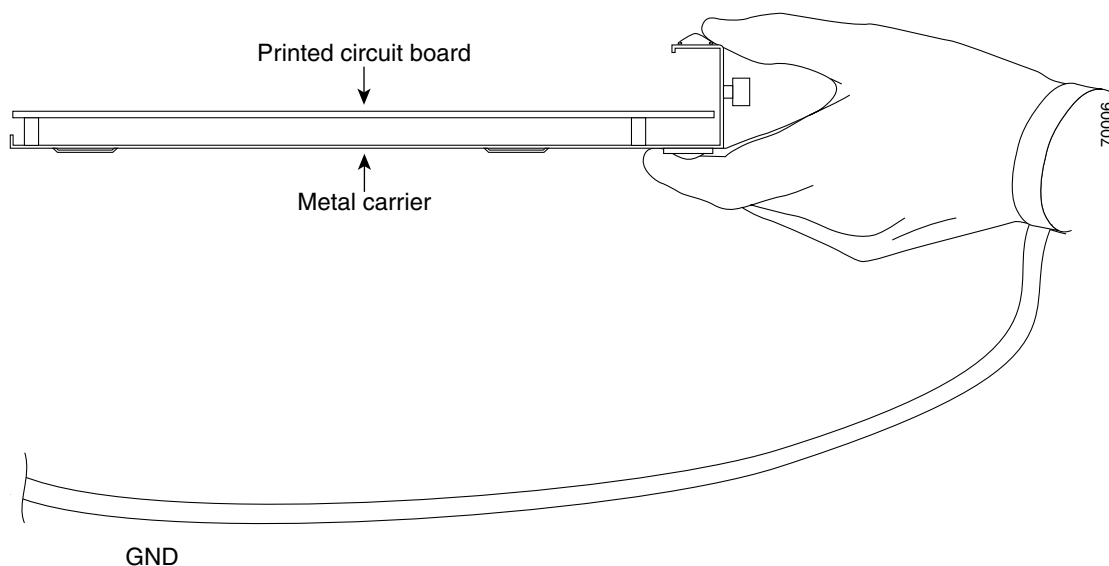
Handling the SSC-600

The SSC-600 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 VSPA and the SSC-600," for a list of parts and tools required for installation.

⚠️
Caution Always handle the SSC-600 by the carrier edges and handle as shown in Figure 3-1. Never touch the SSC-600 components or connector pins.

Figure 3-1   Handling the SSC-600

Printed circuit board

Metal carrier

GND

70006

Installing and Removing the SSC-600

This section provides instructions for installing and removing the SSC-600.

Note To ensure compliance with electromagnetic interference (EMI) approvals by providing a tight EMI-preventive seal for the chassis, we recommend that you first install SSC-600s in the slots closest to the supervisor engine slots, and then work out to the slots furthest from the supervisor engine slots.

Caution When the SSC-600 is installed next to an empty chassis slot, a blank filler plate must be installed in the empty slot to allow the chassis to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow across the SSC-600 and VSPAs. For more information, see the "Using Blank Filler Plates" section on page 3-7.

Warning **During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.** Statement 94

To install and remove the SSC-600, refer to Figure 3-2 and follow these steps:

Step 1   To insert the SSC-600, carefully align the edges of the SSC-600 between the upper and lower edges of the module slot, as shown in C of Figure 3-2.

Step 2   Carefully slide the SSC-600 into the module slot until the SSC-600 makes contact with the backplane.

Note The SSC-600 ejector levers must be positioned at a 45-degree angle before the SSC-600 makes contact with the backplane.

Step 3   Push the SSC-600 ejector levers in until the SSC-600 is fully seated in the router backplane.

> **Note**   When the switch chassis is fully populated, seating the SSC-600 can be difficult. To properly seat the SSC-600 and avoid physical damage, loosen the locking thumbscrews on the neighboring cards.

> ⚠
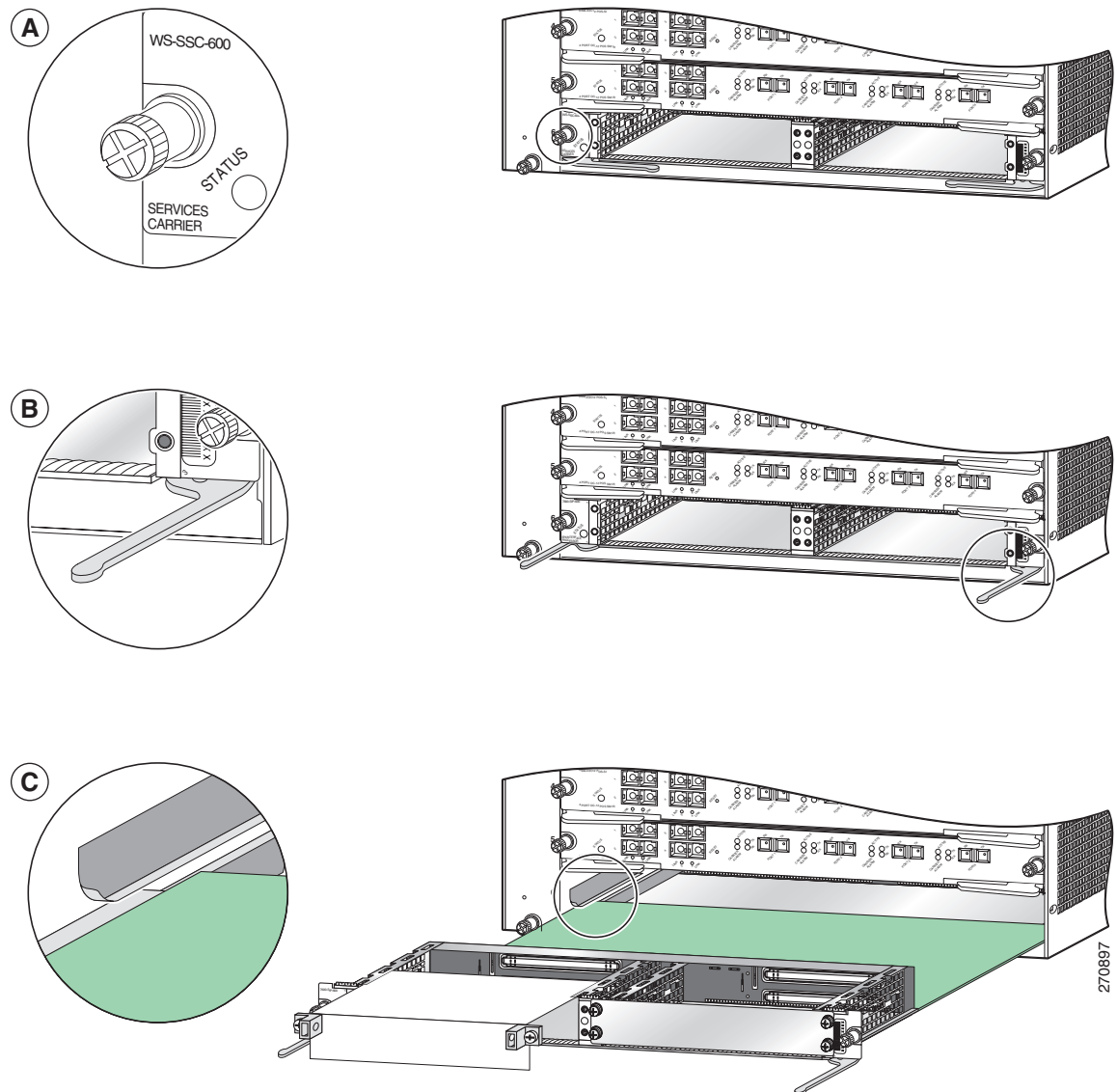> **Caution**   Use of excessive force can damage the chassis or the SSC-600.

Step 4   Tighten the locking thumbscrews on both sides of the SSC-600 to a torque of between 8.3 and 11 inch-pounds (94 to 124 N-cm). Do not overtighten.

Step 5   To remove the SSC-600, loosen the locking thumbscrews on both sides of the SSC-600, as shown in A of Figure 3-2.

Step 6   Pull out the SSC-600 ejector levers, as shown in B of Figure 3-2, and carefully slide the SSC-600 out of the module slot. If you are removing a blank filler plate, pull the blank filler plate completely out of the module slot.

Figure 3-2 illustrates how to install and remove the SSC-600 in a Catalyst 6500 Series switch.

Figure 3-2   SSC-600 Installation and Removal

Preparing for Online Removal of the SSC-600

The Catalyst 6500 Series switch supports online insertion and removal (OIR) of the SSC-600. You can power down the SSC-600 (which automatically deactivates any installed VSPAs) and remove the SSC-600 with the VSPAs still intact, or you can first remove an VSPA before removing the SSC-600 from the switch. To remove the VSPA, see the "Preparing for Online Removal of the VSPA" section on page 4-5.

Before you remove the SSC-600, we recommend deactivating the SSC-600 using the **no power enable module** global configuration command. When you deactivate the SSC-600 using this command, it automatically deactivates each of the VSPAs that are installed in that SSC-600. It is not necessary to deactivate each of the VSPAs prior to deactivating the SSC-600. Although we recommend graceful deactivation of the SSC-600 using the **no power enable module** command, the Catalyst 6500 Series switch supports removal of the SSC-600 without deactivating it first.

Either a blank filler plate or a functional VSPA should reside in every subslot of the SSC-600 during normal operation.

This section includes the following topics on OIR support:

- Deactivating the SSC-600, page 3-5
- Reactivating the SSC-600, page 3-5
- Verifying Deactivation and Activation of the SSC-600, page 3-6

Deactivating the SSC-600

To deactivate the SSC-600 and its installed VSPAs before removal of the SSC-600, enter the following command in global configuration mode:

Command	Purpose
`Router(config)# no power enable module slot`	Shuts down any installed interfaces, and deactivates the SSC-600 in the specified slot. • *slot*—Specifies the chassis slot number where the SSC-600 is installed.

For more information about chassis slot numbering, refer to the "Identifying Slots and Subslots" section on page 1-8.

The following example deactivates the SSC-600 that is installed in slot 5 of the switch, its VSPAs, and all of the interfaces. The corresponding console messages are shown here:

```
Router# configure terminal
Router(config)# no power enable module 5
1w4d: %OIR-6-REMCARD: Card removed from slot 5, interfaces disabled
1w4d: %C6KPWR-SP-4-DISABLED: power to module in slot 5 set off (admin request)
```

Reactivating the SSC-600

Once you deactivate the SSC-600, whether or not you have performed an OIR, you must use the **power enable module** global configuration command to reactivate the SSC-600.

If you did not enter a command to deactivate the VSPAs installed in the SSC-600, but you did deactivate the SSC-600 using the **no power enable module** command, then you do not need to reactivate the VSPAs after an OIR of the SSC-600. The installed VSPAs automatically reactivate upon reactivation of the SSC-600 in the switch.

For example, consider the case where you remove the SSC-600 from the switch to replace it with another SSC-600. You reinstall the same VSPAs into the new SSC-600. When you enter the **power enable module** command on the switch, the VSPAs will automatically reactivate with the new SSC-600.

To activate the SSC-600 and its installed VSPAs after the SSC-600 has been deactivated, use the following command in global configuration mode:

Command	Purpose
Router(config)# **power enable module** *slot*	Activates the SSC-600 in the specified slot and its installed VSPAs. • *slot*—Specifies the chassis slot number where the SSC-600 is installed.

For more information about chassis slot numbering, refer to the "Identifying Slots and Subslots" section on page 1-8.

The following example activates the SSC-600 that is installed in slot 5 of the chassis, its VSPA, and all of the interfaces (provided that you did not enter the **hw-module subslot shutdown** command to also deactivate the VSPA):

```
Router# configure terminal
Router(config)# power enable module 5
```

Notice that there are no corresponding console messages shown with activation. If you reenter the **power enable module** command, a message is displayed indicating that the module is already enabled:

```
Router(config)# power enable module 5
% module is already enabled
```

Verifying Deactivation and Activation of the SSC-600

To verify the deactivation of the SSC-600, enter the **show module** command in privileged EXEC configuration mode. Observe the Status field associated with the SSC-600 that you want to verify.

Command	Purpose
Router(config)# **show module** *slot*	Displays the type and status of a module and submodules in the specified slot. • *slot*—Specifies the chassis slot number where the SSC-600 is installed.

The following example shows that the SSC-600 located in slot 4 is deactivated. This state is indicated by its PwrDown status in the Status field.

```
Router# show module 4
Mod Ports Card Type                              Model              Serial No.
--- ----- -------------------------------------- ------------------ -----------
  4    0  2-subslot Services SPA Carrier-600     WS-SSC-600         JAB113100EN

Mod MAC addresses                      Hw     Fw           Sw           Status
--- ---------------------------------- ------ ------------ ------------ -------
  4  001a.a2ff.1320 to 001a.a2ff.1327  0.302  12.2(SIERRA_ 12.2(SIERRA_ PwrDown

Mod  Sub-Module                 Model            Serial      Hw      Status
---- -------------------------- ---------------- ----------- ------- -------

Mod  Online Diag Status
```

```
   ---- ------------------
     4   Not Applicable

Router#
```

To verify activation and proper operation of the SSC-600, enter the **show module** command. Ok should appear in the Status field as shown in the following example:

```
Router# show module 4
Mod Ports Card Type                                    Model              Serial No.
--- ----- -------------------------------------- ------------------ -----------
   4    0  2-subslot Services SPA Carrier-600     WS-SSC-600         JAB113100EN

Mod MAC addresses                       Hw     Fw           Sw           Status
--- ---------------------------------- ------ ------------ ------------ -------
   4  001a.a2ff.1320 to 001a.a2ff.1327  0.302 12.2(SIERRA_ 12.2(SIERRA_ Ok

Mod  Sub-Module                  Model            Serial      Hw     Status
---- -------------------------- ------------------ ----------- ------- -------

Mod  Online Diag Status
---- ------------------
   4  Pass

Router#
```

Using Blank Filler Plates

When the SSC-600 is installed in a vertical chassis, the chassis slot immediately next to the SSC-600 must be filled with either another module or a blank filler plate. When the SSC-600 is installed in a horizontal chassis, all chassis slots must be filled with either another module or a blank filler plate. For information about blank filler plates, refer to the hardware installation guide for your chassis.

In addition, each subslot on the SSC-600 must be filled with either a VSPA or a blank filler plate, as described in the .

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Caution   Blank filler plates must be installed in empty chassis slots and subslots to allow the chassis to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow across the SSC-600 and VSPAs.