Installing and Removing Air Circulation Components

This chapter provides instructions on how to install and replace Cisco CRS 16-Slot Line Card Chassis air circulation components.

Note   The chassis is shipped with the fan trays and air filter pre-installed.

Information About Air Circulation Components

This section describes the air circulation components: the fan trays and the air filters.

The LCC has two fan trays (show in the figure below), one just below the lower card cage and the other just above the upper card cage. The chassis can run with only one fan tray operating. If a failure occurs in one fan tray, the other fan tray acts as the redundant fan tray to assure fault-tolerant system performance; the chassis continues to operate while the failed fan tray is replaced.

The LCC fan tray operates in either the upper or lower fan tray slots. Each fan tray installs into the rear (MSC) side of the chassis and contains:

- Nine fans
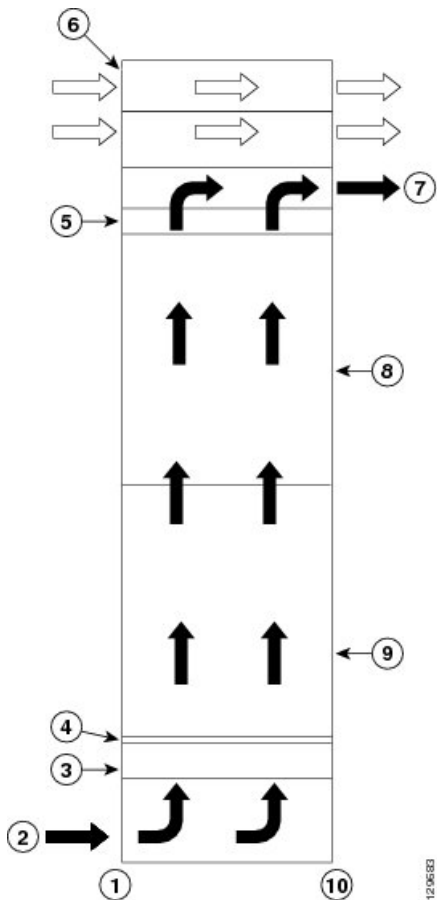- Fan tray board
- Front-panel status LED

Note   The upper and lower fan trays are interchangeable and installed in the same manner.

Figure 1: Airflow Through LCC

1	Front (PLIM) side of chassis	6	Power shelves (two installed)
2	Air intake	7	Air exhaust
3	Lower fan tray	8	Upper card cage
4	Air filter	9	Lower card cage
5	Upper fan tray	10	Rear [MSC] side of chassis

The chassis has a serviceable air filter mounted in a slide-out tray accessible from the front of the chassis just below the lower card cage (as shown in the figure). The air filter removes dust from the room air drawn into the router by the two fan trays. Once a month (or more often in dusty environments) you should examine the air filter and replace it if it appears damaged or excessively dirty.

How to Replace Air Circulation Components
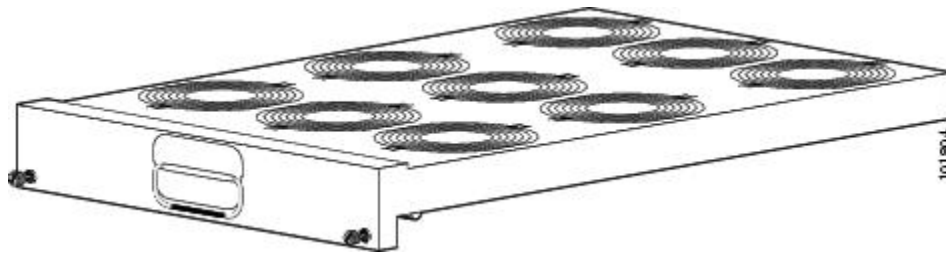
This section contains the following procedures:

Replacing a Fan Tray

This section describes how to replace a fan tray (shown in the figure below) in the LCC. For information on fan trays, see Information About Air Circulation Components, on page 1.

Figure 2: Fan Tray

Prerequisites

Before performing this task, you must first open the chassis doors on the rear (MSC) side of the chassis, if installed. If you are replacing the upper fan tray, you must remove the upper grille from the rear (MSC) side of the chassis. If you are replacing the lower fan tray, you must remove the lower chassis cosmetic bezel from the rear (MSC) side of the chassis.

Required Tools and Equipment

You need the following tools and parts to perform this task:

- ESD-preventive wrist strap
- 6-in. long number 1 Phillips screwdriver
- Fan tray—Cisco product number CRS-16-LCC-FAN-TR

Steps

To replace a fan tray, follow these steps:

Step 1   Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.

Step 2   Using the screwdriver, loosen the two captive screws on the fan tray faceplate. If necessary, use a step platform to reach the upper fan tray comfortably.

Step 3   Pull firmly on the cover to swing it free; some force may be required, as the rubber seals can stick.

> **Caution**   Because of the weight of the fan tray, approximately 44 lb (20 kg), you should be especially careful while removing the fan tray from the chassis. To prevent injury, keep your back straight and lift with your legs, not your back. Avoid sudden twists or lateral moves. It is safer to use two people to remove the fan tray rather than a single person.

Step 4   Grasp the fan tray handle and pull it straight out to disconnect the fan tray from the connector mounted on the front of the fan tray bay on the rear (MSC) side of the chassis. Slide the fan tray halfway from the fan tray bay.

Step 5   Use your free hand to support the fan tray, then slide the fan tray completely from the fan tray bay.

Step 6   Set the fan tray carefully aside.

Step 7   To install the replacement fan tray, using two hands to support the fan tray, position it in front of the fan tray bay so that the fan tray connector that is on the back of the fan tray lip is aligned with the connector mounted on the front of the fan tray bay (on the rear [MSC] side of the chassis).

> **Caution**   Because of the weight of the fan tray, approximately 44 lb (20 kg), you should be especially careful while removing the fan tray from the chassis. To prevent injury, keep your back straight and lift with your legs, not your back. Avoid sudden twists or lateral moves. It is safer to use two people to remove the fan tray rather than a single person.

Step 8   Slide the fan tray into the fan tray bay. Stop when the fan tray makes contact with the chassis connector in the back of the fan tray bay.

> **Caution**   To prevent damage to the chassis connector, do not use excessive force when inserting a fan tray into its bay.

Step 9   Firmly push on the fan tray handle to seat the fan tray connector in the chassis connector. When completely seated, the fan tray faceplate flanges meet the front (PLIM) side of the chassis.

> **Note**   All electrical and control line connections are made automatically when the connectors mate.

Step 10   Tighten the two captive screws on the fan tray faceplate.
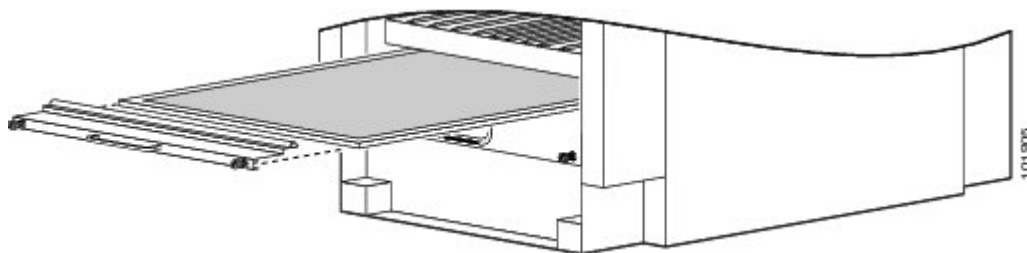

What to do next

After performing this task, close the doors (if installed) and re-install the upper grille or lower chassis cosmetic bezel on the rear (MSC) side of the chassis, as necessary. For more information, see *Installing the Default Rear (MSC) Side Cosmetic Components and Installing the Optional Rear (MSC) Side Cosmetic Components* section in the *Installing and Removing Exterior Cosmetic Components* chapter.

Replacing the Air Filter

This section describes how to replace the air filter in the LCC. For further information, see Information About Air Circulation Components, on page 1.

Figure 3: Air Filter

> **Note**   A lattice of wire exists on both sides of the filter material with an arrow denoting airflow direction and a pair of sheet metal straps on the downstream side of the filter assembly.

Prerequisites

Before performing this task, you must first open the doors and remove the lower grille on the front (PLIM) side of the chassis. For more information, see *Removing the Front (PLIM) Side Cosmetic Components* section in *Installing and Removing Exterior Cosmetic Components* chapter.

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Caution Never operate the LCC without an air filter. Operating an LCC without a filter or leaving a fan tray cover off for an extended time can result in damage to the hardware.

Required Tools and Equipment

You need the following tools and parts to perform this task:

- ESD-preventive wrist strap
- 6-in. long number 1 Phillips screwdriver
- Air filter—Cisco product number CRS-16-LCC-FILTER

Steps

To replace the air filter, perform the following steps:

Step 1 Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.

Step 2 Using the screwdriver, loosen the two captive screws on the fan tray cover faceplate. Pull firmly on the cover to swing it free; some force may be required, as the rubber seals can stick.

Step 3 Grasp the ridge at the front of the air filter and carefully slide it from the slot.

Step 4 Set the air filter carefully aside.

Step 5 To install the replacement air filter, using two hands to support the air filter, orient it so that the ridge on the front of the air filter faces outward from the front (PLIM) side of the chassis and the wire grid backing support is facing up.

Caution All four sides of the air filter door are lined with EMI-preventive gaskets consisting of many raised, conductive contacts. Align and seat the door carefully to avoid damage to the EMI-preventive gaskets. A damaged gasket can result in reduced EMI performance.

Step 6 Slide the air filter into the air filter slot until it is seated fully within the slot.

Step 7 Replace the fan tray cover and tighten the two captive screws on the front.

What to do next

After performing this task, re-install the lower grille and close the doors on the front (PLIM) side of the chassis. For more information, see *Installing the Front (PLIM) Side Exterior Cosmetic Components* section in *Installing and Removing Exterior Cosmetic Components* chapter.