Installing and Removing Air Circulation Components

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

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

This chapter presents the following topics:

Information About the Air Circulation Components

This section contains some general information about the air circulation components in the following topics:

About the Fan Trays

The Cisco CRS Series Enhanced 16-Slot Line Card Chassis has two fan trays (see Figure 1: Airflow Through the Cisco CRS Series Enhanced 16-Slot Line Card Chassis, on page 2), 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 Cisco CRS Series Enhanced 16-Slot Line Card Chassis 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 the Cisco CRS Series Enhanced 16-Slot Line Card Chassis
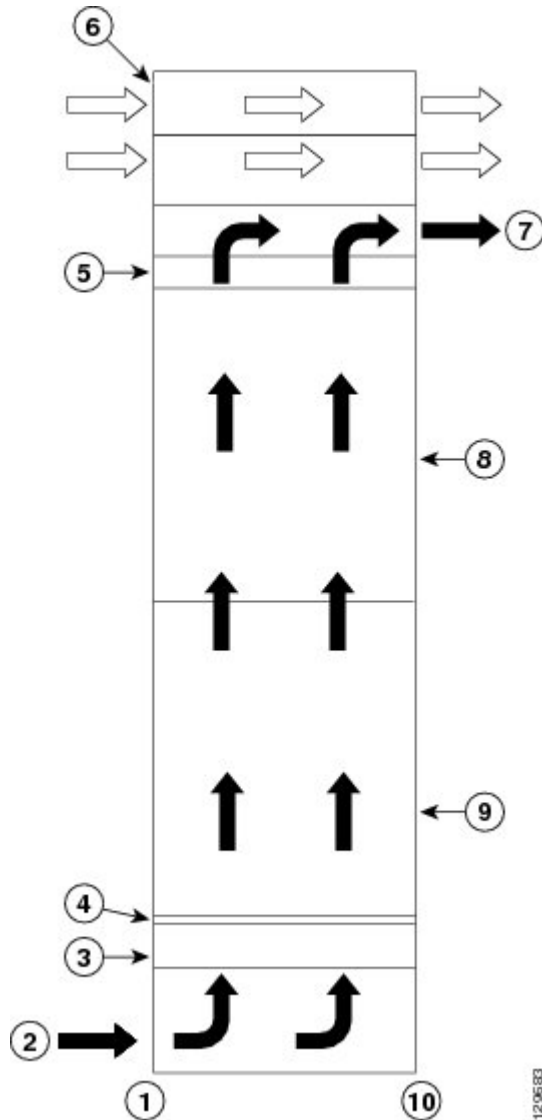
1	Front (PLIM) side of chassis	6	Power shelves (two installed)
2	Air intake	7	Air exhaust
3	Lower fan tray	8	Upper card cage
4	Air filter	9	Lower card cage

5	Upper fan tray	10	Rear [MSC] side of chassis

About the Air Filter

The chassis has a serviceable air filter mounted in a slide-out tray accessible from the rear of the chassis just below the lower card cage (see Figure 1: Airflow Through the Cisco CRS Series Enhanced 16-Slot Line Card Chassis, on page 2). 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.

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Caution Periodic maintenance of the air filter is required to maintain proper air flow in the system as well as to avoid optical contamination. It is highly recommended to clean air filters once in three months and also replace the air filter once in a year.

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 (see Fan Tray figure below) in the Cisco CRS Series Enhanced 16-Slot Line Card Chassis. For information on the fan tray, see the Information About the Air Circulation Components, on page 1. For complete information on regulatory compliance and safety, see *Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System* .

Figure 2: Fan Tray
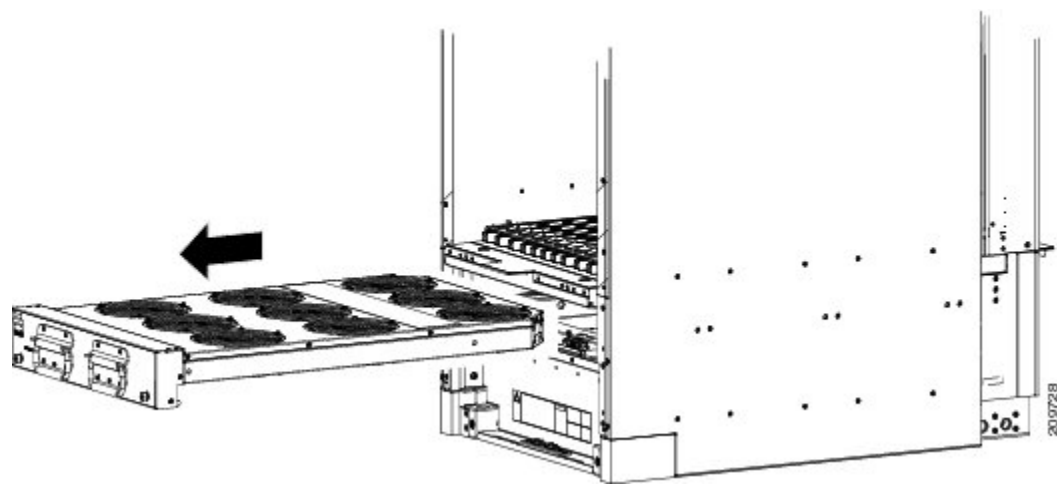
Prerequisites

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 part to perform this task:

- ESD-preventive wrist strap

- 6-in. long number 1 Phillips screwdriver

- Fan tray—Cisco product number CRS-16-FANTRAY

Steps

To replace a fan tray, follow these steps:

SUMMARY STEPS

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 there is one ESD connection socket right above the fan controllers. On the rear (MSC) side of the chassis there are two ESD connection sockets right above the cable management tray in the center of the chassis (left and right). You can also connect the ESD-preventive wrist strap leash to any bare metal surface on the chassis.

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.

3. Pull firmly on the two handles to pull it free; two people are required to remove the fan tray.

4. Grasp the fan tray handles 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.

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

6. Set the fan tray carefully aside.

7. To install the replacement fan tray using two hands to support it, position the fan tray in front of the fan tray bay (label is on top).

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.

9. Firmly push on the fan tray handles to seat the fan tray connector in the chassis connector. When completely seated, the fan tray faceplate flanges meet the rear (MSC) side of the chassis.

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

DETAILED 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 there is one ESD connection socket right above the fan controllers. On the rear (MSC) side of the chassis there are two ESD connection sockets right above the cable management tray in the center of the chassis (left and right). You can also connect the ESD-preventive wrist strap leash to any 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.

Figure 3: Unscrewing the Screws in the Fan Tray Faceplate

Step 3   Pull firmly on the two handles to pull it free; two people are required to remove the fan tray.
   Caution   Because of the weight of the fan tray, approximately 37.5 lb (17 kg), two people are required to remove the fan tray. 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 handles 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 hands 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 it, position the fan tray in front of the fan tray bay (label is on top).
   Caution   Because of the weight of the fan tray, approximately 37.5 lb (17 kg), two people are required to replace the fan tray. You should be especially careful while replacing the fan tray into 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 support the fan tray while replacing it in the fan tray bay 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 handles to seat the fan tray connector in the chassis connector. When completely seated, the fan tray faceplate flanges meet the rear (MSC) side of the chassis.
   Note   All electrical and control line connections are made automatically when the connectors mate. The Fan LED will light when the fan tray is inserted.

**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 the Installing the Rear (MSC) Side Cosmetic Components.

Replacing the Air Filter

This section describes how to replace the air filter in the Cisco CRS Series Enhanced 16-Slot Line Card Chassis. For further information, see the Information About the Air Circulation Components, on page 1. For complete information on regulatory compliance and safety, see *Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System* .

Figure 4: Air Filter
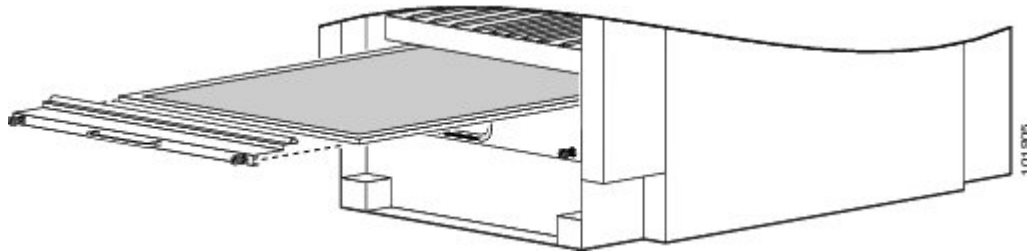
Note   A lattice of wire exists on both sides of the filter material with an arrow denoting airflow direction and a pair of sheet metal straps on the downstream side of the filter assembly.

Prerequisites

Before performing this task, you must first open the doors and remove the lower grille on the Rear (MSC) side of the chassis. See the Removing the Rear (MSC) Side Cosmetic Components for more information.

Caution   Never operate the Cisco CRS Series Enhanced 16-Slot Line Card Chassis without an air filter. Operating a Cisco CRS Series Enhanced 16-Slot Line Card Chassis without a filter or leaving an air filter cover off for an extended time can result in damage to the hardware.

Required Tools and Equipment

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

- ESD-preventive wrist strap

- 6-in. long number 1 Phillips screwdriver

- Air filter—Cisco product number CRS-16-FILTER

Steps

To replace the air filter, perform the following steps:

SUMMARY STEPS

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.

2. Using the screwdriver, loosen the two captive screws on the filter cover faceplate. Pull firmly on the cover to swing it free; some force may be required.

3. Insert the new air filter on top of the existing (old) air filter and push the new air filter into the air filter slot until it is seated fully within the slot.

4. Grasp the tabs at the front of the existing (old) air filter beneath the new air filter and carefully slide it from the slot.

5. Set this old air filter carefully aside.

6. Replace the filter cover and tighten the two captive screws on the front.

DETAILED 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 filter cover faceplate. Pull firmly on the cover to swing it free; some force may be required.

Step 3   Insert the new air filter on top of the existing (old) air filter and push the new air filter into the air filter slot until it is seated fully within the slot.

Step 4   Grasp the tabs at the front of the existing (old) air filter beneath the new air filter and carefully slide it from the slot.

Step 5   Set this old air filter carefully aside.

Step 6   Replace the filter 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 Rear (MSC) side of the chassis. For more information, see the Installing the Rear (MSC) Side Cosmetic Components.