



Installing the Components

This chapter describes the installation procedures for the route processor, interface module and the fan tray. For information on installing the other components in the Cisco ASR 907 router, see the *Cisco ASR 907 Router Hardware Installation Guide*.

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Installing the Route Processor

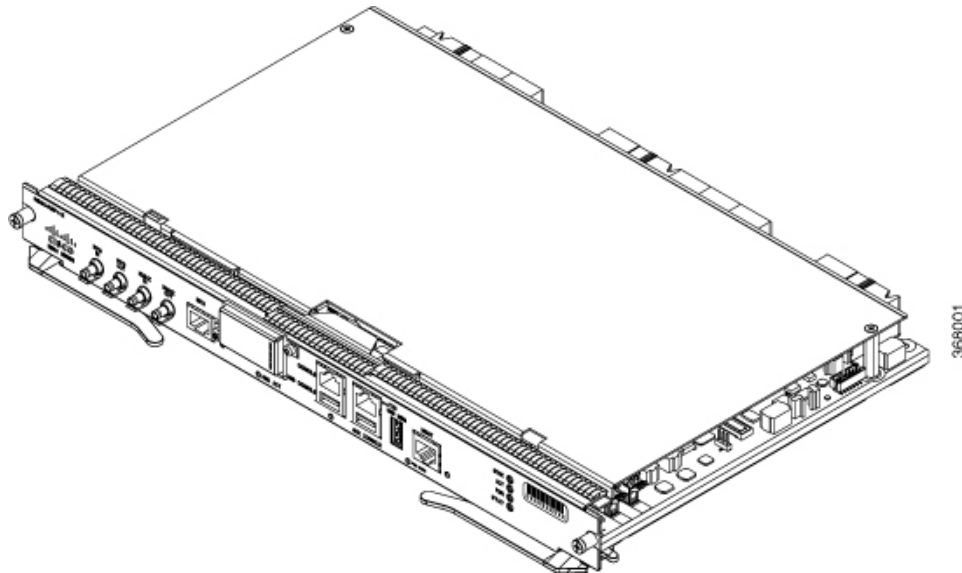


Note Do not use the N560-RSP4 and N560-RSP4-E route processors together in the same router.

Procedure

- Step 1** Choose a slot for the module. Make sure that there is enough clearance to accommodate any equipment that will be connected to the ports on the module. If a blank module filler plate is installed in the slot in which you plan to install the module, remove the plate by removing its 2 Phillips pan-head screws.
- Step 2** Fully open both the ejector levers on the new module, as shown in the figure below.
- Caution** To prevent ESD damage, handle the module as per ESD guidelines. Avoid direct contact to all electronics components.
- Step 3** Position the module in the slot. Make sure that you align the sides of the module with the guides on each side of the slot, as shown in the figure below.

Figure 1: Installing the RSP



- Step 4** Carefully slide the module into the slot until the EMI gasket on the module makes contact with the module in the adjacent slot and both the ejector levers have closed to approximately 45 degrees with respect to the module faceplate.
- Caution** If the top slot already has an RSP module installed, and you install a second RSP module in the slot below it, be careful not to damage the EMI gasket of the bottom RSP module against the ejector levers of the top RSP during insertion.
- Step 5** While pressing down, simultaneously close both the ejector levers to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate.
- Step 6** Tighten the two captive installation screws on the module. The recommended maximum torque is 5.5 in.-lb (.62 N-m).
- Note** Make sure that the ejector levers are fully closed before tightening the captive installation screws.
- Step 7** Verify that the captive installation screws are tightened on all of the modules installed in the chassis. This step ensures that the EMI gaskets on all the modules are fully compressed in order to maximize the opening space for the new or replacement module.
- Note** If the captive installation screws are loose, the EMI gaskets on the installed modules will push adjacent modules toward the open slot, which reduces the size of the opening and makes it difficult to install the new module.
- Caution** Blank module filler plates (Cisco part number A90X-RSPA-BLANK-W) should be installed in any empty chassis slots to keep dust out of the chassis and to maintain consistent airflow through the chassis.
- Note** When installing the cabling to an RSP, we recommend that you leave a service loop of extra cabling sufficient to allow for fan tray removal.

Caution Close all unused RJ-45 and USB ports on the RSP module using the appropriate dust caps to prevent dust from accumulating inside the cage.

Removing the Route Processor

Before you begin

Before you remove an RSP from the router, you should save the current configuration on a TFTP server or an external USB flash drive, using the **copy running-config {ftp | tftp | harddisk:}** command. This saves you time when bringing the module back online.

Use the **commit** command to save the current running configuration.



Warning Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034



Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Procedure

- Step 1** Disconnect any cables attached to the ports on the module.
- Step 2** Verify that the captive installation screws on all the modules in the chassis are tight. This step ensures that the space created by the removed module is maintained.
- Note** If the captive installation screws are loose, the EMI gaskets on the installed modules will push the modules toward the open slot, which in turn reduces the size of the opening and makes it difficult to remove the module.
- Step 3** Loosen the two captive installation screws on the module you plan to remove from the chassis.
- Step 4** Place your thumbs on the ejector levers and simultaneously rotate the ejector levers outward to unseat the module from the backplane connector.
- Step 5** Grasp the front edge of the module and slide the module straight out of the slot. If the chassis has horizontal slots, place your hand under the module to support its weight as you slide it out from the slot. Do not touch the module circuitry.
- Caution** To prevent ESD damage, handle modules by the carrier edges only.
- Step 6** Place the module on an antistatic mat or antistatic foam, or immediately reinstall the module in another slot.
- Step 7** Install blank module filler plates (Cisco part number A90X-RSPA-BLANK-W) in empty slots, if any.

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. Statement 1029

Hot Swapping the Route Processor

you can remove and replace a redundant RSP module without powering down the router. This feature, called hot-swapping or OIR, allows you to remove and replace a redundant module without disrupting router operation.

When two redundant modules are installed in the router, only one of the modules is active. The other one runs in standby mode, ready to take over processing if the active module fails.

When you remove or insert a redundant module while the router is powered on and running, the router does the following:

1. Determines if there is sufficient power for the module.
2. Scans the backplane for configuration changes.
3. Initializes the newly inserted module. In addition, the system notes any removed modules and places those modules in the administratively shutdown state.
4. Places any previously configured interfaces on the module back to the state they were in when they were removed. Any newly inserted interfaces are put in the administratively shutdown state as if they were present (but unconfigured) at boot time. If you insert the same type of module into a slot, its ports are configured and brought online up to the port count of the original module.

The router runs diagnostic tests on any new interfaces and the test results indicate the following:

- If the tests pass, the router is operating normally.
- If the new module is faulty, the router resumes normal operation but leaves the new interfaces disabled.
- If the diagnostic tests fail, the router stops operating, which usually indicates that the new module has a problem in the bus and should be removed.

Use the following guidelines when performing an OIR on an IM:

- Allow at least 2 minutes for the system to reinitialize before inserting a new IM.
- Avoid inserting a new IM during bootup until the active and standby RSPs have reached an OK state.
- When inserting multiple IMs into the chassis, wait until each IM reaches an OK state before inserting the next IM.

Installing the Interface Module

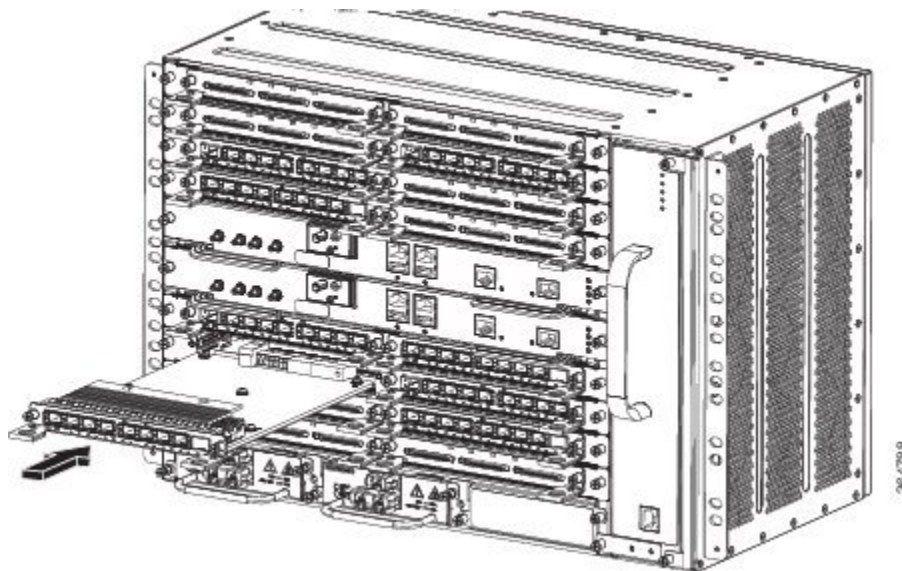
Before you begin

Ensure that the chassis is grounded.

Procedure

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- Step 1** To insert the interface module, carefully align the edges of the interface module between the upper and lower edges of the router slot.
- Step 2** Carefully slide the interface module into the router slot until the interface module makes contact with the backplane. The figure below shows how to install the interface module.

Figure 2: Installing an Interface Module



- Step 3** Tighten the locking thumbscrews on both sides of the interface module. The recommended maximum torque is 5.5 in.-lb (.62 N-m).
- Step 4** Connect all the cables to each interface module.
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What to do next



Caution Do not use the interface module ejector handles to lift the chassis; using the handles to lift the chassis can deform or damage the handles.



Note Close all unused RJ-45, SFP, XFP, and QSFP ports on the interface module using the appropriate dust caps to prevent dust from accumulating inside the cage.

Removing the Interface Module

Procedure

Step 1 Disconnect all the cables from each interface module.

Step 2 Press the ORS (online removal switch) button available on the front panel to shut down the IM.

Note This step is applicable *only* if the router is running Cisco IOS XR Release 7.2.2 and later release.

Note Effective Cisco IOS XR Release 7.2.2, the ORS functionality is available on the N560-IMA-1W interface module.

Note Effective Cisco IOS XR Release 7.3.1, the ORS functionality is available on the N560-IMA-2C-DD interface module.

Step 3 Loosen the locking thumbscrews on both sides of the interface module.

Step 4 Slide the interface module out of the router slot by pulling on the handles. If you are removing a blank filler plate, pull the blank filler plate completely out of the router slot using the captive screws.

Installing the Fan Tray

The fan tray is a modular unit that provides cooling to the router.

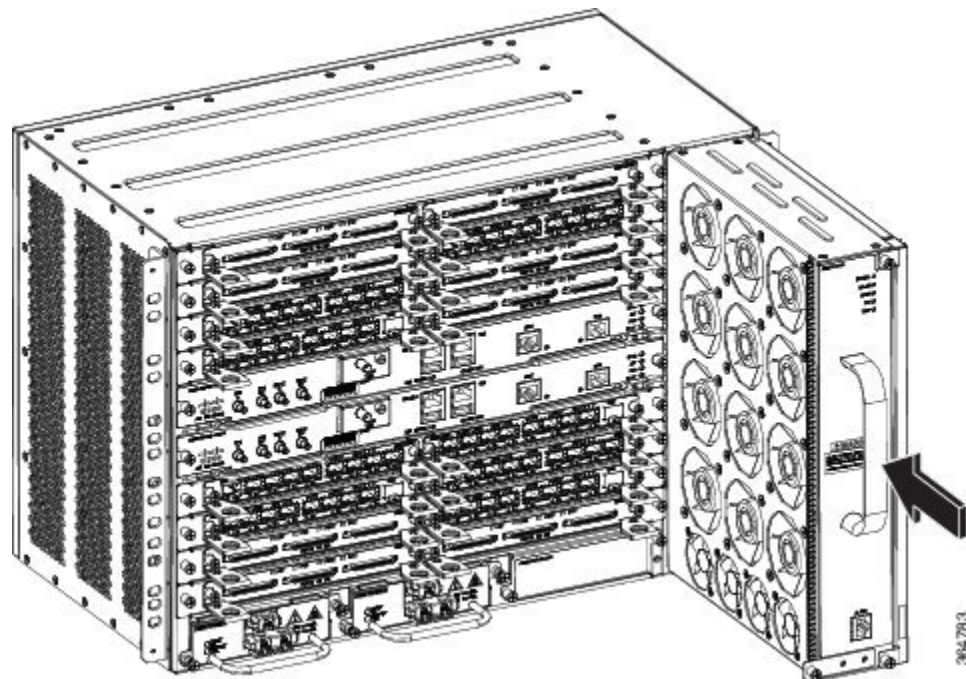


Note Do not introduce body parts or objects in the fan tray slot when installing or removing the fan tray module. Exposed circuitry is an energy hazard.

Procedure

Step 1 Orient the fan tray so that the captive screws are on the right side of the fan tray's front panel. The figure below shows how to orient the fan tray.

Figure 3: Installing the Fan Tray



Step 2 Guide the fan tray into the chassis until it is fully seated.

Caution The fans are exposed on the left side of the fan tray. Keep your fingers, clothing, and jewelry away from the fans. Always handle the fan tray by the handle.

Note When installing the cabling to the RSPs, we recommend that you leave a service loop of extra cabling sufficient to allow for fan tray removal.

Step 3 Secure the fan tray to the chassis using the attached captive installation screws. The recommended maximum torque is 5.5 in.-lb (.62 N-m).

For information about connecting cables to the fan tray alarm port, see the *Connecting the Fan Tray Alarm Port* section. For a summary of the LEDs on the fan tray, see the *LED Details* section.

Removing the Fan Tray

Before you begin

The fan tray supports online insertion and removal (OIR). There is no need to power down the Cisco router to remove or replace the fan tray. However, the router will shut down depending upon the fan speed and ambient temperature. See the Fan Tray OIR table in the *Online Insertion and Removal* section.



Note If a fan tray is removed and not replaced within the stipulated time the system will automatically power-off. There should be a minimum time period of 15 seconds between fan tray removal and re-insertion of the fan trays during the operation of the system. If the system is powered with PSUs other than 1200W AC and if the system is powered off, then the system should be completely powered off for 30 seconds with all the PSU in the system simultaneously, and then turned on for the system to power on.



Note Do not introduce body parts or objects in the fan tray slot when installing or removing the fan tray module. Exposed circuitry is an energy hazard.



Caution In the event of an overtemperature alarm, the router can shut down in less than 60 seconds. In the event of a critical temperature alarm, the router shuts down immediately.

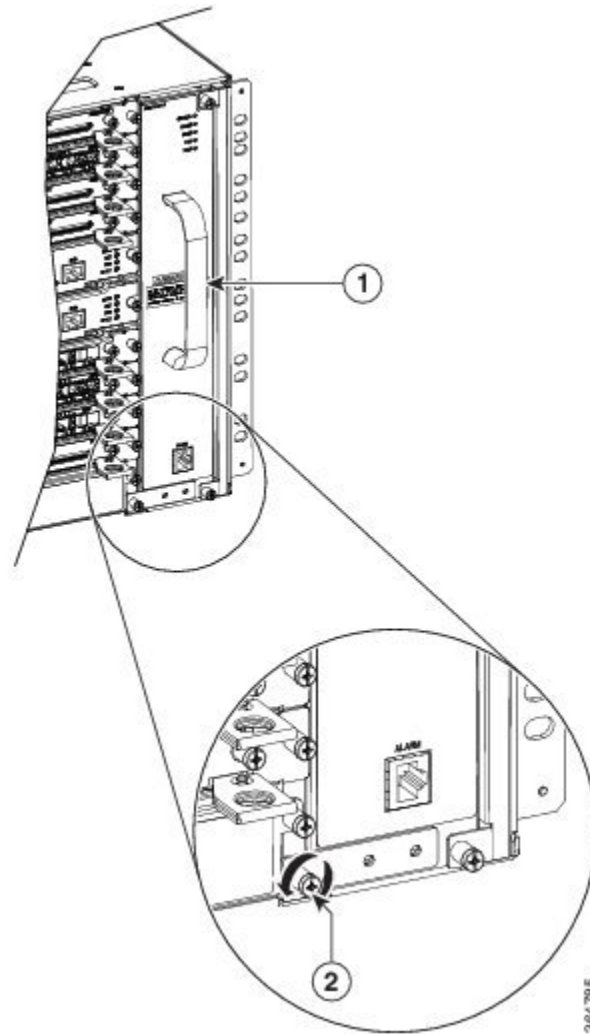


Caution To avoid erroneous failure messages, allow at least 2 minutes for the system to reinitialize after the fan tray has been replaced.

Procedure

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- Step 1** Using a No. 2 Phillips screwdriver or your fingers, loosen the captive installation screw that secures the fan tray to the chassis. The figure below shows the front of the fan tray, including the captive installation screws.

Figure 4: Removing the Fan Tray Screw



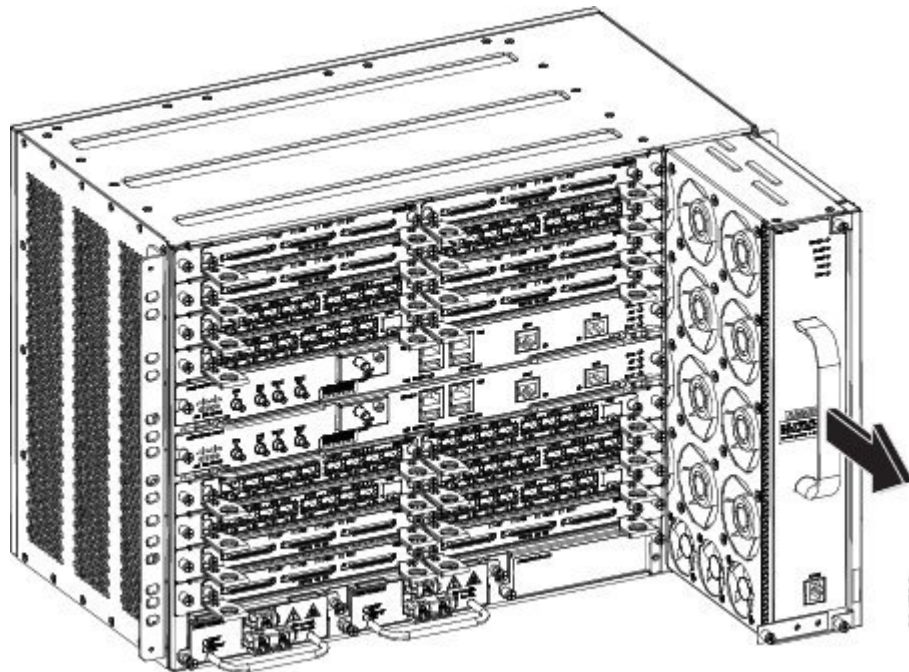
1	Fan tray handle	2	Captive screw
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Step 2 Grasp the fan tray handle with one hand and the outside of the chassis with the other hand. The figure above shows the front of the fan tray, including the handle.

Caution The fans are exposed on the left side of the fan tray. Keep your fingers, clothing, and jewelry away from the fans. Always handle the fan tray by the handle.

Step 3 Pull the fan tray toward you no more than 1 inch to disengage it from the power receptacle on the midplane, as shown in the figure below.

Figure 5: Removing the Fan Tray



Warning When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray. Statement 258

Step 4 Wait at least 5 seconds to allow the fans to stop spinning. Then, pull the fan tray backward toward you and out of the chassis.

Note As the fan tray slides out of the chassis, support the bottom of the fan tray with one hand and keep your other hand on the fan tray handle.

Note The chassis must not be allowed to operate without functioning fans for more than 60 seconds.