Quick Start Guide

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CISCO 7513 AND 7576 ROUTERS

1
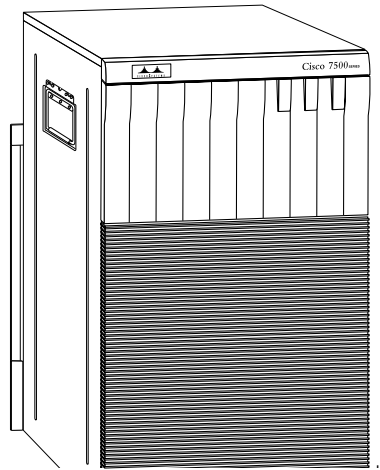
INSTALL THE HARDWARE

2

CONNECT THE RSP

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START AND CONFIGURE THE SYSTEM

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INSTALL FIELD REPLACEABLE UNITS (FRUS)

CISCO SYSTEMS

1 Install the Hardware
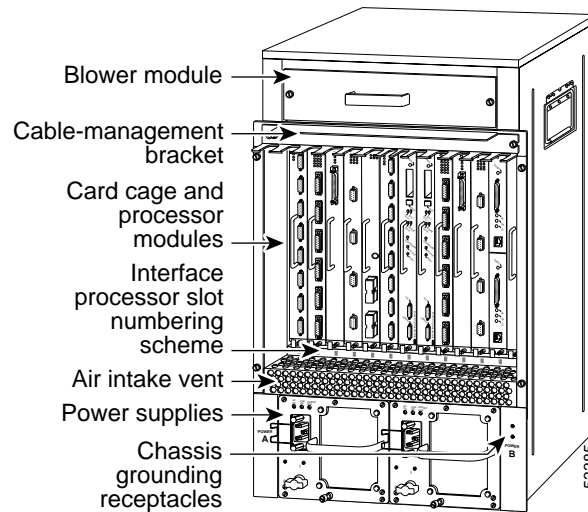
The Cisco 7513 has 13 slots: interface processor slots 0 through 5, Route Switch Processor slots 6 and 7, and interface processor slots 8 through 12.

The Cisco 7576 router is two Cisco 7500 series routers configured on a single split backplane, with 13 slots. Router A uses interface processor slots 0 through 5 with a Route Switch Processor in slot 6. Router B uses interface processor slots 8 through 12 with a Route Switch Processor in slot 7.

The Cisco 7513 and Cisco 7576 routers have bays for up to two AC-input or DC-input power supplies. Each chassis will operate with one power supply, but a second power supply allows load sharing and increased system availability.

Note The Cisco 7576 does not support the high system availability (HSA) feature. The RSP in slot 6 is automatically the system master for router A and the RSP in slot 7 is automatically the system master for router B.

Note If you are only configuring one of the two Cisco 7576 internal routers, configure router A instead of router B. Install an RSP in slot 6, and interface processors in slots 0 through 5.

Packing List

- 1 Cisco 7513 or 7576 router

- 1 Route Switch Processor (RSP)

- Y-adapter cables, 1 auxiliary and 1 console

- 1 AC power supply

- 1 AC power supply cable

- 1 Power cord

- 1 Anti-static wrist strap and documentation

① Install the Hardware

Prepare to Install the Router

Note   For detailed hardware installation instructions and safety guidelines, refer to the *Cisco 7500 Series Router Installation and Configuration Guide, Site Preparation and Safety Guide,* and the *Cisco 7500 Regulatory Compliance and Safety Guide.*

⚠ **Warning**   Only trained and qualified personnel should install, replace, or service this equipment.

Step 1   Lift the router safely out of the packing container.

Step 2   Ensure the power service at the site is suitable for the router you are installing.

Step 3   Check the packing slip to ensure that all the proper components are present.

Step 4   Confirm that you have the required tools and parts:

For rack-mounting (optional):

- Number 1 and Number 2 Phillips screwdrivers

- 1/4-inch and 3/16-inch flat-blade screwdrivers

- Tape measure

- Level (optional)

- Two mounting brackets (identical), each with an attached spanner bar

- Two chassis ears with captive grommets (identical)

- Four M4 x 10-mm Phillips flat-head screws to secure the ears to the chassis

- Twelve 10-32 x 5/8-inch LG Phillips pan-head screws with integral square cone washers

For cable-management brackets:

- Number 1 Phillips screwdriver

- Two cable-management brackets

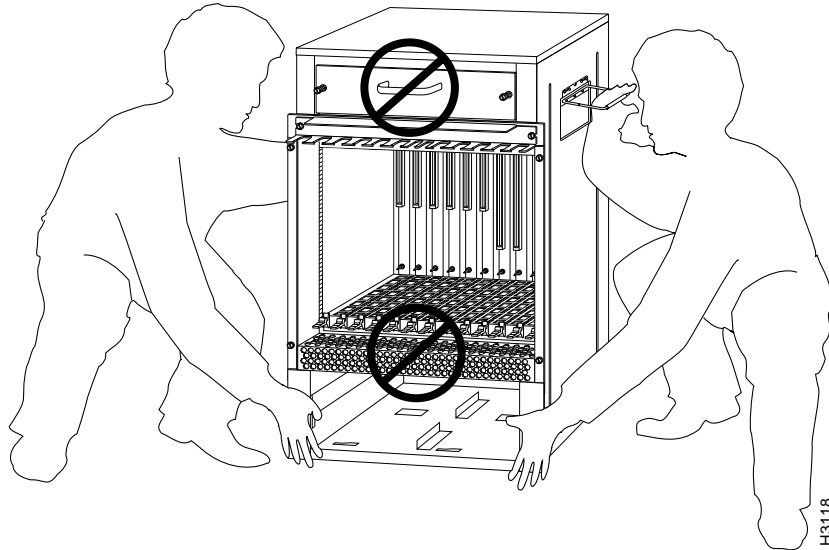- Six M3 x 8-mm Phillips pan-head screws

For interface modules:

- Number 1 Phillips or 3/16-inch flat-blade screwdriver

For DC-Input Power Supply:

- Twin-lead, 10-AWG cable terminal block connection

- Single 8-AWG wire for the ground connection

- 3/16-inch flat-blade screwdriver

- 8-mm nut driver

1 Install the Hardware

Install the Router on a Bench or Tabletop

H3118

Note   To rack-mount the router, refer to the "Rack-Mount the Router (Recommended)" section on page 4.

Caution   Two people are required to perform this step. Avoid sudden twists or moves to prevent injury.

Step 1   With a person positioned at either side of the chassis, grasp the bottom edge of the chassis with one hand near the front and the other near the back. Slowly lift the chassis in unison. Place the chassis on a bench or tabletop where the air intake vent on the front of the chassis is not drawing in exhaust air from other equipment.
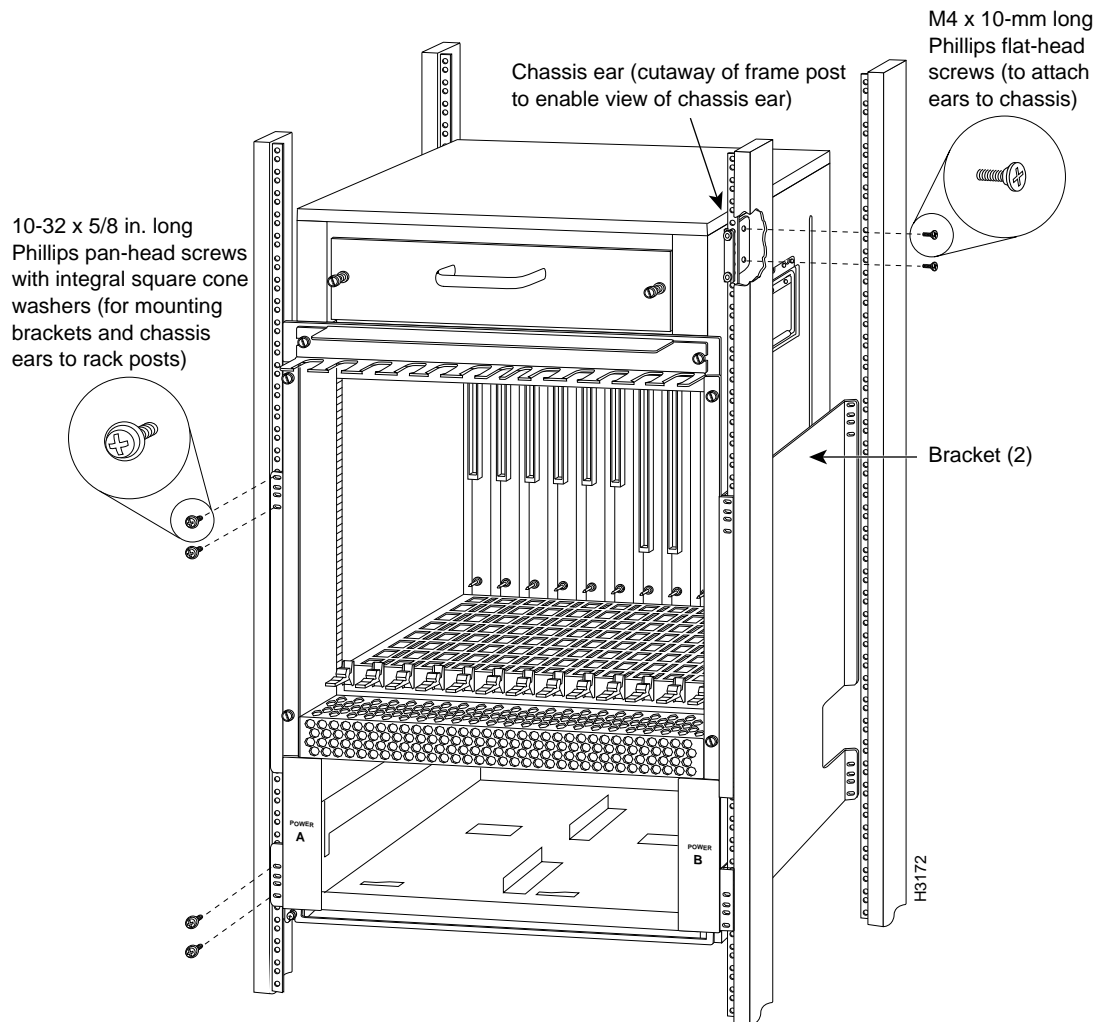
Warning   When lifting the router, do not lift by grasping the handle of the blower module, nor should you grasp the air intake grill.

Step 2   Ensure that you have at least 2 or 3 feet (0.6 to .09 m) of clearance around the rear of the chassis to install power supplies and perform maintenance on the chassis.

Step 3   Proceed to the "Install Interface Processors, Fillers, VIPs, or RSPs" section on page 9.

1 Install the Hardware

Rack-Mount the Router (Recommended)

Chassis ear (cutaway of frame post to enable view of chassis ear)

M4 x 10-mm long Phillips flat-head screws (to attach ears to chassis)

10-32 x 5/8 in. long Phillips pan-head screws with integral square cone washers (for mounting brackets and chassis ears to rack posts)

Bracket (2)

POWER A

POWER B

H3172

To rack-mount the Cisco 7513 or Cisco 7576 router, you will perform the following steps:

Step 1   Mount the brackets to the rack posts.

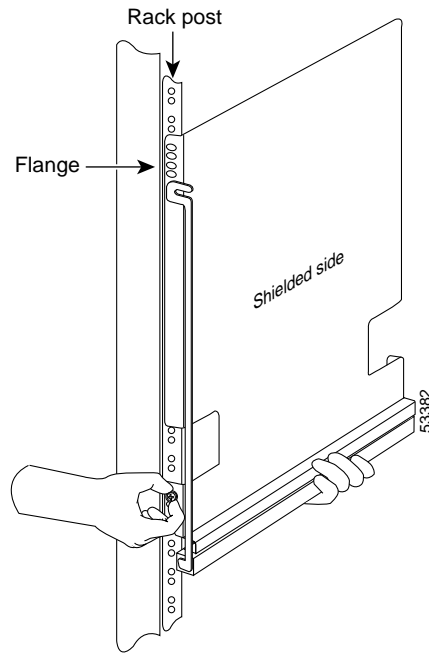**Step 2**   Secure the spanner bars.

Step 3   Attach the chassis ears.

Step 4   Mount the chassis.

1 Install the Hardware

Mount Brackets to the Rack Posts

Note   The distance between the inner edges of the left and right rack-mounting posts must be at least 17.72 inches (45.088 cm), and the distance between the holes in the mounting posts must be 18.31 inches (46.5 cm) ($\pm$ .063 inches or .16 cm).

Step 1   Place the bracket on the inner side of the rack post, with the flanged front edge of the bracket in front of the rack post.

Step 2   Align the mounting holes in the bracket with those in the rack post.

Step 3   Support the bracket with one hand, and use the other hand to insert a 10-32 x 5/8-inch LG Phillips pan-head screw through the bottom mounting hole on the front of the bracket and into the rack post.

**Step 4**   Secure the top of the bracket to the rack with two pan-head screws. Finger-tighten the screws.

Step 5   Push the brackets as far apart as possible before using a Number 2 Phillips screwdriver to tighten the screws.

Step 6   Adjust the brackets if the distance between them is less than 17.5 inches (45.45 cm).

Step 7   Repeat Step 3 through Step 6 for the remaining bracket. Use a level or tape measure to ensure that the two brackets are level in the rack.

1 Install the Hardware

Secure the Spacers
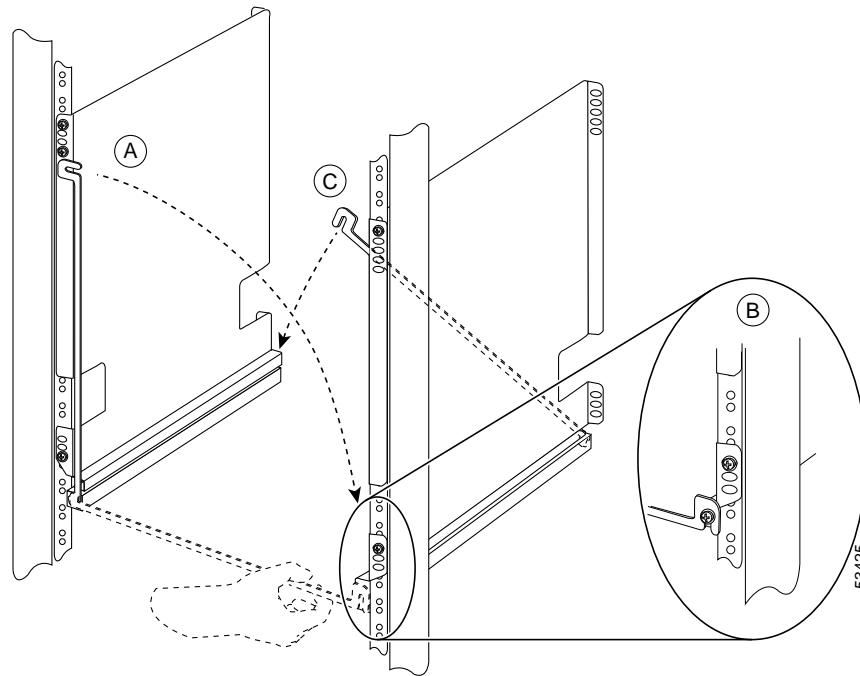
Step 1 Loosen the 10-32 x 5/8-inch LG Phillips pan-head screw at the end of the ledge of the right-side bracket. This screw is the anchor for the spanner bar.

Step 2 Remove the tape that secures the spanner bar on the left bracket, and swing the bar down (see A) over the anchor screw on the opposite bracket (see B).

Step 3 If the spanner bar does not reach the opposite bracket, loosen the pan-head screws to allow more play between the brackets, and adjust brackets as needed.

Step 4 Repeat Step 1 through Step 3 to fasten the remaining spanner bar to its anchor screw. (See C.)

Step 5 Push the brackets as far apart as possible before tightening the screws.

Step 6 Use a Number 2 Phillips screwdriver to tighten the six pan-head screws that secure the brackets to the rack-mounting posts, and the two anchor screws that secure the spanner bars.

Step 7 Adjust the brackets if the distance between them is less than 17.5 inches (44.45 cm).

1 Install the Hardware

Attach the Chassis Ears

Center-mount position

Flush-mount position

H3174

POWER A

POWER B
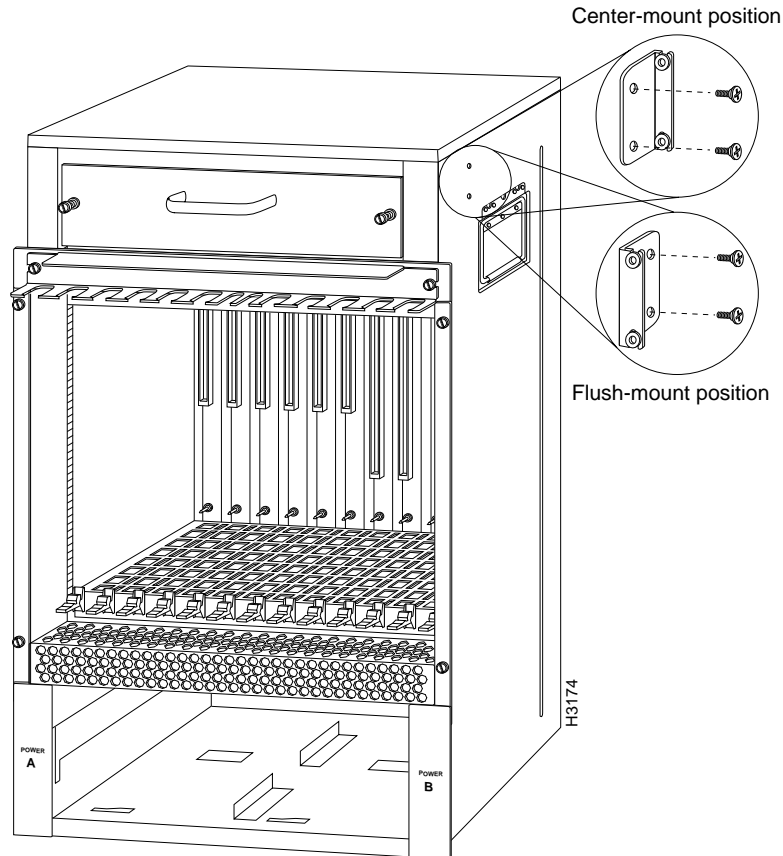
Step 1 Position the ears on the chassis as follows:

- To flush-mount the chassis, place each ear so that the mounting strips are flush with the end of the chassis, and align the mounting holes in the ear with those in the chassis.

- To center-mount the chassis, place each ear with the mounting strips away from the end of the chassis, and align the mounting holes in the ear with those in the chassis.

Step 2 Use two M4 x 10-mm LG Phillips flat-head screws to secure each ear to the chassis.

1 Install the Hardware
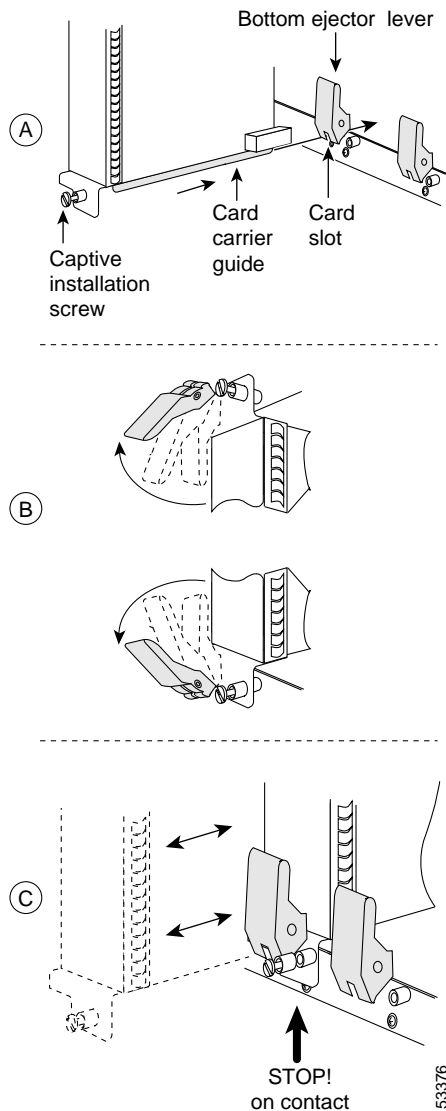
Mount the Chassis in the Rack
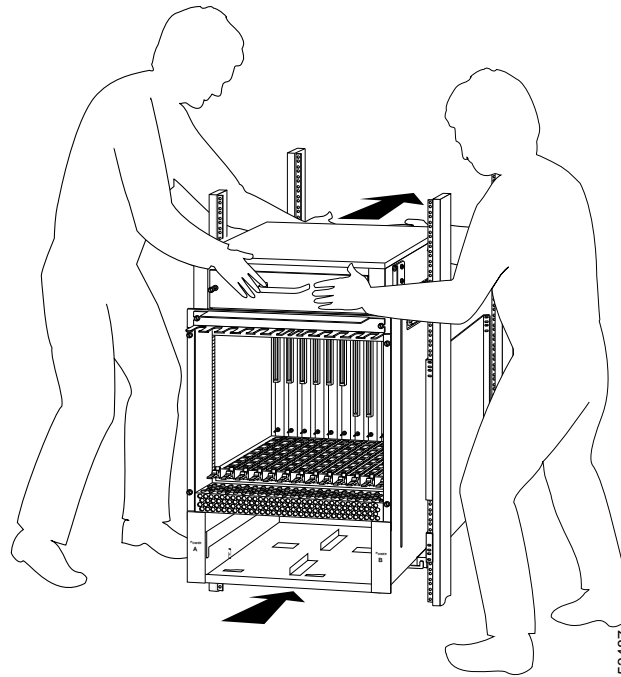
⚠️ **Caution** Two people are required to perform this step.

Step 1 With a person positioned at either side of the chassis, grasp the bottom edge of the chassis with one hand near the front and the other near the back.

Step 2 Slowly lift the chassis in unison. Avoid sudden twists or moves to prevent injury.

Step 3 With the chassis positioned so the front is closest to the rack, insert the front of the chassis into the rack between the brackets, and then slowly lower the chassis until it rests on the two bracket ledges.

Step 4 Slide the chassis back into the rack along the ledges until the ears meet the front mounting posts on both sides of the rack.

Step 5 Secure each ear to the rack-mounting post with two 10-32 x 5/8-inch LG Phillips pan-head screws.

1 Install the Hardware

Install Interface Processors, Fillers, VIPs, or RSPs

A

Bottom ejector lever

Captive installation screw

Card carrier guide

Card slot

B

C

STOP! on contact

53376

The Route Switch Processor (RSP) comes uninstalled with your Cisco 7513 or 7576 router, but is a required system component. Install the RSP2, RSP4, or RSP8 in either slot 6 or slot 7, and install interface processors (optional) in any of the eleven interface

processor slots, which are numbered 0 through 5, and 8 through 12, from left to right when viewing the chassis from the rear.

Step 1 Hold the interface processor, filler, VIP, or RSP with one hand, and place your other hand under the carrier to support the card and guide it into the slot. Avoid touching the card.

Step 2 Place the interface processor, filler, VIP, or RSP in the slot and align the guide on the carrier with the groove in the slot.

Step 3 Carefully slide the interface processor, filler, VIP, or RSP into the slot until the faceplate makes contact with the ejector levers.

Step 4 Use the thumb and forefinger of each hand to push the ejector lever flat against the interface processor, filler, VIP, or RSP.

Step 5 Use a screwdriver to tighten the captive installation screws.

Step 6 Repeat Step 1 through Step 5 to install any additional interface processors, fillers, VIPs, or RSPs.

Step 7 To check an RSP installation, refer to the "Check the RSP Installation" section on page 28, and refer to the "Check the Interface Processor or VIP Installation" section on page 29 to check the interface processor or VIP installation.

1 Install the Hardware

Attach the Cable-Management Bracket

Blower module

Loosen screws (2)

Bracket

Card cage

H3120
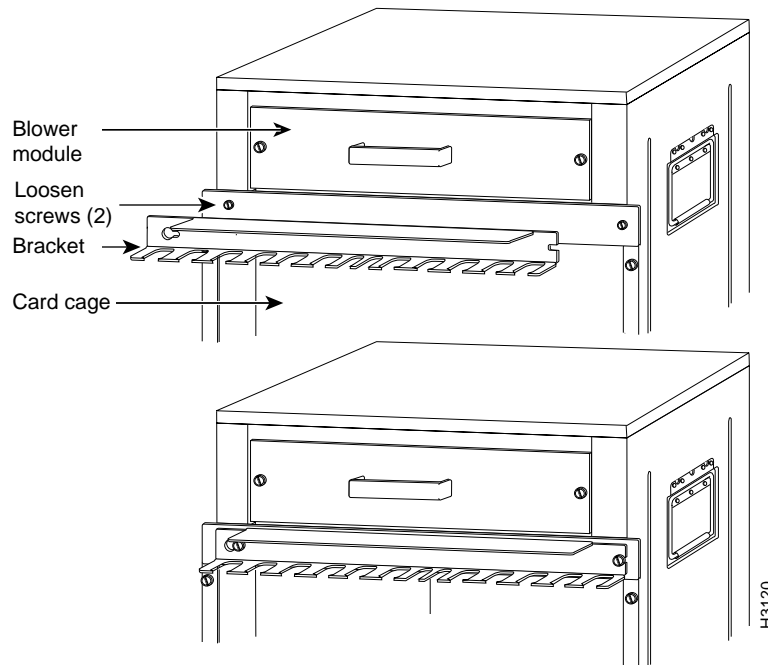
Step 1   Locate the two slotted screws between the blower module and the card cage opening at the interface processor end of the router.

Step 2   Use a flat-blade screwdriver to loosen the screws.

Step 3   Place the bracket over the screws.

Step 4   Tighten the screws.

Step 5   Route the cables to and through the cable-management bracket.

Note   If you are using very thin cables that slip through the bracket, insert cable ties through the holes in the bracket and wrap them around the cables to secure them.

It may be necessary to bundle longer cables to avoid tangling them. Do not block the power supply or chassis intake air vents with cables. Cables should not interfere with the removal and installation of the blower module.

1 Install the Hardware

Install Power Supplies in the Router

Captive screws

53427
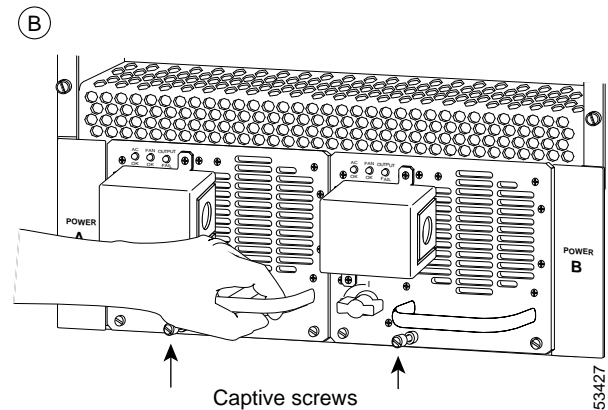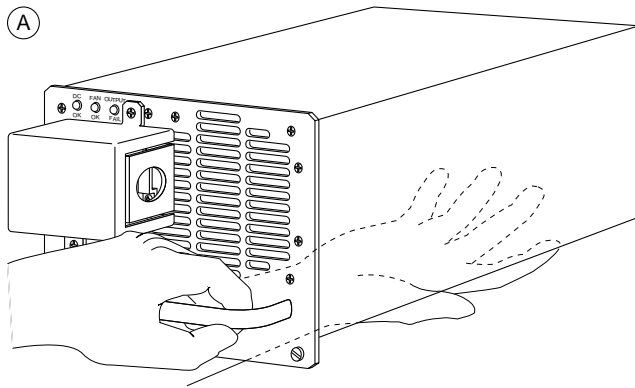
Note The Cisco 7513 and the Cisco 7576 routers are shipped with the power supplies removed. Each chassis comes with one power supply as standard equipment; a second power supply is optional equipment. The power supplies rest on the floor of the chassis under the card cage assembly.

This procedure applies to AC-input and DC-input power supplies, with differences clearly noted. Do not mix AC-input and DC-input power supplies in the same chassis. Install the first power supply in the lower power supply bay and the second, if any, in the upper bay. In systems with dual power supplies and separate available power sources, connect each power supply to separate input lines—the second power source will likely be available during a failure.

Step 1   *For AC-input power supplies*, confirm that the power on the power supply is off.

For DC-input power supplies, turn off the circuit breaker to which you will connect power, and tape the breaker switch to the off position.

Step 2   Hold the power supply by the handle and place your other hand underneath it.

⚠ **Caution**   Use two hands to remove and install power supplies.

Step 3   Place the power supply inside the bay, and align it to go straight into the bay.
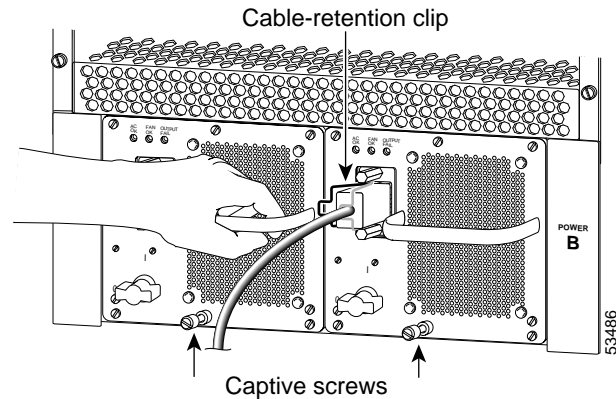
Step 4   Push the power supply back into the bay until its front panel is flush with the chassis rear panel.

Step 5   Use a screwdriver to tighten the captive installation screw on the top of the power supply.

For AC-input power supplies, proceed to the "Connect AC-Input Power Supply" section on . For DC-input power supplies, proceed to the "Connect DC-Input Power Supply" section on .

Connect AC-Input Power Supply

Cable-retention clip

Captive screws

53486

Warning   The system power switch on the power supply should be off.

Step 1   For AC-input power supplies, push the cable retention clip away from the power receptacle and plug in the power cable.

Step 2   Push the cable retention clip until it snaps into place around the cable connector.

Step 3   Reconnect the power cable at the power source, remove the tape on the breaker switch. Do not turn on the breaker or power to the power supply.
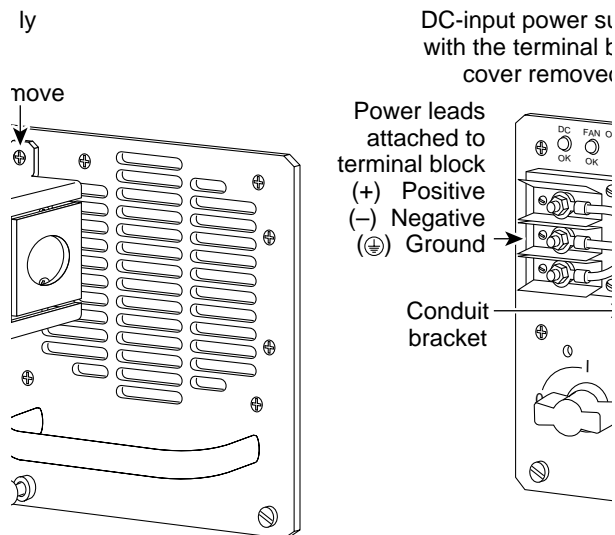
Note   A power supply blank must remain in any empty power supply bay.

Step 4   Repeat Step 1 through Step 3 for the second power supply, if present.

Note   Do not mix AC-input and DC-input power supplies in the same chassis.

1 Install the Hardware

Connect DC-Input Power Supply

ly

nove

DC-input power su
with the terminal b
cover removed

Power leads
attached to
terminal block
(+) Positive
(−) Negative
(⊕) Ground

DC FAN
OK   OK

Conduit
bracket

Ca
inst
s

Warning   The system power switch on the power supply should be off.

Step 1   Use a screwdriver to loosen and remove the terminal block cover screws.

Step 2   Lift and remove the terminal block cover.

Step 3   Route the DC-input power cable from the power source through the conduit bracket on the power supply. Allow sufficient slack in the cable.

Step 4   Attach and tighten the conduit to the conduit bracket.

Note   The proper wiring sequence is ground to ground, positive to positive (line to L), negative to negative (neutral to N). The ground wire should always be connected first and disconnected last.

Step 5 Attach the ground wire to the ground terminals using the 8-mm nut driver.

Step 6 Check the power supply's wiring and color code to verify that it matches the wiring and color code at the DC source.

⚡ **Warning** Incorrect wiring could create a dangerous shock hazard and could damage the power supply, power source, and chassis components.
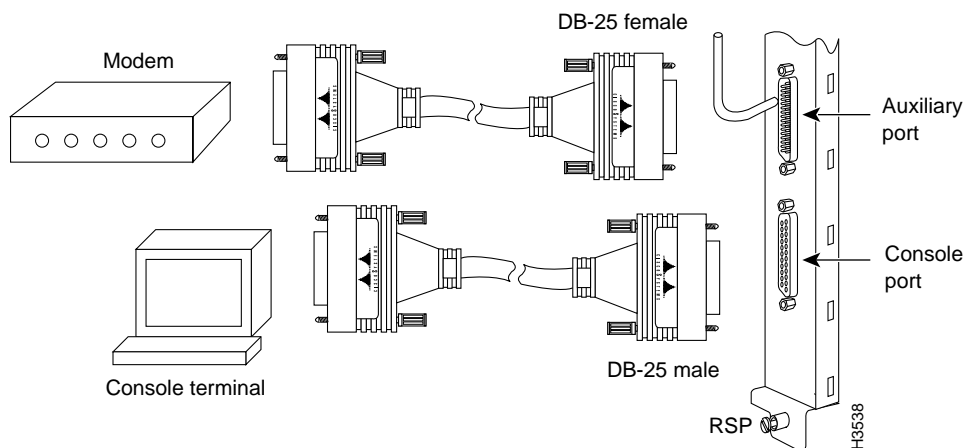
Step 7 Replace the terminal block cover.

Step 8 Reconnect the power cable at the power source.

Step 9 Repeat Step 1 through Step 8 for a second power supply, if present.

2 Connect the RSP

Connect the Console Port

The system console port on the RSP is a DB-25 receptacle DCE port for connecting a data terminal, which allows you to configure and manage the system. The console port is labeled *Console*.

Step 1 Connect the console cable from the terminal to the console port on the RSP.

Step 2 Check your terminal's documentation to determine the baud rate of the terminal you will be using.

Note The baud rate of the terminal you are using must match the default baud rate (9600 baud).

Step 3 Set up the terminal as follows: 9600 baud, 8 data bits, no parity, and 2 stop bits (9600, 8N2).

Connect the Auxiliary Port

The auxiliary port on the RSP is an ETA/TIA DTE DB-25 plug to which you can attach external equipment in order to access the router from the network. The port is located next to the console port on the RSP and is labeled *AUX.*

**Step 1** Connect the cable from the auxiliary device to the auxiliary port on the RSP.

Step 2 Check your terminal's documentation to determine the baud rate of the terminal.

Note The baud rate of the terminal must match the default baud rate (9600 baud).

Step 3 Set up the terminal as follows: 9600 baud, 8 data bits, no parity, and 2 stop bits (9600, 8N2).

Connect the Console and the Auxiliary Y-Cables
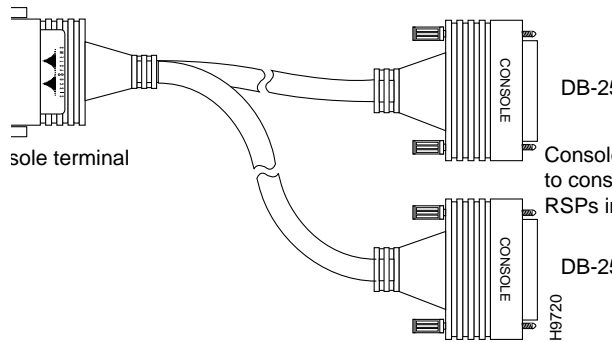
The console and auxiliary Y-cables allow you to simultaneously connect the console or auxiliary ports on two RSP2s, RSP4s, or RSP8s to a single console terminal or external auxiliary device. These are configured as system master and slave in RSP slots 6 and 7 in the Cisco 7513.

Step 1   Connect the DB-25 female end of the Y-cable to the console terminal device.

Step 2   Connect one DB-25 male end of the Y-cable to an RSP or other external auxiliary device.

Step 3   Repeat Step 2 for the other RSP or other external device.
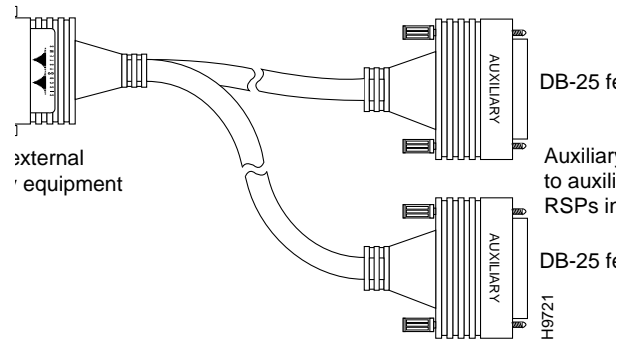
Step 1   Connect the DB-25 male end of the Y-cable to the external auxiliary equipment.

Step 2   Connect one DB-25 female end of the Y-cable to auxiliary ports on an RSP in an RSP slot.

Step 3   Repeat Step 2 for the auxiliary ports on a second RSP in an RSP slot.

Step 4   Connect the interface processors or VIPs to the external network. Refer to the appropriate processor module manual, such as the *Route Switch Processor (RSP4/4+) Installation and Configuration Guide*.

3 Start and Configure the System

Step 1 Check the following components to make sure they are secure:

- Each interface processor is inserted all the way into its slot, and captive installation screws are tightened.

- All interface cable connections are secured, and any Flash memory cards are secured in their PC slots.

- The system power cable is connected.

- Check the console terminal to make sure it is connected to the console port and turned on.

Step 2 Turn the system power switch to the on (|) position. The green AC (or DC) OK and fan OK LEDs on each power supply should go on. After a few seconds, the red output fail LED will turn OFF.

Step 3 Listen for the system blower; you should immediately hear it operating.

Step 4 Observe the normal LED indicator on the RSP. If this indicator is not on after system initialization, an error has occurred. If necessary, refer to Appendix A in the *Cisco 7500 Series Installation and Configuration Guide*.

Step 5 Wait until the system boot is complete before attempting to verify the status of interface processor indicators. During the boot process, the LED indicators on most of the interfaces go on and off in irregular sequence.

Step 6 Observe the LED indicators on the interface processors in your system. When the system boot is complete (a few seconds), the RSP begins to initialize the interface processors. During this initialization, the indicators on each interface processor behave differently (most flash on and off).

The enabled LED on each interface processor goes on when initialization has been completed, and the console screen displays a script and system banner similar to the following:

```
GS Software (RSP-K ), Version 11.1(8)CA
Copyright (c) 1986-1995 by Cisco Systems, Inc.
This RSP2 is system master
Other RSP2 is not plugged in
Compiled Wed 10-May-95 11:06
```

Step 7 Observe the system startup banner. When you start up the router for the first time, the system automatically enters the setup command facility, which determines which interfaces are installed and prompts you for configuration information for each one. On the console terminal, after the system displays the system banner and hardware configuration, you will see the following System Configuration Dialog prompt:

```
--- System Configuration Dialog ---
At any point you may enter a questions mark
`?' for help.
Refer to the `Getting Started' Guide for
additional help.
Default settings are in square brackets `[]'.
continue with
configuration dialog? [yes]:
```

3 Start and Configure the System

Start a Basic Configuration

Many privileged-level EXEC commands are used to set operating parameters. To enter the privileged-level:

Step 1   Enter the enable command at the EXEC prompt (>), and then enter a privileged-level password, as follows:

```
Router> enable
Password:
Router#
```

Step 2   Enter the configure terminal command to enter configuration mode:

```
Router# configure terminal
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
```

Step 3   Enter the config-register *value* configuration command, where *value* is a hexadecimal number preceded by 0x, as in the following example:

```
Router(config)# config-register 0x010F
```

Step 4   Press Ctrl-Z to exit configuration mode.

Step 5   Save the new settings to NVRAM. Enter the copy running-config startup-config command.

Note   The new settings do not take effect until the system software is reloaded by rebooting the router.

Step 6   Enter the show version command to view the configuration register value currently in effect. The value is displayed on the last line of the screen display:

```
Configuration register is 0x141 (will be 0x101
at next reload)
```

Step 7   Reboot the router, and then perform a basic configuration using:

*   AutoInstall (proceed to Step 8)

*   Setup facility (proceed to the "Perform a Basic Configuration Using Setup" section on page 19)

*   Configuration mode (proceed to the "Perform a Basic Configuration Using Configuration Mode" section on page 22)

Note   Configuration register changes take effect only when the system reloads, such as when you issue a reload command from the console.

Configure Using AutoInstall

Step 8   Connect to the network using a serial (WAN) cable to the channel service unit/data service unit (CSU/DSU).

Step 9   Contact your system administrator to verify that the TCP/IP host on your network is preconfigured.

Step 10   Press Ctrl-Z to exit configuration mode.

Step 11   At the # prompt, enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

This completes the procedure for performing a basic configuration using AutoInstall.

Perform a Basic Configuration Using Setup

Note The router's serial (WAN) cable should *not* be connected to the CSU/DSU unless you are planning to use AutoInstall. If you are using the console Y-cable that shipped with your router, use either of the two DB-25 male plug ends of the Y-cable.

Step 1 Select the protocols supported on your interfaces. For Internet Protocol (IP)-only installations, accept the default values. A typical minimal configuration using IP, IPX, and AppleTalk follows:

```
Configuring global parameters:

Enter host name [Router]: Router
```

Step 2 Enter the enable secret password and the enable password when the following is displayed:

```
The enable secret is a one-way cryptographic
secret used instead of the enable password
when it exists.

Enter enable secret: barney

The enable password is used when there is no
enable secret and when using older software
and some boot images.

Enter enable password: betty
```

Step 3 Enter yes or no to accept or refuse SNMP management:

```
Configure SNMP Network Management? [yes]: yes
Community string [public]:
```

Step 4 Enter no to refuse to enable CLNS:

```
Configure CLNS? [no]: no
```

Step 5 Enter yes to enable routing on AppleTalk and IPX:

```
Configure AppleTalk? [no]: yes
Multizone networks? [no]: yes
Configure IPX? [no]: yes
```

Step 6 Enter no to refuse to enable Vines, XNS, DECnet, or bridging:

```
Configure Vines? [no]: no
Configure XNS? [no]: no
Configure DECnet? [no]: no
Configure bridging? [no]: no
```

Step 7 Enter yes or press Return to configure IP, and then select an interior routing protocol for IP, if you are using IP routing:

```
Configure IP? [yes]: yes
Configure IGRP routing? [yes]: yes
Your IGRP autonomous system number [1]: 15
```

Step 8 At the # prompt, enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

Note Consult your network administrator to obtain network addresses and subnet mask information.

3 Start and Configure the System

Configure an Ethernet Interface

Step 1 To configure your system for an Ethernet LAN, respond to the prompts as follows, using your own IP address and subnet mask information:

```
Configuring interface parameters:

Configuring interface Ethernet0/0:
Is this interface in use? [no]: yes
Configure IP on this interface? [no]: yes
IP address for this interface: 1.1.1.10
Number of bits in subnet field [0]:
Class A network is 1.0.0.0, 0 subnet bits;
mask is 255.0.0.0
```

Step 2 Enter yes to enable IPX on this interface, using the IPX network number:

```
Configure IPX on this interface? [no]: yes
IPX network number [2]:
```

Step 3 Enter yes to enable AppleTalk on this interface, to configure for extended AppleTalk networks, and then enter the cable range number. Enter the zone name and any other additional zones that will be associated with your local zone:

```
Configure AppleTalk on this interface? [no]:
yes
Extended AppleTalk network? [no]: yes
AppleTalk starting cable range [0]:
```

Step 4 At the # prompt, enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

Configure a Synchronous Serial Interface

Step 1 Enter yes to configure serial port 0:

```
Configuring interface Serial1/0:
Is this interface in use? [no]: yes
```

Step 2 Determine which protocols you want to allow on the synchronous serial interface and enter the appropriate responses:

```
Configure IP unnumbered on this interface? [no]:
IP address for this interface: 1.1.1.20
Number of bits in subnet field [0]:

Class A network is 1.0.0.0, 0 subnet bits;
mask is 255.0.0.0

Configure IPX on this interface? [no]: yes
IPX network number [2]:

Configure AppleTalk on this interface? [no]:
yes
Extended AppleTalk network? [no]:
AppleTalk network number [1]:
```

**Step 3** Press Ctrl-Z to exit configuration mode.

Step 4 At the # prompt, enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

Your Cisco 7507 router is now minimally configured and ready to use. If you want to modify the parameters after the initial configuration, use the setup command. To perform more complex configurations, use the configure command. For more information on additional interface configuration and information on more specific system configurations, refer to the *Cisco 7500 Series Installation and Configuration Guide.*

Start and Configure the System

Perform a Basic Configuration Using Configuration Mode

At the reboot, the following example appears:

```
Any interface listed with OK? value "NO" does
not have a valid configuration.

Interface IP-Address OK? Method Status
Protocol
Ethernet0/0 unassigned NO not set down down
Serial1/0 unassigned NO not set down down
```

Step 1   Enter the configure terminal command at the enable prompt to enter configuration mode from the terminal, as follows:

```
Router# configure terminal
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
```

Step 2   Enter the interface *type slot/port* command at the enable prompt to enter interface configuration mode, as follows:

```
Router(config)# interface serial slot/port
Router(config-if)#
```

Step 3   Press Ctrl-Z to exit configuration mode.

Step 4   At the # prompt, enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

Your Cisco 7513 or Cisco 7576 router is now minimally configured and ready to use. If you want to modify the parameters after the initial configuration, use the setup command. To perform more complex configurations, use the configure command.

For more information on additional interface configuration and information on more specific system configurations, refer to the *Cisco 7500 Series Installation and Configuration Guide*.

4 Install Field Replaceable Units (FRUs)
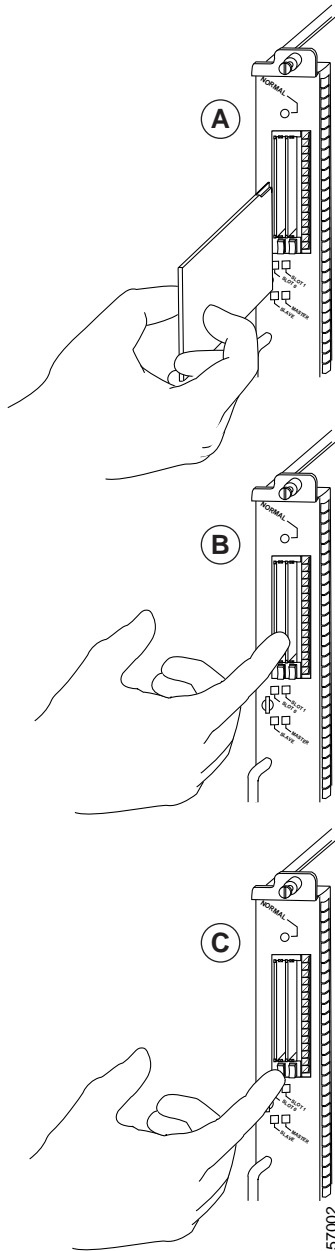
Flash Memory Cards

A Flash memory card that ships with your Cisco 7513 or Cisco 7576 contains the Cisco IOS software image to boot your router. You do not need to format it.

The RSP has two PC Card slots—slot 0 and slot 1—into which you can install a Flash memory card. In the RSP2, RSP4, and RSP8, the orientation is vertical. PC Card slot 0 is on the left and slot 1 is on the right (as shown).

Note A Flash memory card can be inserted and removed with the system power on. Both PC Card slots can be used at the same time.

Step 1 To eject the card, press the appropriate eject button until the card is free of the connector at the back of the slot (see C).

Step 2 Remove the card from the slot and place it in an antistatic bag to protect it.

Step 3 Face the front panel of the RSP, and hold the Flash memory card with the connector end of the card toward the slot (see A).

The label should face right.

Note The Flash memory card is keyed and cannot be seated the wrong way. The eject button will not pop out if the card is not properly inserted.

Step 4 Insert the card into the appropriate slot until the card completely seats in the connector at the back of the slot and the eject button pops out toward you (see B).

Note The card does not insert all the way inside the RSP; a portion of the card remains outside of the slot. Do not attempt to force the card past this point.

4 Install Field Replaceable Units (FRUs)

Format a Flash Memory Card

Flash memory cards shipped as spare parts must be formatted. Use only Intel Series 2+ Flash memory cards.

Step 1   Enter format slot0: (or format slot1:) to format the Flash memory card, as follows:

```
Router# format slot0:
```

Step 2   At the erase all sectors prompt, press Enter to proceed.

```
All sectors will be erased, proceed? [confirm]
```

Step 3   At the volume ID prompt, enter the ID name:

```
Enter volume id (up to 30 characters):
MyNewCard
Formatting sector 1
Format device slot0 completed
Router#
```

Copy Files to Flash Memory

To upgrade to a new Cisco IOS image, copy the image file to Flash memory. Upgrade images one at a time; do not delete all known good images at one time. You cannot copy an image while the system is running from Flash memory.

Use the command copy tftp:*filename* [bootflash | slot0 | slot1]: *filename* for the copy procedure, where tftp:*filename* is the source of the file and [bootflash | slot0 | slot1]: *filename* is the destination in bootflash memory or on either of the Flash memory cards.

An example of the copy tftp:*filename* command follows for a file in the Flash memory card in PC Card slot 0:

```
Router# copy tftp:myfile1 slot0:myfile1

20575008 bytes available on device slot0,
proceed? [confirm]
Address or name of remote host [1.1.1.1]?
Loading new.image from 1.1.1.1 (via
Ethernet1/0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!![OK -
7799951/15599616 bytes]
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Router#
```

Make a Flash Memory Card Image Bootable

Note   In this example, the filename is new.image, and the Flash memory card is located in slot 0.

Step 1   Enter the configure terminal command at the enable prompt, as follows:

```
Router# configure terminal
```

Step 2   Enter the no boot system command, as follows.

```
Router(config)# no boot system
```

Step 3   Enter the boot system flash slot0:new.image command, as follows:

```
Router(config)# boot system flash
slot0:new.image
```

Step 4   Enter the config-register 0x2102 command to enable loading an image from Flash memory:

```
Router(config)# config-register 0x2102
```

Step 5   Press Ctrl-Z to exit configuration mode.

Step 6   Enter the copy running-config startup-config command to save the configuration to NVRAM as follows:

```
Hostname# copy running-config startup-config
```

Step 7   Enter the reload command. When the system reloads, it will boot the image new.image from the Flash memory card in slot 0.

```
Router# reload
```

Enable Booting from Flash Memory

To enable booting from Flash memory, set configuration register bits 3, 2, 1, and 0 to a value between 2 and 15 in conjunction with the boot system flash *device:filename* configuration command, where *device* is bootflash:, slot0:, or slot1:, and *filename* is the name of the file from which you want to boot the system. In the following example, the Flash memory card is in slot 0.

Step 1   Enter the configure terminal command at the enable prompt, as follows:

```
Router# configure terminal
```

Step 2   At the prompt, enter configuration commands, one per line.

```
Enter configuration commands, one per line.
```

Step 3   Press Ctrl-Z to exit configuration.

Step 4   Enter the boot system flash bootflash:slot0: *filename* command, as follows:

```
Router(config)# boot system flash
blootflash:slot0:filename
```

Step 5   Enter the config-register command with the value shown in the following example:

```
Router(config)# config-reg 0x0102
Ctrl-Z
Router#
```

Press Ctrl-Z to exit enable booting mode.

Prepare to Remove and Install an RSP

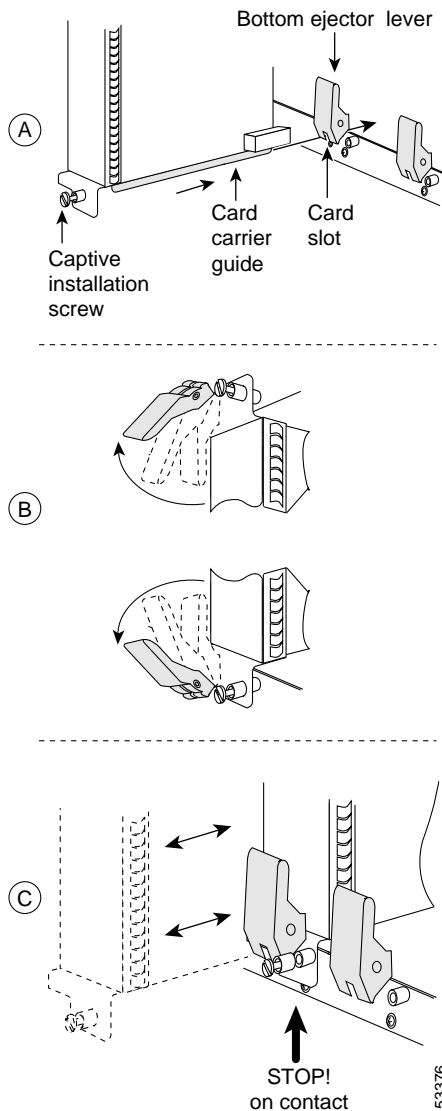To remove and install an RSP, you will perform the following steps:

- Copy the configuration file using a Trivial File Transfer Protocol (TFTP) server

- Remove the RSP

- Install the RSP

- Connect to the RSP

- Turn the system power back on, if it has been turned off

- Retrieve the configuration file

- Configure high system availability (HSA) or high availability (HA) features, provided you are using two RSPs (Follow the instructions in the appropriate Route Switch Processor Installation and Configuration Guide, such as the *Route Switch Processor 8 (RSP8) Installation and Configuration Guide.*)

Note   The high system availability (HSA) and high availability (HA) features are beyond the scope of this Quick Start Guide. For information on configuring your router for HSA or for HA, refer to the appropriate Route Switch Processor Installation and Configuration Guide, such as the *Route Switch Processor 8 (RSP8) Installation and Configuration Guide.*

4 Install Field Replaceable Units (FRUs)

Remove and Install an Interface Processor, Filler, VIP, or RSP

A

Bottom ejector lever

Captive installation screw

Card carrier guide

Card slot

B

C

STOP! on contact

53376

Note   Do not shut down the system power when removing an interface processor, VIP, or an RSP in a system configured for HA. If you are removing an RSP and have only one RSP, shut down the system, but first copy the configuration file to a TFTP server. See the "Copy the Configuration File for an RSP" section on page 31. If you have a system using high system availability (HSA), shut down the system to remove the master RSP, but leave power on if you remove only the slave RSP.

Step 1   Attach an ESD-preventive wrist strap between you and any unpainted chassis surface.

Step 2   If you have a VIP4 and are using HSA with an RSP2 as the slave processor, remove the RSP2 and wait 20-30 seconds.

Step 3   Disconnect all cables from the interface processor, VIP, or RSP port adapters; unless you are only moving a carrier, then skip this step.

Step 4   Use a screwdriver to loosen the captive installation screws, as shown in A.

Step 5   Place your thumbs on both ejector levers and simultaneously pull them both outward, as shown in B.

Step 6   Grasp the interface processor, filler, VIP, or RSP handle with one hand and pull the carrier straight out of the slot, keeping your other hand under the carrier to guide it.

Step 7   Store the interface processor, VIP, or RSP in an antistatic bag.

Install Field Replaceable Units (FRUs)

Step 8 If you have a VIP4 and are using HSA with an RSP2 as the slave processor, wait 20-30 seconds, and then reinsert the RSP2.

Step 9 Repeat Step 2 through Step 8 to remove any additional interface processors, fillers, VIPs, or RSPs.

Step 10 Perform the steps in the "Install Interface Processors, Fillers, VIPs, or RSPs" section on page 9 to install an interface processor, filler, VIP, or RSP.

Check the RSP Installation

Step 1 Check the RSP connections to make sure they are secure:

• The RSP is inserted all the way into its slot, and both the captive installation screws are tightened.

• The console terminal is turned on and is connected to the console port.

Step 2 Observe the RSP LEDs. While the system initializes, the CPU halt LED on the RSP stays on. It goes off when the boot process is complete. As the RSP initializes each interface processor, the status LEDs on each interface processor go on and off in irregular sequence.

Step 3 Verify that the console terminal displays the system banner and startup screen as the system restarts.

Note Boot time is approximately 1 minute for systems with one RSP and approximately 1.5 minutes for systems with two RSPs.

Step 4 Verify that all the enabled LEDs (on the interface processors) are on.

Step 5 In systems with a second RSP installed (and HSA or HA configured), use the show version command to verify that the slave (or standby) RSP is recognized by the system.

Step 6 When you have verified all the conditions in Step 1 through Step 4 (or Step 5 if you have a second RSP installed and want to use the HSA or HA features), the installation is complete.

If you replaced the RSP and saved your configuration file to a remote server before doing so, proceed to the "Retrieve the Configuration File for RSPs" section on page 33.

An error condition exists if no LEDs go on at power up or after initialization, or if the boot error or CPU halt LEDs go on and remain on. If this happens, see Appendix A in the *Cisco 7500 Series Installation and Configuration Guide*.

4 Install Field Replaceable Units (FRUs)

Check the Interface Processor or VIP Installation

Note When a new VIP is inserted or when a VIP is moved to a new slot, the system recognizes the new interfaces, but leaves them in the shutdown state until you configure them. After the system reinitializes all interfaces, the enabled LED on the port adapters and on all interface processors, VIPs, and RSPs should go on, depending on your connections and configuration.

Step 1 Observe the console display messages when the system reinitializes each interface as follows:

- For a new interface processor or VIP, the system should recognize all new interfaces, but leave them configured as *down*.

- For a replaced interface processor or VIP, the system should recognize each interface and place it in the same state (*up* or *down*) each was in when you removed the interface processor or VIP.

Step 2 Verify that the enabled LED on each port adapter goes on and remains on.

If the enabled LED on a port adapter fails to go on, the interface processor or VIP may not be fully seated in the backplane. Refer to Appendix A in the *Cisco 7500 Series Installation and Configuration Guide*.

Step 3 If the VIP is new, configure the new interfaces.

- Enter the enable command at the EXEC prompt (>), and then enter a privileged-level password, as follows:

```
Router> enable
Password:
Router#
```

- Use the configure command to configure the interface processor or VIP.

- Refer to the appropriate configuration section of your port adapter documentation to configure the port adapter.

Step 4 If the VIP is a replacement, use the show interfaces *type slot/port adapter/port* or show controllers cbus command to verify the status of the interfaces.

If you replaced a VIP with a new VIP with a greater number of ports (for example, if you replaced a single-port adapter VIP with a dual-port adapter VIP), the system will recognize the interfaces on the previously configured port adapter, but will not recognize the additional port adapter interfaces. The new interfaces will remain in the shutdown state until you configure them.

Step 5 When the interfaces are up, check the activity of each interface by observing the status LEDs, which are described in the LED section of your port adapter documentation.

Copy the Configuration File for an RSP

Refer to the appropriate Cisco IOS software documentation for the configuration options available, and for specific configuration instructions, as needed.

Before you copy (save) the running configuration to a TFTP file server, ensure the following:

- You have a connection to the router either with a console terminal connected to the RSP console port or remotely through a Telnet session.

- The router is connected to a network supporting a file server (remote host).

- The remote host supports the TFTP application.

- You have the interface processor address or name of the remote host available.

Step 1   Enter the enable command at the EXEC prompt (>), and then enter a privileged-level password, as follows:

```
Router> enable
Password:
Router#
```

Step 2   Enter the ping command followed by the name or IP address of the remote server, and then press Return to check the connection between the router and the remote host.

Step 3   Enter the show running-config command to display the currently running configuration on the terminal and ensure that the configuration information is complete and correct. If it is not, use the configure command to add or modify the existing configuration.

Step 4   Create a file on the TFTP server.

Note   Before you can save a file to a TFTP server, a file must first exist on the TFTP server. Create this file. Ensure that the filename matches the filename you will copy from the router. Also, ensure that the server permissions are set so the router can copy to this file.

Step 5   Enter the copy startup-config tftp command. The EXEC command interpreter prompts you for the name or interface processor address of the remote host that is to receive the configuration file. (The prompt might include the name or address of a default file server.)

```
Router# copy startup-config tftp

Remote host []?
```

Step 6   Enter the name or IP address of the remote host. In the following example, the name of the remote server is *servername*:

```
Router# copy startup-config tftp

Remote host []? servername
Translating "servername"...domain server
(1.1.1.1) [OK]
```

Step 7   Enter the name of the configuration file. The default is to use the name of the router with the suffix *-confg.* Press Return to accept the default filename, or enter a different name for the file, then press Return. In the following example, the default is accepted:

```
Name of configuration file to write
[Router-confg]?
Write file Router-confg on host 1.1.1.1?
[confirm]
Writing Router-confg .....
```

Step 8   The system displays the instructions you entered for confirmation. If the instructions are not correct, enter n (no), and then press Return to cancel the process. To accept the instructions, press Return, or press y and then press Return. In the following example, the default is accepted:

```
Write file Router-confg on host 1.1.1.1?
[confirm]
Writing Router-confg: !!!! [ok]
```

The system displays a series of exclamation points (! ! !) or periods (. . .) during the copy process. The !!!! and [ok] indicate that the operation was successful. A series of periods (...) and [timed out] or [failed] indicates a failure of the process.

If the display indicates that the process was successful, the copy process is complete. The configuration is stored on the remote file server.

If the display indicates that the process failed, the configuration was not saved (see the following example):

```
Writing Router-confg .....
```

Repeat the preceding steps, or select a different remote file server and repeat the preceding steps.

After you upload the configuration file, continue with the "Remove and Install an Interface Processor, Filler, VIP, or RSP" section on page 27 to install the RSP. If you are unable to copy the configuration to a remote host successfully, contact your network administrator or contact Cisco technical assistance.

Retrieve the Configuration File for RSPs

Retrieve the saved configuration and copy it to NVRAM by accessing the router through a console terminal, or from a remote terminal.

Step 1   Enter the enable command at the EXEC prompt (>), and then enter a privileged-level password, as follows:

```
Router> enable
Password:
Router#
```

Note   The router runs from the default configuration in NVRAM until the previous configuration is retrieved. Passwords configured on the previous system are not valid until they are retrieved.

Step 2   Enter the ping command followed by the name or IP address of the remote server, and then press Return to check the connection between the router and the remote host.

Step 3   Enter the copy tftp startup-config command and press Return to enter the configuration mode and specify that you will configure the system from a network device (instead of from the console terminal, which is the default).

```
Router# copy tftp startup-config
```

Step 4   Enter the IP address or name of the remote host (the remote TFTP server to which you originally saved the configuration file).

```
Address of remote host [255.255.255.255]? 10.1.1.1
```

Step 5   Enter the name of the configuration file. The default is to use the name of the router with the suffix *-confg* (Router-confg in the following example). If you specified a different filename when you copied the configuration, enter the filename; otherwise, press Return to accept the default.

```
Name of configuration file [Router-confg]?
```

Step 6   Before the system reloads the new configuration file in NVRAM, it displays the instructions you entered for confirmation. If the instructions are not correct, enter n (no), and then press Return to cancel the process. To accept the instructions, press Return, or press y and then press Return. Output similar to the following appears:

```
Configure using Router-confg from 10.1.1.1? [confirm]
Loading Router-confg from 10.1.1.1: ! ! [OK - 1186/126927 bytes]
Warning: distilled config is not generated
[OK]
%SYS-5-CONFIG_NV: Non-volatile store configured from Router-confg by console tftp from 10.1.1.1
```

The console display indicates whether or not the operation was successful. A series of exclamation points (!!!!) and [OK] (as shown in the preceding example) indicates that the operation was successful. A series of periods (. . .) and [timed out] or [failed] indicates a failure due to a network fault or an incorrect server name, address, or filename. The following is an example of a failed attempt to boot from a remote server:

```
Booting Router-confg ..... [timed out]
```

If the display indicates that the process was successful, as shown in Step 6, proceed to the next step.

If the display indicates that the process failed, verify the name or IP address of the remote server and the filename, and repeat the preceding steps. If the process fails again, contact your network administrator.

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Step 7 Enter the show startup-config command to confirm that the configuration file was retrieved correctly. Look at the first line for the configuration file size. Compare it with the file you retrieved from the TFTP server to confirm that it is correct. Following is an example:

```
Router# show startup-config

Using 1186 out of 126968 bytes
!
version 12.0(9)S
hostname Router
!
Router#
```

Step 8 To ensure that the startup configuration file stored in NVRAM is the default running configuration file used by the system, enter the copy system:running-config nvram:startup-config command:

```
Router# copy system:running-config
nvram:startup-config

Router#
%SYS-5-CONFIG_I: Configured from memory by
console
Router#
```

This completes the process for retrieving the configuration file for the RSP.

4 Install Field Replaceable Units (FRUs)

Remove and Install Port Adapters

A
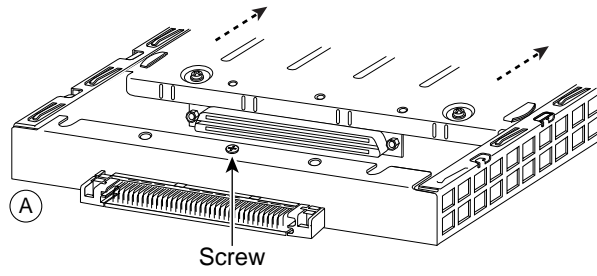
Screw

Note First remove the VIP from the chassis before removing the port adapter from the VIP. See the "Remove and Install an Interface Processor, Filler, VIP, or RSP" section on page 27 for instructions.

Step 1 Remove the screw that secures the port adapter (or blank port adapter), as shown in A.

Step 2 Grasp the handle and carefully pull it out of its slot, away from the edge connector at the rear of the slot. (See A.)

Step 3 To insert the port adapter, align the carrier between the upper and the lower edges of the port adapter slot. (See B.)

Step 4 Carefully slide the port adapter into the slot until the connector is completely seated in the connector at the rear of the port adapter slot, as shown in B.

Step 5 Install the screw in the rear of the port adapter slot on the VIP. Do not overtighten the screw. (See A.)

Step 6 Carefully slide the VIP motherboard into the interface processor slot until the connectors at the rear of the VIP are completely seated in the connectors at the rear of the interface processor slot. Use the ejector levers to seat the VIP in the interface processor slot. Tighten the captive installation screws on the VIP.
(See C.)

4 Install Field Replaceable Units (FRUs)

Remove and Replace the Power Supply

Redundant power supplies support online insertion and removal (OIR); if you remove one power supply, the second power supply immediately ramps up to maintain uninterrupted operation. In this case, proceed to Step 2. If you have only one power supply, you must turn off power before removing and replacing it. In this case, proceed to Step 1.

Step 1 Turn off the power source.

Step 2 Turn off the switch on the power supply.

Step 3 Disconnect the power cable from the power source.

Step 4 Disconnect the power cable from the power supply.

For the AC-input power supply: Lift up the cable retention clip and remove the power cable from the AC receptacle.
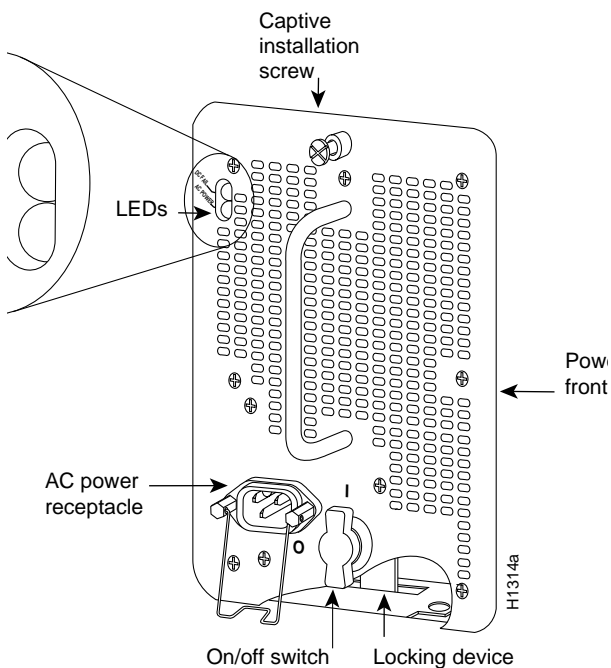
4 Install Field Replaceable Units (FRUs)

For the DC-input power supply: Use a screwdriver to loosen the captive installation screws on the terminal block cover, lift the cover, use the wire cutters to cut the nylon strain-relief ties, and then remove the three power leads (remove the ground lead last) from the terminal block.

Captive installation screw

Power leads attac
to terminal block
(−) negative
(+) positive
(⏚) ground

Nylon ties on cab
and metal bracke

FASTENER TO BE FULLY ENGAGED
BEFORE OPERATING POWER SUPPLY

OT SHIP WITH POWER SUPPLY
LLED

INPUT VOLTAGE : 40-72 V=

INPUT CURRENT : 24-13A

H2530
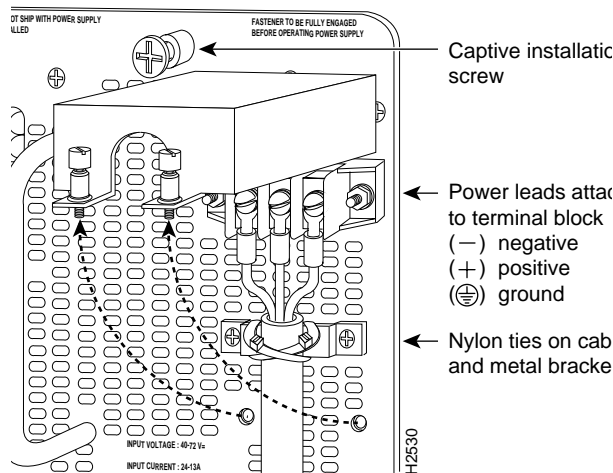
Step 5 Use a screwdriver to loosen and remove the captive installation screw on the top of the power supply.

Step 6 Grasp the power supply handle with one hand and place your other hand underneath to support the bottom of the power supply.

Warning Keep hands and fingers out of the power supply bays. High voltage is present on the power backplane when the system is operating.

Step 7 Pull the power supply out of the bay and put it aside.

Step 8 If the power supply bay is to remain empty, install a power-supply filler plate over the opening and secure it with a mounting screw.

Step 9 Refer to the "Install Power Supplies in the Router" section on page 11 to replace the power supply.

CISCO SYSTEMS

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