

# Media Upgrade Kit Installation Instructions

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This document explains how to install the media upgrade kit for a Juniper Networks routing platform.

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## Media Upgrade Kit Description

This media upgrade kit can be used to install or upgrade the internal compact flash disk in a Routing Engine.

The media upgrade kit includes a compact flash disk and needlenose pliers with grooved jaws.

Table 1 on page 2 shows the ways you can use the media upgrade kit.

**Table 1: Media Upgrade Kit Procedures**

Task	Procedure
Remove or install the internal compact flash disk in the Routing Engine 400, 600, 850, 1600, S-1300, or S-2000.	"Removing or Inserting the Compact Flash Disk Secured by a Clasp" on page 6
Remove or install the internal compact flash disk in the Routing Engine A-1000 or A-2000.	"Removing or Inserting the Compact Flash Disk Secured by a Screw" on page 8

## Routing Engine Description

The Routing Engine is an Intel-based PCI platform that runs JUNOS software. Software processes that run on the Routing Engine maintain the routing tables, manage the routing protocols used on the router, control the router's interfaces, control some chassis components, and provide the interface for system management and user access to the router.

### Boot Devices

The router can boot from the removable medium (PC Card or USB storage device), internal compact flash disk, or hard disk. The disk from which the router boots is called the *primary boot device*, and the other disk is the *alternate boot device*.



**NOTE:** If the router boots from an alternate boot device, a yellow alarm lights the LED on the router's craft interface.

### Boot Sequence

The router attempts to boot from three devices in this order:

- Removable medium, if one is installed (PC Card or USB storage device)
- Internal compact flash disk
- Hard disk



**NOTE:** To reinstall the JUNOS software, you boot the router from the removable media. Do not insert the removable media during normal operations. The router does not operate normally when it is booted from the removable media.

When the router boots from the storage media (removable media, internal compact flash disk, or hard disk) it expands its search in the `/config` directory of the routing platform for the following files in the following order: `juniper.conf` (the main configuration file), `rescue.conf` (the rescue configuration file), and `juniper.conf.1` (the first rollback configuration file). When the search finds the first configuration file that can be loaded properly, the file loads and the search ends. If none of the files can be loaded properly, the routing platform does not function properly. If the router boots from an alternate boot device, the JUNOS software displays a message indicating this when you log in to the router.

## Installing or Upgrading the Internal Compact Flash Disk in a Routing Engine

To install or upgrade the internal compact flash disk in a Routing Engine, perform the procedures in the following sections:

- Tools and Parts Required on page 3
- Manually Switching from Master to Backup Routing Engine on page 3
- Removing a Routing Engine on page 5
- Removing or Inserting the Compact Flash Disk Secured by a Clasp on page 6
- Removing or Inserting the Compact Flash Disk Secured by a Screw on page 8
- Installing the Routing Engine on page 11
- Configuring the Internal Compact Flash Disk on page 12

### Tools and Parts Required

To replace hardware components, you need the following tools and parts:

- Electrostatic bag or antistatic mat
- Electrostatic discharge (ESD) grounding wrist strap
- Phillips (+) screwdrivers, numbers 1 and 2
- Flat-blade (–) screwdrivers, 3/16-in. and 1/4-in.
- Needlenose pliers with grooved jaws (included in the media upgrade kit)

### Manually Switching from Master to Backup Routing Engine

On routers with two Routing Engines, one Routing Engine is the master and one is the backup. By default, the Routing Engine in slot 0 is the master and the one in slot 1 is the backup. If you are upgrading the master Routing Engine, you can switch mastership so that routing can continue during the upgrade.

To switch Routing Engine mastership:

1. Enter CLI operational mode, and issue the following command to copy the currently running and active file system partitions on the router to standby partitions on the internal compact flash disk.

```
user@host> request system snapshot
```

Wait until a message appears on the console confirming that the procedure is complete.

For more information about the command, see the *JUNOS System Basics and Services Command Reference*.

2. To determine which Routing Engine is the master, issue the following CLI command. The master Routing Engine is marked as **Master** in the **Current state** field:

```
user@host> show chassis routing-engine
```

3. If the Routing Engine you are removing is the master, issue the following CLI command to switch mastership to the standby host module:

```
user@host> request chassis routing-engine master switch
```

If the Routing Engines are running JUNOS Release 6.0 or later and are configured for graceful switchover, the standby Routing Engine immediately assumes Routing Engine functions and there is no interruption to packet forwarding. Otherwise, packet forwarding halts while the standby Routing Engine becomes the master and the Packet Forwarding Engine components reset and connect to the new master Routing Engine. For information about configuring graceful switchover, see the section about Routing Engine redundancy in the *JUNOS System Basics Configuration Guide*.



**NOTE:** Router performance might change if the standby Routing Engine's configuration differs from the former master's configuration. For the most predictable performance, configure the two Routing Engines identically, except for parameters unique to a Routing Engine, such as the hostname defined at the `[edit system]` hierarchy level and the management interface (`fxp0` or equivalent) defined at the `[edit interfaces]` hierarchy level.

To configure Routing Engine-specific parameters and still use the same configuration on both Routing Engines, include the appropriate configuration statements under the `re0` and `re1` statements at the `[edit groups]` hierarchy level and use the `apply-groups` statement. For instructions, see the *JUNOS System Basics Configuration Guide*.

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## Removing a Routing Engine

To remove a Routing Engine, follow this procedure:

1. Place an electrostatic bag or antistatic mat on a flat, stable surface.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
3. If the router is not powered down already, use the console or other management device connected to the Routing Engine you are removing to enter CLI operational mode and issue the following command. The command shuts down the Routing Engine cleanly, so its state information is preserved:

```
user@host> request system halt
```

Wait until a message appears on the console confirming that the operating system has halted.

For more information about the command, see the *JUNOS System Basics and Services Command Reference*.



**NOTE:** The CFEB might continue forwarding traffic for approximately 5 minutes after the `request system halt` command has been issued.

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**NOTE:** If the router is using a single Routing Engine, it continues forwarding traffic for a few minutes after the `request system halt` command has been issued. If the router uses more than one Routing Engine, it continues forwarding traffic with a brief halt while mastership is switched.

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4. If there is a cover over the Routing Engine, unscrew the screws holding the cover in place and remove the cover.
5. Remove the Routing Engine using one of the following methods:
  - If the Routing Engine has ejector handles at each end of its faceplate, use a screwdriver to loosen and remove any screws installed in the ejector handles. Push the ends of the ejector handles outward to unseat the Routing Engine from the chassis.
  - If the Routing Engine has thumbscrews, loosen the thumbscrews securing the Routing Engine, using a screwdriver if necessary.
6. Grasp the handle or, if the Routing Engine does not have a handle, grasp the ejector handles and slide the unit about halfway out of the chassis.



**CAUTION:** Be careful to slide the Routing Engine straight out of the chassis. Damage can result if it gets lodged because of uneven movement.

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7. Place one hand under the Routing Engine to support it, slide it completely out of the chassis, and place it on the antistatic mat or in the electrostatic bag.

### ***Removing or Inserting the Compact Flash Disk Secured by a Clasp***

The internal compact flash disk is located in a slot on the Routing Engine board and is secured by a plastic or wire clasp on the following Routing Engines:

- RE-400
- RE-600 (located beneath the hard drive)
- RE-850
- RE-1600 (located beneath the hard drive)
- RE-S-1300
- RE-S-2000

For more information on removing or inserting the compact flash disk for these Routing Engines, see the following procedures:

- Removing the Internal Compact Flash Disk on page 6
- Inserting the Internal Compact Flash Disk on page 7

### **Removing the Internal Compact Flash Disk**

To remove the internal compact flash disk, follow this procedure (see Figure 1 on page 7 or Figure 2 on page 7):



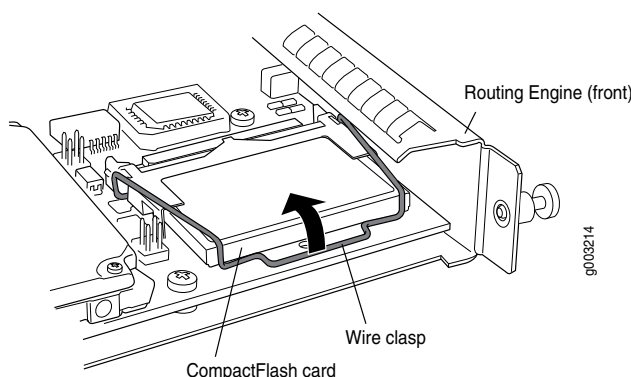
**NOTE:** Depending on your configuration, the router might not have an internal compact flash disk. If there is no internal compact flash disk installed, you can proceed directly to the next section, “Inserting the Internal Compact Flash Disk” on page 7.

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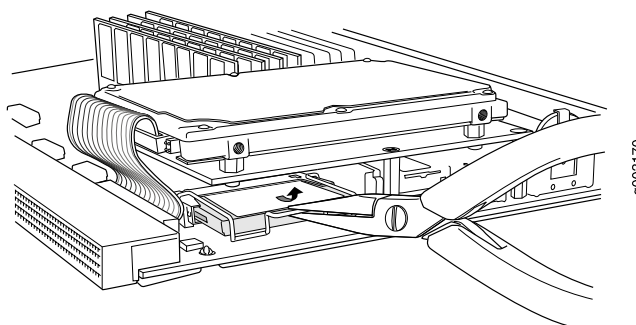
1. Place an electrostatic bag or antistatic mat on a flat, stable surface.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
3. Remove the Routing Engine as described in “Removing a Routing Engine” on page 5.

4. Use needlenose pliers with grooved jaws to pull the wire clasp out from under the compact flash disk and lift it up (see Figure 1 on page 7 or Figure 2 on page 7).
5. Use the needlenose pliers to gently grasp the compact flash disk and slide it out of the connector. Place the compact flash disk on the antistatic mat or in the electrostatic bag.

**Figure 1: Removing the Internal Compact Flash Disk from a Routing Engine 400, 850, S-1300, or S-2000**



**Figure 2: Removing the Internal Compact Flash Disk from a Routing Engine 600 or 1600**



### Inserting the Internal Compact Flash Disk

To insert the internal compact flash disk, follow this procedure (see Figure 3 on page 8 or Figure 4 on page 8):

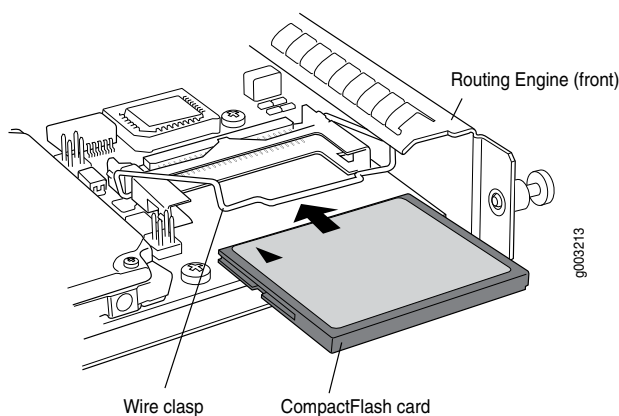
1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
2. If the compact flash disk is in a PC Card adapter, slide it out of the adapter.
3. Orient the compact flash disk with the Juniper Networks logo facing up. Slide the compact flash disk into the connector on the Routing Engine (see Figure 3 on page 8 or Figure 4 on page 8).



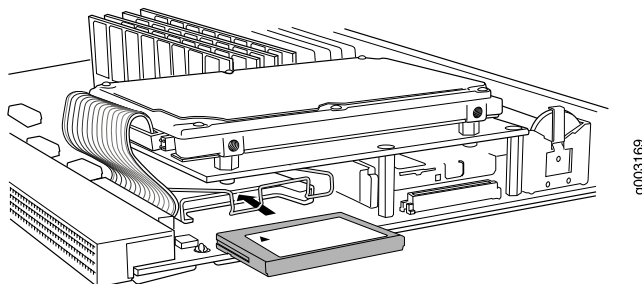
**NOTE:** If there is no Juniper Networks logo on the compact flash disk, orient the compact flash disk so that the manufacturer product code sticker is facing down.

4. Use needlenose pliers with grooved jaws to lower and secure the wire clasp.
5. Install the Routing Engine as described in “Installing the Routing Engine” on page 11.

**Figure 3: Inserting the Internal Compact Flash Disk into a Routing Engine 400, 850, S-1300, or S-2000**



**Figure 4: Inserting the Internal Compact Flash Disk into a Routing Engine 600 or 1600**

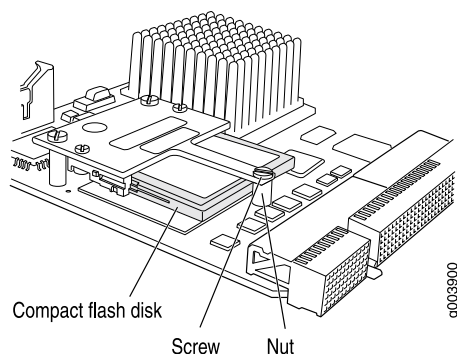


### **Removing or Inserting the Compact Flash Disk Secured by a Screw**

The internal compact flash disk is located in a slot on the Routing Engine board and is secured by a plastic nut and screw on the following Routing Engines (see Figure 5 on page 9):

- RE-A-1000
- RE-A-2000



**Figure 5: Routing Engine A-1000 and A-2000 Compact Flash Components**

For more information on how to remove or insert the compact flash disk for these Routing Engines, see the following procedures:

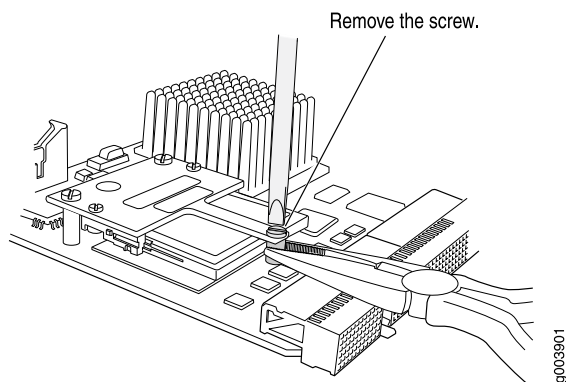
- Removing the Internal Compact Flash Disk on page 9
- Inserting the Internal Compact Flash Disk on page 10

### Removing the Internal Compact Flash Disk

To remove the internal compact flash disk, follow this procedure:

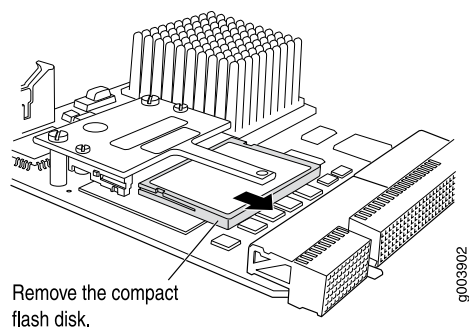
1. Place an electrostatic bag or antistatic mat on a flat, stable surface.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
3. Remove the Routing Engine as described in “Removing a Routing Engine” on page 5.
4. Use needlenose pliers with grooved jaws to hold the plastic nut in place.
5. With your other hand, use a 3/16-in flat-blade screwdriver to remove the plastic screw (see Figure 6 on page 10).

**Figure 6: Removing the Screw Securing the Internal Compact Flash on a Routing Engine A-1000 or A-2000**



6. Gently grasp the sides of the compact flash disk and slide it out of the connector (see Figure 7 on page 10). Place the compact flash disk on the antistatic mat or in the electrostatic bag.

**Figure 7: Removing the Internal Compact Flash Disk from a Routing Engine A-1000 or A-2000**



### Inserting the Internal Compact Flash Disk

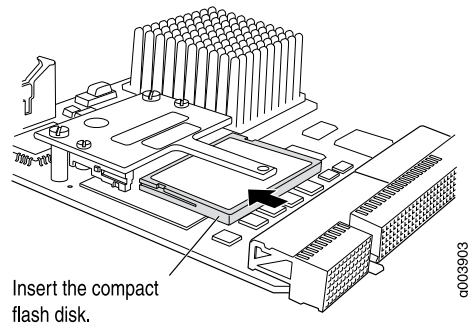
To insert the internal compact flash disk, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
2. If the compact flash disk is in a PC Card adapter, slide it out of the adapter.
3. Orient the compact flash disk with the Juniper Networks logo facing down. Slide the compact flash disk into the connector on the Routing Engine (see Figure 8 on page 11).



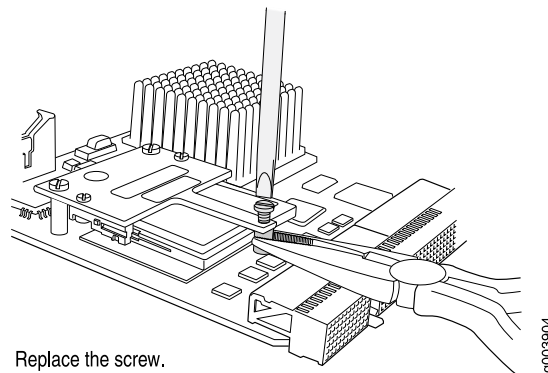
**NOTE:** If there is no Juniper Networks logo on the compact flash disk, orient the compact flash disk so that the manufacturer's product code sticker is facing up.

**Figure 8: Inserting the Internal Compact Flash Disk into a Routing Engine A-1000 or A-2000**



4. Use needlenose pliers with grooved jaws to hold the plastic nut in place directly below the hole for the screw.
5. With your other hand, use a 3/16-in flat-blade screwdriver to tighten the plastic screw (see Figure 9 on page 11).

**Figure 9: Replacing the Screw to Secure the Internal Compact Flash on a Routing Engine A-1000 or A-2000**



6. Install the Routing Engine as described in “Installing the Routing Engine” on page 11.

## Installing the Routing Engine

To install the Routing Engine, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
2. If the Routing Engine has ejector handles, verify that the ejector handle at each end of the Routing Engine is flipped toward the outer edge of the unit. If necessary, use your thumbs to push and hold the red tab on each ejector handle toward the outer edge, then push the ends of the ejector handles outward.
3. Place one hand under the Routing Engine to support it and grasp the handle on the faceplate with the other hand.

4. Align the rear of the Routing Engine with the guide rails inside the chassis and slide it in completely.



**CAUTION:** Be careful to align the Routing Engine correctly with the guide rails and push it in evenly. Damage can result if it gets lodged in the rails because of uneven movement.

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5. Secure the Routing Engine using one of the following methods:
  - If the Routing Engine has ejector handles, press the ejector handle at each end of the Routing Engine inward to seat the unit firmly in the chassis. If you removed screws from the ejector handles when you removed the Routing Engine, replace them and use a screwdriver to tighten them.
  - If the Routing Engine has thumbscrews, tighten the thumbscrews securing the Routing Engine, using a screwdriver if necessary.
6. If there was a cover over the Routing Engine that you removed, reinstall the cover and tighten the screws to secure it to the chassis.
7. You can verify correct Routing Engine functioning by issuing the `show chassis routing-engine` command.

## Configuring the Internal Compact Flash Disk

After installing the internal compact flash disk for the first time, you must copy the software from the Routing Engine's hard disk to the internal compact flash disk.



**NOTE:** RE-A-1000 and RE-A-2000 require JUNOS Release 8.1R2 or later to function properly with the 1 GB compact flash disk. RE-S-1300 and RE-S-2000 require JUNOS Release 8.2 or later to function properly with the 1 GB compact flash disk.

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**NOTE:** To configure the internal compact flash disk, you must be connected to the Routing Engine through the console or other management device.

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To copy software to the compact flash disk:

1. Install the internal compact flash disk as described in either “Inserting the Internal Compact Flash Disk” on page 7 or “Inserting the Internal Compact Flash Disk” on page 10, and replace the Routing Engine as described in “Installing the Routing Engine” on page 11.
2. On the console or other management device connected to the Routing Engine, boot from the hard drive.



**NOTE:** If the compact flash disk has not yet been partitioned with JUNOS software, you may get an error message and prompted for a keystroke. If after pressing the keystroke, the Routing Engine does not immediately boot from the hard drive, it may take up to 10 minutes for the Watchdog timer to reset the Routing Engine and boot from the hard drive.

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3. Enter CLI operational mode, and issue the following command to copy the currently running and active file system partitions on the router to standby partitions on the internal compact flash disk.

```
user@host> request system snapshot partition
```

Wait until a message appears on the console confirming that the procedure is complete.

For more information about the command, see the *JUNOS System Basics and Services Command Reference*.

4. Issue the following command to reboot the router's software:

```
user@host> request system reboot
```

The internal compact flash disk will now be the primary boot device.

5. You can verify correct boot order by issuing the `show system boot-messages` command. The output lists the devices mounted. The internal compact flash disk is located at `ad0`.

For more information about the command, see the *JUNOS System Basics and Services Command Reference*.

## JUNOS Documentation and Release Notes

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For a list of related JUNOS documentation, see <http://www.juniper.net/techpubs/software/junos/>.

If the information in the latest *JUNOS Release Notes* differs from the information in the documentation, follow the *JUNOS Release Notes*.

To obtain the most current version of all Juniper Networks technical documentation, see the product documentation page on the Juniper Networks Web site at <http://www.juniper.net/>.

Table 2 on page 14 lists additional books on Juniper Networks solutions that you can order through your bookstore. A complete list of such books is available at <http://www.juniper.net/books>.

**Table 2: Additional Books Available Through <http://www.juniper.net/books>**

Book	Description
<i>Interdomain Multicast Routing</i>	Provides background and in-depth analysis of multicast routing using Protocol Independent Multicast sparse mode (PIM SM) and Multicast Source Discovery Protocol (MSDP); details any-source and source-specific multicast delivery models; explores multiprotocol BGP (MBGP) and multicast IS-IS; explains Internet Gateway Management Protocol (IGMP) versions 1, 2, and 3; lists packet formats for IGMP, PIM, and MSDP; and provides a complete glossary of multicast terms.
<i>JUNOS Cookbook</i>	Provides detailed examples of common JUNOS software configuration tasks, such as basic router configuration and file management, security and access control, logging, routing policy, firewalls, routing protocols, MPLS, and VPNs.
<i>MPLS-Enabled Applications</i>	Provides an overview of Multiprotocol Label Switching (MPLS) applications (such as Layer 3 virtual private networks [VPNs], Layer 2 VPNs, virtual private LAN service [VPLS], and pseudowires), explains how to apply MPLS, examines the scaling requirements of equipment at different points in the network, and covers the following topics: point-to-multipoint label switched paths (LSPs), DiffServ-aware traffic engineering, class of service, interdomain traffic engineering, path computation, route target filtering, multicast support for Layer 3 VPNs, and management and troubleshooting of MPLS networks.
<i>OSPF and IS-IS: Choosing an IGP for Large-Scale Networks</i>	Explores the full range of characteristics and capabilities for the two major link-state routing protocols: Open Shortest Path First (OSPF) and IS-IS. Explains architecture, packet types, and addressing; demonstrates how to improve scalability; shows how to design large-scale networks for maximum security and reliability; details protocol extensions for MPLS-based traffic engineering, IPv6, and multitopology routing; and covers troubleshooting for OSPF and IS-IS networks.
<i>Routing Policy and Protocols for Multivendor IP Networks</i>	Provides a brief history of the Internet, explains IP addressing and routing (Routing Information Protocol [RIP], OSPF, IS-IS, and Border Gateway Protocol [BGP]), explores ISP peering and routing policies, and displays configurations for both Juniper Networks and other vendors' routers.
<i>The Complete IS-IS Protocol</i>	Provides the insight and practical solutions necessary to understand the IS-IS protocol and how it works by using a multivendor, real-world approach.

## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/customers/support/downloads/710059.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool located at <https://tools.juniper.net/SerialNumberEntitlementSearch/>.

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting support.html>

## Revision History

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10 April 2009—530-020330-01. Revision 2. Added information about installing and configuring the internal compact flash disk.

1 March 2007—530-020330-01. Revision 1.

16 May 2005—530-013693-01. Revision 1.

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