



Cisco CRS-1 Carrier Routing System Single-Shelf to Multishelf Upgrade Guide

Cisco IOS XR Software Release 3.3

Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

Text Part Number: OL-8919-01



THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

iQuick Study are service marks of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0601R)

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

Cisco CRS-1 Carrier Routing System Single-Shelf to Multishelf Upgrade Guide
© 2006 Cisco Systems, Inc. All rights reserved.



Preface v

Changes to This Document	v
Obtaining Documentation	v
Cisco.com	v
Product Documentation DVD	vi
Ordering Documentation	vi
Documentation Feedback	vi
Cisco Product Security Overview	vii
Reporting Security Problems in Cisco Products	vii
Obtaining Technical Assistance	viii
Cisco Technical Support & Documentation Website	viii
Submitting a Service Request	viii
Definitions of Service Request Severity	ix
Obtaining Additional Publications and Information	ix
	x

CHAPTER 1

Upgrading to a Multishelf System 1-1

Contents	1-1
Prerequisites for Upgrading to a Multishelf System	1-2
Restrictions for Upgrading to a Multishelf System	1-3
Information About Upgrading to a Multishelf System	1-3
How to Upgrade to a Multishelf System	1-4
Upgrading the Fabric Cards and Adding an FCC	1-4
Adding an LCC to a Multishelf System	1-9
Configuration Examples for Upgrading to a Multishelf System	1-12
Displaying Chassis Serial Numbers: Example	1-13
Adding a Fabric Card Chassis: Example	1-13
Adding an LCC to a Multishelf System: Example	1-16
Where to Go Next	1-18
Additional References	1-18
Related Documents	1-18
Technical Assistance	1-19

INDEX



Preface

This guide describes how to upgrade a single-shelf Cisco CRS-1 to a multishelf system. The upgrade process is similar to the process for a new multishelf system installation. This guide documents only the differences between the upgrade process and the new installation process.

The preface contains the following sections:

- [Changes to This Document, page v](#)
- [Obtaining Documentation, page v](#)
- [Documentation Feedback, page vi](#)
- [Cisco Product Security Overview, page vii](#)
- [Obtaining Technical Assistance, page viii](#)
- [Obtaining Additional Publications and Information, page ix](#)

Changes to This Document

[Table 1](#) lists the technical changes made to this document since it was first printed.

Table 1 *Changes to This Document*

Revision	Date	Change Summary
OL-8919-01	April 2006	Initial release of the document.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/techsupport>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML documentation that is found on the Cisco website without being connected to the Internet. Certain products also have PDF versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m.

(0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by

calling 011 408 519-5055. You can also order documentation by e-mail at

tech-doc-store-mkpl@external.cisco.com or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can submit comments about Cisco documentation by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories, security notices, and security responses for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you have identified a vulnerability in a Cisco product, contact PSIRT:

- For Emergencies only—security-alert@cisco.com

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For Nonemergencies—psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532



Tip

We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>



Note

Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests, or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—An existing network is down, or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of the network is impaired, while most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

<http://www.cisco.com/go/guide>

- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

<http://www.cisco.com/go/marketplace/>

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

<http://www.ciscopress.com>

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

<http://www.cisco.com/packet>

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

<http://www.cisco.com/go/iqmagazine>

or view the digital edition at this URL:

<http://ciscoiq.texterity.com/ciscoiq/sample/>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

<http://www.cisco.com/ipj>

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

<http://www.cisco.com/en/US/products/index.html>

- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

<http://www.cisco.com/discuss/networking>

- World-class networking training is available from Cisco. You can view current offerings at this URL:

<http://www.cisco.com/en/US/learning/index.html>



Upgrading to a Multishelf System

This chapter describes how to upgrade a single-chassis Cisco CRS-1 Carrier Routing System router to a Cisco CRS-1 Carrier Routing System Multishelf System.



Note

For an introduction to the multishelf system, see *Cisco CRS-1 Carrier Routing System Multishelf System Description*. For information on planning a multishelf system installation, see *Cisco CRS-1 Carrier Routing System Multishelf System Site Planning Guide*.

Feature History for the Cisco CRS-1 Multishelf System

Release	Modification
Release 3.3	The Cisco CRS-1 Multishelf System was introduced.

Contents

- [Prerequisites for Upgrading to a Multishelf System, page 1-2](#)
- [Restrictions for Upgrading to a Multishelf System, page 1-3](#)
- [Information About Upgrading to a Multishelf System, page 1-3](#)
- [How to Upgrade to a Multishelf System, page 1-4](#)
- [Configuration Examples for Upgrading to a Multishelf System, page 1-12](#)
- [Where to Go Next, page 1-18](#)
- [Additional References, page 1-18](#)

Prerequisites for Upgrading to a Multishelf System

An upgrade kit is required to use an existing Cisco CRS-1 16-Slot Line Card Chassis as a component in a multishelf system. The upgrade kit is product ID CRS-16-MC-UPG. The upgrade kit includes fabric cards (S13 cards should replace the S123 cards) and cabling.

- Prepare the single chassis system as follows:
 - Obtain the chassis serial number, which is required for configuration. The serial number is on a chassis label and can be displayed using the **show diag chassis**, as described in *Cisco IOS XR Getting Started Guide*.
 - Upgrade the ROM Monitor software to Version 1.40 or later, as described in *Cisco IOS XR ROM Monitor Guide*.
 - For more information, see the documents in the [“Related Cisco CRS-1 Multishelf Hardware Documentation”](#) section on page 1-18.
- Prepare each fabric card chassis (FCC) as follows:
 - Install the FCCs and distribute the eight fabric card chassis-switch fabric cards (FCC-SFCs, product ID CRS-FCC-SFC) among the FCCs.
 - Obtain the chassis serial number for each FCC, which is required for configuration. The serial number is on a chassis label and can be displayed using the **show diag chassis**, as described in *Cisco IOS XR Getting Started Guide*.
 - Ensure that the power to the FCCs is off.
 - Connect all fabric cables to the FCCs, as described in *Cisco CRS-1 Carrier Routing System Multishelf System Interconnection and Cabling Guide*.
 - For more information, see the documents in the [“Related Cisco CRS-1 Multishelf Hardware Documentation”](#) section on page 1-18.

**Note**

You cannot connect the fabric cables to the pre-existing single-chassis rack until you replace the FC/S cards in the line card chassis (LCC). To avoid service interruption, replace these modules and connect the fabric cables only when instructed to do so in the procedure that appears in the [“How to Upgrade to a Multishelf System”](#) section on page 1-4.

- Prepare the additional LCC as follows:
 - Install the LCC and all cards.
 - Obtain the chassis serial number, which is required for configuration.
 - Ensure that the power to the LCC is off.
 - For more information, see the documents in the [“Related Cisco CRS-1 Multishelf Hardware Documentation”](#) section on page 1-18.
- Prepare the control network (Catalyst 6509 switches) as follows:
 - Install the Catalyst 6509 switches.
 - Cable the Catalyst 6509 switches to the FCC and both LCCs, as described in *Cisco CRS-1 Carrier Routing System Multishelf System Interconnection and Cabling Guide*.
 - Configure the Catalyst 6509 switches, as described in *Cisco IOS XR Getting Started Guide*.
 - For more information, see the documents in the [“Related Documentation for the Catalyst 6509 Switch”](#) section on page 1-19.

Restrictions for Upgrading to a Multishelf System

- Cisco IOS XR Software Release 3.3 supports the multishelf feature only on the 16-slot LCCs. This release does not support multishelf operation using 8-slot LCCs.

Information About Upgrading to a Multishelf System

The difference between upgrading a single-chassis system to a multishelf system and installing a multishelf system is the fabric upgrade. A single-chassis system uses fabric cards designed for single-chassis systems (FC/S cards), and an LCC in a multishelf system uses fabric cards designed for a multishelf system (FC/M cards). On a single chassis system, each fabric card represents one fabric plane. To upgrade a single-chassis system to a multishelf system without interrupting service, you must do the following:

1. Use CLI commands to prepare each FC/S fabric card for replacement with an FC/M card.
2. Shut down the plane on each FC/S card before it is replaced.
3. Replace the FC/S card with an FC/M card.
4. Bring up the FC/M card.
5. Repeat Step 2 through Step 4 until all planes (0 through 7) are upgraded.

When you plan to perform a single-shelf to multishelf system upgrade, consider the following:

- You need these components:
 - Fabric card chassis and new line card chassis.
 - Cisco Catalyst 6509 Switch, which provides the control Ethernet network for the multishelf system control traffic. We highly recommend two switches for redundancy.
 - S13 cards for the original line card chassis (to replace the original S123 cards in the chassis).
 - Optical array cables (48 cables for each multishelf system and 24 cables for each line card chassis).
 - Additional MSCs and PLIMs for the new line card chassis.
- To avoid traffic loss, you must upgrade the switch fabric one plane at a time. To do that, you must replace each FC/S card with a new FC/M card and restore service to that fabric plane before upgrading the next fabric plane.
- You might want to perform the upgrade during a network maintenance window or when system traffic is light.

**Note**

Be sure to review the upgrade procedures before deciding when to schedule the upgrade. That way, you can familiarize yourself with the upgrade procedure and determine if there are other issues to consider before performing the upgrade.

- Are there cabling issues to consider when you add the new chassis to the existing chassis? For example, will you have to install optical chassis interconnect cables between the chassis before you bolt the chassis to the floor? If so, be sure to protect the cables while moving the chassis.

How to Upgrade to a Multishelf System

To upgrade a single-chassis system to a multishelf system, you must complete the following tasks:

- [Upgrading the Fabric Cards and Adding an FCC, page 1-4](#)
- [Adding an LCC to a Multishelf System, page 1-9](#)

Upgrading the Fabric Cards and Adding an FCC

This section describes how to upgrade the fabric cards in a single-chassis system and establish communications between the designated shelf controller (DSC) LCC and one or more FCCs.

Prerequisites

Software Requirements

- Cisco IOS XR Software Release 3.31 or later
- ROMMON 1.40 or later



Caution

The ROM Monitor software must be upgraded to version 1.40 or higher on all RPs before a Cisco CRS-1 system is upgraded to Cisco IOS XR Software Release 3.3.1 or higher release. If the router is brought up with an incompatible version of the ROM Monitor software, then the standby RP may fail to boot. For instructions to overcome a boot block in the standby RP in a single chassis system, see *Cisco IOS XR ROM Monitor Guide*. If a boot block occurs in a multishelf system, contact your Cisco Systems support representative for assistance. See [Obtaining Technical Assistance, page -viii](#).

In addition, Cisco CRS-1 Multishelf systems should be upgraded to ROMMON release 1.40 before being upgraded to IOS XR Release 3.3.1 to ensure RPs are assigned the correct rack numbers during system boot.

For more information, see *Cisco IOS XR ROM Monitor Guide*.

Hardware Requirements

- The system hardware should be prepared as described in the [“Prerequisites for Upgrading to a Multishelf System” section on page 1-2](#).
- The control network must be set up as described in the [“Prerequisites for Upgrading to a Multishelf System” section on page 1-2](#).
- The power should be off for the FCCs and any additional LCCs.

Restrictions

None.

SUMMARY STEPS

1. **admin**
2. **configure**
3. **dsc serial *serialNumber* rack 0**
4. **dsc serial *serialNumber* rack *Frack***
5. **controllers fabric plane *planeNumber***
oim count 1
oim instance 0 location *Frack/slot/FM*
6. **commit**
7. **end**
8. Apply power to the FCC.
9. **show platform *Frack/**/****
10. **configure**
11. **do show controllers fabric plane all**
12. **controllers fabric plane *planeNumber* shutdown**
13. **commit**
14. **end**
15. In Rack 0, remove the FC/S card for the plane that was shut down in Step 12.
16. In Rack 0, insert the FC/M card for the plane that was shut down in Step 12.
17. **show platform 0/smslot*Number*/sp**
18. In Rack 0, attach the fabric cable connectors to the plane that was shut down in Step 12.
19. In the appropriate FCC, check the LEDs on the appropriate OIM-LED panel for the cables connected to the plane that is being upgraded.
20. **configure**
21. **do show controllers fabric plane *planeNumber* detail**
22. **no controllers fabric plane *planeNumber* shutdown**
23. **commit**
24. **end**
25. Repeat Step 9 through Step 24 for each fabric plane.
26. **show controllers fabric plane all**

DETAILED STEPS

	Command or Action	Purpose
Step 1	admin Example: RP/0/RP1/CPU0:router# admin	Places the router in administration EXEC mode. All commands listed in this procedure should be entered on the pre-existing single-chassis system.
Step 2	configure Example: RP/0/RP1/CPU0:router(admin)#configure	Places the router in administration configuration mode.
Step 3	dsc serial <i>serialNumber</i> rack 0 Example: RP/0/RP1/CPU0:router(admin-config)# dsc serial TBA08260159 rack 0	Configures the pre-existing single-chassis system as the DSC rack in the new multishelf system. - Replace <i>serialNumber</i> with the serial number of the pre-existing single-chassis system. - If you are configuring the system from a remote location, you can use a command to display the serial number. For more information, see <i>Cisco IOS XR Getting Started Guide</i>.
Step 4	dsc serial <i>serialNumber</i> rack <i>Frack</i> Example: RP/0/RP1/CPU0:router(admin-config)# dsc serial TBC0820052000000 rack F0	Configures the FCC identified by the serial number as an FCC rack within the multishelf system. - Replace <i>serialNumber</i> with the serial number of the FCC. - Replace <i>rack</i> with the FCC number as it appears in the fabric cabling plan, which is described in <i>Cisco CRS-1 Carrier Routing System Multishelf System Interconnection and Cabling Guide</i>. - If you are configuring the system from a remote location, you can use a command to display the serial number. For more information, see <i>Cisco IOS XR Getting Started Guide</i>.

	Command or Action	Purpose
Step 5	controllers fabric plane <i>planeNumber</i> oim count 1 oim instance 0 location <i>Frack/slot/FM</i> Example: RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 0 RP/0/RP0/CPU0:router(admin-config)# oim count 1 RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM9/FM	Configures a plane to operate in an FCC slot. - Enter this command sequence for each of the eight fabric planes. - Replace <i>planeNumber</i> with the number of the plane (0 to 7) you want to configure. - Replace <i>rack</i> with the FCC rack number assigned to the FCC that hosts the plane. - Replace <i>slot</i> with the FCC slot number that supports the fabric plane you are configuring. Valid slot numbers are SM0 to SM23. - The plane numbers and slot numbers are determined by the hardware installation and cabling. The software configuration must match the hardware configuration. For more information, see <i>Cisco CRS-1 Carrier Routing System Multishelf System Interconnection and Cabling Guide</i>. - Enter this command once for each of the eight planes. Note These configuration commands are ignored when the FC/S cards are installed.
Step 6	commit Example: RP/0/RP1/CPU0:router(admin-config)# commit	Commits the target configuration to the router running configuration.
Step 7	end Example: RP/0/RP1/CPU0:router(admin-config)# end	Changes the mode from administration configuration mode to administration EXEC mode.
Step 8	Apply power to the FCCs.	Starts the FCCs.
Step 9	show platform <i>Frack/**/*</i> Example: RP/0/RP1/CPU0:router(admin)# show platform F0/**/*	Displays the status of all FCC modules in the specified rack. - Replace <i>rack</i> with the rack number of the FCC to examine. - Repeat this command for all FCCs. - The state for all modules should be IOS-XR RUN. - It can take a few minutes for all FCC modules to start. Note The FCC module status appears only when the show platform command is executed in administration EXEC mode.

	Command or Action	Purpose
Step 10	configure Example: RP/0/RP1/CPU0:router(admin)#configure	Places the router in administration configuration mode.
Step 11	do show controllers fabric plane all Example: RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric plane all	Displays the administrative and operational status of all eight fabric planes. The do command prefix allows the EXEC mode show command to execute in administration configuration mode.  Caution To prevent service interruption, do not continue until the administrative and operational status for all eight planes is UP.
Step 12	controllers fabric plane <i>planeNumber</i> shutdown Example: RP/0/RP1/CPU0:router(admin-config)# controllers fabric plane 0 shutdown	Modifies the target configuration to shut down the specified plane number. Replace the <i>planeNumber</i> parameter with the number of the plane you want to shut down.
Step 13	commit Example: RP/0/RP1/CPU0:router(admin-config)# commit	Commits the target configuration to the router running configuration. This step shuts down the plane identified in the previous step.
Step 14	end Example: RP/0/RP1/CPU0:router(admin-config)# end	Changes the mode from administration configuration mode to administration EXEC mode.
Step 15	In Rack 0, remove the FC/S card for the plane that was shut down in Step 12.	Creates room for the FC/M card that is required for multishelf operation.
Step 16	In Rack 0, insert the FC/M card for the plane that was shut down in Step 12.	Provides the hardware required for communication with the FCC.
Step 17	show platform 0/smslotNumber/sp Example: RP/0/RP1/CPU0:router(admin)# show platform 0/sm0/sp	Displays the status of the Rack 0 fabric slot specified by <i>slotNumber</i> . Note The fabric card status appears only when the show platform command is executed in administration EXEC mode.
Step 18	In Rack 0, attach the fabric cable connectors to the plane that was shut down in Step 12.	Completes the connection between a plane in the LCC and the same plane in the FCC.
Step 19	In the appropriate FCC, check the LEDs on the appropriate OIM-LED panel for the cables connected to the plane that is being upgraded.	Green LEDs indicate that the cables are connected correctly. If the LEDs display a color other than green, see <i>Cisco IOS XR Getting Started Guide</i> for information on interpreting the LED display.

	Command or Action	Purpose
Step 20	configure Example: RP/0/RP1/CPU0:router(admin)#configure	Places the router in administration configuration mode.
Step 21	do show controllers fabric plane <i>planeNumber</i> detail Example: RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric plane 0 detail	Displays the status of the plane specified by <i>planeNumber</i> . - Verify that a capital “P” appears in the Down Flags column. - Wait for the plane to come up before you continue.
Step 22	no controllers fabric plane <i>planeNumber</i> shutdown Example: RP/0/RP1/CPU0:router(admin-config)# no controllers fabric plane 0 shutdown	Modifies the target configuration to bring up the specified fabric plane.
Step 23	commit Example: RP/0/RP1/CPU0:router(admin-config)# commit	Commits the target configuration to the router running configuration. This step brings up the previously shutdown plane, which is now configured to use the FCC-SFC.
Step 24	end Example: RP/0/RP1/CPU0:router(admin-config)# end	Changes the mode from administration configuration mode to administration EXEC mode.
Step 25	Repeat Step 9 through Step 24 for each fabric plane.	
Step 26	show controllers fabric plane all Example: RP/0/RP1/CPU0:router(admin)# show controllers fabric plane all	Displays the administrative and operational status of all eight fabric planes. Verify that all fabric planes are operational.

What to Do Next

When the Rack 0 upgrade is completed and Rack 0 is communicating with FCCs, the next step is to add a second LCC to the multishelf system.

Adding an LCC to a Multishelf System

This section describes how to add an LCC to a multishelf system.

Prerequisites

Software Requirements

- Cisco IOS XR Software Release 3.31 or later
- ROMMON 1.40 or later

Hardware Requirements

- The LCC to be added must be prepared as described in the [“Prerequisites for Upgrading to a Multishelf System”](#) section on page 1-2.
- The control network must be operational and connected to all chassis.
- The power should be off for the LCC to be added.

Restrictions

None.

SUMMARY STEPS

1. **admin**
2. **configure**
3. **dsc serial *serialNumber* rack 1**
4. **controllers fabric rack 1 install-mode**
5. **commit**
6. Apply power to the new LCC (Rack 1).
7. Connect all fabric cables that connect the fabric planes in the new LCC to the FCCs.
8. In the FCCs, check the LEDs for the cables that connect to the new LCC (Rack 1).
9. **do show controllers fabric rack-status all detail**
10. **do show controllers fabric fabric-backpressure summary**
11. **no controllers fabric rack 1 install-mode**
12. **commit**
13. **do show controllers rack-status all detail**

DETAILED STEPS

	Command or Action	Purpose
Step 1	admin Example: RP/0/RP1/CPU0:router# admin	Places the router in administration EXEC mode. All commands listed in this procedure should be entered on the pre-existing single-chassis system.
Step 2	configure Example: RP/0/RP1/CPU0:router(admin)#configure	Places the router in administration configuration mode.
Step 3	dsc serial serialNumber rack 1 Example: RP/0/RP1/CPU0:router(admin-config)# dsc serial TBA08440024 rack 1	Configures the additional LCC as Rack 1 in the multishelf system. - Replace the <i>serialNumber</i> parameter with the serial number of the additional LCC. - If you are configuring the system from a remote location, you can use a command to display the serial number. For more information, see <i>Cisco IOS XR Getting Started Guide</i>.
Step 4	controllers fabric rack 1 install-mode Example: RP/0/RP1/CPU0:router(admin-config)# controllers fabric rack 1 install-mode	Modifies the target configuration to change the Rack 1 configuration to installation mode.
Step 5	commit Example: RP/0/RP1/CPU0:router(admin-config)# commit	Commits the target configuration to the router running configuration.
Step 6	Apply power to the new LCC (Rack 1).	Starts up the second LCC (Rack 1).
Step 7	Connect all fabric cables that connect the fabric planes in the new LCC to the FCCs.	Interconnects the fabric cards in the LCC and FCC.
Step 8	In the FCCs, check the LEDs for the cables that connect to the new LCC (Rack 1).	Green LEDs indicate that the cables are connected correctly. If the LEDs display a color other than green, see <i>Cisco IOS XR Getting Started Guide</i> for information on interpreting the LED display.
Step 9	do show controllers fabric rack-status all detail Example: RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric rack-status all detail	Displays the status of all racks and additional information for racks in installation mode. Wait for the status in the Rack in Install and Rack out of Install columns to change to UP for all planes.

	Command or Action	Purpose
Step 10	do show controllers fabric fabric-backpressure summary Example: RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric fabric-backpressure summary	Displays the backpressure status for all racks. The status for the row labeled “Rack 1: All Groups Received? :” should be “Yes.”
Step 11	no controllers fabric rack 1 install-mode Example: RP/0/RP1/CPU0:router(admin-config)# no controllers fabric rack 1 install-mode	Modifies the target configuration to change the Rack 1 configuration to normal mode.
Step 12	commit Example: RP/0/RP1/CPU0:router(admin-config)# commit	Commits the target configuration to the router running configuration.
Step 13	do show controllers rack-status all detail Example: RP/0/RP1/CPU0:router(admin-config)# do show controllers rack-status all detail	Displays the status of all racks in the system. In a properly operating system, the rack status for all racks should be Normal, and the server status should be Present.

What to Do Next

When all chassis in the multishelf system are operational and communicating with each other, it is time to continue system configuration, as described in the documents in the [“Related Documents” section on page 1-18](#).

Troubleshooting Tips

For troubleshooting information, see the documents described in the [“Related Documents” section on page 1-18](#).

Configuration Examples for Upgrading to a Multishelf System

This section provides examples for the following procedures:

- [Displaying Chassis Serial Numbers: Example, page 1-13](#)
- [Adding a Fabric Card Chassis: Example, page 1-13](#)
- [Adding an LCC to a Multishelf System: Example, page 1-16](#)

Displaying Chassis Serial Numbers: Example

The following example shows how to display the chassis serial numbers in a Cisco CRS-1 Multishelf system.

```
RP/0/RP0/CPU0:ios(admin)# show diag chassis
```

```
RACK 0 :
  MAIN: board type 0001e0
        800-24872-01 rev 20
        dev N/A
        S/N TBA08260159
  PCA:  73-7640-05 rev 20
  PID:  CRS-16-LCC
  VID:  V01
  CLEI: IPM6700DRA
  ECI:  445022
  RACK NUM: 0
```

```
RACK 1 :

  MAIN: board type 0001e0
        800-24872-01 rev 20

        dev N/A
        S/N TBA08260159
  PCA:  73-7640-05 rev 20
  PID:  CRS-16-LCC
  VID:  V01
  CLEI: IPM6700DRA
  ECI:  445022
  RACK NUM: 0
```

```
RACK 240 :
  MAIN: board type 0001e0
        800-24872-01 rev 20
        dev N/A
        S/N TBA08260159
  PCA:  73-7640-05 rev 20
  PID:  CRS-16-LCC
  VID:  V01
  CLEI: IPM6700DRA
  ECI:  445022
  RACK NUM: 0
```

Adding a Fabric Card Chassis: Example

The following example shows how to add a single FCC to an existing single-chassis system.

```
RP/0/RP1/CPU0:router# admin
```

```
RP/0/RP1/CPU0:router(admin)# configure
```

```
RP/0/RP1/CPU0:router(admin-config)# dsc serial TBC0820052000001 rack 0
```

```
RP/0/RP1/CPU0:router(admin-config)# dsc serial TBC0820052000000 rack F0
```

```

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 0
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM9/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 1
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM6/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 2
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM3/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 3
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM0/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 4
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM12/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 5
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM15/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 6
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM18/FM

RP/0/RP0/CPU0:router(admin-config)# controllers fabric plane 7
RP/0/RP0/CPU0:router(admin-config)# oim count 1
RP/0/RP0/CPU0:router(admin-config)# oim instance 0 location F0/SM21/FM

RP/0/RP1/CPU0:router(admin-config)# commit

RP/0/RP1/CPU0:router(admin-config)# end

```

Power is applied to the FCC at this time.

```
RP/0/RP1/CPU0:router(admin)# show platform F0/**/*
```

Node	Type	PLIM	State	Config State
F0/SM0/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM3/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM6/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM9/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM12/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM15/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM18/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SM21/SP	FCC-SFC (SP)	FCC-FM-1S	IOS-XR RUN	PWR, NSHUT, MON
F0/SC0/CPU0	FCC-SC (Standby)	N/A	IOS-XR RUN	PWR, NSHUT, MON
F0/SC1/CPU0	FCC-SC (Active)	N/A	IOS-XR RUN	PWR, NSHUT, MON
F0/AM0/SP	ALARM (SP)	N/A	IOS-XR RUN	PWR, NSHUT, MON
F0/AM1/SP	ALARM (SP)	N/A	IOS-XR RUN	PWR, NSHUT, MON
F0/LM0/SP	FCC-LED (SP)	N/A	IOS-XR RUN	PWR, NSHUT, MON
F0/LM1/SP	FCC-LED (SP)	N/A	IOS-XR RUN	PWR, NSHUT, MON

```
RP/0/RP1/CPU0:router(admin)# configure
```

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric plane all
```

```
Flags: P - plane admin down,      p - plane oper down
       C - card admin down,       c - card oper down
       L - link port admin down,  l - linkport oper down
       A - asic admin down,       a - asic oper down
       B - bundle port admin down, b - bundle port oper down
       I - bundle admin down,     i - bundle oper down
       N - node admin down,       n - node down
       o - other end of link down d - data down
       f - failed component downstream
       m - plane multicast down
```

Plane Id	Admin State	Oper State
0	UP	UP
1	UP	UP
2	UP	UP
3	UP	UP
4	UP	UP
5	UP	UP
6	UP	UP
7	UP	UP

```
RP/0/RP1/CPU0:router(admin-config)# controllers fabric plane 0 shutdown
```

```
RP/0/RP1/CPU0:router(admin-config)# commit
```

```
RP/0/RP1/CPU0:router(admin-config)# end
```

```
RP/0/RP1/CPU0:Mar  4 18:37:55.055 : fsdb_aserver[173]: %FABRIC-FSDB-1-PLANE_UPDOWN : Plane
0 state changed to DOWN:
```

```
RP/0/RP1/CPU0:Mar  4 18:37:55.088 : config[65733]: %MGBL-LIBTARCFG-6-ADMIN_COMMIT :
Administration configuration committed by user 'lab'.
```

The FC/S card is replaced with an FC/M card at this point.

```
RP/0/RP1/CPU0:Mar  4 18:38:32.680 : oir_daemon[245]: %PLATFORM-OIRD-5-OIROUT : OIR: Node
0/SM0/SP removed
```

```
RP/0/RP1/CPU0:Mar  4 18:38:54.328 : oir_daemon[245]: %PLATFORM-OIRD-5-OIRIN : OIR: Node
0/SM0/SP inserted
```

```
SP/0/SM0/SP:Mar  4 18:40:52.575 : alphadisplay[100]: %PLATFORM-ALPHA_DISPLAY-6-CHANGE :
Alpha display on node 0/SM0/SP changed to IOS-XR in state default
```

```
SP/0/SM0/SP:Mar  4 18:41:34.027 : sfe_drvr[108]: %FABRIC-FABRIC_DRV-6-ASIC_INITIALIZED :
Fabric ASICs initialized
```

```
RP/0/RP1/CPU0:router(admin)# show platform 0/sm9/sp
```

0/SM9/SP	FC/M(SP)	N/A	IOS-XR RUN	PWR,NSHUT,MON
----------	----------	-----	------------	---------------

The fabric cable is attached to the FC/M card at this point.

```
RP/0/RP1/CPU0:router(admin)# configure
```

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric plane 0 detail
```

```
...
Plane Admin Oper      Down      Total      Down
Id     State State      Flags      Bundles    Bundles
-----
0      DOWN  DOWN      pPm        9          6
```

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric plane 0 detail
...
Plane  Admin   Oper      Down      Total      Down
Id      State   State    Flags    Bundles    Bundles
-----
0       DOWN    DOWN      P         9          6

RP/0/RP1/CPU0:iox(admin-config)# no controllers fabric plane 0 shutdown

RP/0/RP1/CPU0:iox(admin-config)# commit

RP/0/RP1/CPU0:Mar  4 18:47:42.930 : fsdb_aserver[173]: %FABRIC-FSDB-1-PLANE_UPDOWN : Plane
0 state changed to UP:
RP/0/RP1/CPU0:Mar  4 18:47:42.954 : config[65733]: %MGBL-LIBTARCFG-6-ADMIN_COMMIT :
Administration configuration committed by user 'lab'.

RP/0/RP1/CPU0:router(admin-config)# end

RP/0/RP1/CPU0:router(admin)# show controllers fabric plane all

Flags: P - plane admin down,          p - plane oper down
       C - card admin down,           c - card  oper down
       L - link port admin down,      l - linkport oper down
       A - asic admin down,           a - asic  oper down
       B - bundle port admin Down,    b - bundle port oper down
       I - bundle admin down,         i - bundle oper down
       N - node admin down,           n - node  down
       o - other end of link down    d - data  down
       f - failed component downstream
       m - plane multicast down

Plane  Admin   Oper
Id      State   State
-----
0       UP     UP
1       UP     UP
2       UP     UP
3       UP     UP
4       UP     UP
5       UP     UP
6       UP     UP
7       UP     UP
```

Adding an LCC to a Multishelf System: Example

The following example shows how to add an LCC to a multishelf system.

```
RP/0/RP1/CPU0:router# admin

RP/0/RP1/CPU0:router(admin)# configure

RP/0/RP1/CPU0:router(admin-config)# dsc serial TBC0820031000000 rack 1

RP/0/RP1/CPU0:router(admin-config)# control fabric rack 1 install-mode

RP/0/RP1/CPU0:router(admin-config)# commit
```

Apply power, attach cables, and check cable LEDs.

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric rack-status all detail
```

Rack Num	Rack Status	Server Status	Oper State			
-----	-----	-----				
0	NORMAL	PRESENT				
1	INSTALL	PRESENT				
			Plane Num	Admin State	Rack in Install	Rack out of Install
			-----	-----	-----	-----
			0	UP	UP	UP
			1	UP	UP	DOWN
			2	UP	UP	DOWN
			3	UP	UP	DOWN
			4	UP	UP	DOWN
			5	UP	UP	DOWN
			6	UP	UP	DOWN
			7	UP	UP	DOWN

F0 NORMAL PRESENT

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers fabric rack-status all detail
```

Rack Num	Rack Status	Server Status	Oper State			
-----	-----	-----				
0	NORMAL	PRESENT				
1	INSTALL	PRESENT				
			Plane Num	Admin State	Rack in Install	Rack out of Install
			-----	-----	-----	-----
			0	UP	UP	UP
			1	UP	UP	UP
			2	UP	UP	UP
			3	UP	UP	UP
			4	UP	UP	UP
			5	UP	UP	UP
			6	UP	UP	UP
			7	UP	UP	UP

F0 NORMAL PRESENT

```
RP/0/RP1/CPU0:router(admin-config)# show controllers fabric fabric-backpressure summary
```

```
Expected BP Fabric Groups in the System: 0 1 2 3
```

```
Rack 0: All Groups Received? : Yes
```

```
-----
```

```
Rack 1: All Groups Received? : Yes
```

```
RP/0/RP1/CPU0:router(admin-config)# no controllers fabric rack 1 install-mode
```

```
RP/0/RP1/CPU0:router(admin-config)# commit
```

```
RP/0/RP1/CPU0:router(admin-config)# do show controllers rack-status all detail
```

Rack Num	Rack Status	Server Status
----	-----	-----
0	NORMAL	PRESENT
1	NORMAL	PRESENT
F0	NORMAL	PRESENT

Where to Go Next

When all fabric planes on both LCCs are configured and connected to the FCCs, see *Cisco IOS XR Getting Started Guide* for information on general system setup and operation.

Additional References

The following sections provide references related to upgrading a single-chassis system to a multishelf system.

Related Documents

- [Related Cisco CRS-1 Multishelf Hardware Documentation, page 1-18](#)
- [Related Documentation for the Catalyst 6509 Switch, page 1-19](#)
- [Related Cisco IOS XR Software Documentation, page 1-19](#)

Related Cisco CRS-1 Multishelf Hardware Documentation

For additional documentation related to hardware installation and site planning, see the following Cisco Systems documents:

Related Topic	Document Title
Multishelf system description and installation planning	<i>Cisco CRS-1 Carrier Routing System Multishelf System Description</i> <i>Cisco CRS-1 Carrier Routing System Multishelf System Planning Guide</i>
FCC installation	<i>Cisco CRS-1 Carrier Routing System Fabric Card Chassis Site Planning Guide</i> <i>Installing the Cisco CRS-1 Carrier Routing System Fabric Card Chassis</i>
LCC installation	<i>Cisco CRS-1 Carrier Routing System 16-Slot Line Card Chassis System Description</i> <i>Installing the Cisco CRS-1 Carrier Routing System 16-Slot Line Card Chassis</i>
Cabling between all system components	<i>Cisco CRS-1 Carrier Routing System Multishelf System Interconnection and Cabling Guide.</i>

Related Topic	Document Title
Color codes for FCC OIM-LED panel LEDs	<i>Cisco CRS-1 Carrier Routing System Multishelf System Description</i>
Troubleshooting	<i>Cisco CRS-1 Carrier Routing System Multishelf System Troubleshooting Guide</i>

Related Documentation for the Catalyst 6509 Switch

For additional documentation related to the installation and configuration of the Catalyst 6509 switch, see the following Cisco Systems documents:

Related Topic	Document Title
Catalyst 6509 installation	Cisco Catalyst 6500 Series documentation
Catalyst 6509 configuration and general system configuration after the fabric installation and configuration is complete	<i>Cisco IOS XR Getting Started Guide</i>

Related Cisco IOS XR Software Documentation

The Cisco IOS XR software documentation is published at the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/ioxsoft/index.htm>

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport



A

admin configure command [1-6, 1-11](#)

C

cabling documentation [1-18](#)

Catalyst 6509 documentation [1-19](#)

chassis serial number, location [1-2](#)

commit command [1-7, 1-11](#)

considerations

 switch fabric upgrade [1-3](#)

controllers fabric plane command [1-8, 1-9](#)

controllers fabric rack command [1-11, 1-12](#)

CRS-FCC-SFC cards [1-2](#)

D

documentation

 Catalyst 6509 Switch [1-19](#)

 Cisco CRS-1 Multishelf hardware [1-18](#)

dsc serial command [1-6, 1-11](#)

E

end command [1-7](#)

F

fabric card, FCC

See FCC-SFC cards

fabric card, multishelf system

See FC/M cards

fabric card, single-chassis system

See FC/S cards

fabric card chassis

See FCC

FC/M cards [1-3](#)

FC/S cards [1-3](#)

FCC

 installation documents [1-18](#)

 LEDs [1-8, 1-11, 1-19](#)

 serial number configuration [1-6](#)

 serial number location [1-2](#)

FCC-SFC cards [1-2](#)

L

LCC

 installation documents [1-18](#)

 rack 0 serial number configuration [1-6](#)

 rack 1 serial number configuration [1-11](#)

 serial number location [1-2](#)

line card chassis

See LCC

M

multishelf system

 documentation [1-18](#)

 upgrading

 configuration examples [1-12](#)

 information [1-3](#)

 prerequisites [1-2](#)

 procedure [1-4](#)

 restrictions [1-3](#)

P

planning documentation [1-18](#)

R

ROMMON, version required for LCC [1-9](#)

S

serial number

displaying [1-13](#)

FCC configuration [1-6](#)

LCC configuration [1-11](#)

location [1-2](#)

rack 0 configuration [1-6](#)

show controllers fabric fabric-backpressure summary
command [1-12](#)

show controllers fabric plane all command [1-8, 1-9](#)

show controllers fabric plane command [1-9](#)

show controllers fabric rack-status all detail
command [1-11](#)

show controllers rack-status all detail command [1-12](#)

show platform command [1-7](#)

switch fabric plane

upgrade considerations [1-3](#)

T

technical assistance [1-19](#)

troubleshooting documentation [1-19](#)