Cisco CRS Carrier Routing System Fabric Card Chassis Unpacking, Moving, and Securing Guide

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Preface

This preface explains the objectives, intended audience, and organization of this *Cisco CRS Carrier Routing System Fabric Card Chassis Unpacking, Moving, and Securing Guide* . The companion document to this guide is Cisco CRS Carrier Routing System Multishelf System Site Planning Guide , which describes how to plan and prepare your site facilities for the installation of a switch fabric card chassis

The Cisco CRS Fabric Card Chassis is part of the Cisco CRS carrier routing system multishelf system, The CRS multishelf system consists of LCC and FCC combinations:

- Fabric Card Chassis (commonly referred to as FCC)-the mechanical enclosure that contains the second stage (S2) of the switch fabric in multishelf systems, system controllers, fiber modules to interconnect to the LCC, and its own power and cooling systems.

- 16-Slot Line Card Chassis (commonly referred to as LCC)-the mechanical enclosure that contains the line cards, line card interfaces on the PLIMs, route processors (RPs) or forwarding processors (FPs), distributed route processors (DRPs), stages one and three of the three-stage switch fabric (S13), and its own power and cooling subsystems.

The FCC supports either 40 GB switch fabric cards (CRS-FCC-SFC), 140 GB switch fabric cards (CRS-FCC-SFC-140), or 400 GB switch fabric cards (CRS-FCC-SFC-400). An FCC with a mix of 40 GB,140 GB and 400 GB SFCs is not a supported mode of operation. Such a mode is temporarily allowed only during the upgrade process.

Note   Throughout this document, the generic term Cisco CRS Carrier Routing system refers to the Cisco CRS-1, Cisco CRS-3, and Cisco CRS-X Carrier Routing Systems, unless otherwise specified.

Objective

This document provides instructions for unpacking the Cisco CRS Fabric Card Chassis and its components, attaching the dolly, moving the chassis safely, and securing the chassis to the floor. This document does not

provide background information and basic theory-of-operation for anyone wanting to understand the Cisco CRS Carrier Routing System.

Audience

This document is intended for those who unpack the Cisco CRS Fabric Card Chassis and Cisco installation partners who are responsible for moving and securing the LCC. No additional knowledge of routing or the Cisco IOS XR software is assumed.

Changes to This Document

Table 1: Changes to This Document

Date	Change Summary
July 2014	Added updates to support the Cisco CRS-X.
August 2011	Updated this document with minor editorial changes.
June 2011	Updated the chassis moving content. Reorganized sections in the document. Updated illustrations.
April 2011	Updated this document with unpacking information and graphics. Added CRS-1 and CRS-3 information. Also made minor editorial changes.
October 2010	This document was updated with minor editorial changes and information for the new MSC140, FP140 and PLIMs was added.
December 2009	This document was updated with new chassis move path specifications, dolly moving safety shipping information, and chassis weight changes for shipping.
August 2009	This document was updated with new chassis shipping information. See "Chassis Packaging Overview" section on page 3, "Key Chassis Specifications" section on page 3, and the caution note about chassis weight.
February 2011	Updates with Arctic info, content and graphics.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation*, at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation as an RSS feed and delivers content directly to your desktop using a reader application. The RSS feeds are a free service, and Cisco currently supports RSS Version 2.0.

CHAPTER 1

Cisco CRS Carrier Routing System Fabric Card Chassis Unpacking, Moving, and Securing Guide

This chapter provides instructions for unpacking the Cisco CRS Fabric Card Chassis (FCC) and its components, moving the chassis to its permanent location, and mounting and securing the chassis .

- Cisco CRS Carrier Routing System Fabric Card Chassis Unpacking, Moving, and Securing Guide, on page 1

Cisco CRS Carrier Routing System Fabric Card Chassis Unpacking, Moving, and Securing Guide

This guide provides instructions for unpacking the Cisco CRS Fabric Card Chassis (FCC) and its components, moving the chassis to its permanent location, and mounting and securing the chassis. The companion document to this guide is Cisco CRS Carrier Routing System Multishelf System Site Planning Guide , which describes how to plan and prepare your site facilities for the installation of a switch fabric card chassis.

The Cisco CRS Fabric Card Chassis is part of the Cisco CRS carrier routing system multishelf system, The CRS multishelf system consists of LCC and FCC combinations:

- Fabric Card Chassis (commonly referred to as FCC)—the mechanical enclosure that contains the second stage (S2) of the switch fabric in multishelf systems, system controllers, fiber modules to interconnect to the LCC, and its own power and cooling systems.
- 16-Slot Line Card Chassis (commonly referred to as LCC)—the mechanical enclosure that contains the line cards, line card interfaces on the PLIMs, route processors (RPs) or forwarding processors (FPs), distributed route processors (DRPs), stages one and three of the three-stage switch fabric (S13), and its own power and cooling subsystems.

The FCC supports either 40 GB switch fabric cards (CRS-FCC-SFC), 140 GB switch fabric cards (CRS-FCC-SFC-140), or 400 GB switch fabric cards (CRS-FCC-SFC-400). An FCC with a mix of 40 GB,140 GB and 400 GB SFCs is not a supported mode of operation. Such a mode is temporarily allowed only during the upgrade process.

Note   Throughout this document, the generic term Cisco CRS Carrier Routing system refers to the Cisco CRS-1, Cisco CRS-3, and Cisco CRS-X Carrier Routing Systems, unless otherwise specified.

Changes to This Document

Table 2: Changes to This Document , on page 2 lists the technical changes made to this document since it was first printed.

Table 2: Changes to This Document

Revision	Date	Change Summary
78-17535-13	July 2014	Added updates to support the Cisco CRS-X.
78-17535-10	August 2011	Updated this document with minor editorial changes.
78-17535-09	June 2011	Updated the chassis moving content. Reorganized sections in the document. Updated illustrations.
78-17535-08	April 2011	Updated this document with unpacking information and graphics. Added CRS-1 and CRS-3 information. Also made minor editorial changes.
78-17535-07	October 2010	This document was updated with minor editorial changes and information for the new MSC140, FP140 and PLIMs was added.
78-17535-06	December 2009	This document was updated with new chassis move path specifications, dolly moving safety shipping information, and chassis weight changes for shipping.
78-17535-05	August 2009	This document was updated with new chassis shipping information. See "Chassis Packaging Overview" section on page 3, "Key Chassis Specifications" section on page 3, and the caution note about chassis weight.
78-17536-05	February 2011	Updates with Arctic info, content and graphics.
78-17536-04	January 2008	Reorganized existing content.
78-17536-04	September 2007	Added a new section on "Installing the Alternate Chassis Floor-Mounting Kit" for the NEBS-compliant chassis. This section replaces the previous section, which documented the pre-NEBS-compliant chassis.
78-17536-03 B0	March 2007	The document was updated with information about the 22-port shelf controller Gigabit Ethernet card. The "Installing the Alternate Chassis Floor-Mounting Kit" section was modified with new information and technical corrections. The term "outrigger kit" was changed to "alternate chassis floor-mounting kit."
78-17536-02	September 2006	The document was updated with technical corrections.
78-17536-01	April 2006	Initial release of this document

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For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation* , which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

Preparing To Unpack the Fabric Card Chassis

This section provides information about the Cisco CRS fabric card chassis before you unpack it and transport it to the final installation location. This section contains the following topics:

Chassis Packaging Overview

Depending on the number of options you ordered, the line card chassis (LCCs) and fabric card chassis (FCCs) that make up the multishelf system are packaged and shipped in several shipping crates and pallets that reduce the potential for product damage during routine material handling and shipment. To protect the chassis:

- Always store the chassis in its original packaging in an upright position.
- If you plan to store chassis components before the installation, be sure to store the components carefully and in their original shipping containers to prevent accidental damage.

Each shipping box has a label on the outside of the box identifying that box's number among the number of boxes in your shipment. For example 1 of 6, 4 of 6. The fabric card chassis is shipped on a pallet by itself and arrives inside a polyethylene bag enclosed in a plywood box, held in place by steel clips. Other system components are shipped in separate crates and can arrive at the final chassis site at different times.

⚠

Caution   Do not stack the Cisco CRS shipping crates, because serious damage to the system components can occur.

For complete details on the contents of your shipment, see the inventory and parts identification label on the crate as shown in the following figure. The total number of pallets depends on the details of the options you ordered, with each package containing a label that describes the contents.

Figure 1: Section of Chassis Inventory List on Outside of Shipping Box

Note Crate numbering for chassis packaging is for reference only. This list is only a sample of what a CRS fabric card chassis shipment contains. For complete details on the contents of each pallet, see the shipping and parts identification label on the pallet or shipping manifest.

The FCC arrives packaged on several pallets (total depends on the details of the options you ordered) with each package containing a label that describes the contents:

- Installation kit (crate 1): contains the drill template and other installation kit items.
- FCC chassis pallet (crate 2): contains the chassis itself encased in a polyethylene bag and covered with a wooden packing crate held together with metal clips. The chassis is shipped with the fan trays and air filter already installed. The switch fabric card slots are populated with blanks and impedance carriers or covered by slot covers.
- Power components pallet (crate 3): contains the power components, including the power shelves, PMs (Modular Power) or PEMs (Fixed Power), alarm module, and power bezel and retainer frame.
- Card pallet (crate 4): contains the switch fabric cards and shelf controller Gigabit Ethernet (SCGE) cards.
- Exterior cosmetic components pallet (crate 5)—contains the default exterior cosmetic components for the chassis.

For complete details on the contents of each pallet, see the shipping and parts identification label on the pallet or shipping manifest.

Key Chassis Specifications

Table 3: Fabric Card Chassis Specifications lists key specifications for the fabric card chassis (FCC). See the Cisco CRS Carrier Routing System Multishelf System Description Guide for a complete list of FCC specifications.

Table 3: Fabric Card Chassis Specifications

Physical dimensions:	
Height	84 in. (213.4 cm) with power shelves installed 80 in. (203.2 cm) without power shelves installed
Depth	36 in. (91.4 cm) 41.5 in. (105.4 cm), including cable-management system and front cover
Width	23.6 in. (60.0 cm)
Weight:	
Weight (without packaging):	CRS FCC as-shipped weight: 1175 lb (533 kg) (Est.)
	CRS FCC spare chassis weight: 1044 lb (473.6 kg) (Est.)

Dolly Specifications

The dolly that is available for the Cisco CRS LCC and FCC is flexible enough to meet several difficult challenges encountered when first positioning a chassis of this size and weight.

✎

Note   The Cisco dolly works with both the CRS 16-Slot Line Card Chassis (LCC) and the Fabric Card Chassis (FCC); the only difference is the lift brackets that are used (see #con_163725/fig_142684 and #con_163725/fig_142945). If you decide to order the dolly (CRS-16-LIFT/B) and you have a Cisco CRS FCC, then you must order the FCC lift brackets (CRS-FCC-LIFT-BRKT).

Some challenges moving a chassis on the dolly include limited hallway or doorway width, doorway thresholds, ramps, and tight corners along the transport route. To overcome these challenges, use the dolly in either of these configurations:

- *90-degree configuration—* The dolly assemblies are shipped in this configuration. In some cases this configuration is needed to transport the chassis. Use the 90-degree configuration to move the chassis off of the pallet. Extra care should be used with this configuration to ensure that the chassis does not tip during transport.
- *180-degree configuration—* This configuration is a more stable configuration for transporting the chassis. The 180-degree position is the recommended configuration for moving the chassis.

Both configurations are acceptable to transport the as-shipped chassis.

Table 4: Cisco Dolly Specifications lists the specifications for the dolly.

Table 4: Cisco Dolly Specifications

Specification	Value
Weight (each component)	126 lb (57.3 kg)
Maximum recommended safe curb height	1.5 in. (3.8 cm)

✎

Note In the event that the dolly supplied by Cisco is not the appropriate method of transportation, consult Cisco Technical Staff to determine a method of transportation appropriate for the site. Ensure that the alternate moving device is capable of moving the chassis safely, supporting the weight of the chassis, and is capable of preventing the chassis from tipping.

Safety Guidelines

⚠

Caution Before you perform any procedure outlined in this document, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment.

These guidelines are for your safety and to protect equipment. Guidelines do not include all hazards. Be alert.

✎

Note Review the safety warnings listed in Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System before installing, configuring, or troubleshooting any installed card.

- Never attempt to lift an object that might be too heavy for you to lift by yourself.
- Keep the work area clear and dust free during and after installation. Do not allow dirt or debris to enter into any laser-based components.
- Keep tools and router components away from walk areas.
- Do not wear loose clothing, jewelry, and other items that could get caught in the router while working with optical interface modules (OIMs), and their associated components.
- Use Cisco equipment in accordance with its specifications and product-usage instructions.
- Do not work alone if potentially hazardous conditions exist.

Verifying the Securing Location

Verifying the recommended space ensures that you have enough space available to perform the initial installation of the chassis and its components.

Before moving the chassis into position, make sure that you have properly prepared the site so that there is sufficient room for installation and maintenance.

For additional details on making your site ready for the chassis, see Cisco CRS Carrier Routing System 16-Slot Line Card Chassis Site Planning Guide and Cisco CRS Carrier Routing System Multishelf System Site Planning Guide .

Preventing Electrostatic Discharge

Electrostatic discharge (ESD) damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. We recommend the use of an ESD-preventive strap whenever you handle network equipment or one of its components.

These guidelines for preventing ESD damage:

- Always use an ESD-preventive wrist or ankle strap, and ensure that it makes good skin contact. Connect the equipment end of the connection cord to an ESD connection socket on the router or to a bare metal surface on the chassis.
- Handle a card by its ejector levers, when applicable, or its metal carrier only; avoid touching the board or connector pins.
- Place a card removed from the chassis, component side up, on an antistatic surface or in a static-shielding bag. If you plan to return the component to the factory, immediately place it in a static-shielding bag.
- Avoid contact between the card and clothing. The wrist strap protects the board from only ESD voltage on the body: ESD voltage on clothing can still cause damage.

⚠️ **Caution**   When unpacking and setting parts aside, it is important to set them either in their original antistatic packaging or on an antistatic mat to avoid static discharge.

Unpacking the Cisco Dolly

The dolly is a Cisco-supplied orderable item. The shipping crate contains the dolly units, positioned in the 90 degree configuration as shown in #task_80580/fig_80654. This section describes how to unpack and position the dollies.

📝 **Note**   The dolly will work with both the CRS 16-Slot Line Card Chassis (LCC) and the Fabric Card Chassis (FCC); the only difference is the lift brackets that are used (see #con_163725/fig_142684 and #con_163725/fig_142945).

📝 **Note**   In the event that the dolly supplied by Cisco is not the appropriate method of transportation, consult Cisco Technical Staff to determine a method of transportation appropriate for the site. Ensure that the alternate moving device is capable of moving the chassis safely, supporting the weight of the chassis, and is capable of preventing the chassis from tipping.

Prerequisites

No prerequisites exist for this task.

Required Tools and Equipment

You need the following tools (only used to remove packaging) to perform this task:

- 3/8-in. ratchet wrench
- 9/16-in. socket and a 5/8-in. socket
- Phillips #2 screwdriver (used to remove the clip from the dolly crate)

⚠️ **Caution**   The dolly should be used only for transporting the as-shipped chassis.

Steps

To unpack the dolly, follow these steps:

SUMMARY STEPS

1. Carefully move the pallet containing the dolly to the location where you plan to unpack it. The dolly arrives as two separate, identical units, one unit each for the front and back of the chassis.
2. Remove the clip tool from the dolly shipping crate as shown in the following figure.
3. Remove side panel from dolly crate. Swing open and lift off.
4. Using the 3/8-in. ratchet wrench with 5/8-in. socket remove the two holding bolts from each side at the bottom of the dolly pallet base as shown in Figure 2: Cisco Dolly Shipping Container.
5. With at least two people, one on each side of the dolly shipping crate, tilt crate back and lift off pallet, then set the crate carefully aside as shown in Figure 3: Removing Cisco Dolly Shipping Container.
6. Using the 3/8-in. ratchet wrench with 5/8-in. socket remove the two bolts and the dolly stopper as shown in the following figure.
7. Release the caster brakes and remove the dolly from the pallet.
8. Remove the LCC lift brackets from the dolly. Use the 3/8-in. ratchet wrench with 12-mm hex bit (provided by Cisco) to remove the two LCC dolly-to-chassis lift brackets and set the LCC lift brackets carefully aside. Repeat this step for the second dolly unit.

DETAILED STEPS

Step 1   Carefully move the pallet containing the dolly to the location where you plan to unpack it. The dolly arrives as two separate, identical units, one unit each for the front and back of the chassis.

Step 2   Remove the clip tool from the dolly shipping crate as shown in the following figure.

Figure 2: Cisco Dolly Shipping Container
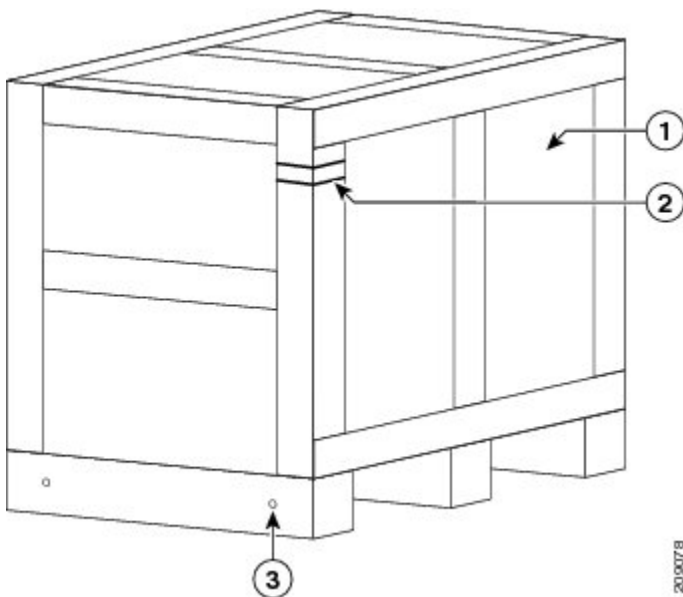
| 1 | Side panel to be removed | 3 | Location of shipping pallet holding bolts (two bolts on each side) |

2	Clip tool		

Step 3   Remove side panel from dolly crate. Swing open and lift off.

Step 4   Using the 3/8-in. ratchet wrench with 5/8-in. socket remove the two holding bolts from each side at the bottom of the dolly pallet base as shown in Figure 2: Cisco Dolly Shipping Container.

Step 5   With at least two people, one on each side of the dolly shipping crate, tilt crate back and lift off pallet, then set the crate carefully aside as shown in Figure 3: Removing Cisco Dolly Shipping Container.

Figure 3: Removing Cisco Dolly Shipping Container
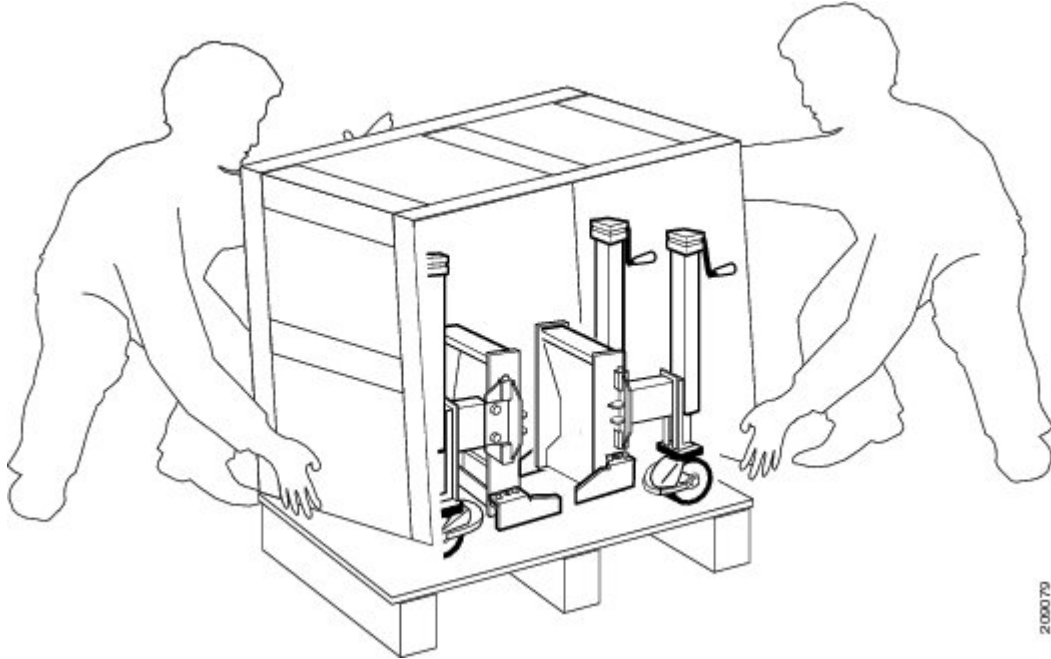
Step 6   Using the 3/8-in. ratchet wrench with 5/8-in. socket remove the two bolts and the dolly stopper as shown in the following figure.

Figure 4: Position of Cisco Dolly Shipping Stopper—One Dolly Unit
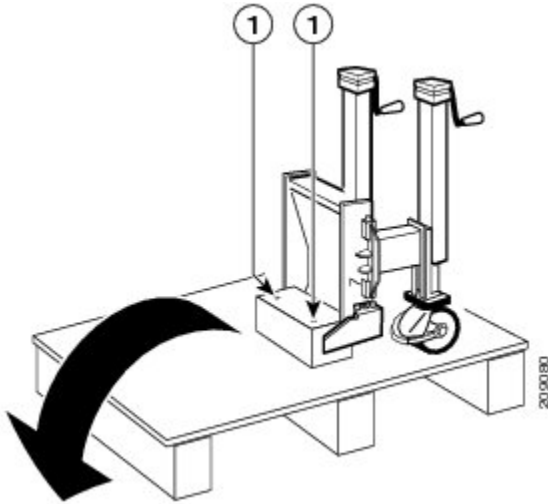
| 1 | Each dolly stopper has two holding bolts. Note that Figure 4: Position of Cisco Dolly Shipping Stopper—One Dolly Unit shows only one dolly unit. Remove the other unit using the same steps. |

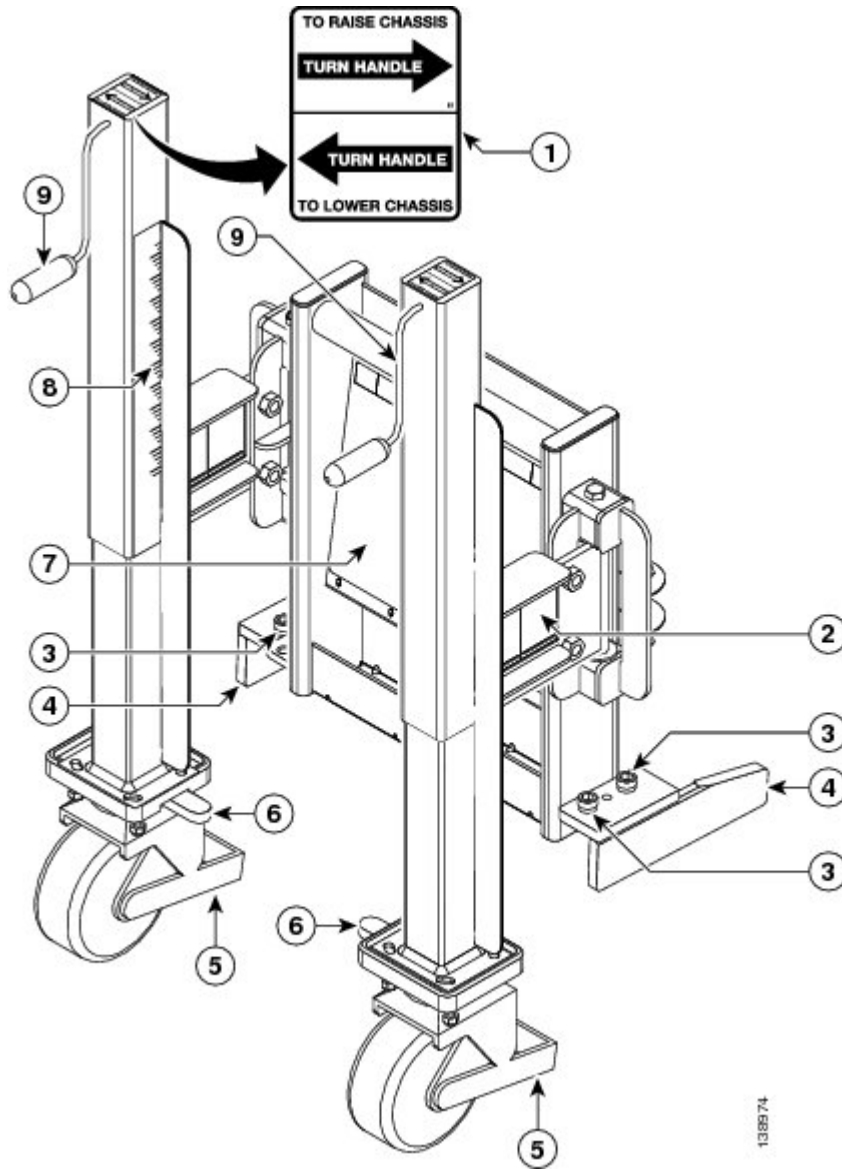**Step 7** Release the caster brakes and remove the dolly from the pallet.

Step 8 Remove the LCC lift brackets from the dolly. Use the 3/8-in. ratchet wrench with 12-mm hex bit (provided by Cisco) to remove the two LCC dolly-to-chassis lift brackets and set the LCC lift brackets carefully aside. Repeat this step for the second dolly unit.

Note If the dolly is being sent from a previous installation, verify the bracket type (LCC, FCC) before removing. Brackets need to be removed prior to attaching to the chassis.

Caution Each dolly unit weighs approximately 126 lb (57 kg). We recommend that at least two people remove the unit from the pallet.

Figure 5: Cisco Dolly—90-Degree Position shows the dolly 90-degree configuration with callouts pointing to components and LCC lift brackets (see #con_150081/fig_150102 for the dolly with FCC lift brackets) still attached. To use the dolly for a Cisco fabric card chassis, you must order the FCC lift brackets.
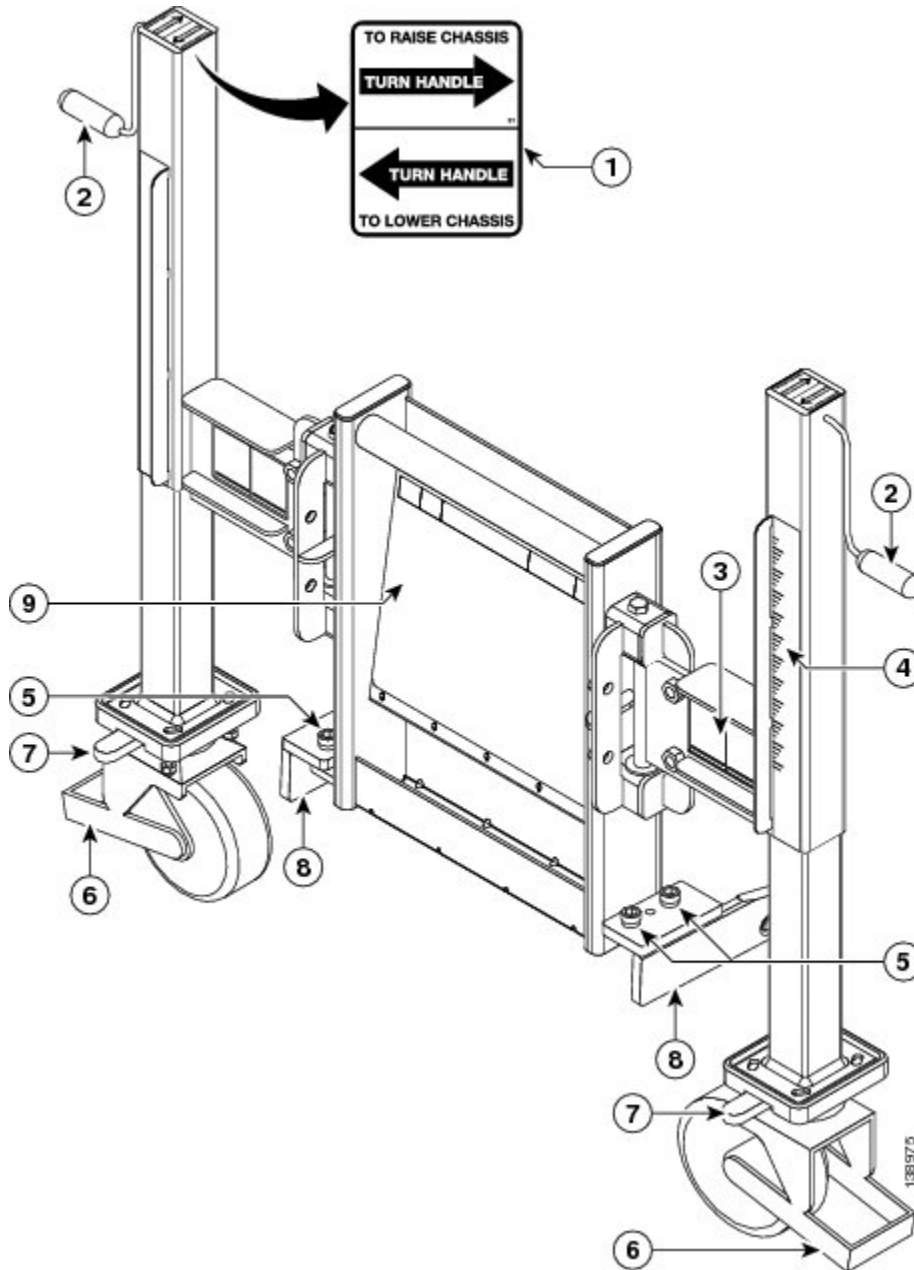
Figure 5: Cisco Dolly—90-Degree Position

1	Dolly handle label	6	Caster antirotation pins
2	Swing component for dolly (used to change the dolly configuration)	7	Label showing how to attach dolly to chassis
3	Lift bracket bolts	8	Move height calibration label
4	Lift brackets	9	Lifting cranks
5	Brakes		

Figure 6: Cisco Dolly—180-Degree Position shows the dolly 180-degree configuration with callouts pointing to components and LCC lift brackets (#task_150146/fig_150182 for the dolly with FCC lift brackets) still attached. Both dolly units are identical.

Figure 6: Cisco Dolly—180-Degree Position

1	Dolly handle label	6	Brakes
2	Lifting cranks	7	Caster antirotation pins
3	Swing component for dolly (used to change the dolly configuration)	8	Lift brackets
4	Move height calibration label	9	Label showing how to attach dolly to chassis

5	Lift bracket bolts		

What to Do Next

After unpacking the dolly, unpack the chassis.

Unpacking the CRS Fabric Card Chassis

This section describes:

Required Tools and Equipment

You need:

- 3/8-in. ratchet wrench
- 10-mm hex bit (provided by Cisco included in the dolly packaging)
- 11/16-in. socket (to remove the top wood and frame cushion system)
- Ladder or step platform

Prepare the Fabric Card Chassis For Unpacking

The chassis is shipped on a pallet by itself in a plywood box. The chassis is unpacked before all other shipping boxes, except for the dolly lifting device.

Prerequisites

Before unpacking the chassis, be sure to have sufficient room around the chassis pallet for unpacking.

Steps

To prepare the chassis for unpacking, follow these steps:

SUMMARY STEPS

1. Locate a large area to accommodate the chassis and move crate with pallet jack to that location.
2. Go to the next section, Unpacking the Chassis .

DETAILED STEPS

Step 1 Locate a large area to accommodate the chassis and move crate with pallet jack to that location.

Caution The crated Cisco CRS fabric card chassis is heavy and tall and it must be handled carefully to eliminate the risk of tipping the chassis over. We recommend using that at least two people to handle and move the chassis.

Step 2 Go to the next section, Unpacking the Chassis .

Note	The crated CRS fabric card chassis is moved first. All other component shipping boxes can remain in the receiving area or as space allows by your site, until the chassis is secured in its final location.

Unpacking the Chassis

Steps

To unpack the chassis, follow these steps:

SUMMARY STEPS

1. Remove the hinge mechanisms from front door only. Raise and twist the lock hinges on the sides and the base of the plywood box .
2. Remove the front cover and set it carefully aside.
3. Disengage the remaining latches from the shipping box. There are two on each side of the shipping box.
4. Using at least two people, lift and remove the three-sided box and place aside. The chassis is exposed on the pallet protected by a shipping bag secured with tape around the bag.
5. The following figure shows the wooden box removed from the chassis and the protective bag still attached to the chassis with tape.
6. You need a ladder to remove the four top cover bolts as shown in Figure 9: Location of the Four Bolts On the FCC Shipping Box Top Cover. Use the 3/8-in. ratchet wrench with 11/16-in. socket to loosen the four bolts holding the top wood and frame cushion system from the top of the shipping box. Once the four bolts are loosened, remove each bolt manually and place aside, then remove the top wood and frame cushion system from the chassis.
7. When you are ready to remove the chassis bag, unseal the tape that exists around the perimeter of the chassis (as shown in Figure 8: FCC Shipping Box Removed and Top Cover Bolts Being Removed) base and pull the bag off the chassis.

DETAILED STEPS

Step 1   Remove the hinge mechanisms from front door only. Raise and twist the lock hinges on the sides and the base of the plywood box .

Figure 7: Fabric Card Chassis in Original Packaging
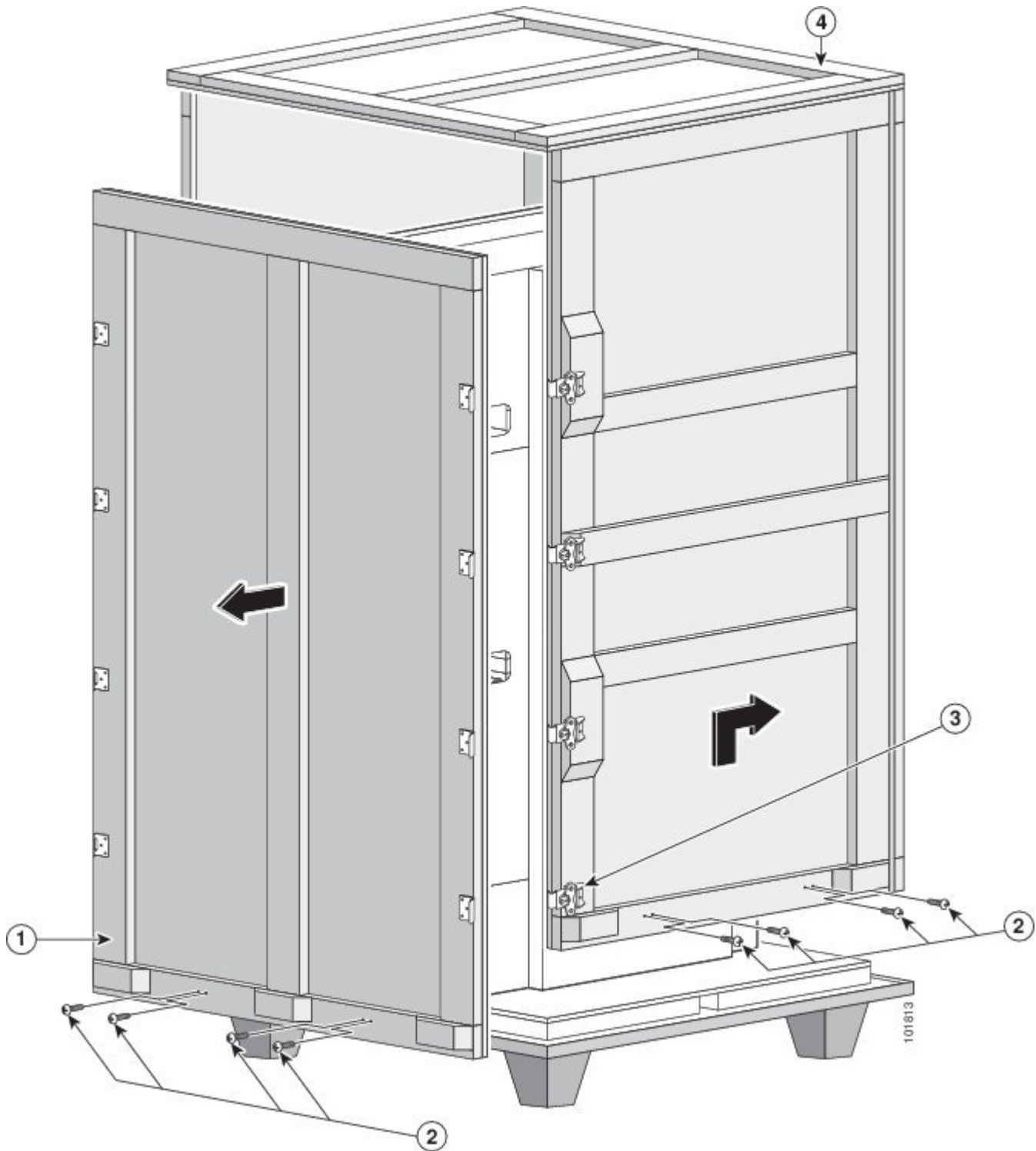
1	Lock latches	3	Three-sided plywood box

2	Front door		

Step 2   Remove the front cover and set it carefully aside.

> **Note**   When setting aside the box, be careful to rest the wood on the floor so that the metal lock latches are not bent or otherwise damaged.

Step 3   Disengage the remaining latches from the shipping box. There are two on each side of the shipping box.

Step 4   Using at least two people, lift and remove the three-sided box and place aside. The chassis is exposed on the pallet protected by a shipping bag secured with tape around the bag.

Step 5   The following figure shows the wooden box removed from the chassis and the protective bag still attached to the chassis with tape.

Figure 8: FCC Shipping Box Removed and Top Cover Bolts Being Removed
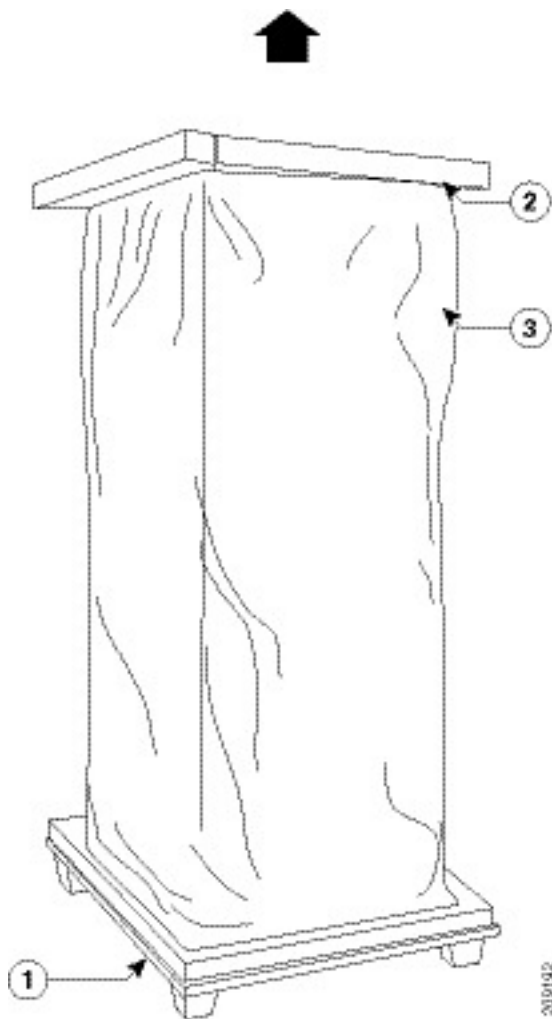
| 1	Chassis pallet	4	Protective bag over chassis
2	Four bolts being removed from top shipping cover	5	Tape around chassis perimeter

3	Top chassis shipping cover		

Step 6 You need a ladder to remove the four top cover bolts as shown in Figure 9: Location of the Four Bolts On the FCC Shipping Box Top Cover. Use the 3/8-in. ratchet wrench with 11/16-in. socket to loosen the four bolts holding the top wood and frame cushion system from the top of the shipping box. Once the four bolts are loosened, remove each bolt manually and place aside, then remove the top wood and frame cushion system from the chassis.

Figure 9: Location of the Four Bolts On the FCC Shipping Box Top Cover
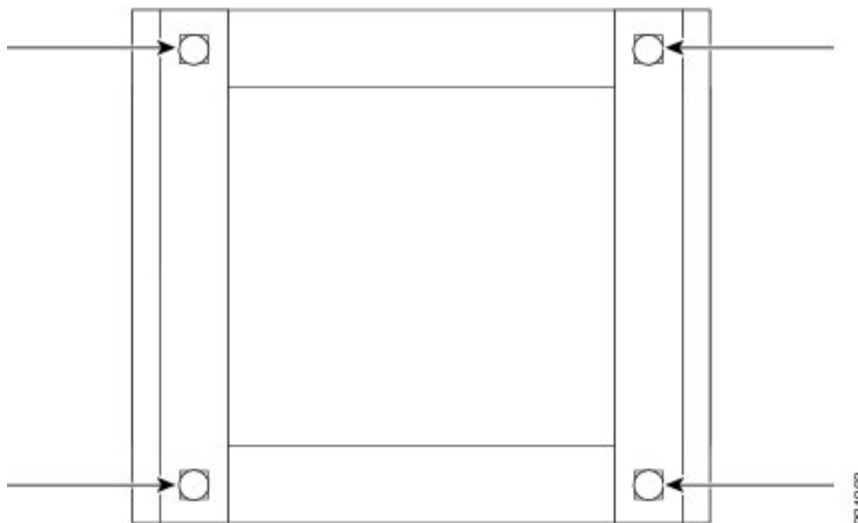
Note Do not remove the chassis bag until you are ready to move and install the chassis.

Step 7 When you are ready to remove the chassis bag, unseal the tape that exists around the perimeter of the chassis (as shown in Figure 8: FCC Shipping Box Removed and Top Cover Bolts Being Removed) base and pull the bag off the chassis.

What to Do Next

After performing this task, go to the next section Attaching the Dolly to the Chassis and Removing the Chassis Pallet.

Attaching the Dolly to the Chassis and Removing the Chassis Pallet

This section describes how to remove the LCC lift brackets from the dolly and use the FCC lift brackets, attach the dolly to the Cisco CRS FCC, and to remove the chassis shipping pallet. Only the 90-degree dolly configuration is used to remove the chassis from the pallet.

Note The dolly ships with the line card chassis (LCC) lift brackets installed, therefore you must order the FCC lift brackets (bolts are the same) for a Cisco fabric card chassis. See Figure 10: Cisco LCC Lift Brackets and Bolts and Figure 11: Cisco FCC Lift Brackets for the differences in the lift brackets.

Figure 10: Cisco LCC Lift Brackets and Bolts shows the LCC lift brackets and Figure 11: Cisco FCC Lift Brackets shows the FCC lift brackets and the bolts that both lift bracket types use.

Figure 10: Cisco LCC Lift Brackets and Bolts
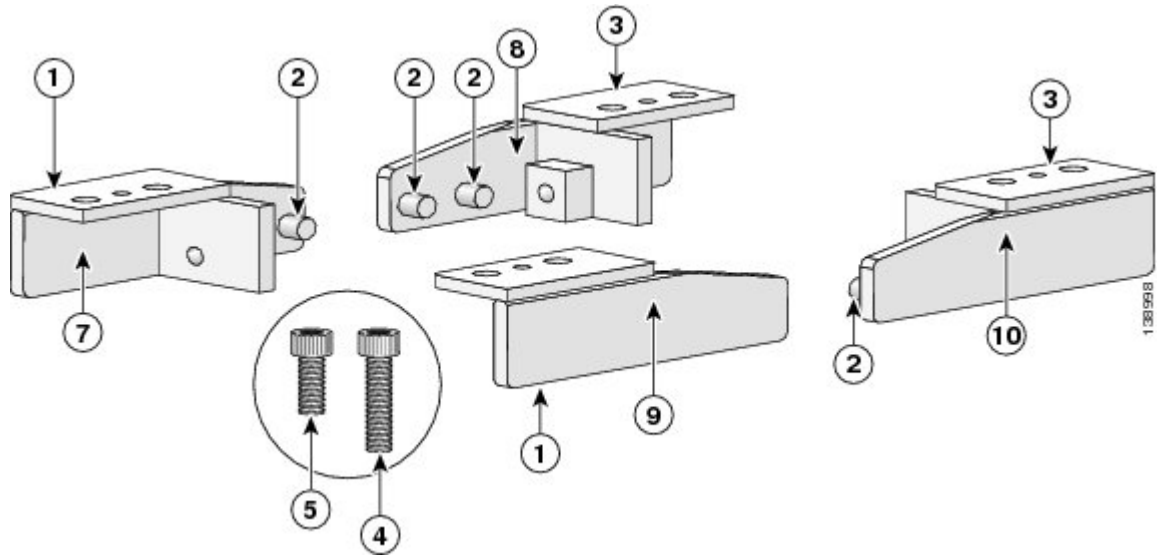
1	From left to right—left front and right front lift brackets	4	Two M14 x 50-mm socket-head cap screws s (used to bolt the front and rear lift brackets to the chassis)
2	Side pins on each lift bracket (inserted into the chassis)	5	Four M14 x 30-mm socket-head cap screws (used to bolt the front and rear lift brackets to the dolly)
3	From left to right—Right rear and left rear lift brackets		

Figure 11: Cisco FCC Lift Brackets
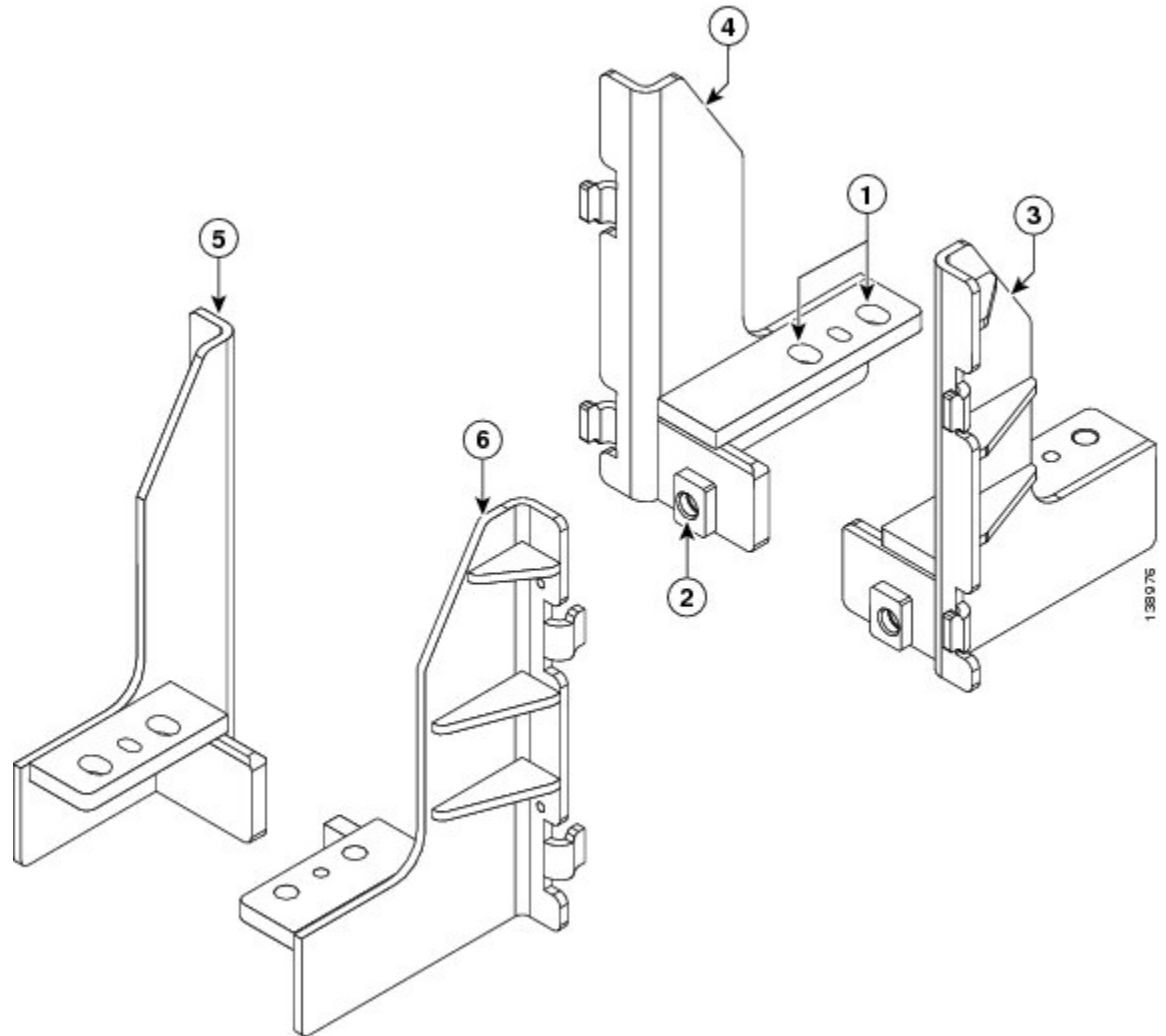
1	FCC holes for the four M14 x 30-mm socket-head cap screws (used to bolt the front and rear lift brackets to the dolly) See Figure 10: Cisco LCC Lift Brackets and Bolts.	4	Right rear side lift bracket
2	FCC holes for the two M14 x 40-mm socket-head cap screws s (used to bolt the front and rear lift brackets to the chassis) SeeFigure 11: Cisco FCC Lift Brackets.	5	Left front side lift bracket
3	Left rear side lift bracket	6	Right front side lift bracket

Figure 12: Attaching the Cisco Dolly To the Chassis—Instructions shows the dolly instruction label, which is part of the dolly and is located on the inside component of the dolly. Refer to this graphic when performing the steps to attach the dolly to the chassis.

Note The Instruction Label on the dolly shows illustrations for using the dolly with a line card chassis, except for label 2b-FCC (for fabric card chassis). The steps also apply to the fabric card chassis. If there are differences, these will be highlighted in the documentation.

Figure 12: Attaching the Cisco Dolly To the Chassis—Instructions
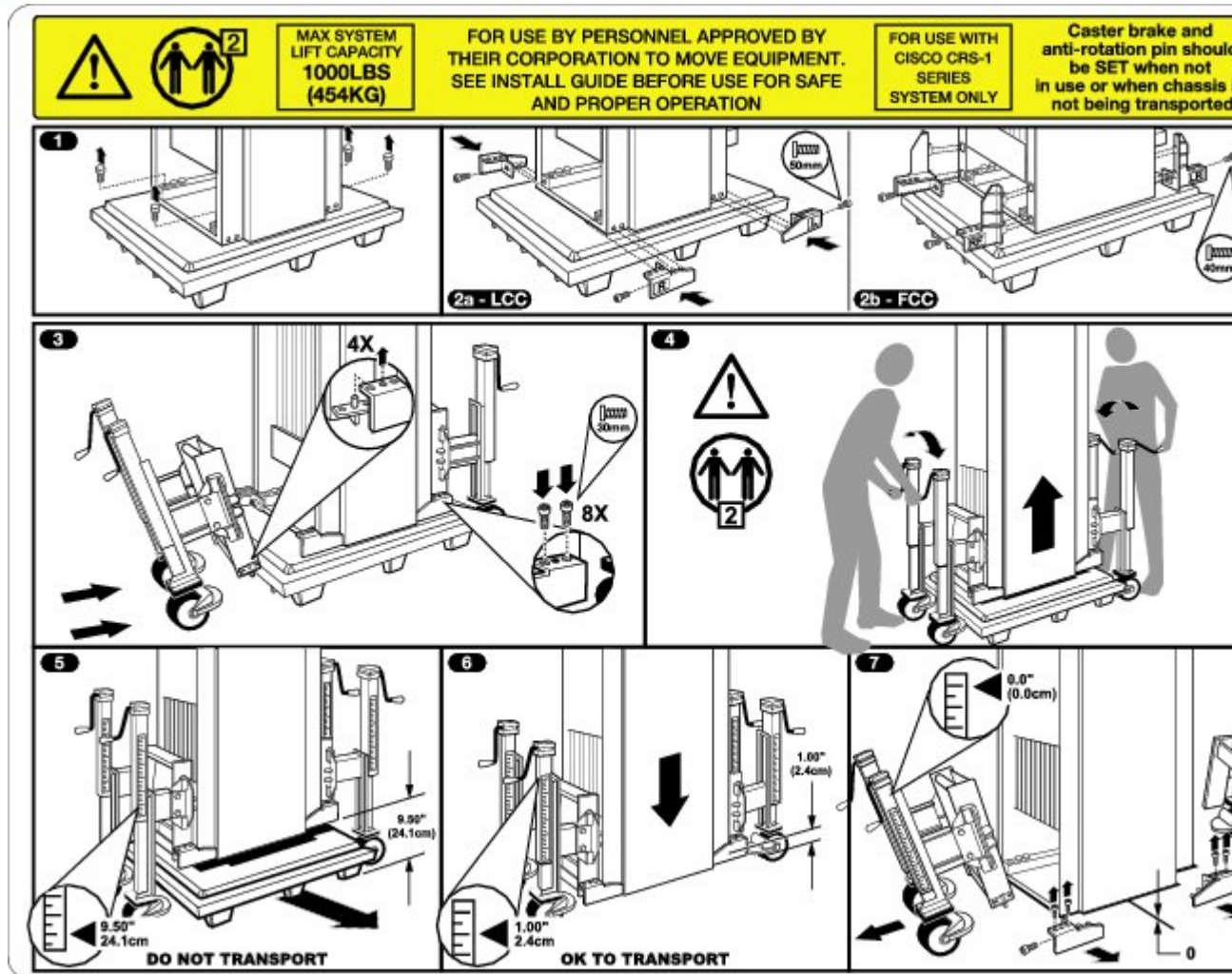
Prerequisites

Before attaching the dolly to the chassis, unpack the chassis and unpack the dolly, and remove LCC lift brackets from the dolly.

Required Tools and Equipment

You need these tools and part to perform this task:

- 2.5mm hex key (to remove the covers)
- 14-mm socket

• 3/8-in. ratchet wrench with 6-in. extension
• 12-mm hex bit (included in the dolly packaging)
• Dolly (Cisco product number CRS-16-LIFT/B)
• FCC lift brackets (CRS-FCC-LIFT-BRKT)

Steps

To attach the dolly to the fabric card chassis, follow these steps:

SUMMARY STEPS

1. Using the Hex socket and wrench remove the four bolts (½-13 x 3.5 in. long hex-head) that connect the pallet to each corner of the chassis base as shown in Figure 13: Remove Four Bolts That Attach the Chassis to the Pallet .

2. Select a FCC lift bracket (the LCC lift brackets have already been removed), as shown in #con_163725/fig_142945. There are two identical lift brackets for the right front and left rear and two identical lift brackets for the right rear and left front.

3. Fit the FCC brackets on all four sides of the chassis.

4. Bolt the FCC lift brackets to the chassis. Insert the 40-mm socket-head cap screw that connects the left lift bracket to the bolt block on the lower front corner of the front side of the chassis, and use the 14-mm hex drive socket to tighten it. Repeat this step for the right lift bracket to attach the bracket to the chassis. See Figure 14: Attaching the FCC Lift Bracket Bolts to the Chassis (Oblique View).

5. Repeat #task_87167/_181917 and #task_87167/_181883 for the rear side of the chassis.

6. If the dolly caster brakes are locked, then release them and slide the dolly towards the lift brackets on the chassis as shown in Figure 15: Sliding the Dolly to the FCC Lift Brackets On the Chassis so that the pins on the upper side of the unit align with the holes on the lift brackets on the PLIM side of the chassis. The dolly and lift brackets must align with each other to easily insert the bolts and secure the dolly to the lift brackets.

7. Bolt the lift brackets to the dolly. Insert the 30-mm socket-head cap screws (shorter screw, as shown in #con_163725/fig_142684) and use the 14-mm hex drive socket to tighten it. Repeat this step for the right lift bracket to insert the two bolts that bolt the lift bracket to the dolly.

8. Repeat #task_87167/_178529 and #task_87167/_178534 for the rear (MSC) side of the chassis.

9. After all bolts are secured, remove the chassis pallet following these steps:

DETAILED STEPS

Step 1   Using the Hex socket and wrench remove the four bolts (½-13 x 3.5 in. long hex-head) that connect the pallet to each corner of the chassis base as shown in Figure 13: Remove Four Bolts That Attach the Chassis to the Pallet .

Figure 13: Remove Four Bolts That Attach the Chassis to the Pallet
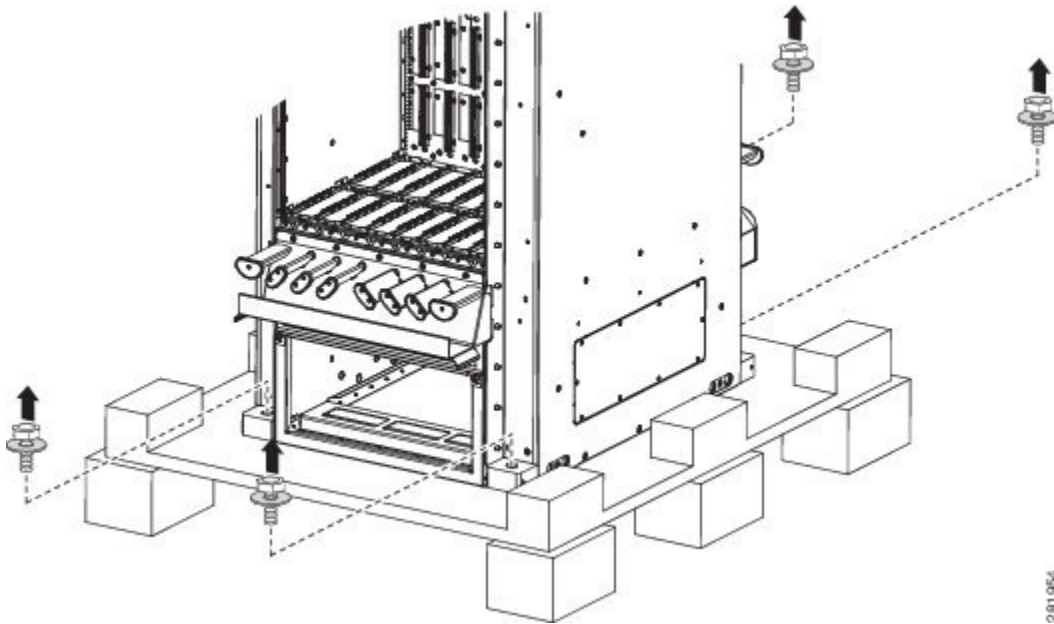
> **Note**   The lift brackets must be attached to the chassis first.

Step 2   Select a FCC lift bracket (the LCC lift brackets have already been removed), as shown in #con_163725/fig_142945. There are two identical lift brackets for the right front and left rear and two identical lift brackets for the right rear and left front.

Step 3   Fit the FCC brackets on all four sides of the chassis.

> **Note**   The LCC lift brackets install from the sides of the chassis and uses 50-mm bolts, while the FCC lift brackets install from the front and rear of the chassis and uses 40-mm bolts.

Step 4   Bolt the FCC lift brackets to the chassis. Insert the 40-mm socket-head cap screw that connects the left lift bracket to the bolt block on the lower front corner of the front side of the chassis, and use the 14-mm hex drive socket to tighten it. Repeat this step for the right lift bracket to attach the bracket to the chassis. See Figure 14: Attaching the FCC Lift Bracket Bolts to the Chassis (Oblique View).

Figure 14: Attaching the FCC Lift Bracket Bolts to the Chassis (Oblique View)
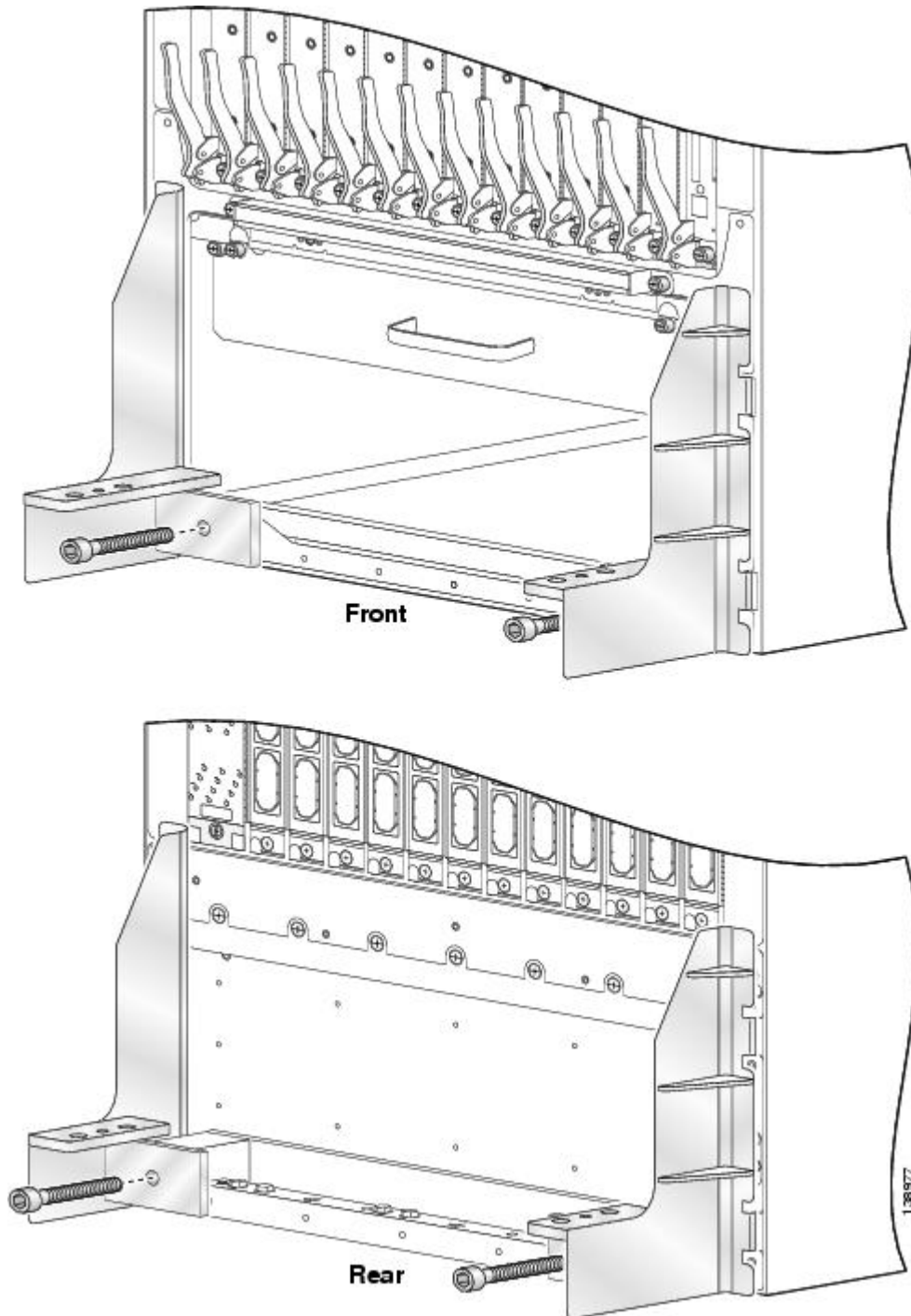


Step 5   Repeat #task_87167/_181917 and #task_87167/_181883 for the rear side of the chassis.

Step 6   If the dolly caster brakes are locked, then release them and slide the dolly towards the lift brackets on the chassis as shown in Figure 15: Sliding the Dolly to the FCC Lift Brackets On the Chassis so that the pins on the upper side of the unit align

with the holes on the lift brackets on the PLIM side of the chassis. The dolly and lift brackets must align with each other to easily insert the bolts and secure the dolly to the lift brackets.

Figure 15: Sliding the Dolly to the FCC Lift Brackets On the Chassis
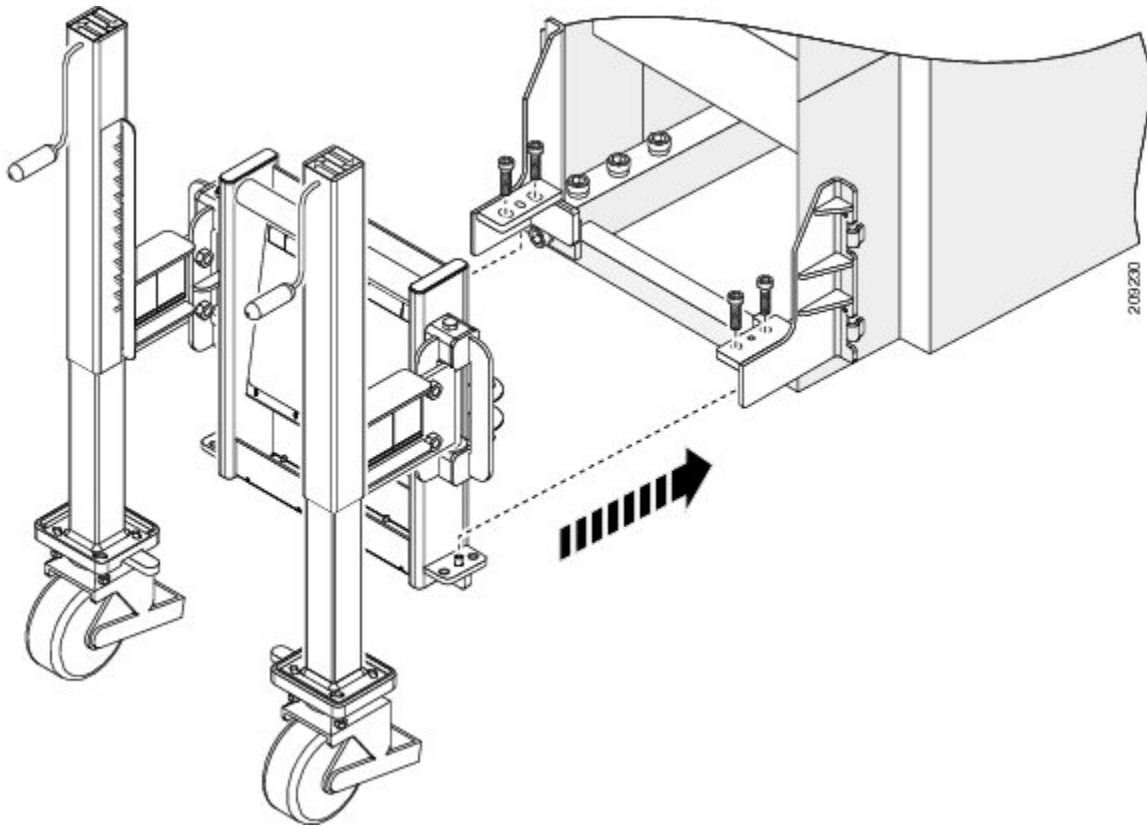
Step 7   Bolt the lift brackets to the dolly. Insert the 30-mm socket-head cap screws (shorter screw, as shown in #con_163725/fig_142684) and use the 14-mm hex drive socket to tighten it. Repeat this step for the right lift bracket to insert the two bolts that bolt the lift bracket to the dolly.

Step 8   Repeat #task_87167/_178529 and #task_87167/_178534 for the rear (MSC) side of the chassis.

Step 9   After all bolts are secured, remove the chassis pallet following these steps:

a)   Using two people (one person working on each dolly unit), turn the two lifting cranks to lift the chassis about 3/4 of an in. above the pallet, as shown in Figure 16: Example of Adjusting the Height of the Dolly.

Figure 16: Example of Adjusting the Height of the Dolly
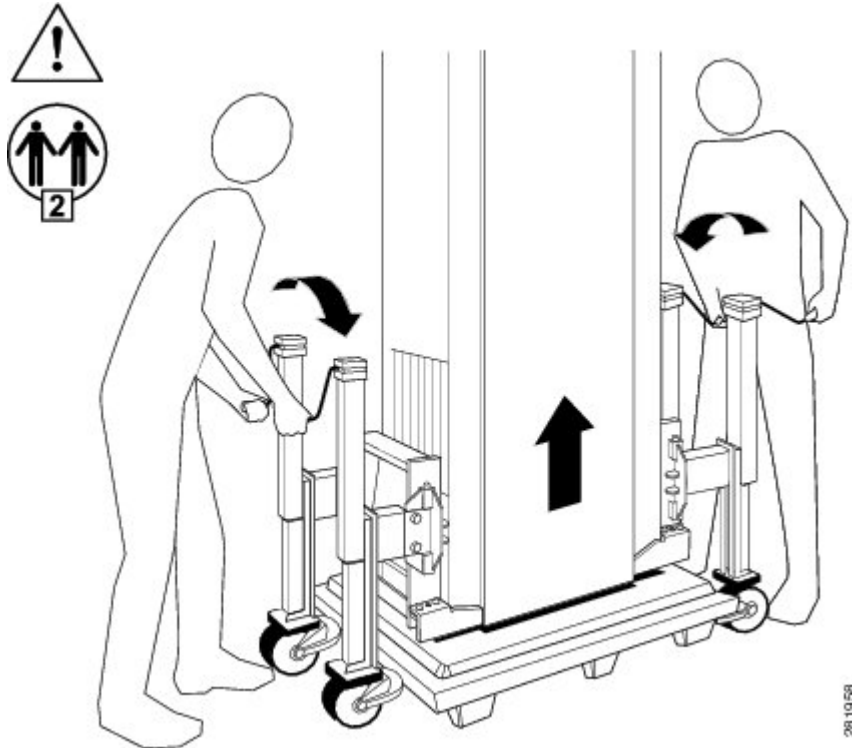
b) Slide the pallet from under the chassis.

Figure 17: Slide Pallet From Under Chassis
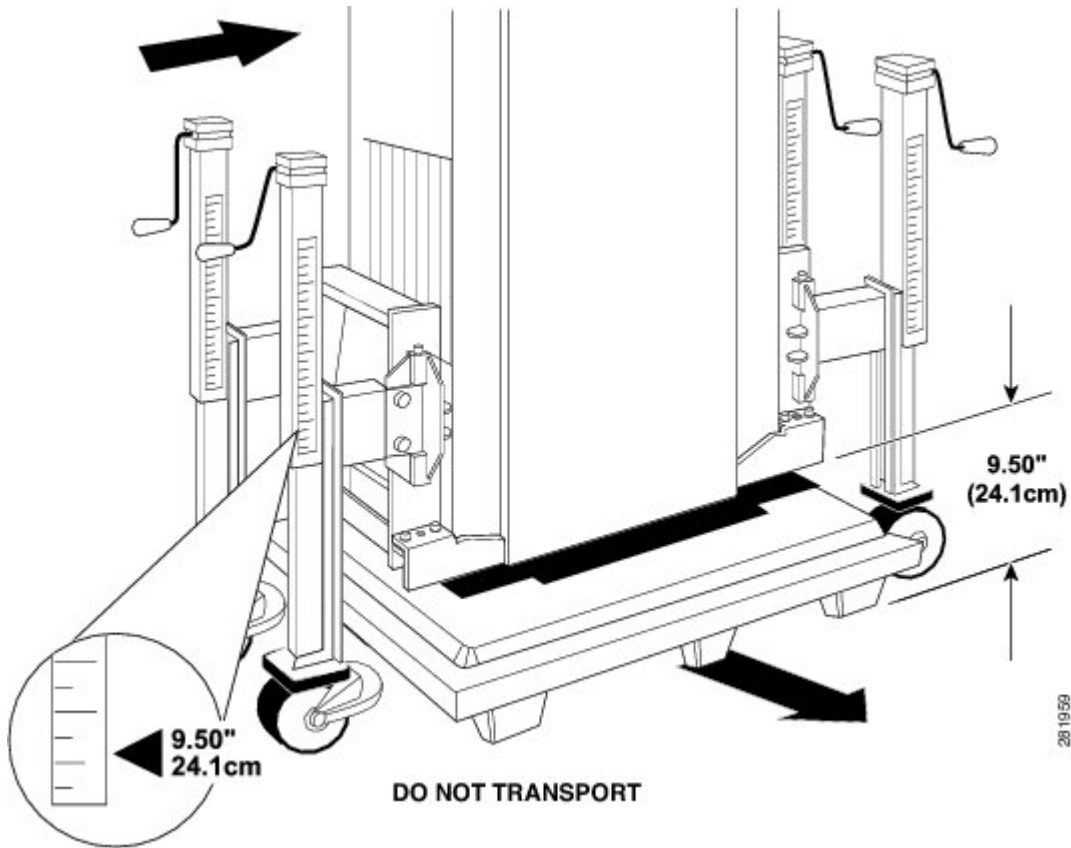
c) Using two people (one person working on each dolly unit), lower the chassis (see Figure 18: Lowering the Chassis) to within 1 in. of the floor. See the height label on the dolly lift wheel assembly.

Figure 18: Lowering the Chassis
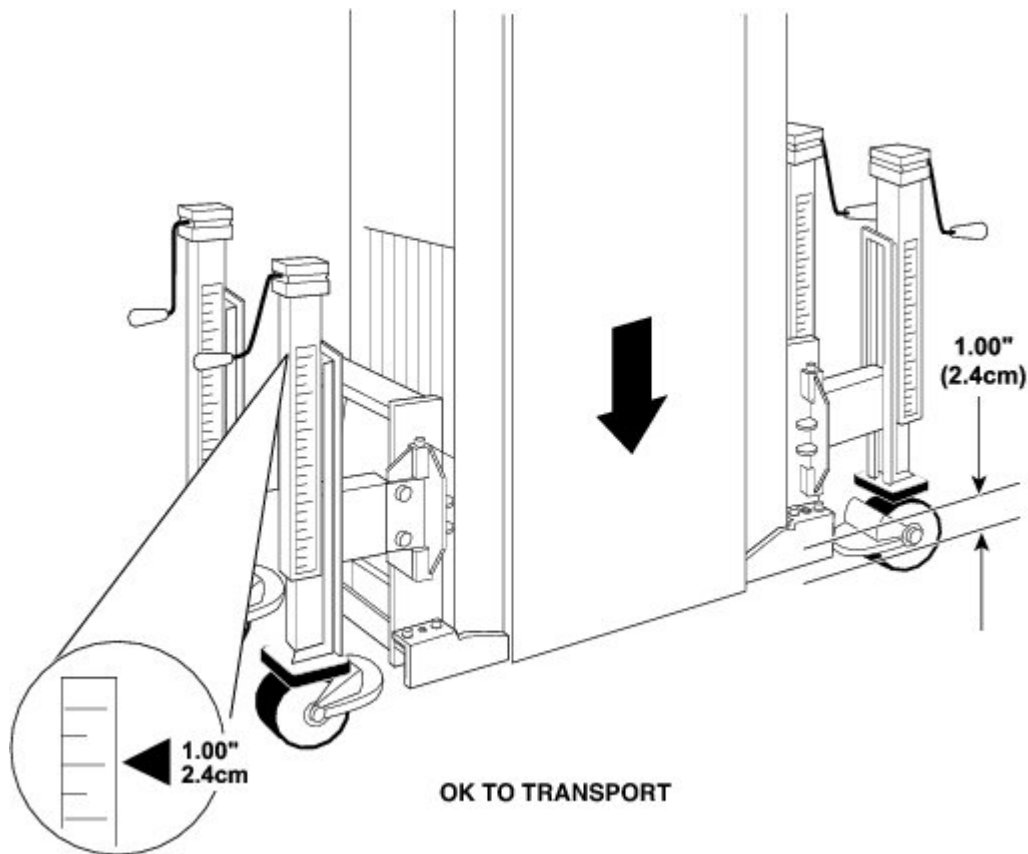
d) Depending on the transport route and the moving space requirements at your site, the dolly can be used to move the chassis in the 90-degree or 180-degree configuration. The 180-degree position is the recommended configuration for moving the chassis.

> **Danger** To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 in. (2.54 cm) above the floor during transportation. Statement 358

What to Do Next

After removing the shipping pallet from the chassis, move the chassis. First read the Important Notice About Transporting the Chassis.

Important Notice About Transporting the Chassis

Either a fork lift or pallet jack can be used to transport a crated chassis only.

Throughout this document we refer to the dolly (supplied by Cisco) as the required means to transport the uncrated chassis from the shipping dock to the chassis final location.

Note In the event that the dolly supplied by Cisco is not the appropriate method of transportation, consult Cisco Technical Staff to determine a method of transportation appropriate for the site. Ensure that the alternate moving device is capable of moving the chassis safely, supporting the weight of the chassis, and is capable of preventing the chassis from tipping.

Caution When using any type of device to transport the chassis, exercise extreme caution and follow proper safety practices.

Moving the CRS Fabric Card Chassis

This section presents these topics:

- Cisco Dolly and Chassis Moving Guidelines
- Verifying the Move Path
- Moving the Chassis

Cisco Dolly and Chassis Moving Guidelines

When you use the dolly to move the FCC, follow these guidelines:

- When using the dolly to move the chassis, you should make sure that the chassis is empty of components, as shipped.
- *When raising or lowering the chassis* , follow these guidelines:

  - Make sure that you have at least one person on each side of the chassis to turn the lifting cranks on the dolly as simultaneously as possible.
  - Raise or lower the chassis only on a level surface.
  - Make sure that the caster brakes and antirotation pins are in the locked position.
  - Keep the casters on the floor at all times when you are raising or lowering the chassis.
  - Attempt to keep the chassis itself as level as possible when raising or lowering it with the dolly.
  - Use the height label on the dolly to make sure that you have the correct amount of ground clearance. (The label shows the recommended transport chassis engagement height, the height that is not to be exceeded, and to ensure correct alignment between both dolly wheel assemblies.)

- *When moving the chassis using a dolly* , follow these guidelines:

  - Make sure that you have at least two people to transport the chassis. Never transport the chassis by yourself.
  - Use the dolly in the 180-degree configuration whenever possible when you move the chassis. This configuration requires you to have passageways at least 50 inches in width to accommodate the combined dolly and chassis width.
  - Use the dolly in the 90-degree configuration if your site restrictions require it. If hallway constraints require you to use the 90-degree dolly configuration (24 inches), the chassis is more likely to tip, so use extra care when transporting the chassis in that configuration.
  - Dolly is used to transport the chassis. To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 inch (2.54 cm) above the floor during transportation.

- Dolly can be used to transport the chassis over thresholds up to 1.5 inches.

- *When transporting the chassis on a ramp* , follow these guidelines:

  - Make sure that you have at least two people to transport the chassis up and down a ramp. One person in the rear pushing, one person at the front pulling, and one steering the chassis.
  - Dolly is optimized to move the chassis on flat surfaces. It is not designed to move the chassis on ramps greater than 1 inch of rise for every 6 inches of run. If the ramp exceeds this maximum limit, consult with Cisco Technical Staff.
  - Exercise extreme caution when moving chassis up an incline of any angle.

Caution   Use the recommended 180-degree configuration to transport a chassis. If the 90-degree configuration is used, then the chassis is more likely to tip. Use caution and take extra care in rolling the chassis up a ramp. Always follow proper safety practices whenever moving a CRS chassis.

Note   The following warning statements are also documented in the Cisco Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System .

Danger   Cisco does NOT recommend moving a fully populated chassis.

Danger   This dolly is designed only for the temporary transportation of the Cisco equipment listed here. Do not use it with any other device or for any other purpose. Cisco equipment designed for use with the dolly: Cisco CRS fabric card chassis and line card chassis (CRS-FCC, CRS-16-LCC). Statement 356

Danger   Do not permanently locate the equipment on the dolly. Safely store the dolly after use. Statement 357

Danger   To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 inch (2.54 cm) above the floor during transportation. Statement 358

Danger   This dolly is designed to transport the equipment over short distances only. Statement 359

⚠️

Danger   In order to reduce the risk of chassis damage or personal injury when replacing a fully-loaded, existing FCC chassis, do not move the chassis in a configuration that is greater than the as-shipped chassis. Before attaching the dolly and moving the chassis, remove power modules, switch fabric and fiber modules from the chassis. Statement 367

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Danger   To reduce the risk of dolly instability, chassis damage, or personal injury, do not transport the equipment with the dolly raised higher than the maximum transport height shown on the dolly label, and do not raise the equipment higher than required to remove the shipping pallet. For information about maximum dolly heights, see the dolly instructions in this document. Statement 368

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Caution   Dolly wheel casters and anti-rotation pins should be in the locked position when the dolly is not in use.

Verifying the Move Path

Before moving the chassis, it is critical that you verify that the path that you are planning to use, to move the chassis to its final location, can accommodate the chassis size and weight and the restrictions of the chassis when using the dolly (see the Dolly Specifications).

See Table 5: FCC Chassis Move Path Specifications for a list of the restrictions for your move path, and verify that you have sufficient room for the *entire* move path prior to moving the chassis.

Table 5: FCC Chassis Move Path Specifications

Height (on dolly, with recommended 1 in. raise)	81 in. (205 cm)
Depth (on dolly, 90-degree dolly position)	70 in. (178 cm)
Depth (on dolly, 180-degree dolly position)	48 in. (122 cm)
Width (on dolly, 90-degree dolly position)	23.6 in. (60 cm)
Width (on dolly, 180-degree dolly position)	44 in. (112 cm)
Turning radius (on dolly, 90-degree dolly position)	37 in. (94 cm)
Turning radius (on dolly, 180-degree dolly position)	33 in. (83 cm)
Weight of chassis (as shipped, packaging removed)	1175 lb (533 kg), Estimated
Weight of dolly (both units)	252 lb (114.5 kg)
Maximum recommended height above floor (for chassis on dolly)	1.5 in. (3.8 cm)

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Note   Allow a gap of between 4 in. to 6 in. (10 cm to 15 cm) on each side of the chassis when moving it.

Figure 19: Recommended Turning Diameter of Dolly shows the recommended minimum space to turn the chassis on the dolly in its 90-degree and 180-degree configuration.

Figure 19: Recommended Turning Diameter of Dolly
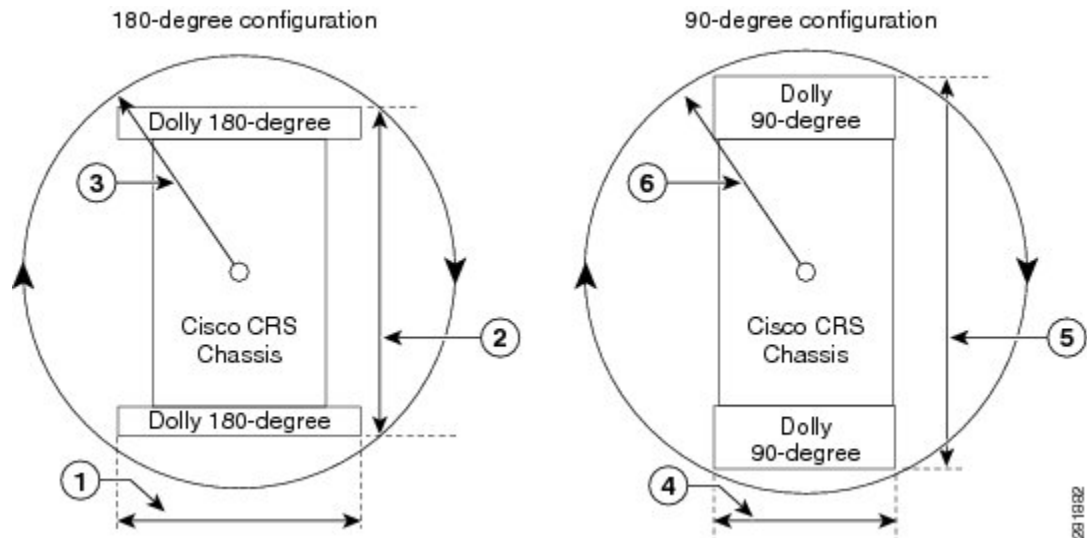
1	Width (on dolly, 180-degree position) 44 in. (112 cm)	4	Width (on dolly, 90-degree position) 24 in. (60 cm)
2	Depth (on dolly, 180-degree position) 48 in. (122 cm)	5	Depth (on dolly, 90-degree position) 70 in. (178 cm)
3	Turn radius (on dolly, 180-degree position) 33 in. (83 cm)	6	Turn radius (on dolly, 90-degree position) 37 in. (94cm)

Table 6: Chassis Turning Recommendations provides the dolly width and the recommended aisle width turning radius for the 90-degree and 180-degree dolly configuration.

Table 6: Chassis Turning Recommendations

Dolly Configuration	Width of Dolly	Recommended Aisle Width
90-degree dolly position	24 in. (60 cm)	32 in. (81 cm)*
180-degree dolly position	44 in. (112 cm)	52 in. (132 cm)
*Aisle width may need to be more than 32 inches when transporting the chassis around a corner.		

Figure 20: Minimum Aisle Space Requirements to Install the Chassis—Top View (With Dolly Removed) is a top view of the minimum aisle space required to install the Cisco CRS fabric card chassis without using the dolly supplied by Cisco.

Figure 20: Minimum Aisle Space Requirements to Install the Chassis—Top View (With Dolly Removed)
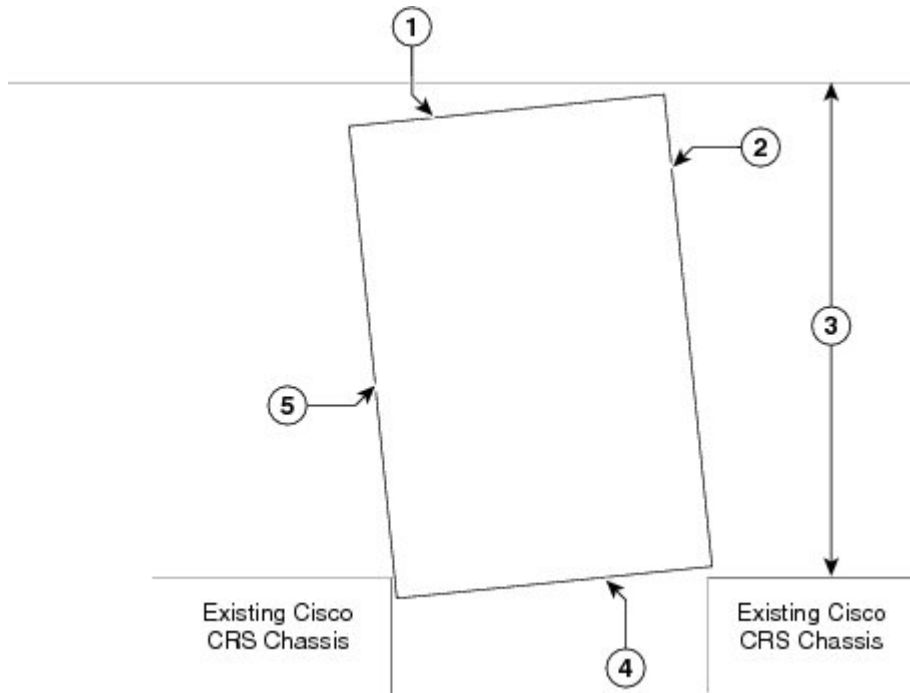
1	Chassis front	4	Chassis rear
2	Chassis side	5	Chassis side
3	Moving space requirement 37.4 in (95 cm)		

Moving the Chassis

Prerequisites

Before performing this task, make sure that the dolly is in the correct configuration, is firmly attached to the chassis, and that the dolly brakes are in the locked position.

Note   If a dolly configuration change is required, the go to the section, Modifying the Dolly Configuration to Move the Chassis.

Steps

This section describes how to move the FCC:

SUMMARY STEPS

1. With a person on each side of the chassis, turn all four lifting cranks of the dolly slowly clockwise. Lift the dolly to the *Transport* marking on the height label on each lift assembly leg. The dolly must be used to transport the chassis unless an alternate moving method has been approved by Cisco. To reduce the

risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 in. (2.54 cm) above the floor during transportation which is the standard recommendation for flat surfaces and thresholds.

2. Unlock the dolly caster antirotation and brake systems.

3. Use at least two people to transport the chassis up any ramp. Position one person in the front of the chassis to pull, one person at the rear of chassis to push, and one person steering the chassis to transport the chassis.

4. Roll the chassis carefully into position. Figure 21: Fabric Card Chassis Floor Plan shows a typical floor plan from the top of the chassis. For additional details on making your site ready for the chassis, see Cisco CRS Carrier Routing System Multishelf System Site Planning Guide .

5. Remove the dolly.

DETAILED STEPS

Step 1   With a person on each side of the chassis, turn all four lifting cranks of the dolly slowly clockwise. Lift the dolly to the *Transport* marking on the height label on each lift assembly leg. The dolly must be used to transport the chassis unless an alternate moving method has been approved by Cisco. To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 in. (2.54 cm) above the floor during transportation which is the standard recommendation for flat surfaces and thresholds.

| **Note** | The dolly has four separate lifting cranks, each of which works independently. It is best to turn each lifting crank simultaneously when lifting the chassis to keep the chassis as level as possible so as to not put undue stress on the chassis frame or dolly and to reduce the risk of tipping. |

| **Caution** | The Cisco CRS FCC is heavy and tall, and it must be handled carefully to eliminate the risk of tipping the chassis over. We recommend that at least two people handle and move the chassis. |

| **Note** | The 180-degree position is the recommended configuration for moving the chassis. If needed because of site requirements, rotate the dolly to the 90-degree position. If you are transporting in a 90-degree configuration, then have at least two people moving the chassis to prevent any transporting hazard. See the Modifying the Dolly Configuration to Move the Chassis for further information. |

| **Note** | You must lower the chassis completely to the floor before rotating swing component to minimize the risk of tipping. When you have rotated the dolly, raise the chassis again. See the Modifying the Dolly Configuration to Move the Chassis for further information. |

Step 2   Unlock the dolly caster antirotation and brake systems.

| **Note** | The dolly is optimized to move the chassis on flat surfaces. It is not designed to move the chassis up stairs, over curbs, up ramps, or over bumps more than 1.5 inches high (such as door thresholds). |

Step 3   Use at least two people to transport the chassis up any ramp. Position one person in the front of the chassis to pull, one person at the rear of chassis to push, and one person steering the chassis to transport the chassis.

Step 4   Roll the chassis carefully into position. Figure 21: Fabric Card Chassis Floor Plan shows a typical floor plan from the top of the chassis. For additional details on making your site ready for the chassis, see Cisco CRS Carrier Routing System Multishelf System Site Planning Guide .

Figure 21: Fabric Card Chassis Floor Plan shows a typical site floor plan for a Cisco FCC.

Figure 21: Fabric Card Chassis Floor Plan
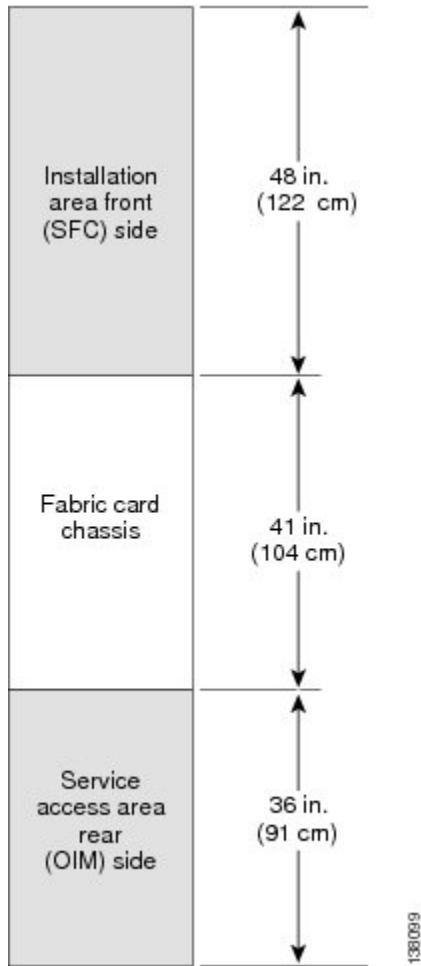
Step 5   Remove the dolly.

What to Do Next

After moving the chassis, secure the chassis.

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Danger   Do not permanently locate the equipment on the dolly. Safely store the dolly after use. Statement 357

Securing the Chassis

This section presents these topics:

- Site Preparation
- Bolt Hole Templates
- Securing the Chassis To the Floor

Site Preparation

Before moving the chassis into place and securing it, you must make sure that your site is prepared. Because of its size and weight issues, the chassis must be securely bolted to the floor. Several possible bolting configurations exist for the chassis, including using the optional alternate chassis floor-mounting kit. Bolt hole templates are provided for the various securing options.

For complete details on preparing your site for the chassis, see Cisco CRS Carrier Routing System Fabric Card Chassis Site Planning Guide .

Bolt Hole Templates

Cisco provides two bolt hole layout templates to help you determine where to install the system:

- An aluminum plate template (CRS-LCC-DRILLTEMP(=)) shows the chassis footprint and the pattern of holes that must be drilled into the floor for the mounting brackets that secure the chassis to the floor.
- A mylar template (CRS-LCC-FLOORTEMP(=)) shows the chassis footprint, door swings, and required clearances to remove and replace chassis components. You can use this template to plan the aisle space required for the installation and maintenance of a line card chassis.

Complete information about the templates and floor plans, clearance information, and planning for future space needs, is included in Cisco CRS Carrier Routing System Fabric Card Chassis Site Planning Guide .

Securing the Chassis To the Floor

This section describes how to secure the Cisco CRS FCC to a concrete floor. The chassis is shipped with a drill hole template (CRS-LCC-DRILLTEMP(=)) to assist you in putting the bolts in the proper position on the floor. The template is used for both raised floors and slabs. The drill hole template identifies primary, secondary and alternate mounting locations for securing the chassis to the floor. Whenever possible, use the:

- Primary mounting locations
- Second and alternate locations only when the primary locations are not available

If alternate mounting locations are used, an alternate chassis mounting kit (CRS-FCC-ALTMNT) (orderable from Cisco) needs to be installed on the chassis

The instructions in this section are specific to securing the chassis to a concrete floor. The instructions for securing the chassis to a raised floor vary from site to site, depending on such details as whether your floor needs additional support (as local practice applies for raised floors), where (depending on the location of the floor tiles) the bolt holes need to be and so on. Work with your facilities representative to determine your needs for your particular site.

Prerequisites

Identify chassis location before performing this task.

Required Tools and Equipment

You need the following parts to perform this task:

- 3/8-in. ratchet wrench
- Set of standard and metric sockets
- Drill and bits for masonry and wood

✎

| Note | The full list of tools depends on the anchor bolt kit you use. See the documentation for your anchor bolt kit for details. |

Steps

SUMMARY STEPS

1. Using the drill hole template, drill pilot holes into the floor at the identified locations.
2. Refer to your mounting kit instructions for anchoring hardware to the floor. Remove the drill hole template, and drill the indicated anchor bolt holes into the floor at the pilot hole locations.
3. Carefully move the chassis into place over the bolt holes. See the Moving the Chassis for details on moving the chassis with the dolly.
4. Lock the dolly caster antirotation and brake systems.
5. With a person on each side of the chassis, turn all four lifting cranks of the dolly counterclockwise slowly to lower the chassis to the floor.
6. Remove the dolly from the chassis.
7. Insert all anchor bolts.
8. Tighten all bolts and nuts.
9. Replace corner brackets on the chassis.

DETAILED STEPS

Step 1   Using the drill hole template, drill pilot holes into the floor at the identified locations.

Step 2   Refer to your mounting kit instructions for anchoring hardware to the floor. Remove the drill hole template, and drill the indicated anchor bolt holes into the floor at the pilot hole locations.

Step 3   Carefully move the chassis into place over the bolt holes. See the Moving the Chassis for details on moving the chassis with the dolly.

| Note | Where side clearance is not enough to use the dolly, you must first lower the chassis to the floor and then slide it into place. |

Step 4   Lock the dolly caster antirotation and brake systems.

Step 5   With a person on each side of the chassis, turn all four lifting cranks of the dolly counterclockwise slowly to lower the chassis to the floor.

| Note | The dolly has four separate lifting cranks, each of which works independently when lifting or lowering the chassis. It is best to turn the lifting cranks simultaneously when lifting the chassis so as to not put undue stress on the chassis frame or dolly and reduce the risk of tipping. |

Step 6   Remove the dolly from the chassis.

Step 7   Insert all anchor bolts.

Step 8   Tighten all bolts and nuts.

Step 9   Replace corner brackets on the chassis.

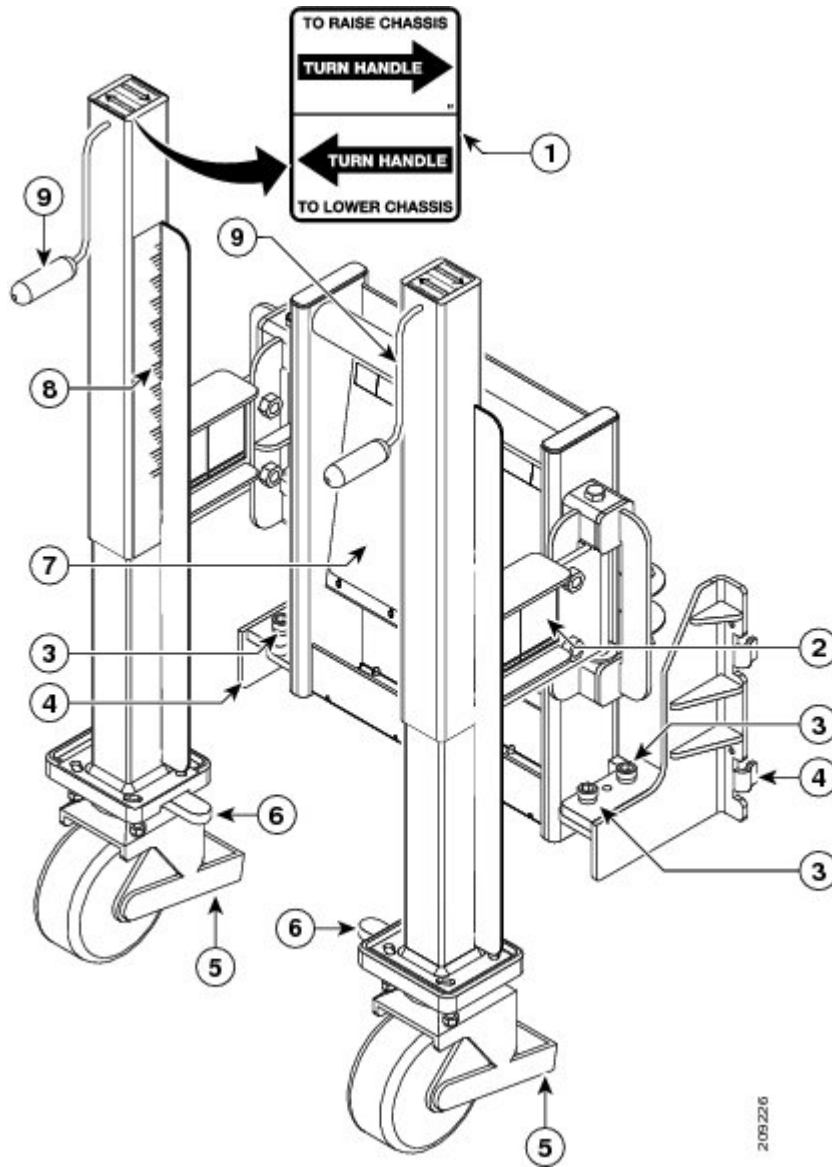# Modifying the Dolly Configuration to Move the Chassis

This section describes how to modify the dolly from one configuration to another if your site requires it. The dolly can be configured in either the 180-degree or 90-degree position, depending on the needs of your site. For further information on the two configurations, see the Dolly Specifications. See the Cisco Dolly and Chassis Moving Guidelines section for important recommendations before modifying the dolly configuration.

When changing the configuration of the dolly wheel assemblies (from 180 to 90 degrees or conversely) , follow these guidelines:

- Lower the chassis to the floor before you change configurations.
- Unlock the brake or antirotation on the casters only when you are ready to actually change the configuration (move the lift swing arm bracket). When you are preparing to change the configuration (remove bolts), make sure that the brakes and antirotation pin are in the locked position.
- Change the dolly configuration one caster at a time. Take your time and do not rush through the process.
- Make sure that the bolts are secured after you have completed changing the configuration.

Figure 22: Chassis Dolly—90-Degree Position shows the dolly with FCC lift brackets and its components in the 90-degree position.

Figure 22: Chassis Dolly—90-Degree Position

1	Dolly handle label	6	Caster antirotation pins
2	Swing component for dolly (used to change the dolly configuration)	7	Label showing how to attach dolly to chassis
3	Lift bracket bolts	8	Move height calibration label
4	Lift brackets	9	Lifting cranks
5	Brakes		

Prerequisites

Before performing this task, make certain that the chassis and pallet are on the floor.

Required Tools and Equipment

You need a 3/8-in. ratchet wrench with 12-mm hex bit (provided by Cisco) to perform this task.

Steps

To change the dolly configuration from the 90-degree configuration to the 180-degree transport configuration, follow these steps:

SUMMARY STEPS

1. Set the caster wheel rotation using the caster antirotation pin. Turn the antirotation pin to a vertical position to lock the caster. See #con_150081/fig_150102.
2. Lock the brakes. Depress the brakes (#con_150081/fig_150102) on each side of the dolly.
3. Using the handles, turn the dolly lifting cranks to raise or lower the dolly according to the label rotation direction (see #task_87167/fig_164936). Turn the lifting cranks until the dolly casters are just off the floor.
4. Unlock the dolly caster brakes and antirotation pins.
5. On the dolly unit attached to the front fabric card side of the chassis, use the wrench to remove the two holding bolts on the left side lift arm swing bracket.
6. Swing the lift arm swing bracket to the side as shown in Figure 23: Chassis Dolly—Removing Holding Bolts and Swinging Arm Out to 180-Degrees. Reinsert the holding bolts and partially tighten the bolts.
7. On the dolly unit attached to the front side of the fabric card chassis, use the 3/8-in. ratchet wrench with 12-mm hex bit (provided by Cisco) to remove the two holding bolts on the left side lift arm swing bracket to convert to the 180-degree configuration.
8. Repeat steps 5, 6 and 7 for the right side lift arm swing bracket. Figure 24: Chassis Dolly—180-Degree Position shows the dolly in the 180-degree position with FCC lift brackets.
9. Lock the dolly caster brakes and antirotation pins until you are ready to move the chassis.
10. Repeat steps 1 through 8 for the other dolly component.
11. Using the wrench, firmly tighten the holding bolts.

DETAILED STEPS

Step 1 Set the caster wheel rotation using the caster antirotation pin. Turn the antirotation pin to a vertical position to lock the caster. See #con_150081/fig_150102.

Step 2 Lock the brakes. Depress the brakes (#con_150081/fig_150102) on each side of the dolly.

Step 3 Using the handles, turn the dolly lifting cranks to raise or lower the dolly according to the label rotation direction (see #task_87167/fig_164936). Turn the lifting cranks until the dolly casters are just off the floor.

Step 4 Unlock the dolly caster brakes and antirotation pins.

Step 5 On the dolly unit attached to the front fabric card side of the chassis, use the wrench to remove the two holding bolts on the left side lift arm swing bracket.

Step 6 Swing the lift arm swing bracket to the side as shown in Figure 23: Chassis Dolly—Removing Holding Bolts and Swinging Arm Out to 180-Degrees. Reinsert the holding bolts and partially tighten the bolts.

Step 7   On the dolly unit attached to the front side of the fabric card chassis, use the 3/8-in. ratchet wrench with 12-mm hex bit (provided by Cisco) to remove the two holding bolts on the left side lift arm swing bracket to convert to the 180-degree configuration.
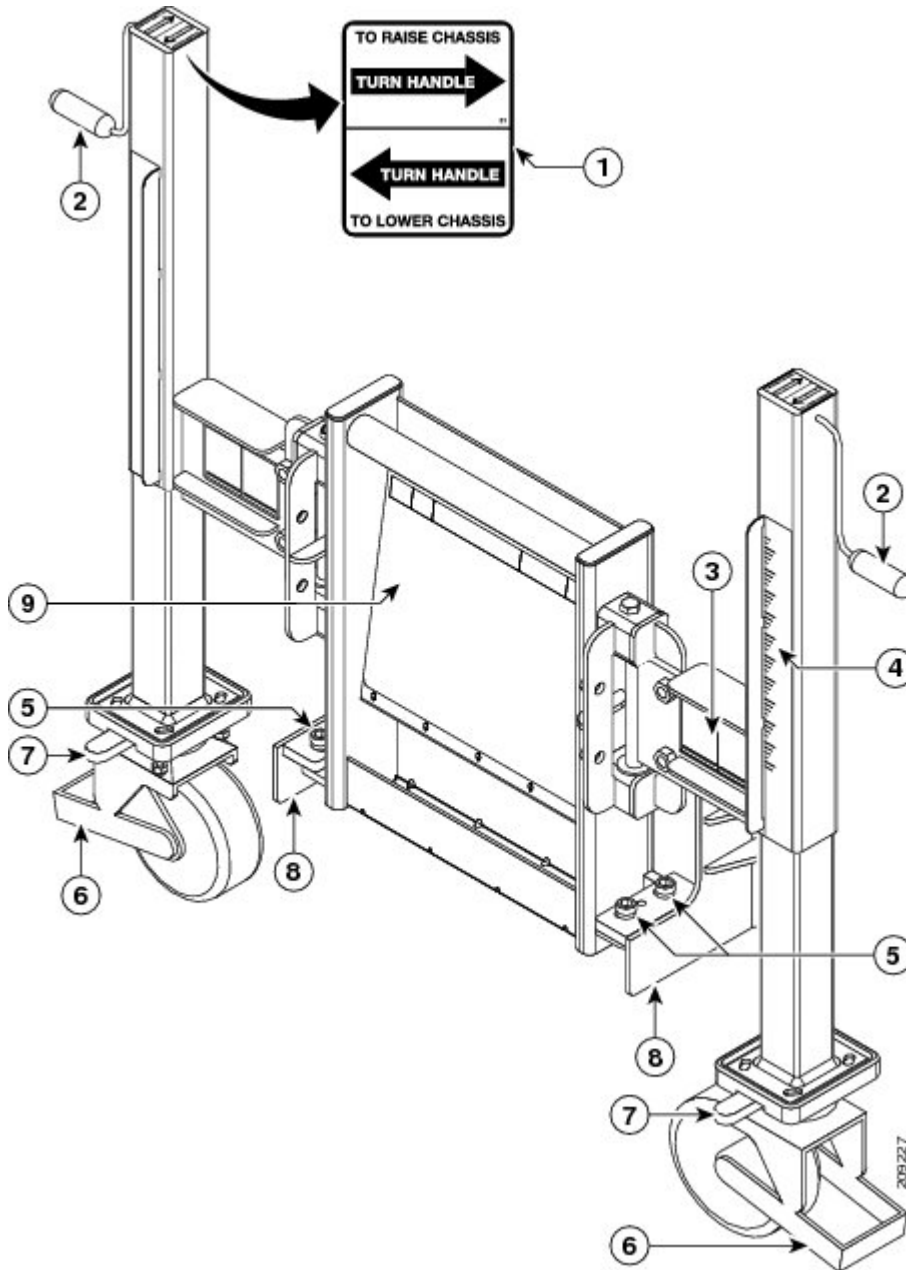
Figure 23: Chassis Dolly—Removing Holding Bolts and Swinging Arm Out to 180-Degrees
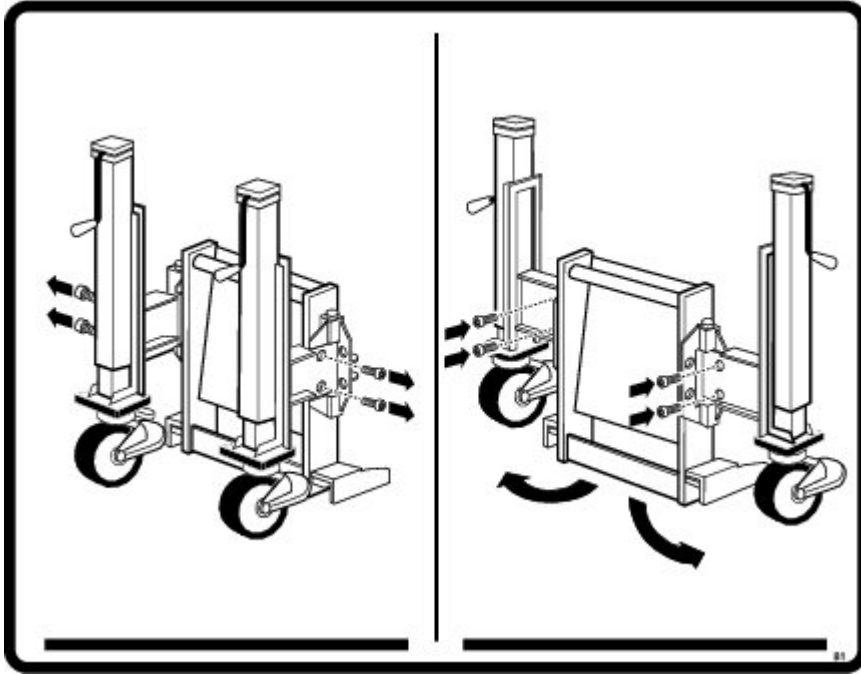
Step 8   Repeat steps 5, 6 and 7 for the right side lift arm swing bracket. Figure 24: Chassis Dolly—180-Degree Position shows the dolly in the 180-degree position with FCC lift brackets.

Figure 24: Chassis Dolly—180-Degree Position

1	Dolly handle label	6	Brakes
2	Lifting cranks	7	Caster antirotation pins
3	Swing component for dolly (used to change the dolly configuration)	8	Lift brackets
4	Move height calibration label	9	Label showing how to attach dolly to chassis
5	Lift bracket bolts		

Step 9   Lock the dolly caster brakes and antirotation pins until you are ready to move the chassis.

Step 10   Repeat steps 1 through 8 for the other dolly component.

Step 11   Using the wrench, firmly tighten the holding bolts.

> **Note**   To change the configuration back to the 90-degree configuration, repeat these steps and swing the arm into the 90-degree configuration position.

Installing the Alternate Chassis Floor-Mounting Kit

This section describes how to attach the alternate chassis floor mount kit (see Figure 25: Alternate Chassis Floor-Mounting Kit Blocks) to the FCC. The kit allows you to mount the chassis to the floor by providing offset holes for mounting. Primary and secondary bolt locations exist for securing the chassis to the floor. The drill template that is shipped with the chassis has two locations available for bolting the chassis the floor; the alternate chassis floor mount kit is needed if your site is such that you cannot bolt the chassis down at the primary or secondary location. See Cisco CRS Carrier Routing System Multishelf System Site Planning Guide for further details.

> **Note**   The alternate chassis floor mount kit is an orderable item. If you cannot use the primary or secondary mounting holes, then use the optional alternate chassis floor mount kit for an alternate set of mounting holes. Use this kit only if there is no other means to mount the chassis to the floor.
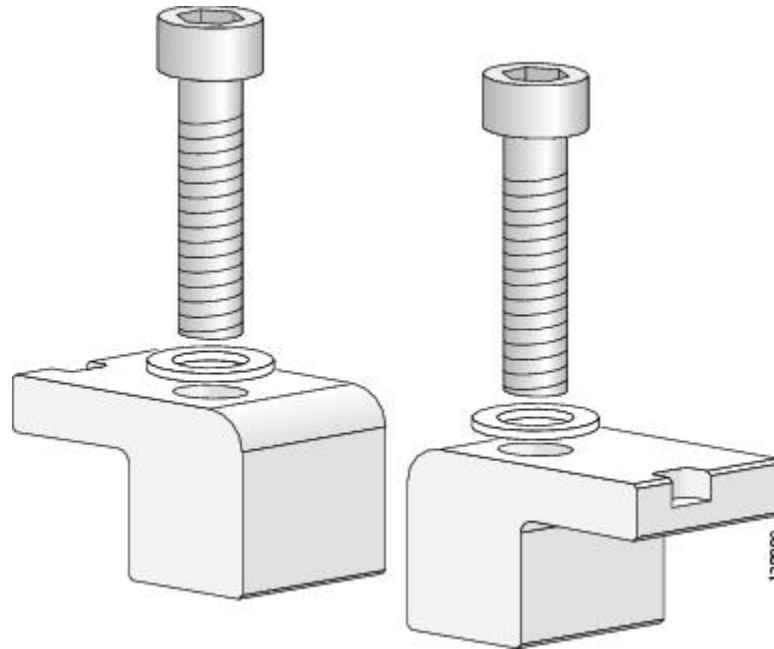
> **Note**   The front fabric cards and rear (OIM) side alternate chassis floor mount kit blocks are both installed from the front fabric card side of chassis.

Figure 25: Alternate Chassis Floor-Mounting Kit Blocks

Prerequisites

Before installing the alternate chassis floor mount kit, you must prepare the floor, unpack the chassis, move the chassis into position, and remove the lower fan tray. To remove a fan tray, see the Cisco CRS Carrier Routing System Fabric Card Chassis Installation Guide .

Required Tools and Equipment

You need these tools and part to perform this task:

- Drill hole template (Cisco product number CRS-LCC-DRILLTEMP(=)
- 12-mm Hex wrench
- Alternate chassis floor-mounting kit (Cisco product number CRS-FCC-ALTMNT(=)

Steps

To install an alternate chassis floor-mounting kit, follow these steps:

SUMMARY STEPS

1. Make sure that the lower fan tray has been removed.
2. Install the front fabric card side alternate chassis floor-mounting kit blocks (one for each side) as outlined in steps 3 and 4.
3. Insert the two alternate chassis floor-mounting bolt blocks (one for each side) into the front fabric card side of the chassis (see Figure 26: Inserting the Front Switch Fabric Card Side Alternate Chassis For-Mounting Bolt Blocks).
4. Insert the two 12-mm hex bolts (one for each bolt block) into the holes on the top of the alternate chassis floor-mounting bolt blocks, and use the 12-mm hex wrench to fully tighten the bolts to secure the bolt blocks to the chassis and the chassis to the floor.

5. Install the rear (OIM) side alternate chassis floor-mounting blocks (one for each side) as outlined in steps 6 and 7.
6. Insert the two alternate chassis floor-mounting bolt blocks (one for each side) into the rear (OIM) side of the interior of the chassis (see Figure 27: Inserting the Rear (OIM) Side Alternate Chassis Interior Floor Mounting Bolt Blocks).
7. Insert the two 12-mm hex bolts (one for each bolt block) into the holes on the top of the alternate chassis floor-mounting bolt blocks, and use the 12-mm hex wrench to fully tighten the bolts to secure the bolt blocks to the chassis and the chassis to the floor.

DETAILED STEPS

Step 1   Make sure that the lower fan tray has been removed.

Step 2   Install the front fabric card side alternate chassis floor-mounting kit blocks (one for each side) as outlined in steps 3 and 4.

Step 3   Insert the two alternate chassis floor-mounting bolt blocks (one for each side) into the front fabric card side of the chassis (see Figure 26: Inserting the Front Switch Fabric Card Side Alternate Chassis For-Mounting Bolt Blocks).

Figure 26: Inserting the Front Switch Fabric Card Side Alternate Chassis For-Mounting Bolt Blocks
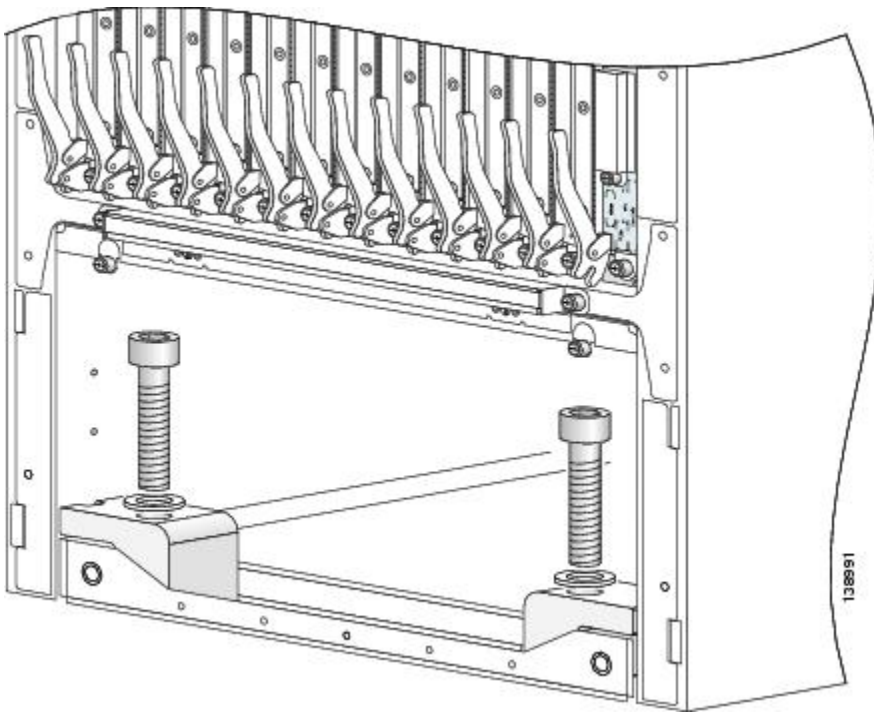
Step 4   Insert the two 12-mm hex bolts (one for each bolt block) into the holes on the top of the alternate chassis floor-mounting bolt blocks, and use the 12-mm hex wrench to fully tighten the bolts to secure the bolt blocks to the chassis and the chassis to the floor.

Note   The standard floor anchor bolt kit can also be used to secure the chassis to the floor.

Step 5   Install the rear (OIM) side alternate chassis floor-mounting blocks (one for each side) as outlined in steps 6 and 7.

Note   The rear (OIM) side alternate chassis floor-mounting blocks are installed in the rear of the interior of the chassis. You must access the alternate chassis floor-mounting kit block attachment location through the front switch fabric card side of the chassis.

Step 6   Insert the two alternate chassis floor-mounting bolt blocks (one for each side) into the rear (OIM) side of the interior of the chassis (see Figure 27: Inserting the Rear (OIM) Side Alternate Chassis Interior Floor Mounting Bolt Blocks).

Figure 27: Inserting the Rear (OIM) Side Alternate Chassis Interior Floor Mounting Bolt Blocks
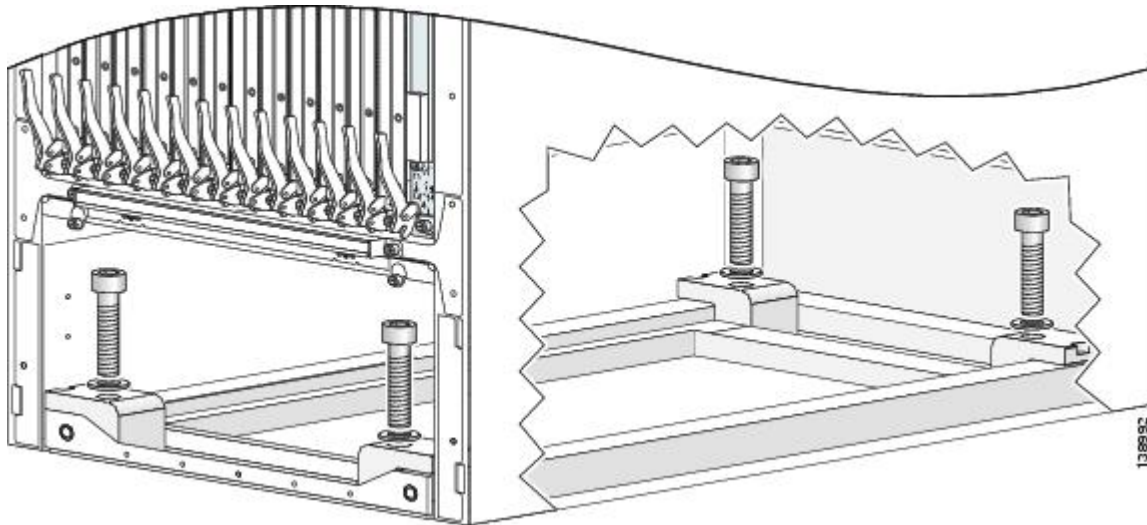
Step 7   Insert the two 12-mm hex bolts (one for each bolt block) into the holes on the top of the alternate chassis floor-mounting bolt blocks, and use the 12-mm hex wrench to fully tighten the bolts to secure the bolt blocks to the chassis and the chassis to the floor.

What to Do Next

After installing the alternate chassis floor-mounting kit and securing the chassis to the floor, you need to unpack and install all remaining chassis parts. See the Unpacking the Other Pallets for unpacking information and Cisco CRS Carrier Routing System Fabric Card Chassis Installation Guide to locate the installation instructions for the individual parts.

Unpacking the Other Pallets

This section describes how to unpack the primary, secondary, power, and exterior cosmetic component pallets for the FCC.

Prerequisites

No prerequisites exist for this task.

Required Tools and Equipment

You need these tools to perform this task:

- Antistatic mat
- Phillips #2 screwdriver

• A pair of scissors

Steps

To unpack the pallets, follow these steps:

SUMMARY STEPS

1. If possible, move the pallets to the same location as the unpacked and secured chassis. If that is not possible, move the individual boxes containing the various components to the chassis location.
2. Use the pair of scissors to cut the straps that hold the packages to the pallet.
3. Unpack all primary pallet parts from the packaging, and set the parts carefully aside on the antistatic mat for installation.
4. Unpack all secondary pallet parts from the packaging, and set the parts carefully aside on the antistatic mat for installation.
5. Unpack all power components from the packaging, and set the components carefully aside.
6. Unpack exterior cosmetic components from the packaging, and set the components carefully aside on an ESD-immune surface for installation.

DETAILED STEPS

Step 1 If possible, move the pallets to the same location as the unpacked and secured chassis. If that is not possible, move the individual boxes containing the various components to the chassis location.

> **Note** All components are packaged separately. Cards are attached and installed on a wooden board insert held in place by captive Phillips screws.

Step 2 Use the pair of scissors to cut the straps that hold the packages to the pallet.

Step 3 Unpack all primary pallet parts from the packaging, and set the parts carefully aside on the antistatic mat for installation.

> **Note** We recommend that you unpack and install components in only a sterile environment or clean room. If this is not practical, be sure to take appropriate precautions for the sensitive optical components that are shipped with the chassis.

Step 4 Unpack all secondary pallet parts from the packaging, and set the parts carefully aside on the antistatic mat for installation.

> **Caution** Use the slide-assistance arm to slide cards from the card carrier. *Do not lift cards by the slide-assistance arm* ! Rotate cards onto their vertical axes, then lift them from the bottom, using the slide-assistance arm only as an aid for balance.

> **Caution** Optical components for some cards are packed in clean room bags; do not open them until you are ready to use them.

Step 5 Unpack all power components from the packaging, and set the components carefully aside.

Step 6 Unpack exterior cosmetic components from the packaging, and set the components carefully aside on an ESD-immune surface for installation.

> **Note** If any components need to be returned, they must be returned in their complete original packaging. Failure to do so may result in damage or loss of product.

Component Return Information

Before preparing to ship back the product or product components, you must contact Cisco technical support and provide them with the details of your difficulty. Technical support needs to confirm your product or component failure prior to assigning a RMA number for return shipment. For additional information, see the Obtaining Documentation and Submitting a Service Request.

To facilitate your conversation with technical support, locate and note the serial number for the chassis. The serial number label for the FCC is located on the rear (OIM) side of the FCC (see Figure 28: Switch Fabric Card Chassis Serial Number Location).

Figure 28: Switch Fabric Card Chassis Serial Number Location
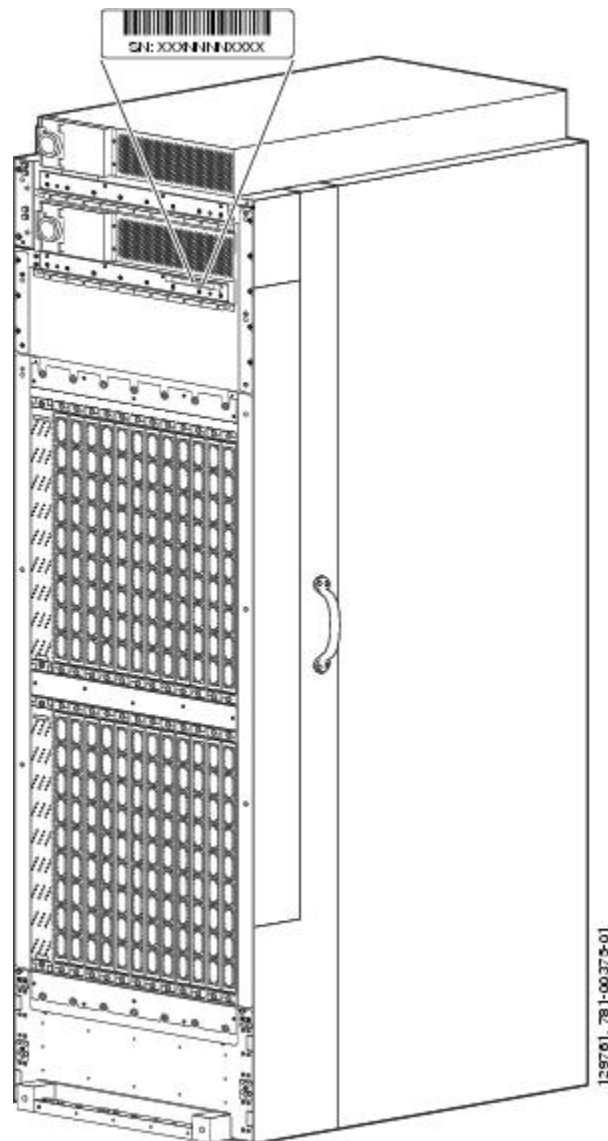
Printed in the USA on recycled paper containing 10% postconsumer waste.