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Cisco Network Convergence System 6000 Series Routers Unpacking, Moving, and Securing Guide

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Preface

This document provides instructions for unpacking a Cisco NCS 6000 Series chassis and its components, attaching a dolly, moving the chassis, and securing the chassis to the floor.

The Cisco NCS 6008 Line Card Chassis (LCC) and the Cisco NCS 6000 Fabric Card Chassis (FCC) are products in the Cisco Network Convergence System 6000 Series family. The companion document to this guide is the *Cisco Network Convergence System 6000 Series Routers Site Planning Guide* that describes how to plan and prepare your site facilities for chassis installation.

Audience

This guide is written for hardware installers and system administrators of Cisco routers.

This publication assumes that the user has a substantial background in installing and configuring router and switch-based hardware. The reader should also be familiar with electronic circuitry and wiring practices, and have experience as an electronic or electromechanical technician.

Documentation Conventions

This document uses the following conventions:

Convention	Description
bold font	Commands and keywords and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.

Convention	Description
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
	Indicates a variable for which you supply values, in context where italics cannot be used.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note   *Means reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Tip   *Means the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Caution   *Means reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Warning   IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

⚠ **Warning** Statements using this symbol are provided for additional information and to comply with regulatory and customer requirements.

Related Documentation

For complete planning, installation, and configuration information, see the following documents that are available on Cisco.com at the following URL:

http://www.cisco.com/c/en/us/support/routers/network-convergence-system-6000-series-router/products-installation-guides-list.html.

- *Cisco Network Convergence System 6000 Series Routers Site Planning Guide*

- *Cisco Network Convergence System 6000 Series Routers Hardware Installation Guide*

- *Cisco Network Convergence System 6000 Fabric Card Chassis Hardware Installation Guide*

- *Regulatory Compliance and Safety Information for the Cisco Network Convergence System 6000 Series Routers*

Changes to This Document

This table lists the technical changes made to this document since it was first created.

Table 1: Changes to This Document

Date	Summary
September 2013	Initial release of this document. This document introduces the Cisco NCS 6008 8-Slot Line Card Chassis.
January 2014	Minor changes to packaging instructions.
July 2014	This release introduces Cisco NCS 6000 Fabric Card Chassis to this document.

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.

C H A P T E R 1

Overview

This chapter provides an overview of the Cisco NCS 6000 Series Routers. The Cisco NCS 6000 Series Routers include the Cisco NCS 6008 Line Chassis (LCC) and the Cisco NCS 6000 Fabric Card Chassis (FCC). Read the information in this chapter before you unpack and transport the chassis to the final installation location.

Chassis Packaging

Depending on the number of options that you ordered, the Cisco NCS 6000 Series chassis arrives packaged in several shipping crates and pallets. The 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.

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

Note The following list is only a sample of what a Cisco NCS 6000 shipment contains. For complete details on the contents of each pallet, see the shipping and parts identification label on the pallet or the shipping manifest.

- **Dolly pallet:** Contains two dolly units in the 90-degree position (Figure 3: Removing the Chassis Dolly Shipping Container).

- **Chassis pallet:** Contains the chassis itself encased in a polyethylene bag and covered with a wooden packing crate held together with metal brackets. The chassis is the first shipping box to be unpacked and transported to its final installation location.

The drill hole template (Cisco product ID NC6-DRILLTEMP) is attached to the inside of the shipping crate door. The drill hole template is the same for both the LCC and FCC.

- **Power components pallet:** Contains the power components, including the Power Modules (PMs). For the FCC, a separate box ships that contains a power supply enclosure that includes the power trays and the PCMs.

- **Primary card pallet:** Contains the fabric cards, line cards, and route processor cards. The FCC pallet contains only fabric cards.

- **Cosmetics pallet:** Contains the default cosmetic components for the exterior of the chassis. This pallet will also contain any optional cosmetic components for the exterior of the chassis, if ordered.

Chassis Specifications

The following table lists the physical specifications (dimensions and weight) for the Cisco NCS 6000 Series Routers (as shipped and as installed without packaging).

Table 2: Cisco NCS 6000 Series Chassis Specifications

	Cisco NCS 6008 Line Card Chassis	Cisco NCS 6000 Fabric Card Chassis
Physical Dimensions (Without Packaging)		
Height	81.0 in. (205.7 cm) as shipped 84.0 in. (213.4 cm) as installed with the "top cap" (The top cap in the cosmetics package attaches to the top of the chassis)	76.60 in. (205.7 cm) as shipped 84.0 in. (213.4 cm) as installed with the power shelf The FCC does not have a top cap.
Width	23.6 in. (59.9 cm)	23.6 in. (59.9 cm)
Depth	39.0 in. (99.1 cm) without doors and other cosmetics 42.0 in. (106.7 cm) with front and rear doors and standard vertical cable troughs	39.0 in. (99.1 cm) without exterior cosmetics 42.0 in. (106.7 cm) with front and rear doors and standard vertical cable troughs
Aisle Spacing	To install the LCC (front): 48 in. (122 cm) To service FRUs (front): 31.7 in. (80.5 cm) To service FRUs (rear): 14.0 in. (35.6 cm)	To install the FCC (front): 48 in. (122 cm) To service FRUs (front): 31.7 in. (80.5 cm) To service FRUs (rear): 14.0 in. (35.6 cm)
Weight (Without Packaging)		
	775 lb (352 kg) chassis as shipped 1025 lb (466 kg) chassis in shipping crate with pallet 1450 lb (658 kg) chassis fully loaded with power, fan trays, cards, and cosmetics	708 lb (321 kg) chassis as shipped 925 lb (420 kg) chassis in shipping crate with pallet 1130 lb (513 kg) chassis fully loaded with power, fan trays, cards, and cosmetics

Safety Guidelines

⚠

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

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

✎

Note   Before installing, configuring, or troubleshooting any installed card, review the safety warnings listed in the Regulatory Compliance and Safety Information for the Cisco Network Convergence System 6000 Series Routers.

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 chassis components away from walk areas.

- Do not wear loose clothing, jewelry, and other items that could get caught in the chassis while working with the chassis and its associated components.

- Use Cisco equipment in accordance with its specifications and product-usage instructions.

- Do not work alone if potentially hazardous conditions exist.

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 use of an ESD-preventive strap whenever you handle network equipment or one of its components.

Follow 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 jack or 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 removed card board 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 ESD damage.

Site Preparation

Before moving the chassis into place and securing it, you must make sure that your site is prepared. Verify that the securing location provides the recommended space and ensure that you have enough space available for installation and maintenance of the chassis and its components.

For additional details on making your site ready for the chassis, see the Cisco Network Convergence System 6000 Series Routers Site Planning Guide .

System Installation Templates

Because of its size and weight, the chassis must be securely bolted to the floor. Cisco provides a drill hole template (Figure 1: Drill Hole Template for the Cisco NCS 6000 Series Chassis) that ships attached to the inside of the crate door. This template identifies the chassis footprint and the pattern of holes that must be drilled into the floor for the mounting hardware that secures the chassis to the floor. This drill template is used for both the LCC and FCC.

For more information about floor plans, clearance information, and planning for future space needs, see the Cisco Network Convergence System 6000 Series Routers Site Planning Guide.

Figure 1: Drill Hole Template for the Cisco NCS 6000 Series Chassis
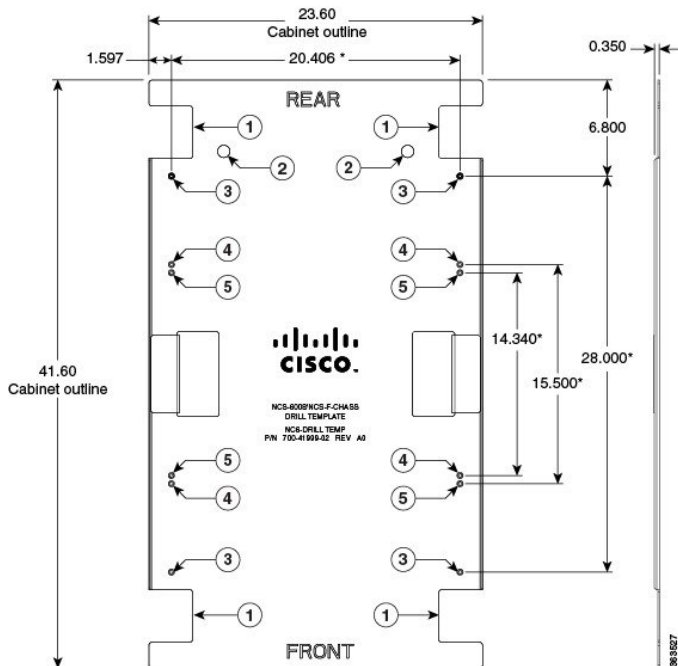
1	Cable pass though	4	Secondary LCC mount locations
2	Cable pass through for chassis ground	5	Secondary FCC mount locations

3	Primary LCC/FCC mount locations (preferred location)		

Dolly Specifications

The optional dolly that is available for the Cisco NCS 6000 Series chassis is flexible enough to meet several challenges common when first positioning a chassis of this size and weight. Such challenges 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 the following configurations:

- The 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 (Figure 5: Chassis Dolly—90-Degree Configuration) to move the chassis off the pallet. Take extra care when using this configuration so that the chassis does not tip too far and fall during transport.

- This 180-degree configuration — This configuration is a more stable configuration for transporting the chassis. We recommend using the 180-degree configuration (Figure 6: Chassis Dolly—180-Degree Configuration) for moving the chassis, although both configurations are acceptable to transport the as-shipped chassis.

Note The optional Cisco NCS 6000 Series Routers lift dolly is available from Cisco (PID NCS-LIFT). If you already have a CRS lift dolly, you can order PID NCS-LIFT-BRKT, which is the CRS lift upgrade to the NCS lift dolly.

The following table lists the specifications for the Cisco NCS 6000 Series chassis lift dolly.

Table 3: Cisco NCS 6000 Series Lift Dolly Specifications

Specification	Value
Weight (each component)	126.0 lb (57 kg)
Maximum recommended safe curb height	1.5 in. (3.8 cm)

Unpacking the Dolly

We recommend that you use a dolly to move the chassis. The dolly is an optional item that you can order from Cisco. The shipping crate contains the dolly units, positioned in the 90-degree configuration (Figure 3: Removing the Chassis Dolly Shipping Container). This section describes how to unpack and position the dolly units.

Note   If the dolly supplied by Cisco is not the appropriate method of transportation, contact Cisco support to determine a method of transportation appropriate for your site. Ensure that the alternate moving device is capable of supporting the weight of the chassis, moving the chassis safely, and preventing the chassis from tipping too far and falling during transport.

Required Tools and Equipment

- 3/8-inch ratchet wrench
- 5/8-inch socket
- Flat-blade screwdriver

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   Use the flat-blade screwdriver to remove the clip from the dolly shipping crate.

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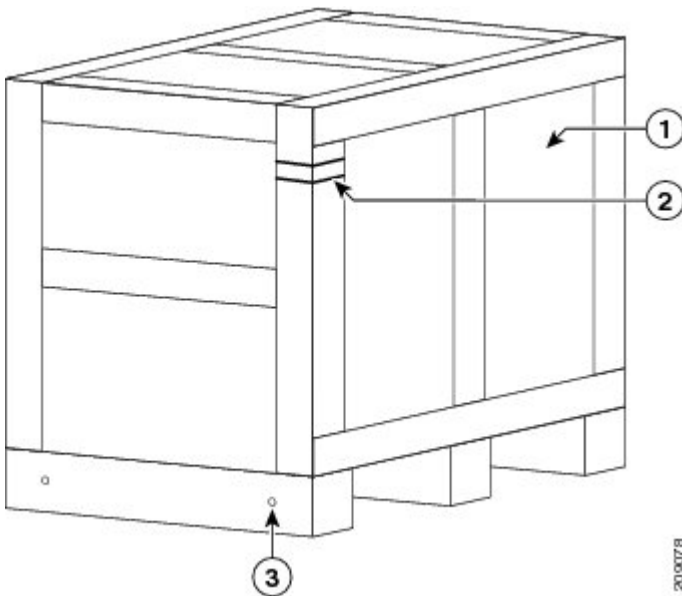
1	Side panel to be removed	3	Location of shipping pallet holding bolts (two bolts on each side)
2	Clip		

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

Step 4   Using the 3/8-inch ratchet wrench with 5/8-inch socket, remove the two holding bolts from each side at the base of the dolly pallet (Figure 2: Chassis Dolly Shipping Container).

Step 5   With at least two people, one on each side of the dolly shipping crate, tilt the crate back and lift off the pallet.

Figure 3: Removing the Chassis Dolly Shipping Container
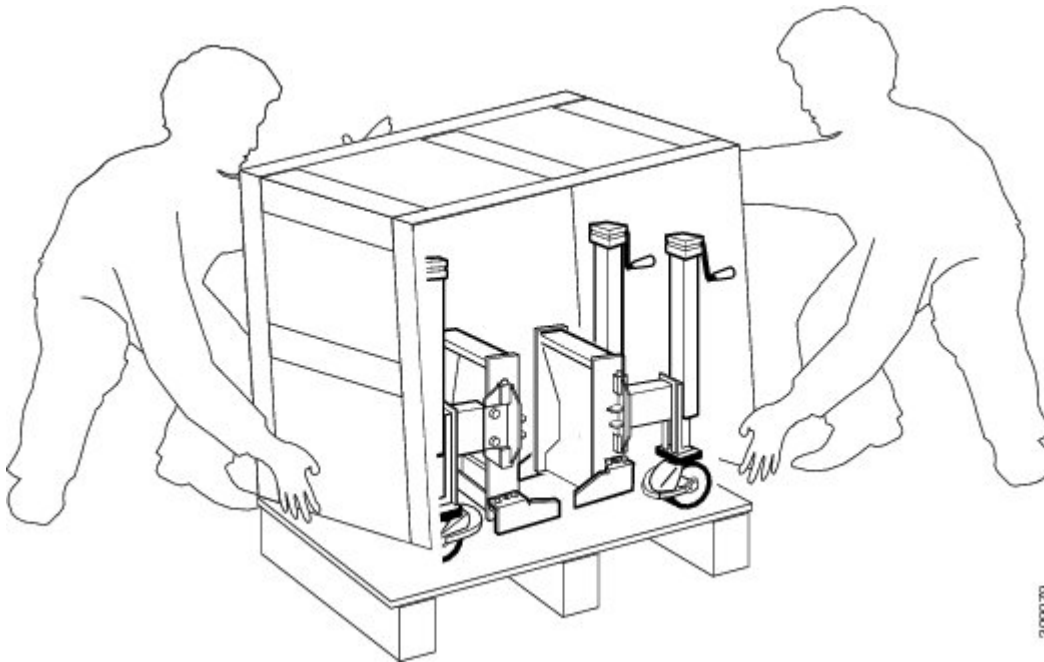
Step 6   Using the 3/8-inch ratchet wrench with 5/8-inch socket, remove the two bolts and the dolly stopper.

Figure 4: Position of Dolly Shipping Stopper—One Dolly Unit
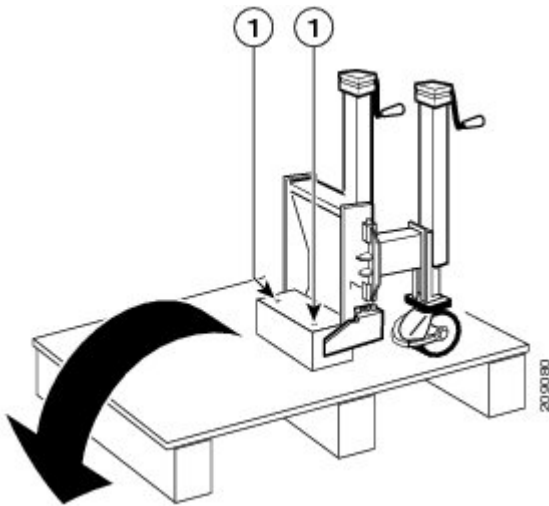
1	Each dolly stopper has two holding bolts. Note that the above figure shows only one dolly unit. The other has been removed.

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

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

The following figure shows the dolly 90-degree configuration labels and components.

Figure 5: Chassis Dolly—90-Degree Configuration
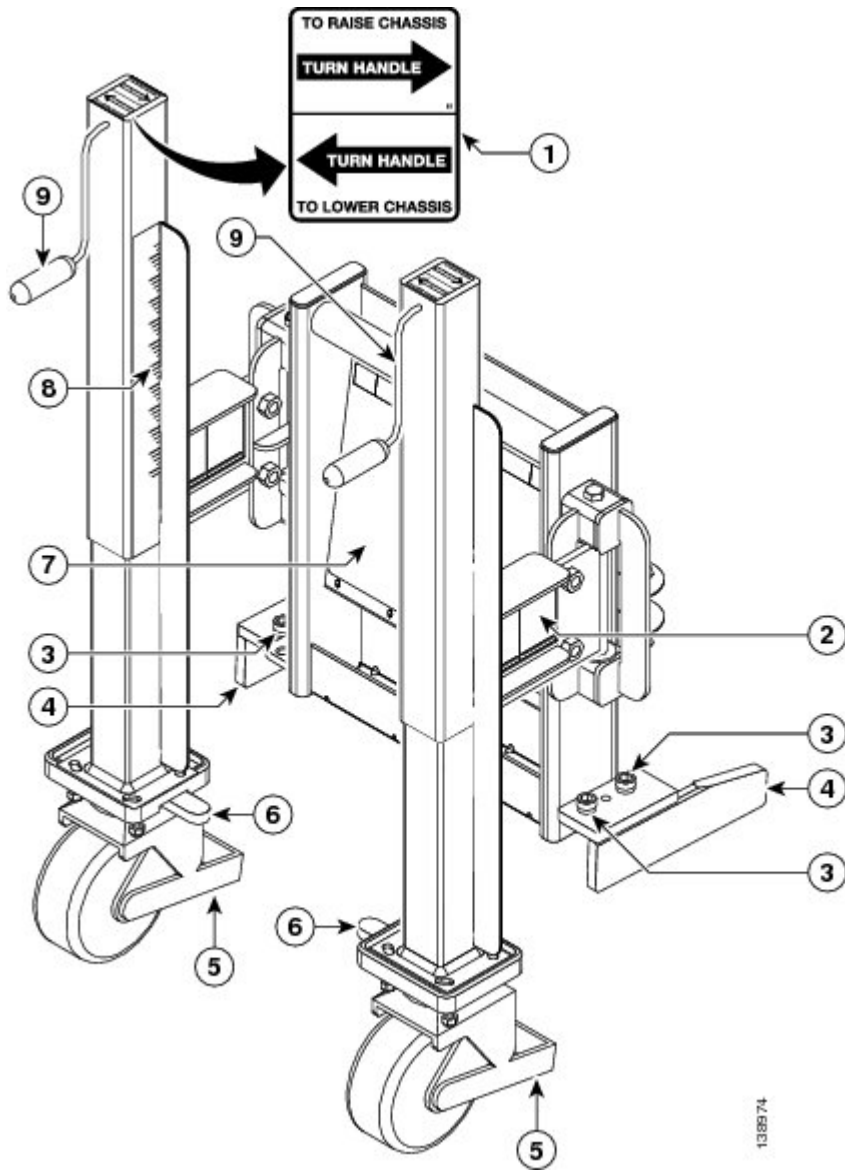
1	Dolly handle label	6	Caster anti-rotation pins
2	Swing component for dolly (used to change the dolly configuration)	7	Label showing how to attach dolly to chassis
3	Lift bracket bolts	8	Move height calibration label
4	Lift brackets	9	Lifting cranks

5	Brakes		

The following figure shows the dolly 180-degree configuration. Both dolly units are identical.

Figure 6: Chassis Dolly—180-Degree Configuration
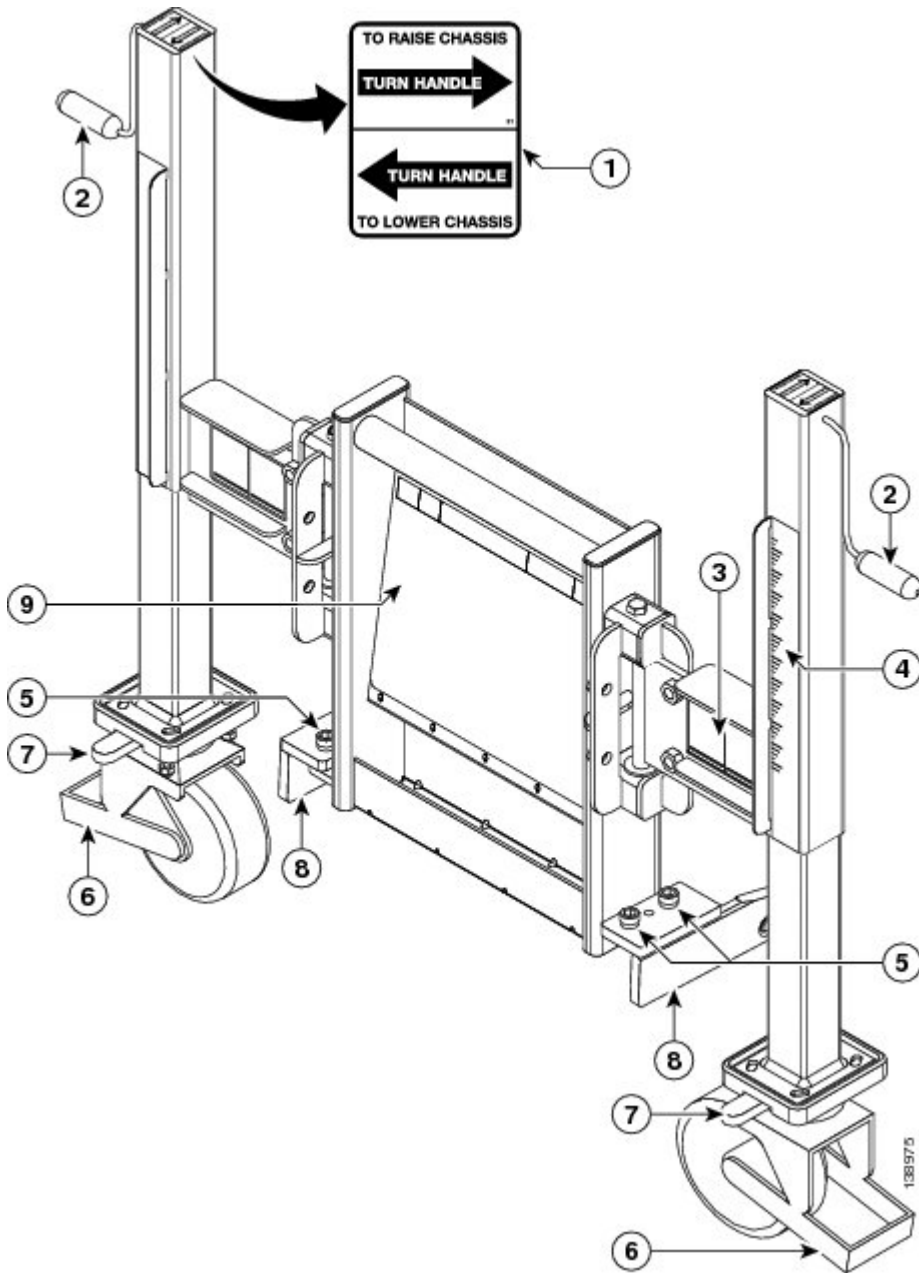
1	Dolly handle label	6	Brakes

2	Lifting cranks	7	Caster anti-rotation 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		

Modifying the Dolly Configuration

The dolly can be positioned in either the 180-degree or 90-degree configuration, depending on the needs of your site. See the Guidelines , on page 31 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.

- Keep the casters on the floor at all times when you are changing the dolly configuration from one position to the other.

- Unlock the brake or anti-rotation 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 anti-rotation 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.

Required Tools and Equipment

- 3/8-inch ratchet wrench
- 12-mm hex bit

Steps

To change the dolly configuration from the as-shipped 90-degree configuration to the 180-degree transport configuration, perform the following steps.

Step 1 Set the caster wheel rotation using the caster anti-rotation pin. Turn the anti-rotation pin to a vertical position to lock the caster (Figure 5: Chassis Dolly—90-Degree Configuration , callout 2).

Step 2 To lock the brakes depress the brakes on each side of the dolly.

Step 3 Using the handles (Figure 5: Chassis Dolly—90-Degree Configuration , callout 9), turn the dolly lifting cranks to raise or lower the dolly according to the label rotation direction. Turn the lifting cranks until the dolly casters are just off the floor.

Step 4 Unlock the dolly caster brakes and anti-rotation pins on both units.

Step 5 On the dolly unit attached to the front side of the chassis, use the 3/8-inch ratchet wrench with 12-mm hex bit to remove the two holding bolts on the left side lift arm swing bracket to convert to the 180-degree configuration.

Figure 7: Chassis Dolly—Removing Holding Bolts and Swinging Arm Out to 180 Degrees
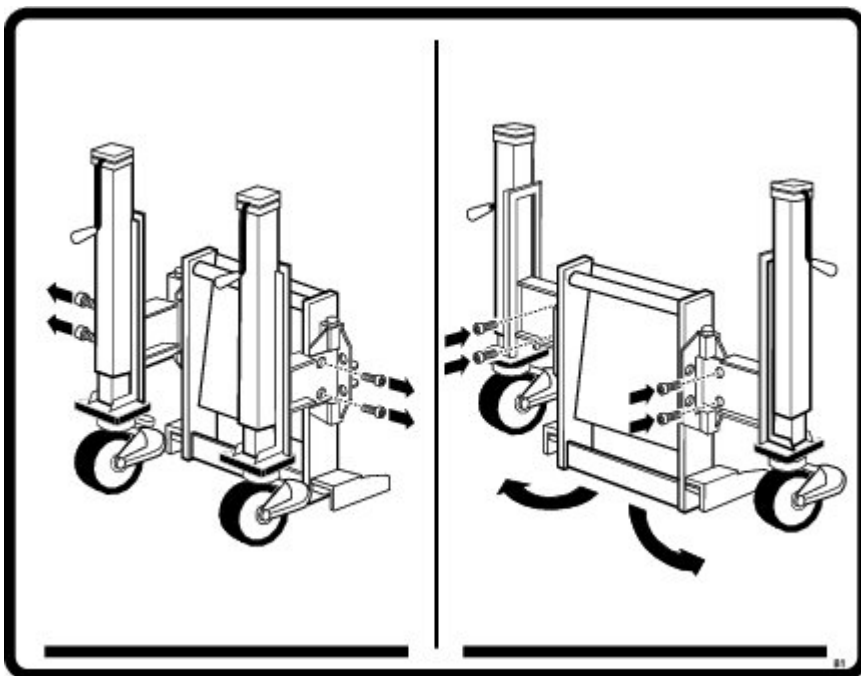
Step 6 Swing the lift arm swing bracket to the side (180-degree position as shown in the above figure). Reinsert the holding bolts and partially tighten the bolts.

Step 7 Repeat Step 1 through Step 6 for the other dolly unit. Figure 6: Chassis Dolly—180-Degree Configuration shows the dolly in a 180-degree configuration.

Step 8 Lock the dolly caster brakes and anti-rotation pins until you are ready to move the chassis.

Step 9 Using the 3/8-inch ratchet wrench with 12-mm hex bit, firmly tighten the holding bolts on both dolly units.

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

C H A P T E R **2**

Unpacking the Chassis

This chapter describes how to unpack the chassis from its shipping crate and attach a dolly before moving the chassis to its mounting location.

Unpacking the Cisco NCS 6000 Series Chassis

The Cisco NCS 6000 Series chassis is shipped on a pallet by itself in a plywood box.

Unpack the chassis and chassis components in the following order:

- Chassis
- Power system
- Exterior cosmetic components
- Cards

Note Unpack the chassis and dolly lifting device before all other component shipping boxes. Leave all other component shipping boxes in the receiving area or in an area, as space allows, at your site, until the chassis is secured in its final location.

The following table lists the physical characteristics of the Cisco NCS 6000 Series chassis shipping crate.

Table 4: Shipping Crate and Pallet Weight and Dimensions

Weight (estimated maximum)	LCC: • 775 lb (352 kg) chassis as shipped • 1025 lb (465 kg) shipping crate with pallet • 1450 lb (658 kg) chassis fully loaded with power, fan trays, cards, and cosmetics FCC: • 708 lb (321 kg) chassis as shipped. • 925 lb (420 kg) shipping crate with pallet • 1130 lb (513 kg) chassis fully loaded with power, fan trays, cards, and cosmetics
Dimensions	Height: 88 in. (223.5 cm)
	Width: 40 in. (101.6 cm)
	Length: 48 in. (121.9 cm)

Required Tools and Equipment

- 3/8-inch ratchet wrench

- 9/16-inch socket

- Number-2 Phillips screwdriver

- Ladder or step platform

Steps

Step 1	Locate a large area to accommodate and remove the chassis crate.
Step 2	Open the four vertical latches on each side of the crate cover.
Step 3	Unscrew the four Phillips-head screws at the bottom of the large side panel.
Step 4	Unscrew the three Phillips-head screws on the bottom of each side of the plywood box.

Figure 8: Cisco NCS 6000 Series Chassis Crate
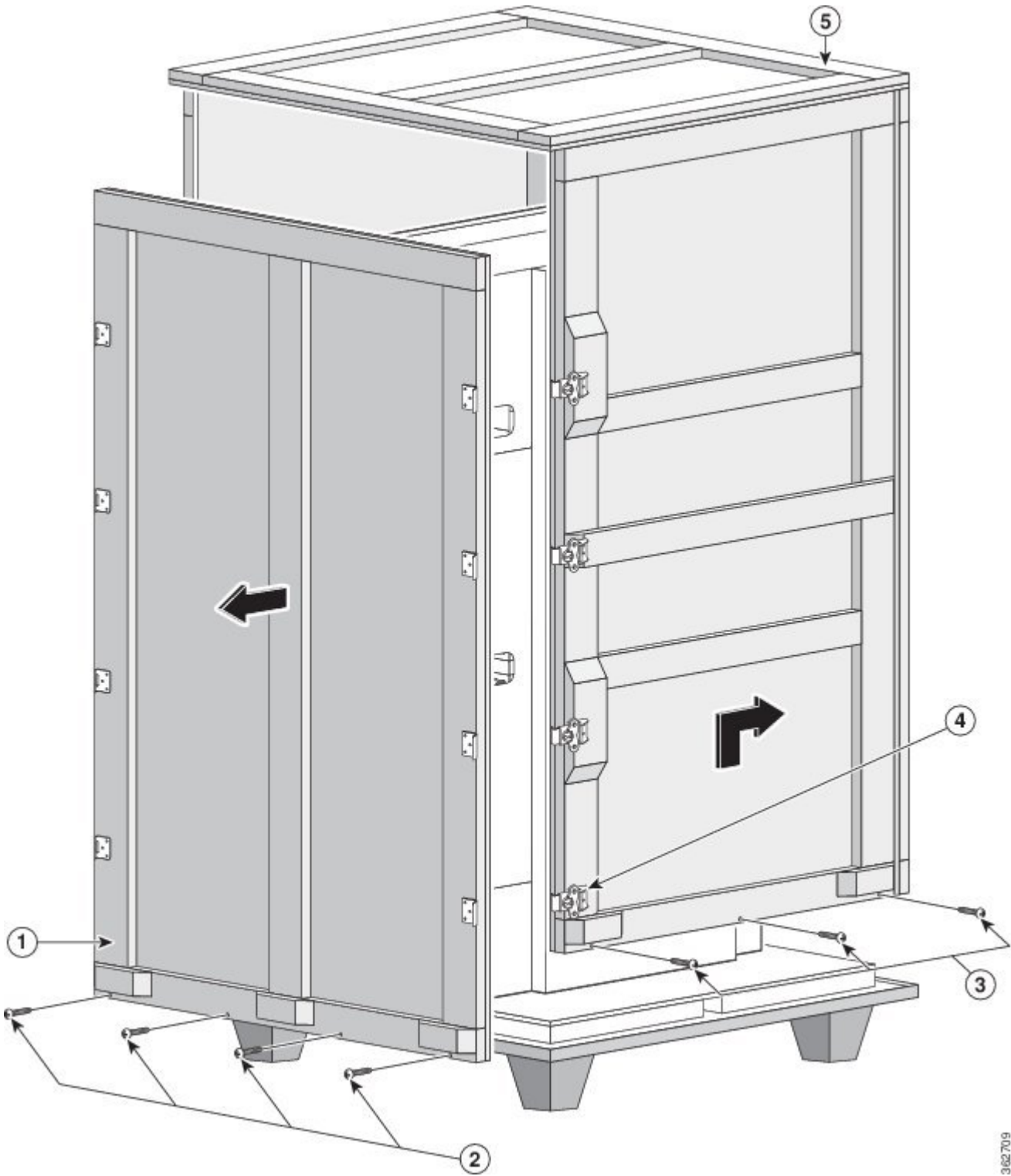
| 1 | Large side panel | 4 | Vertical lock latches (four on each side) |

2	Four Phillips-head screws	5	Three-sided plywood box
3	Phillips-head screws (three on each side of plywood box)		

The drill hole template is attached to the inside of the door.

Figure 9: Drill Hole Template Attached to Inside of Crate Door
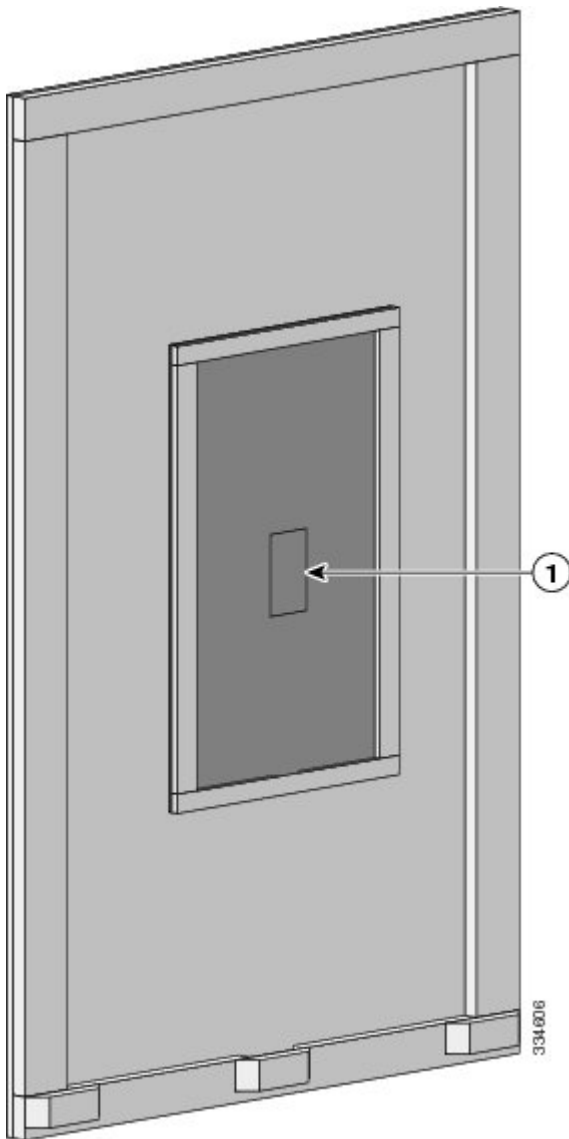
1	Drill hole template

Step 5   Remove the large side panel of the wooden enclosure and set it aside carefully.

      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. On most of the wooden enclosure, there should be rubber bands above the bottom lock latches to hold them up so that they do not get damaged when setting the enclosure down.

Step 6   Remove the remaining bottom screws on each side of the plywood box (Figure 8: Cisco NCS 6000 Series Chassis Crate).

Step 7   Using at least two people, one on each side of the box, lift and remove the three-sided box and place it aside.

Step 8   Remove the protective shipping bag from the chassis. Do not remove the bag until you are ready to move and install the chassis

The following figure shows the wooden box removed from the chassis and its protective bag.

Figure 10: Chassis Shipping Box Removed and Chassis Shipping Bag
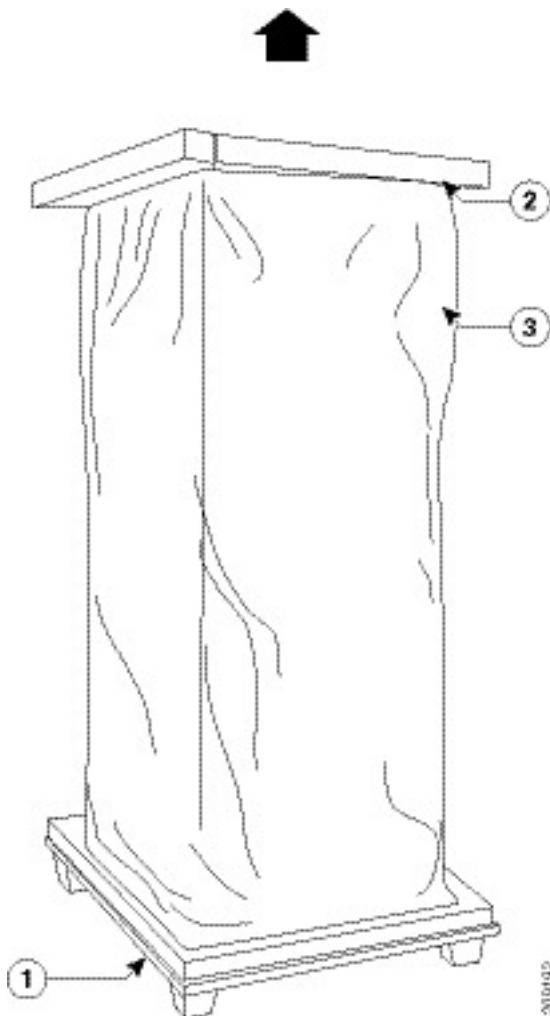
1	Chassis pallet	3	Protective bag over chassis

2	Top chassis shipping cover		

Attaching the Dolly to the Chassis and Removing the Chassis Pallet

This section describes how to attach the dolly to the Cisco NCS 6000 Series chassis to remove the chassis shipping pallet and prepare to move the chassis into place. Only the 90-degree dolly configuration is used to remove the chassis from the pallet.

The following figure shows the dolly instruction label on the inside component of the dolly. Refer to this figure when performing the steps to attach the dolly to the chassis in this section.

Figure 11: Attaching the Dolly to the Chassis—Instructions
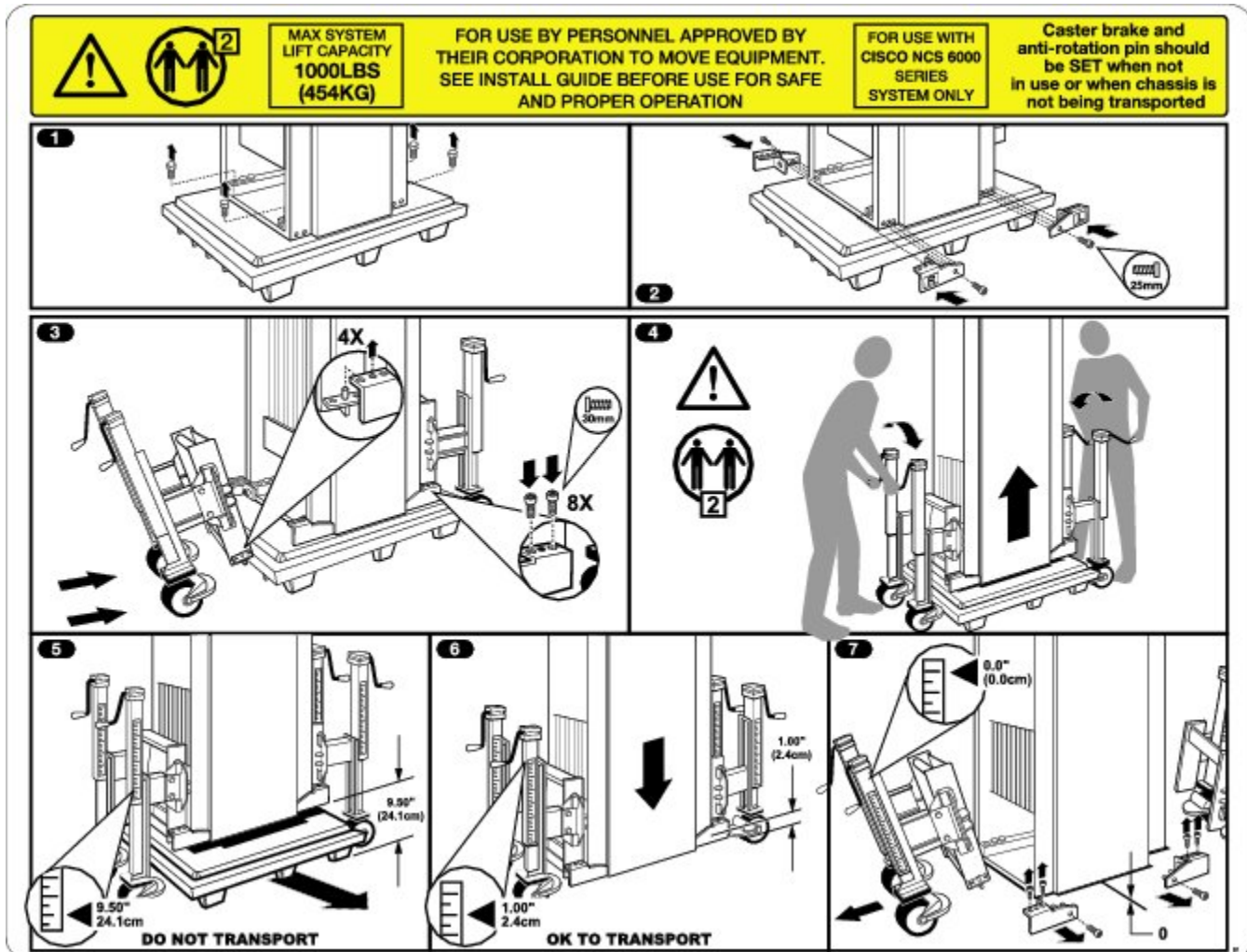
Prerequisites

Before performing this task, unpack both the chassis and the dolly.

Required Tools and Equipment

- 3/8-inch ratchet wrench
- 9/16-mm socket
- 14-mm socket
- 12-mm hex bit

• Dolly (Cisco product ID NC-8-LIFT/B=)

Steps

Step 1   Using the 3/8-inch ratchet wrench with 9/16-mm socket, remove the four bolts that connect the pallet to each corner of the chassis base.

Figure 12: Remove Four Bolts That Attach Pallet to the Cisco NCS 6000 Series Chassis
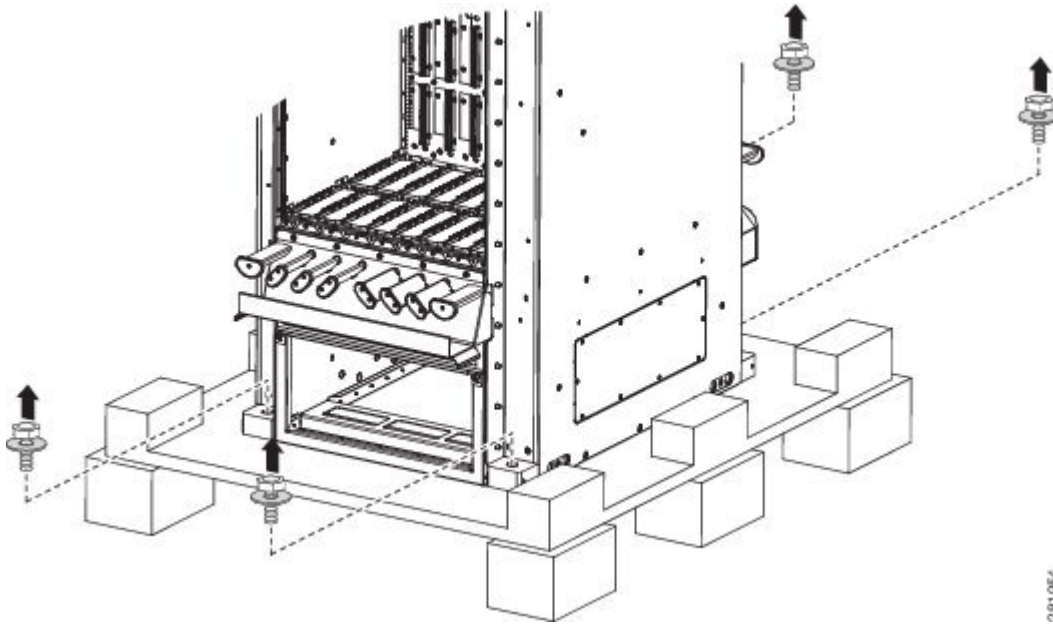
Step 2   Use the 3/8-inch ratchet wrench and 9/16-mm socket to remove the two dolly-to-chassis lift brackets. Repeat this step for the second dolly unit.

Figure 13: Install Lift Brackets from Dolly
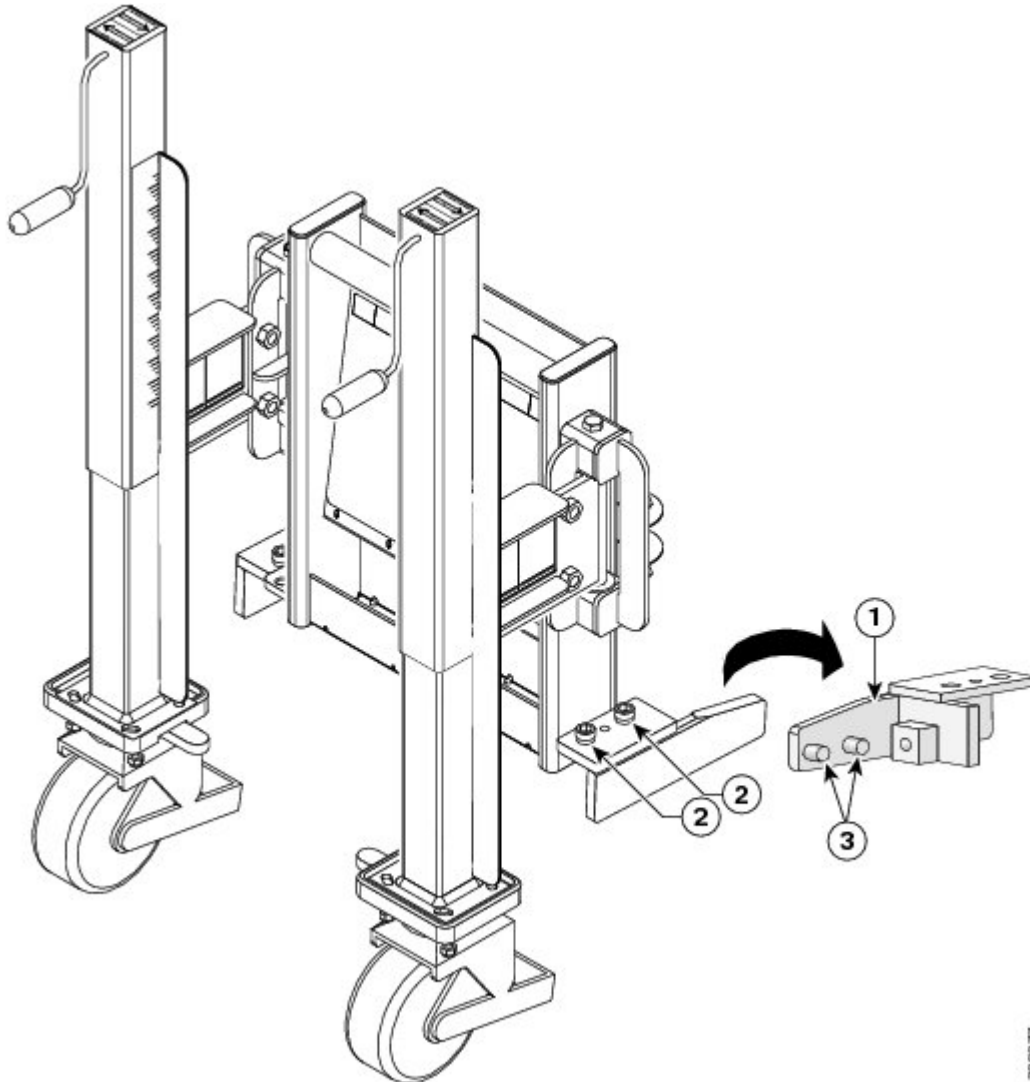
1	Lift bracket	3	Two lift bracket side pins on the removed lift bracket
2	12-mm hex bit		

Note   The lift brackets must be attached to the chassis first.

Step 3   Select a lift bracket. 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.

Note The brackets are labeled as left or right (viewed from the front and rear).

Figure 14: Lift Brackets and Bolts
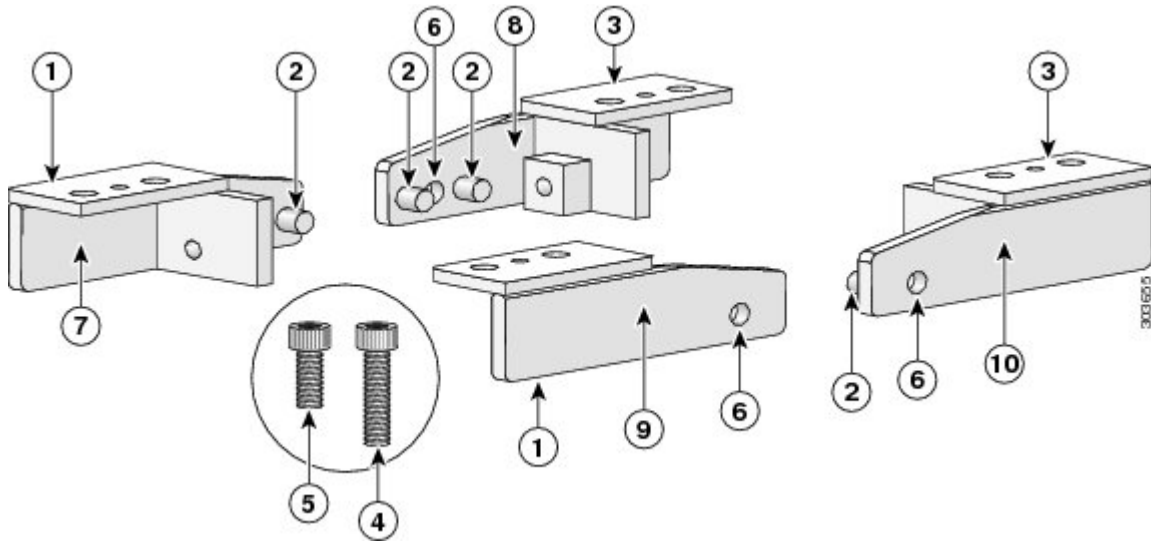
1	From left to right—left front and right front lift brackets	6	Hole for M10 x 25 mm socket-head cap screw
2	Side pins on each lift bracket (inserted into the chassis)	7	Left front
3	From left to right—right rear and left rear lift brackets	8	Right rear
4	Eight M14 x 30 mm socket-head cap screws (used to bolt the front and rear lift brackets to the dolly)	9	Right front
5	Four M10 x 25 mm socket-head cap screws (used to bolt the front and rear lift brackets to the chassis)	10	Left rear

Step 4 Attach lift brackets to the chassis by using the M10 x 25 mm bolts and 17-mm socket (Figure 14: Lift Brackets and Bolts). Align and insert the side pins of the lift bracket to the lower left side of the front side of the chassis.

Step 5 Repeat this step with the right lift bracket on the lower right side of the front side of the chassis. Figure 15: Attaching the Lift Brackets to the Chassis (Oblique View)—Cisco NCS 6008 Chassis Shown shows the oblique view of attaching

the lift brackets to the chassis. Figure 16: Attaching the Lift Brackets to the Cisco NCS 6000 Series Chassis (Top-Down View) shows the top-down view of attaching the lift brackets to the chassis.

Figure 15: Attaching the Lift Brackets to the Chassis (Oblique View)—Cisco NCS 6008 Chassis Shown
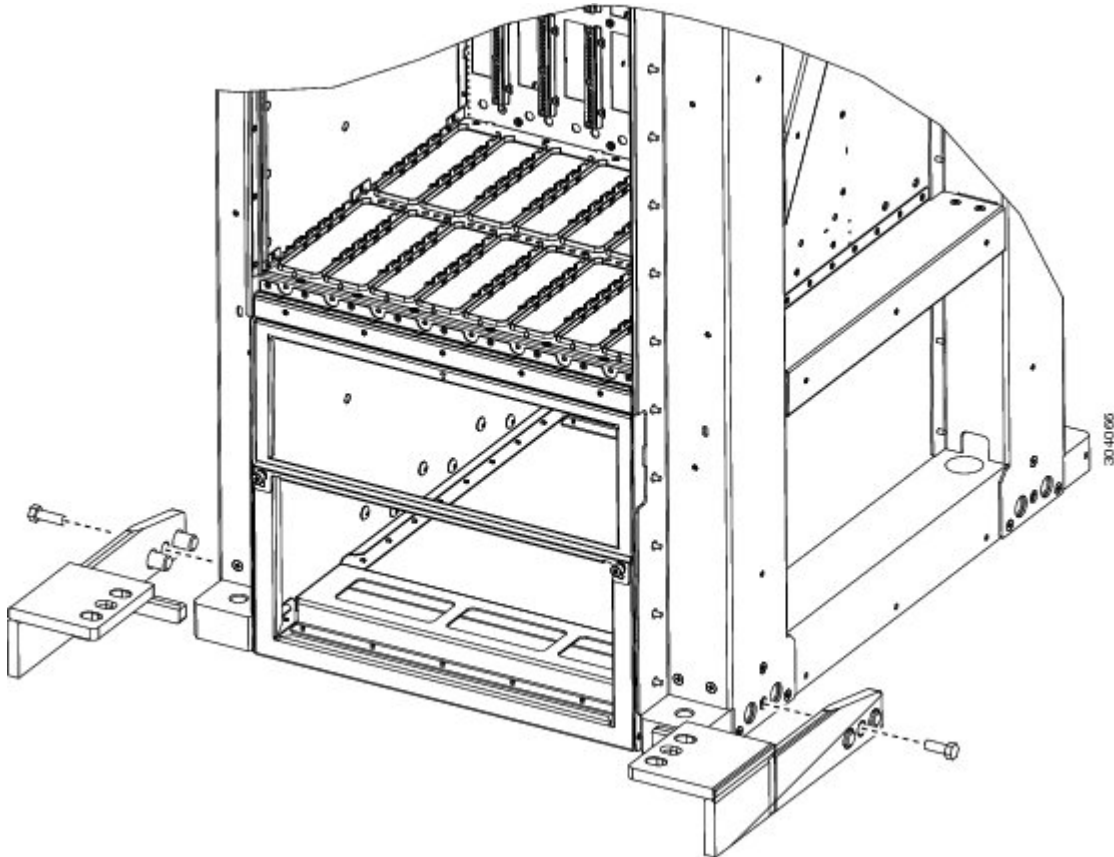
Figure 16: Attaching the Lift Brackets to the Cisco NCS 6000 Series Chassis (Top-Down View)
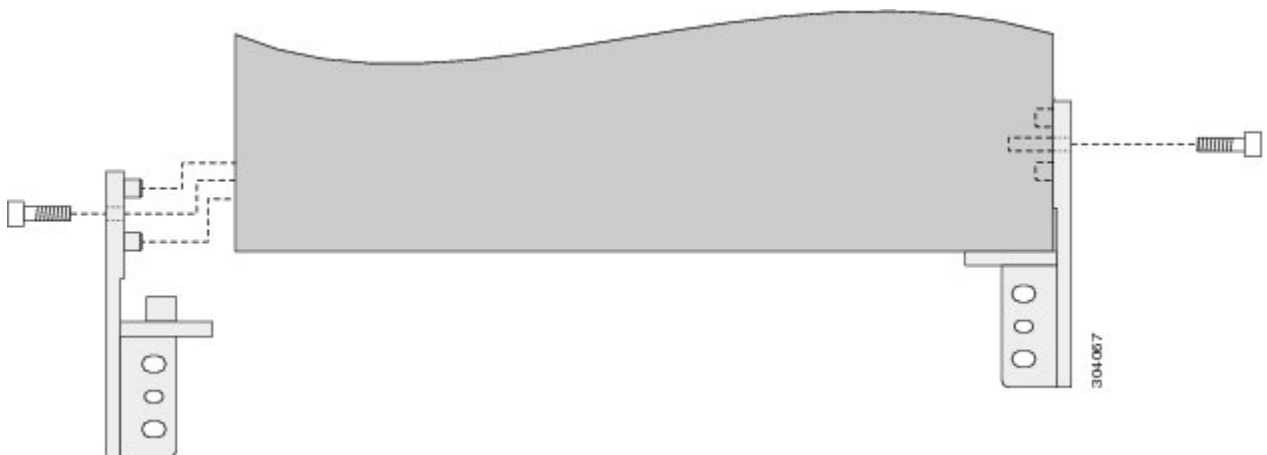
Step 6   Repeat Step 4 for the rear side of the chassis.

Step 7   Attach the lift brackets to the dolly by using the M14 x 30 mm bolts and 12-mm hex bit (Figure 14: Lift Brackets and Bolts).

Step 8   If the dolly caster brakes are locked, then release them and slide the dolly towards the lift brackets on the chassis (Figure 17: Sliding the Dolly to the Lift Brackets) so that the pins on the upper side of the unit align with the holes on the lift brackets. The dolly and lift brackets must align with each other to easily insert the bolts and secure the dolly to the lift brackets. Using two people, crank the dolly up (Figure 18: Adjusting the Height of the Dolly).

      Note   To make aligning easier, as you slide the dolly, tilt it as needed.

Figure 17: Sliding the Dolly to the Lift Brackets
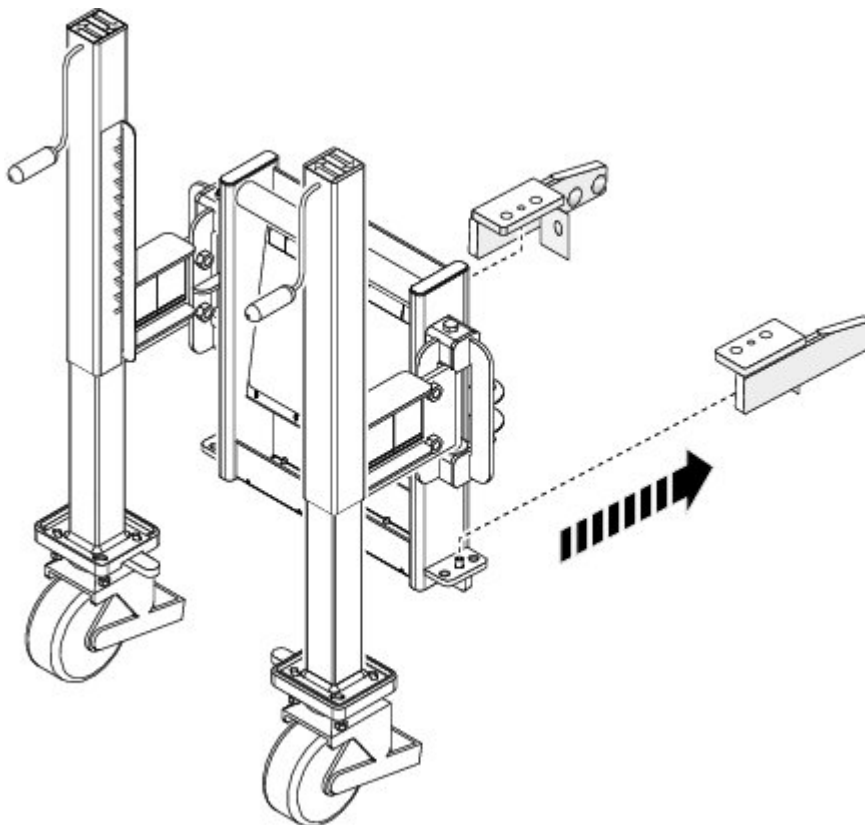
Step 9   After all bolts are secured, remove the chassis pallet following these steps:

    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 inch above the pallet (Figure 18: Adjusting the Height of the Dolly).

Note   One person on each side of the dolly should raise the chassis enough to cleanly remove the base pallet.

Figure 18: Adjusting the Height of the Dolly
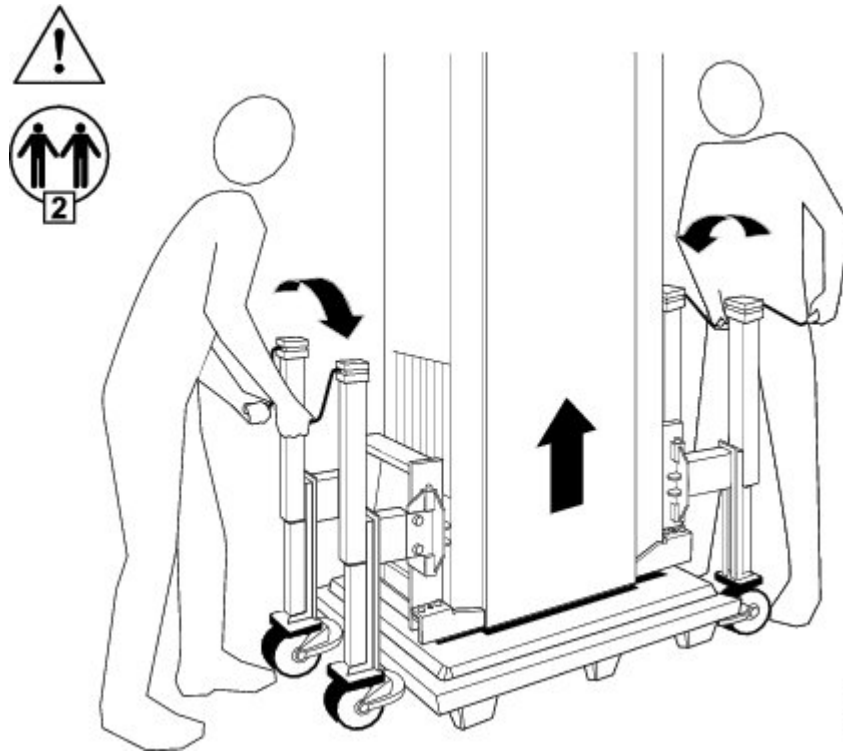
b) Slide the pallet from under the chassis.

Figure 19: Slide Pallet From Under the Chassis

9.50"
(24.1cm)

9.50"
24.1cm

DO NOT TRANSPORT
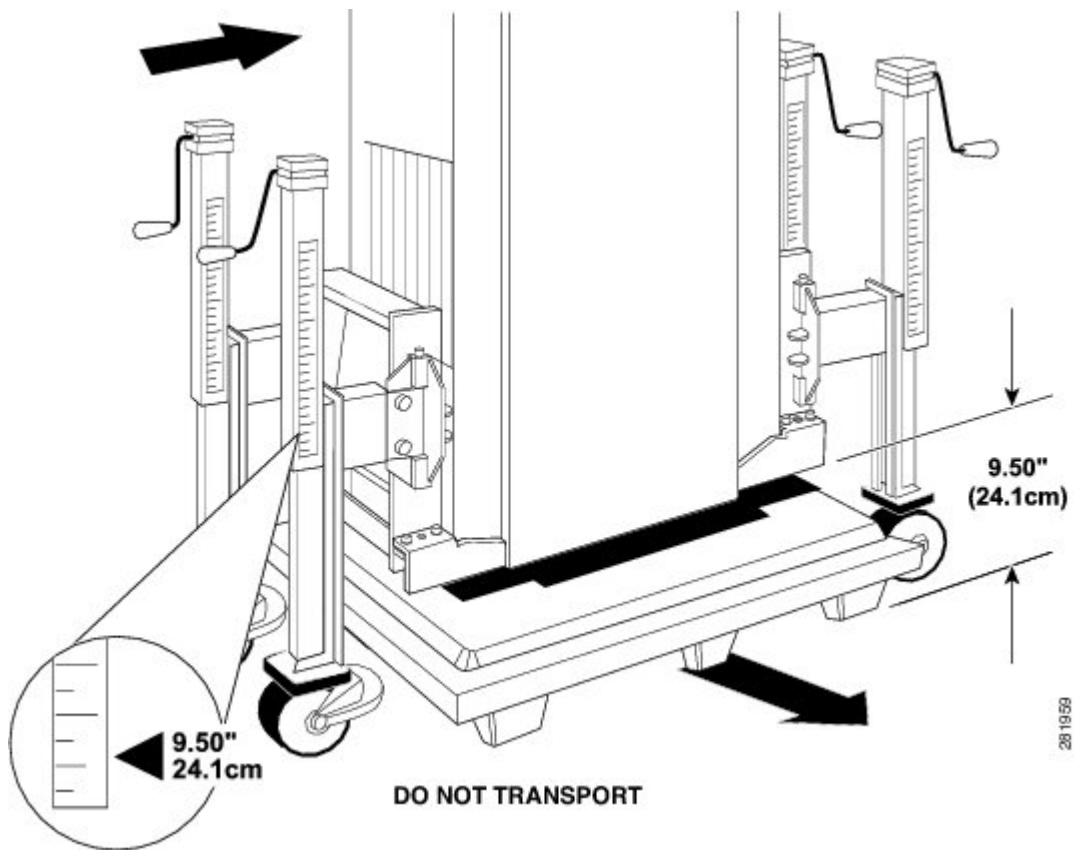
c) Using two people (one person working on each dolly unit), lower the chassis to within 1 inch of the floor. See the height label on the dolly lift wheel assembly.

Figure 20: Lowering the Chassis
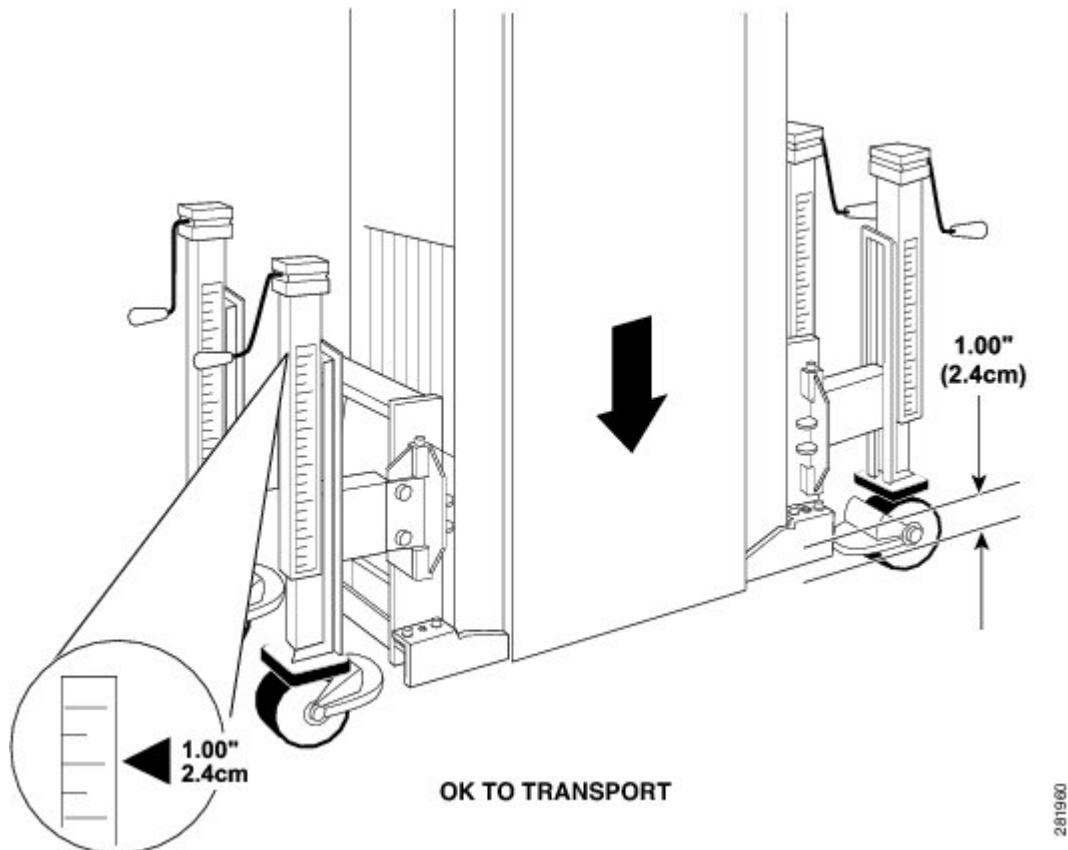
d) Depending on the transport route and the moving space requirements at your site, the dolly can be used to move the chassis in the 90-degree or 180-degree configuration. The 180-degree position is the recommended configuration for moving the chassis.

Warning   **To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 inch (2.4 cm) above the floor during transportation.** Statement 358

Moving the Chassis

This chapter describes the things to consider as you move the Cisco NCS 6000 Series chassis from the loading dock to the mounting location at the site.

Important Notice

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.

In the event that the dolly supplied by Cisco is not the appropriate method of transportation, consult with Cisco support to determine a method of transportation appropriate for the site. Ensure that the alternate moving device is capable of supporting the weight of the chassis, moving the chassis safely, and preventing the chassis from tipping too far and falling during transport.

Guidelines

When you use the dolly to move the as-shipped Cisco NCS 6000 Series chassis, follow these guidelines:

- When using the dolly to move the as-shipped chassis between locations, ensure that the chassis is free of RP cards, FCs, LCs, fan trays, and power components (to reduce weight). Cisco strongly recommends that you do not move a chassis while it is fully populated.

Note   The Cisco NCS 6000 FCC ships with two shelf controller cards (SC-SW or SC cards) preinstalled in the chassis. Do not remove these cards.

⚠️

Caution   The crated Cisco NCS 6000 Series chassis is tall and heavy. Handle it carefully to reduce the risk of tipping the chassis over too far so that it falls to the floor and causes injury. We recommend that at least two people move the chassis together to better support its size and weight.

- 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 anti-rotation 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 in a hallway (a standard hallway is 5 feet wide) or through aisles 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.

  ◦ When the 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 (2.4 cm) above the floor during transportation.

  ◦ The 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 three 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.

  ◦ The 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 support.

  ◦ 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 Cisco NCS 6000 Series chassis.

⚡ **Warning**   **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 NCS 6000 Series Chassis.** Statement 356

⚡ **Warning**   **Do not permanently locate the equipment on the dolly. Safely store the dolly after use.** Statement 357

⚡ **Warning**   **To reduce the risk of dolly instability, chassis damage, or personal injury, do not raise the equipment more than 1 inch (2.4 cm) above the floor during transportation.** Statement 358

⚡ **Warning**   **This dolly is designed to transport the equipment over short distances only.** Statement 359

⚡ **Warning**   **In order to reduce the risk of chassis damage or personal injury when replacing a fully-loaded, existing 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 the power system, fan trays, RP cards, fabric cards, and line cards from the LCC. Remove the entire power tray assembly and associated components and any fabric cards from the FCC (Do not remove the SC-SW or SC cards).** Statement 367

⚡ **Warning**   **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

⚠ **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 Cisco NCS 6000 Series 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 following table 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: Cisco NCS 6000 Series Chassis Move Path Specifications

Specification	Value
Height (on dolly, with recommended 1 inch raise)	82 in. (208.3 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)
Weight of chassis (as shipped, packaging removed)	775 lb (352 kg)
Weight of dolly	126 lb (57.3 kg)
Maximum recommended height from floor (for chassis on dolly)	1.5 in. (3.8 cm)

Note   Allow a minimum gap of between 4 to 6 inches (10 to 15 cm) on each side of the combined chassis and dolly when moving it.

The following figure shows the recommended minimum space to turn the chassis on the dolly in its 90-degree and 180-degree configuration.

Figure 21: Recommended Turning Diameter of Dolly
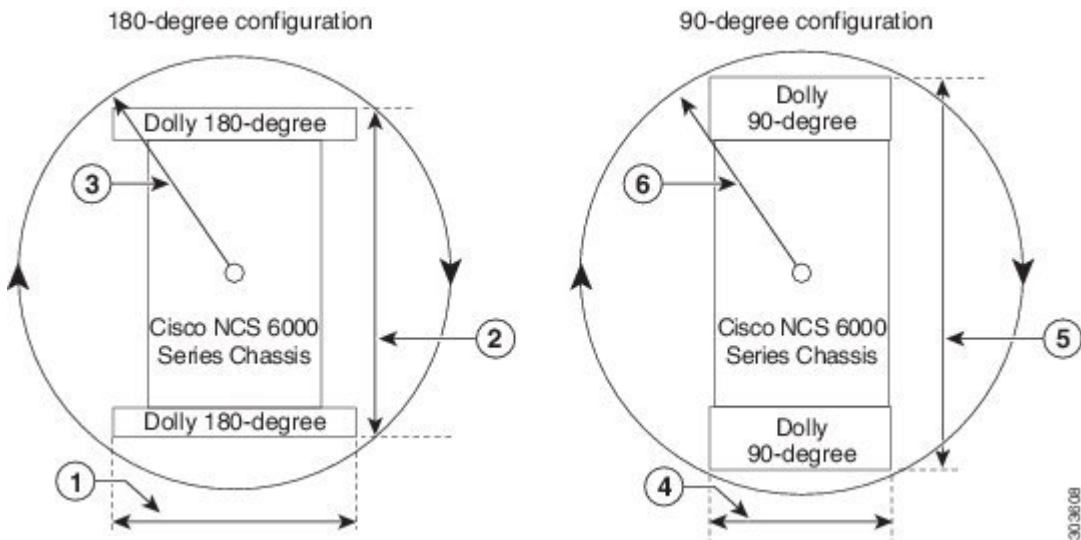
1	Width (on dolly, 180-degree position) 44 in. (112 cm)	4	Width (on dolly, 90-degree position) 24 in. (60 cm)

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. (94 cm)

The following table 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) Aisle width may be different when transporting the chassis around a corner.
180-degree dolly position	44 in. (112 cm)	52 in. (132 cm)

The following figure shows a top view of the minimum aisle space required to install the Cisco NCS 6000 Series chassis without using the dolly supplied by Cisco. This space is exclusive of both the PDU brackets (mounted on both sides), and the router cosmetics.

Figure 22: Minimum Aisle Space Requirements to Install the Cisco NCS 6000 Series Chassis—Top View (With Dolly Removed)
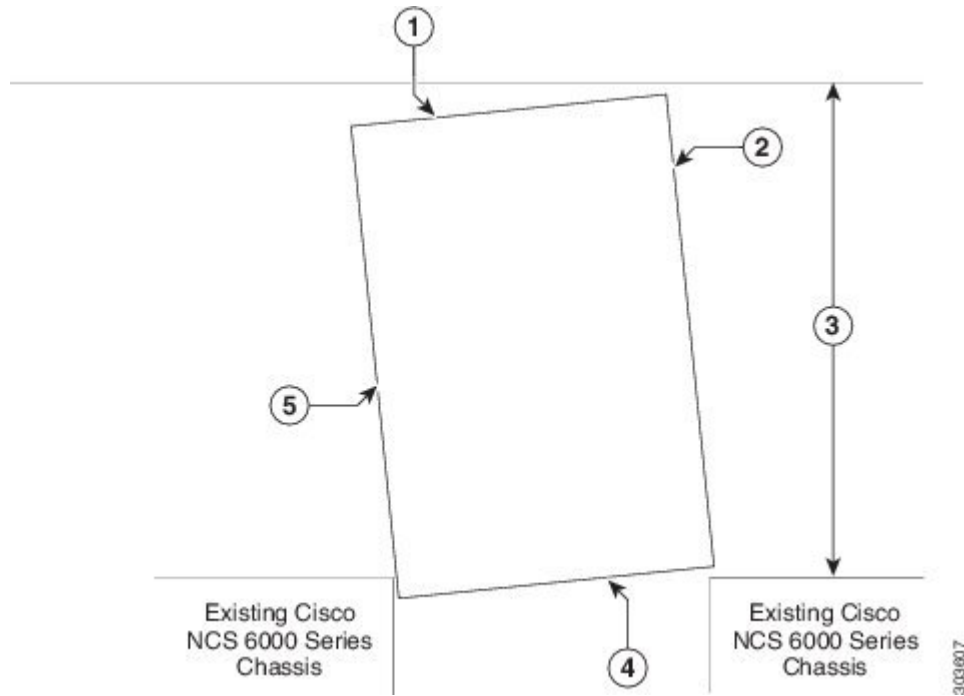
1	Chassis front	4	Chassis rear
2	Chassis side	5	Chassis side
3	Moving space requirement: 34.7 in. (95 cm)		

Moving the Unpacked Chassis

Prerequisites

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

Note If a dolly configuration change is required, see the Modifying the Dolly Configuration, on page 11.

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 can be used to transport the chassis at heights from 0.5 to 3.0 inches; the transport height is 1 inch max and 1.5 inch max for going over 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 too far.

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, on page 11 for further information.

Note You must lower the chassis completely to the floor before rotating the outrigger legs. When you have rotated the lifting cranks, raise the chassis again. See the Modifying the Dolly Configuration, on page 11 for further information.

Step 2 Unlock the dolly caster anti-rotation 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 three 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.

Step 4 Carefully roll the chassis into position near its mounting location.

Securing the Chassis

This chapter describes how to secure the Cisco NCS 6000 Series chassis to a concrete floor.

Securing the Chassis

The chassis is shipped with a drill hole template 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 and secondary locations for securing the chassis to the floor. Whenever possible, use the following:

- Primary mounting locations
- Secondary locations only when the primary locations are not available

The instructions in this chapter 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), and where (depending on the location of the floor tiles) the bolt holes need to be. Work with your facilities representative to determine your needs for your particular site.

Prerequisites

Identify the chassis location and ensure that there is sufficient space before performing this task.

Required Tools and Equipment

- Drill hole template
- Marking pen or pencil
- 3/8-inch ratchet wrench
- Set of standard and metric sockets
- Drill and bits for masonry and wood

• Number-1 Phillips screwdriver

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

Steps

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

Step 2   Remove the drill hole template, and drill the indicated anchor bolt holes into the floor at the pilot hole locations.

Step 3   If an alternate floor mounting pattern is required, remove the lower side panels (left and right sides of the chassis) to expose additional floor mounting holes.

Figure 23: Remove Lower Side Panels to Expose Additional Floor Mounting Holes—Cisco NCS 6008 LCC Shown
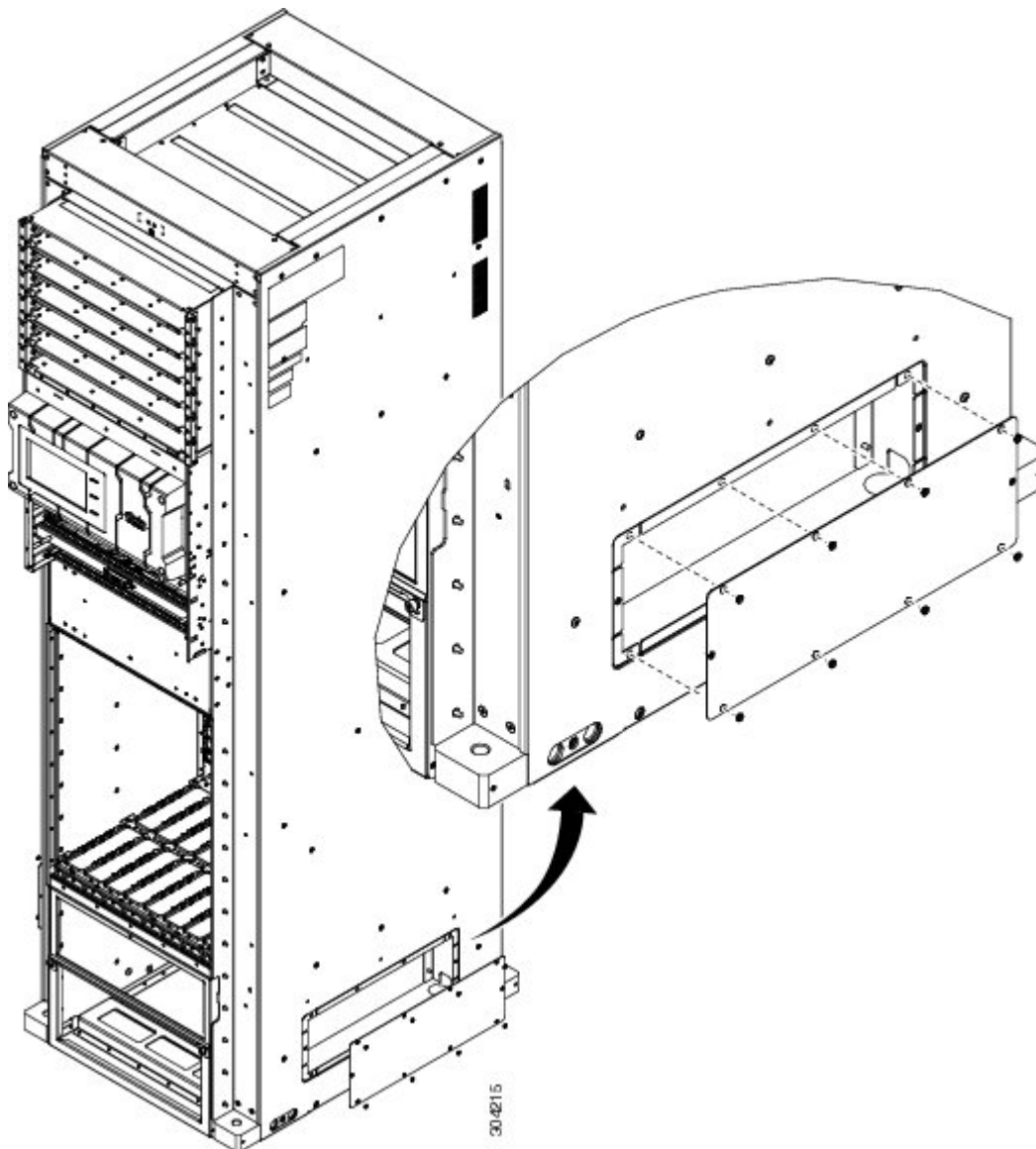
Step 4 Carefully move the chassis into place over the bolt holes. See the Moving the Unpacked Chassis, on page 36 for details on moving the chassis with the dolly.

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 5 Lock the dolly caster anti-rotation and brake systems.

Step 6 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 too far.

Step 7 Remove the dolly from the chassis.

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

Step 8 Insert all anchor bolts.

Step 9 Tighten all bolts and nuts.

Unpacking Chassis Components

The remaining shipping boxes and pallets are now ready to be delivered from the receiving/shipping dock or a site holding area to the final location of the Cisco NCS 6000 Series chassis.

Steps

Step 1 If possible, move the pallets to the same location as the unpacked and secured chassis. If 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 Unpack all primary pallet parts from the packaging, and set the parts aside for installation.

Step 3 Unpack all secondary pallet parts from the packaging, and set the parts aside for installation.

Note Do not unpack individual cards until you are ready to install the cards in the chassis.

Step 4 Unpack all power components from the packaging, and set the parts carefully aside on an ESD-immune surface for installation.

Step 5 Unpack all exterior cosmetic parts from the packaging and set the parts aside.

To continue with the installation of individual components, see the Cisco Network Convergence System 6000 Series Routers Hardware Installation Guide or the Cisco Network Convergence 6000 Fabric Card Chassis Hardware Installation Guide

Component Return Information

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

To facilitate your conversation with Cisco technical support, locate and note the serial number for the chassis. The serial number label for the Cisco NCS 6000 Series chassis is located on the rear side of the chassis, lower left corner.