



*Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)*



## **Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide**

January 22, 2012

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883

Part Number: OL-24475-02

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

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

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco's installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without Cisco's written authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

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

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

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

CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0711R)

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



## CONTENTS

### **Preface** i-vii

Audience vii

Organization vii

Conventions viii

Related Documentation i-xiv

Obtaining Documentation and Submitting a Service Request i-xiv

---

## **CHAPTER 1**

### **Product Overview** 1-1

Interconnect Features 1-1

Cisco UCS 6248 UP Fabric Interconnect Chassis 1-2

Cisco UCS 6296 UP Fabric Interconnect Chassis 1-5

UCS Unified Port Expansion Module 1-7

Cisco UCS 6248 UP Port Numbering 1-8

Cisco UCS 6296 UP Port Numbering 1-9

Cabling Considerations for Fabric Port Channels 1-9

Power Supplies 1-10

Fan Module 1-13

LED Descriptions 1-14

Port Level LEDs 1-14

Supported Transceivers 1-15

SFP+ Transceivers 1-15

SFP Transceivers 1-16

SFP+ Copper Cables 1-16

SFP Fibre Channel Transceivers 1-17

---

## **CHAPTER 2**

### **Installing the Cisco UCS 6200 Series Fabric Interconnect** 2-1

Preparing for Installation 2-2

Installation Options 2-2

Airflow Considerations 2-2

Chassis Weight 2-2

Installation Guidelines 2-3

Required Equipment 2-4

Cabinet and Rack Requirements 2-4

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

General Requirements for Cabinets and Racks	2-4
Requirements Specific to Perforated Cabinets	2-5
Requirements Specific to Standard Open Racks	2-5
Cable Management Guidelines	2-5
Required Equipment	2-6
Unpacking and Inspecting the Cisco UCS 6200 Series Fabric Interconnect	2-6
Installing the Cisco UCS 6248 UP Chassis in a Cabinet or Rack	2-7
Installing the Cisco UCS 6296 Chassis in a Cabinet or Rack	2-9
Grounding the System	2-12
Proper Grounding Practices	2-12
Preventing Electrostatic Discharge Damage	2-14
Establishing the System Ground	2-16
Required Tools and Equipment	2-16
Grounding the Interconnect	2-17
Starting the System	2-19
Replacing or Installing Components	2-21
Replacing or Installing Expansion Modules	2-21
Removing an Expansion Module	2-22
Installing an Expansion Module	2-23
Replacing or Installing Power Supplies	2-23
Removing a Power Supply	2-24
Installing a Power Supply	2-25
Wiring a DC Power Connector	2-26
Fan Modules	2-27
Replacing a Fan Module	2-28
Preparing a Fabric Interconnect for Removal	2-29
Removing a Cisco UCS 6248 UP	2-30
Removing a Cisco UCS 6296	2-30
Repacking the Cisco UCS Fabric Interconnect for Return Shipment	2-31

## CHAPTER 3

### Connecting the Cisco UCS 6200 Series Fabric Interconnect 3-1

Preparing for Network Connections	3-1
Connecting to the Console Port	3-1
Connecting Ports	3-4
Connecting to an SFP+ Ethernet or Fibre Channel Port	3-4
Installing or Removing SFP+ Transceivers	3-4
Installing a Transceiver	3-4
Removing a Transceiver	3-5

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

Installing or Removing Cables into SFP or SFP+ Transceivers	3-6
Installing a Cable into a Transceiver	3-6
Removing a Cable from a Transceiver	3-7
Connecting to a Fibre Channel Port	3-7
Installing or Removing SFP Transceivers	3-7
Installing an SFP Transceiver	3-8
Removing an SFP Transceiver	3-8
Installing or Removing Cables into SFP Transceivers	3-9
Installing a Cable into an SFP Transceiver	3-10
Removing a Cable from an SFP Transceiver	3-10
Maintaining SFP Transceivers and Fiber-Optic Cables	3-10

## APPENDIX A

System Specifications	A-1
Power Specifications	A-2
Transceiver Specifications	A-3
Environmental Conditions and Power Requirement Specifications for SFP+ Transceivers	A-3
General Specifications for Cisco Fibre Channel SFP Transceivers	A-4
Environmental Conditions and Power Requirements Specification for SFP Transceivers	A-4

## APPENDIX B

Accessory Kit for the Cisco UCS Fabric Interconnect	B-1
Console Cable	B-2
Console Port	B-2
Supported Power Cords and Plugs	B-3
AC Power Cord Illustrations	B-4
Jumper Power Cord	B-8

## APPENDIX C

Site Preparation Checklist	C-1
Contact and Site Information	C-3
Chassis and Module Information	C-4

## APPENDIX D

Overview	D-1
SNMP Traps	D-1
System Hardware Best Practices	D-2
Installation Best Practices	D-2
Initialization Best Practices	D-2
System Operation Best Practices	D-2

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***



## Preface

---

This preface describes the audience, organization, and conventions of the *Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide*. It also provides information on how to obtain related documentation.

## Audience

To use this installation guide, you must be familiar with electronic circuitry and wiring practices and preferably be an electronic or electromechanical technician.

## Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	<a href="#">Product Overview</a>	Provides an overview of the Cisco UCS 6200 Series Fabric Interconnect and its components.
Chapter 2	<a href="#">Installing the Cisco UCS 6200 Series Fabric Interconnect</a>	Describes how to install the Cisco UCS 6200 Series Fabric Interconnect, and how to install modules, power supplies, and fan assemblies.
Chapter 3	<a href="#">Connecting the Cisco UCS 6200 Series Fabric Interconnect</a>	Describes how to connect the Cisco UCS 6200 Series Fabric Interconnect, including the modules.
Appendix A	<a href="#">Technical Specifications</a>	Lists specifications for the Cisco UCS 6200 Series Fabric Interconnect and components including modules, power supplies, and transceivers.
Appendix B	<a href="#">Cable and Port Specifications</a>	Lists cable and port specifications for the Cisco UCS 6200 Series Fabric Interconnect.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

Chapter	Title	Description
Appendix C	<a href="#">Site Planning and Maintenance Records</a>	Provides site planning and maintenance records.
Appendix D	<a href="#">Troubleshooting Hardware Components</a>	Provides installation troubleshooting information for the Cisco UCS 6200 Series Fabric Interconnect.

## Conventions

This document uses the following conventions for notes, cautions, and safety warnings.

Notes and Cautions contain important information that you should be aware of.



### Note

Means *reader take note*. Notes contain helpful suggestions or references to material that are not covered in the publication.



### Caution

Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, can cause physical injuries. A warning symbol precedes each warning statement.



### 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.** Statement 1071

#### SAVE THESE INSTRUCTIONS

### Waarschuwing

#### BELANGRIJKE VEILIGHEIDSINSTRUCTIES

**Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.**

#### BEWAAR DEZE INSTRUCTIES



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Varoitus TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

**SÄILYTÄ NÄMÄ OHJEET**

**Attention IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

**CONSERVEZ CES INFORMATIONS**

**Warnung WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

**BEWAHREN SIE DIESE HINWEISE GUT AUF.**

**Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

**CONSERVARE QUESTE ISTRUZIONI**

**Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

**TA VARE PÅ DISSE INSTRUKSJONENE**

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

**GUARDE ESTAS INSTRUÇÕES**

**¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

**GUARDE ESTAS INSTRUCCIONES**

**Varning! VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

**SPARA DESSA ANVISNINGAR**

**Figyelem FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejte helyzetben van. Mielőtt bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján kereshető meg.

**ORIZZTE MEG EZEKET AZ UTASÍTÁSOKAT!**

**Предупреждение ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

**СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ**

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

**警告** 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

**警告** 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

**주의** 중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

**Aviso** INSTRUÇÕES IMPORTANTES DE SEGURANÇA

**Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.**

**GUARDE ESTAS INSTRUÇÕES**

**Advarsel** VIGTIGE SIKKERHEDSANVISNINGER

**Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemeskade. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.**

**GEM DISSE ANVISNINGER**

**تحذير**

**إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في آخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز. قم بحفظ هذه الإرشادات

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Upozorenje VAŽNE SIGURNOSNE NAPOMENE

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznat sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

**SAČUVAJTE OVE UPUTE**

## Upozornění DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

**USCHOVEJTE TYTO POKYNY**

## Προειδοποίηση ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθειες πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

**ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ**

## אזהרה

## הוראות בטיחות חשובות

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כדי לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

**שמור הוראות אלה**

## Opomena VAŽNI BEZBEDNOSNI NAPATSTVIJA

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

**ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА**

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Ostrzeżenie      WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA**

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

**NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**

**Upozornenie      DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

**USCHOVAJTE SI TENTO NÁVOD**

**Opozorilo      POMEMBNI VARNOSTNI NAPOTKI**

Ta opozorilni simbol pomeni nevarnost. Nahajate se v situaciji, kjer lahko pride do telesnih poškodb. Preden pričnete z delom na napravi, se morate zavedati nevarnosti udara električnega toka, ter tudi poznati preventivne ukrepe za preprečevanje takšnih nevarnosti. Uporabite obrazložitevno številko na koncu posameznega opozorila, da najdete opis nevarnosti v priloženem varnostnem priročniku.

**SHRANITE TE NAPOTKE!**

**警告      重要安全性指示**  
此警告符號代表危險，表示可能造成人身傷害。使用任何設備前，請留心電路相關危險，並熟悉避免意外的標準作法。您可以使用每項警告後的聲明編號，查詢本裝置隨附之安全性警告譯文中的翻譯。請妥善保留此指示

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Related Documentation

The documentation set for the Cisco UCS 6200 Series Fabric Interconnect includes the following documents:

- *Cisco UCS Documentation Roadmap*
- *Cisco UCS Manager CLI Configuration Guide*
- *Cisco UCS Manager GUI Configuration Guide*
- *Cisco UCS Manager CLI Command Reference*
- *Cisco UCS Manager XML API Programmer's Guide*
- *Cisco UCS Manager Troubleshooting Guide*
- *Cisco UCS Site Preparation Guide*
- *Cisco UCS 5108 Server Chassis Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for Cisco UCS*
- *Release Notes for Cisco UCS Manager*

## Obtaining Documentation and Submitting a Service Request

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.



# CHAPTER 1

## Product Overview

---

This describes the Cisco UCS Fabric Interconnects and their components, and includes the following sections:

- [Interconnect Features, page 1-1](#)
- [Cisco UCS 6248 UP Fabric Interconnect Chassis, page 1-2](#)
- [Cisco UCS 6296 UP Fabric Interconnect Chassis, page 1-5](#)
- [UCS Unified Port Expansion Module, page 1-7](#)
- [Power Supplies, page 1-10](#)
- [Fan Module, page 1-13](#)
- [LED Descriptions, page 1-14](#)
- [Supported Transceivers, page 1-15](#)

## Interconnect Features

A Cisco UCS 6200 series fabric interconnect is a top-of-rack fabric interconnect that provides Ethernet and Fibre Channel to all servers in the UCS system. Servers connect to the fabric interconnect, and it connects to the LAN or SAN.

This family of fabric interconnects connect UCS servers to 10 Gigabit Ethernet 1, 2, 4, and 8 Gbps Fibre Channel networks, and provides consolidated I/O connectivity to both production Ethernet LANs and Fibre Channel SANs in a cost-effective, high-performance, low-latency environment.

The Cisco UCS 6200 series has the following characteristics:

- The UCS 6248 UP fabric interconnect is a one-rack-unit (1 RU), 10-Gigabit Ethernet and FCoE device that offers up to 960-Gbps throughput and up to 48 ports. It has 32 1- or 10-Gbps fixed small form-factor pluggable plus (SFP+) ports and one expansion slot. The Cisco UCS 6248 UP has 32 ports on the base system and can be upgraded with one expansion module providing an additional 16 ports.
- The UCS 6296 UP fabric interconnect is a two-rack-unit (2 RU), 10-Gigabit Ethernet and FCoE device that offers up to 1920-Gbps throughput and up to 96 ports. It has 48 1- or 10-Gbps fixed small form-factor pluggable plus (SFP+) ports and three expansion slots. The Cisco UCS 6248 UP has 48 ports on the base system and can be upgraded with three expansion modules providing an additional 48 ports.
- Universal port functionality allows Ethernet or Fibre Channel over Ethernet (FCoE) physical port types to be selected in software.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

- Slots on the back of the switch for an expansion module. You can use the UCS EIGUP module.
- Slots on the front of the chassis for hot swap-capable power supplies.
- Slots on the front of the chassis for fan modules.
- One USB port at the front of the switch.

## Cisco UCS 6248 UP Fabric Interconnect Chassis

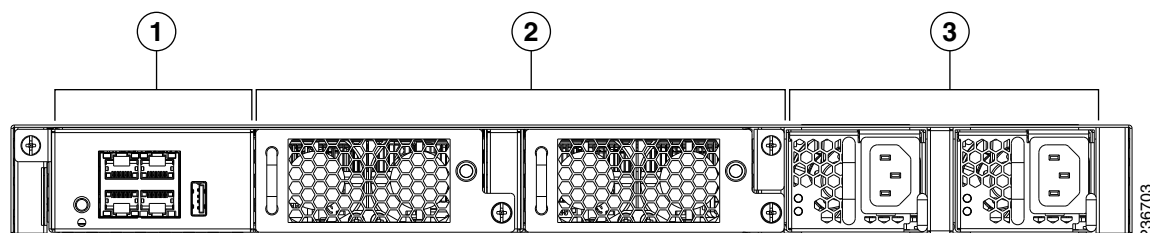
The Cisco UCS 6248 UP chassis is 1 RU, 1.72 inches tall, 17.3 inches wide and 30.0 inches deep. It mounts in a standard 19-inch rack (the Cisco R Series rack is an ideal choice). The chassis has two power supplies and two fan modules on the front of the chassis, and it has network ports on the rear of the chassis as well as also has one USB port (usb1:) at the front. This external USB flash memory is installed in a supervisor module used for storing image files, configuration files, and other miscellaneous files. You can create directories on external flash memory and navigate through these directories. You can also create and access files. The usb1: port usage on the Cisco UCS 6248 is the same as that on Cisco NX-OS devices. (For details, see

[http://www.cisco.com/en/US/docs/switches/datacenter/sw/5\\_x/nx-os/fundamentals/configuration/guide/Cisco\\_Nexus\\_7000\\_Series\\_NX-OS\\_Fundamentals\\_Configuration\\_Guide\\_Release\\_5.x\\_chapter7.htm](http://www.cisco.com/en/US/docs/switches/datacenter/sw/5_x/nx-os/fundamentals/configuration/guide/Cisco_Nexus_7000_Series_NX-OS_Fundamentals_Configuration_Guide_Release_5.x_chapter7.htm))

Thirty-two fixed 10-Gigabit Ethernet ports and an expansion modules slot supporting 16 ports are at the rear of the switch. The airflow is front to back. The airflow is front to back. Figure 1-1 shows the front of the Cisco UCS 6248 UP.

Figure 1-1 shows the front of the chassis.

**Figure 1-1 Cisco UCS 6248 UP Front View**



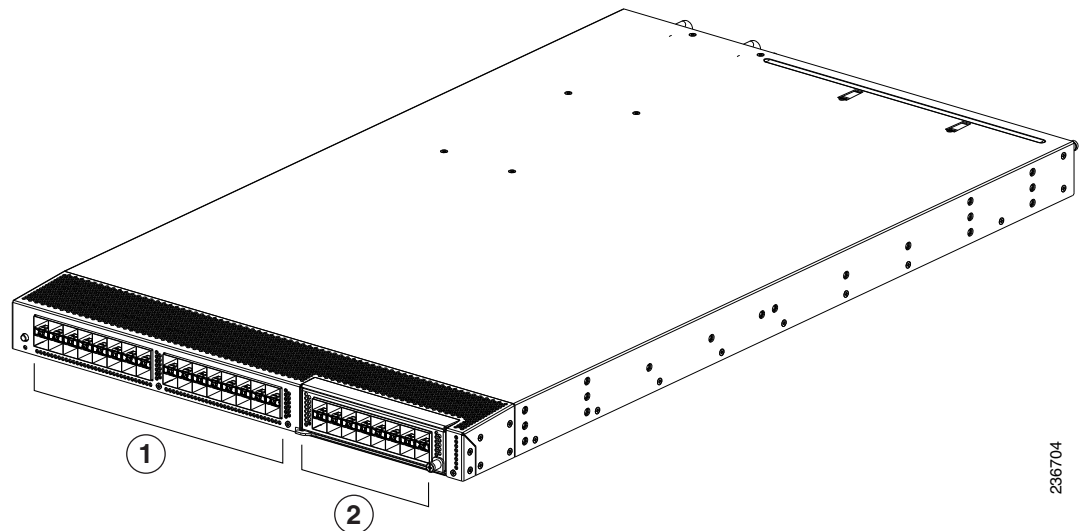
<b>1</b>	Management (10/100/1000) port, console port, and USB port (see Figure 1-4)	<b>3</b>	Two power supplies (AC shown)
<b>2</b>	Two fan modules		



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

The rear of the Cisco UCS 6248 UP chassis has 32 fixed 10-Gigabit, Fiber Channel over Ethernet-capable SFP+ Ethernet ports, 1 slot for an optional expansion module, [Figure 1-2](#) shows the rear of the Cisco UCS 6248 UP.

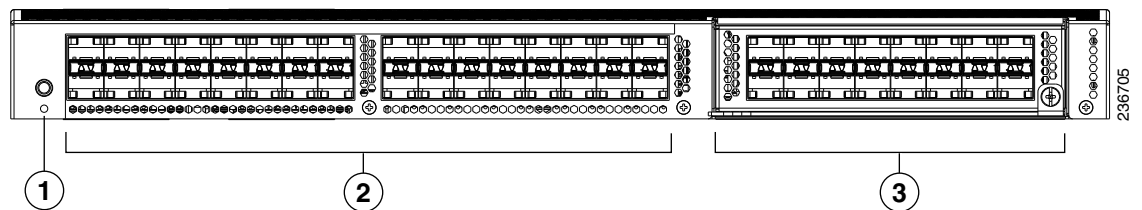
**Figure 1-2 Cisco UCS 6248 UP Rear View**



<b>1</b>	32 fixed 10-Gigabit Ethernet ports	<b>2</b>	16 Expansion module ports
----------	------------------------------------	----------	---------------------------

[Figure 1-3](#) shows a close-up view of the rear of the Cisco UCS 6248 UP chassis.

**Figure 1-3 Cisco UCS 6248 UP Switch Rear View Close-up**

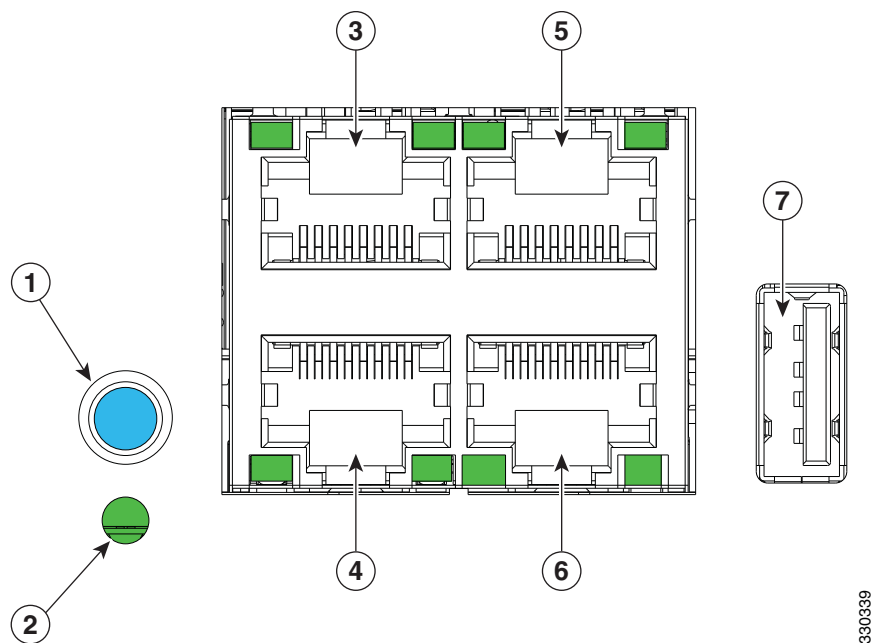


<b>1</b>	System status LED and beaconing LED/button	<b>3</b>	16 port Expansion module
<b>2</b>	32 fixed 10-Gigabit Ethernet ports		

The front connector ports are in a 2x2 stacked RJ-45 jack. [Figure 1-4](#) shows a close-up view of the Ethernet connector ports.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 1-4 Connector Ports, LEDs**



<b>1</b>	Beaconing LED/button	<b>5</b>	Network management port
<b>2</b>	System Status LED	<b>6</b>	Console port
<b>3</b>	UCS cross connect port L1	<b>7</b>	USB port
<b>4</b>	UCS cross connect port L2		

Table 1-1 lists the LED descriptions for all Ethernet LEDs.

**Table 1-1 Ethernet LED Descriptions**

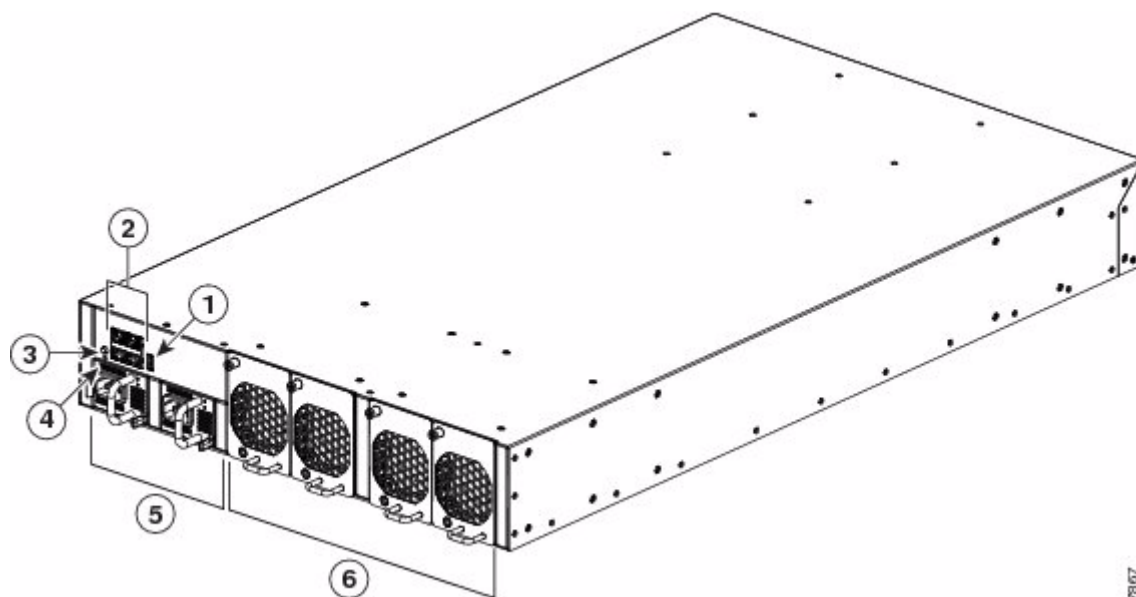
LED	Status	Description
Left	Off	No link
	Solid green	Physical link
Right	Off	No activity
	Blinking green	Activity

[Send document comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

## Cisco UCS 6296 UP Fabric Interconnect Chassis

The Cisco UCS 6296 UP chassis is 2 RU or 3.47 inches (8.8 cm) tall, 17.3 inches (43.9 cm) wide, and 29.5 inches (74.9 cm) deep. It is designed to be mounted in a standard 19-inch wide rack. The front of the switch, shown in [Figure 1-5](#), has a USB port, four Ethernet and ports (two cross-connect ports, one management port, and one console port), two power supplies, and four fan modules.

**Figure 1-5 Front View of the Cisco UCS 6296 UP**

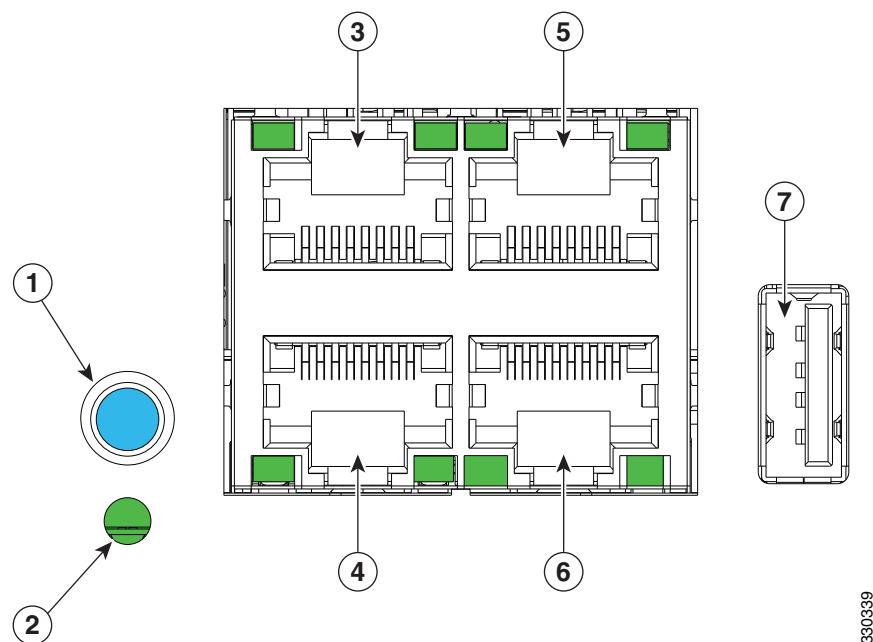


1	USB port	4	System status LED
2	Management and console ports (two RJ-45 Ethernet connector ports on the left, a RJ-45 network management connector on the upper right, and a console connector on the lower right)	5	Two power supplies
3	Identifier LED	6	Four fan modules

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

The management and console ports are in a 2 x 2 stacked RJ-45 jack. [Figure 1-6](#) shows a close-up view of these ports. For information about the connector port LEDs, see [Table D-1 on page D-2](#).

**Figure 1-6 Management and Console Ports**

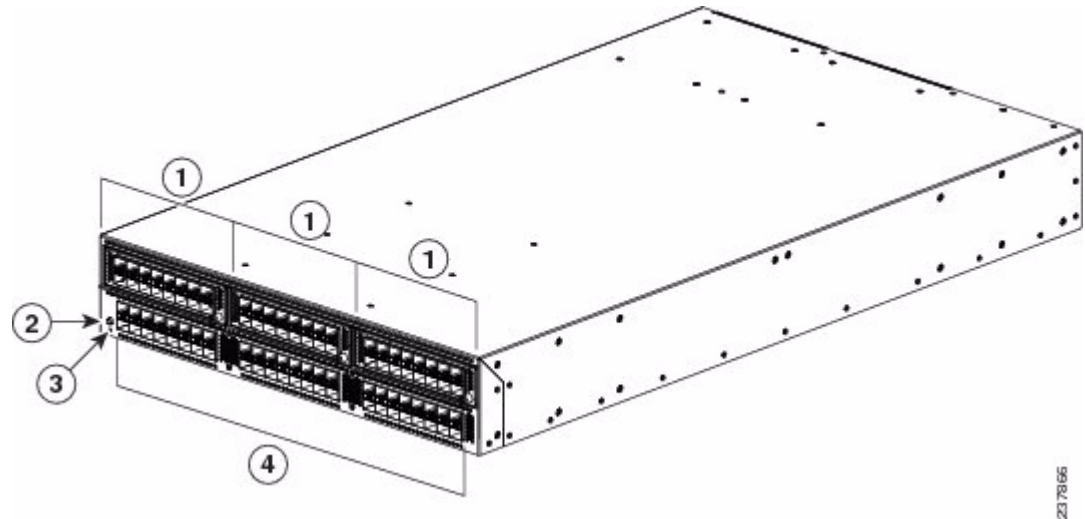


<b>1</b>	Beaconing LED/button	<b>5</b>	Network management port
<b>2</b>	System Status LED	<b>6</b>	Console port
<b>3</b>	UCS cross connect port L1	<b>7</b>	USB port
<b>4</b>	UCS cross connect port L2		

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

The rear of the Cisco UCS 6296 UP chassis, shown in [Figure 1-7](#), has 48 fixed 10-Gigabit Ethernet data ports on the bottom and three slots for optional expansion modules on top.

**Figure 1-7** *Rear View of the Cisco UCS 6296 UP*



<b>1</b>	Expansion modules, shown here with three 16-port Universal GEM2 modules (can also have Layer 3 GEM2 modules)	<b>3</b>	System status LED
<b>2</b>	Identifier LED	<b>4</b>	48 fixed 1- and 10-Gigabit Ethernet ports

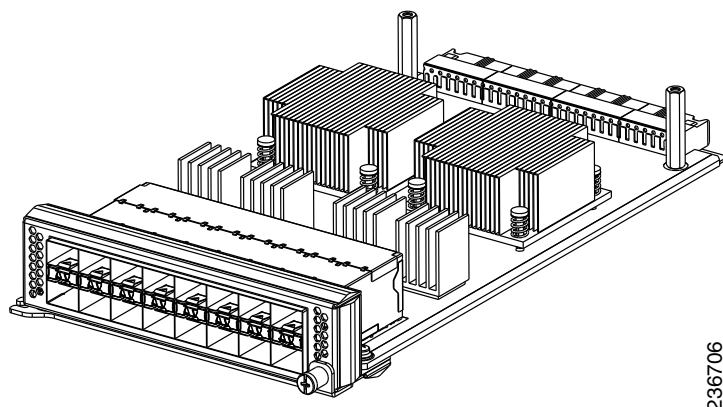
## UCS Unified Port Expansion Module

Expansion modules allow Cisco UCS 6200 Series Fabric Interconnect to be configured as cost-effective 10-Gigabit Ethernet fabric interconnects and as I/O consolidation platforms with native Fibre Channel connectivity. The Cisco UCS 6248 UP has one slot for an optional expansion module. The Cisco UCS 6296 has three slots for an optional uplink expansion module. Only the 16-port UCS E16UP expansion module using the small form factor pluggable plus (SFP+) interface is supported.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

Figure 1-8 shows the UCS E16UP expansion module.

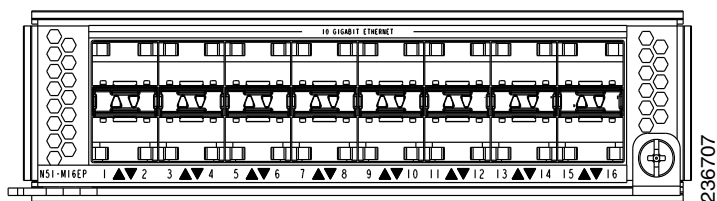
**Figure 1-8 16-port 10Gb Unified Port Expansion Module (UCS-FI-E16UP)**



236706

Figure 1-9 shows a front view of the expansion module.

**Figure 1-9 UCS E16UP GEM**



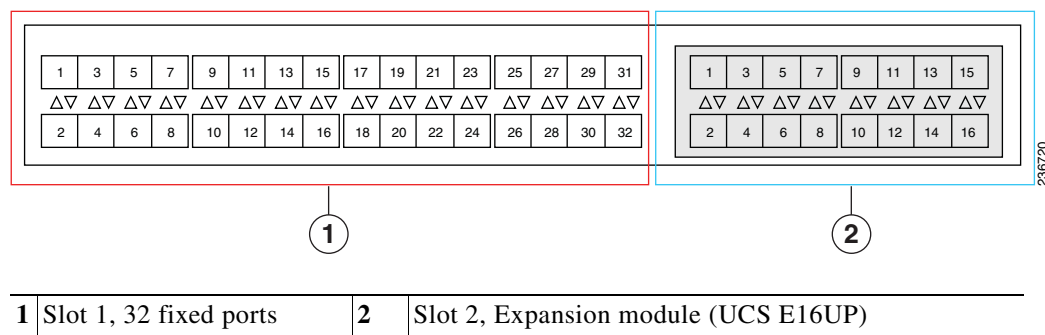
236707

## Cisco UCS 6248 UP Port Numbering

Each individual port is numbered, and groups of ports are numbered based on their function. The ports are numbered top to bottom and left to right.

There are 32 to 48 ports on the Cisco UCS 6248 UP, depending on whether an expansion module is installed. Each individual port is numbered, and groups of ports are numbered based on their function. The ports are numbered from top to bottom and left to right.

**Figure 1-10 Port Numbering of the Cisco UCS 6248UP with an Expansion Module**



236720

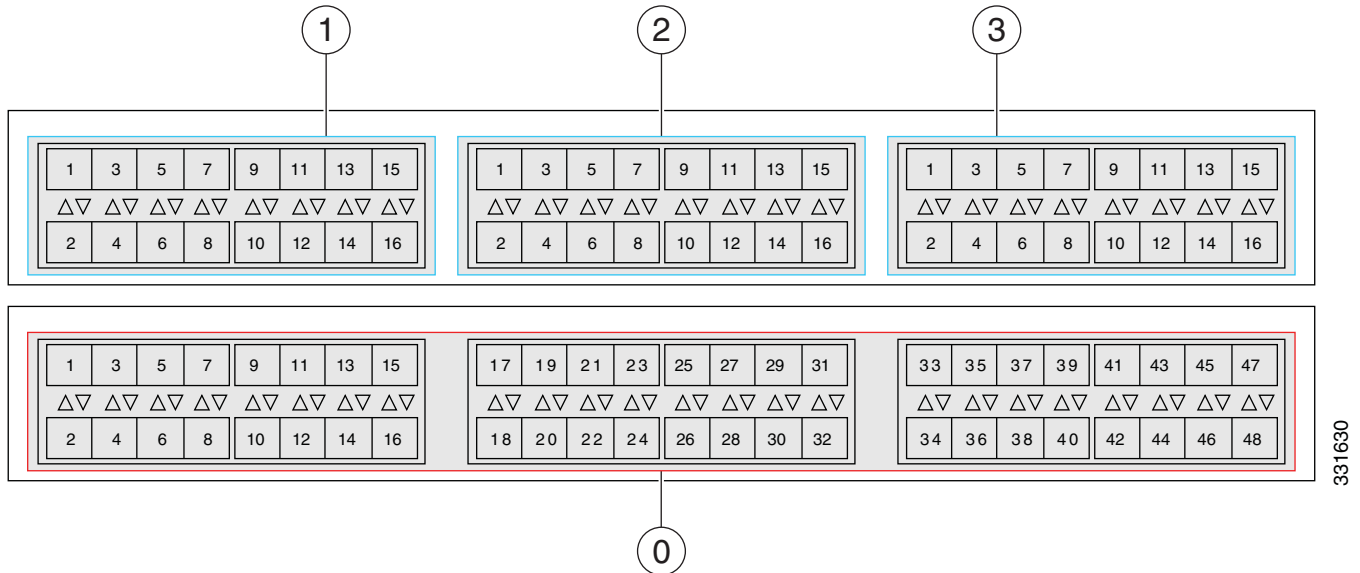
***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Cisco UCS 6296 UP Port Numbering

Each port on the Cisco UCS 6296 UP is numbered, and groups of ports are numbered based on their function. The ports are numbered top to bottom and left to right. The 48 fixed ports support 8-, 4-, 2-, or 1-Gbps Fibre Channel transceivers and 1- or 10-Gigabit Ethernet transceivers.

Figure 1-11 shows how ports are numbered and grouped by function for both the fixed ports and the Fibre Channel plus Ethernet expansion module ports.

**Figure 1-11 Port Numbering of Fixed Ports and Fibre Channel Plus Ethernet Expansion Module Ports**



<b>0</b>	Port numbering for the 48 fixed ports	<b>2</b>	Port numbering for the 16-port GEM in slot 1
<b>3</b>	Port numbering for the 16-port GEM in slot 2	<b>4</b>	Port numbering for the 16-port GEM in slot 3

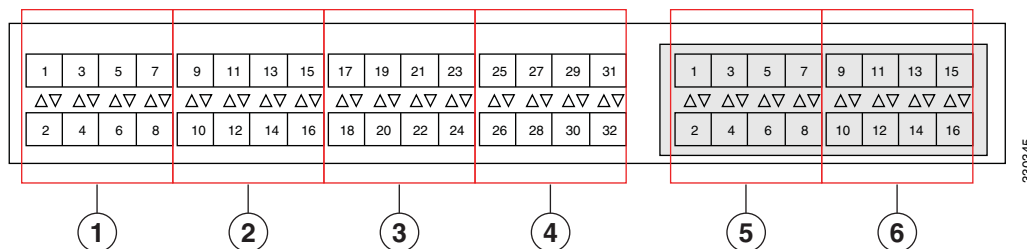
## Cabling Considerations for Fabric Port Channels

When you configure the links between the UCS 2208 IOM to the UCS 6248 fabric interconnect in fabric port channel mode, the available VIF namespace on the adapter varies depending on where the IOM uplinks are connected to the fabric interconnect ports.

Inside the 6248 fabric interconnect there are six sets of eight contiguous ports, with each set of ports managed by a single chip. When uplinks are connected such that all of the uplinks from an IOM are connected to a set of ports managed by a single chip, Cisco UCS Manager maximizes the number of VIFs used in service profiles deployed on the blades in the chassis. If uplink connections from an IOM are distributed across ports managed by separate chips, the VIF count is decreased.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

**Figure 1-12 Port Groups for Fabric Port Channels**



**Caution**

Adding or removing links from a fabric port channel is disruptive and may affect the available amount of VIF namespace.

For high availability cluster mode applications, symmetric cabling configurations are strongly recommended. If the cabling is asymmetric, the maximum number of VIFs available is the smaller of the two cabling configurations.

For more information on the maximum number of VIFs for your Cisco UCS environment, see the configuration limits document for your hardware and software configuration.

## Power Supplies

**Table 1-2 Power Supply Models**

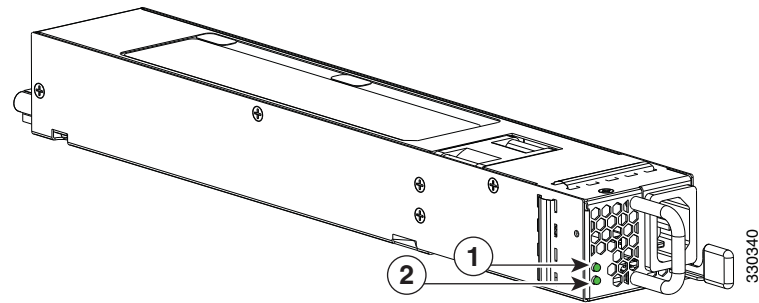
Cisco PID	Fabric Interconnect	Source	Wattage
UCS-PSU-6248UP-AC	Cisco UCS 6248 UP	110 VAC	390
UCS-PSU-6248UP-DC	Cisco UCS 6248 UP	-48 VDC	390
UCS-PSU-6296UP-AC	Cisco UCS 6296 UP	110 VAC	680

The fabric interconnect uses a front-end power supply. The chassis has slots for two power supplies. Two power supplies can be used for redundancy, but the fabric interconnect is fully functional with one power supply. [Figure 1-13](#) shows the 390 W AC power supply, which has two LEDs: one for power status and one for failure condition. [Figure 1-15](#) shows the 390 W power supply, which has two LEDs: one for power status and one for failure condition.



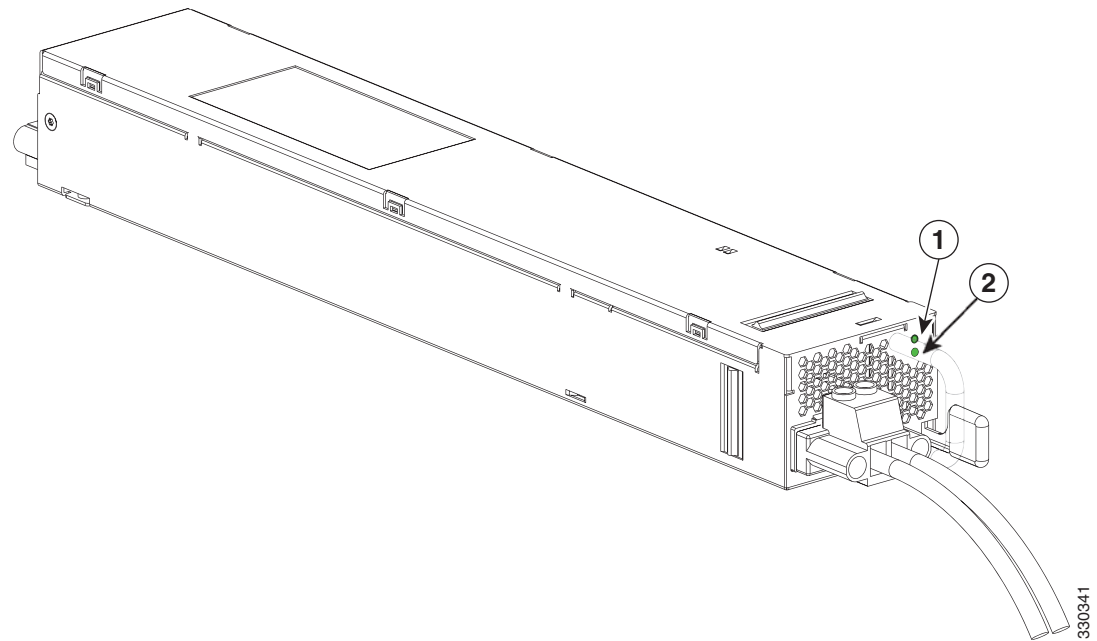
***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 1-13 AC Power Supply for the Cisco UCS 6248 UP Fabric Interconnect**



1	Fault LED	2	Power LED
---	-----------	---	-----------

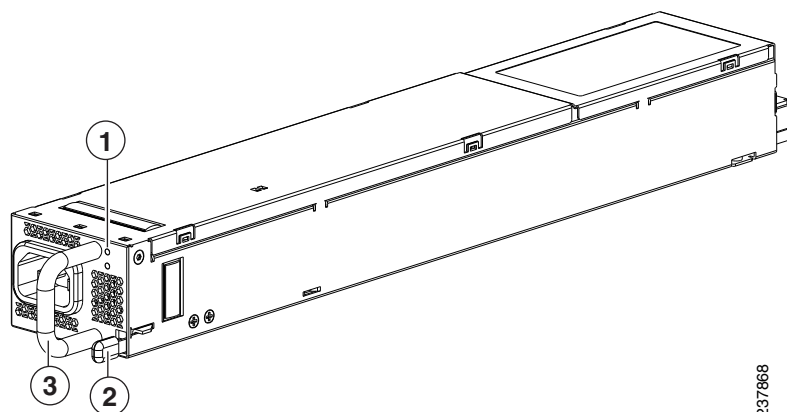
**Figure 1-14 DC Power Supply for the Cisco UCS 6248 UP Fabric Interconnect**



1	Amber LED indicates a failure condition.	2	Green LED indicates the input power status.
---	--	---	---

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 1-15 Power Supply for the Cisco UCS 6296 UP Switch**



<b>1</b>	Failure (top) and Power (bottom) LEDs	<b>3</b>	Release lever
<b>2</b>	Handle		

Table A-2 Table A-3 and list the power supply properties of the Cisco UCS 6248 UP.

Table 1-3 describes the status of the two power supply LEDs.

**Table 1-3 Power Supply LED Descriptions**

Power Supply Condition	Power LED Status	Fail LED Status
No AC power to all power supplies.	Off	Off
Power supply failure, including over voltage, over current, over temperature, and fan failure.	Off	On
Power supply warning events where the power supply continues to operate. These events include high temperature, high power, and slow fan.	Off	1 Hz Blinking
AC present, 3.3 voltage standby (VSB) on, and the power supply unit is off.	1 Hz blinking	Off
Power supply on and OK.	On	Off

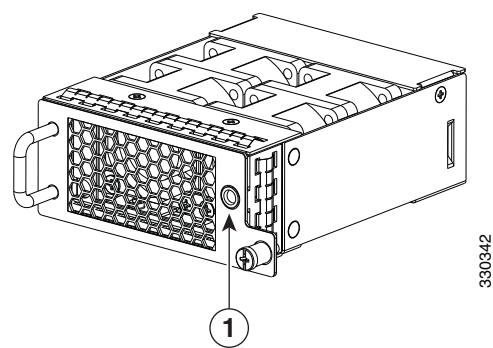
***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

If one power supply is installed in the chassis, but the other power supply slot is empty, a blank filler panel (N10-S1BLKP=) should be used to cover the empty slot.

# Fan Module

TheCisco UCS 6248 UP fabric interconnect has slots for two fan modules (also called fan trays). Each fan module houses 4 fans. The combination of 4 fans per module and 2 modules provides the chassis with 8 fans. [Figure 1-16](#) shows the fan module for the Cisco UCS 6248 UP.

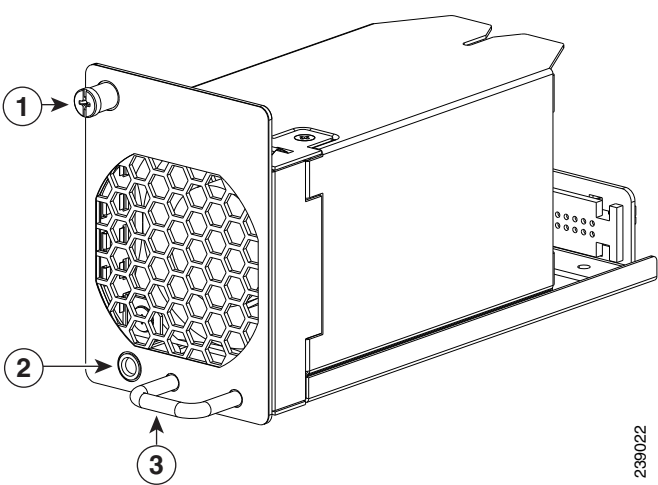
**Figure 1-16 Cisco UCS 6248 UP Fan Module (UCS-FAN-6248UP=)**



1	Fan Tray Status LED (see <a href="#">Table 1-4</a> )
---	--

The Cisco UCS 6296 UP switch has four fan modules with one fan each.

**Figure 1-17 Cisco UCS 6296 UP Fan Module**



1	Captive screw	3	Handle
2	Status LED		

The bi-color fan module LED indicates fan tray health. Green indicates normal operation, while amber indicates a fan failure.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## LED Descriptions

The switch has three chassis activity LED's.

[Table 1-4](#) describes the LEDs for the Cisco UCS 6200 series fabric interconnect.

**Table 1-4 LEDs for the Cisco UCS 6248 UP**

LED	Location	Function	Color	Status	Description
System Status LED	Front	Power/Health	Green	Solid On	System is on and operating normally
				Off	Switch is powered off
			Amber	On	Fault condition
Fan Tray Status	Fan trays (front)	Fan tray health indicator (multi color)	Green	On	Fan tray is operating normally
			Amber	On	Fan failure has occurred within the fan tray
PSU Status	Power supply (front)	PSU Health (multi color)	Green	OFF	No AC power to power supply
				Solid On	Power supply on and OK
			Amber	Solid On	Power supply failures, overvoltage, overcurrent, overtemperature
				1 Hz blinking	AC present, 3.3 VSB on, PSU is off
				OFF	Operating normally
Beaconing	Front of chassis	Identify selected chassis	Blue	Solid on	Chassis is selected
				Off	Chassis is not selected

## Port Level LEDs

There are port activity LEDs on the chassis and on the expansion modules. [Table 1-5](#) summarizes the behavior of the port LEDs.

**Table 1-5 Port LEDs**

Color	Description
Green (blinking)	Link is up, enabled, and active.
Amber	Link is administratively disabled.
Amber (blinking)	POST or operational error.
Off	Link is down.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Supported Transceivers

The fabric interconnect supports SFP+ Ethernet transceivers, SFP transceivers, and SFP Fibre Channel transceivers. Specifications for these transceivers is at:

[http://www.cisco.com/en/US/docs/interfaces\\_modules/transceiver\\_modules/installation/note/78\\_15160.html](http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15160.html)

### SFP+ Transceivers

The high bandwidth of 10-Gigabit Ethernet poses challenges to transmissions that are met by the transceiver and cabling options supported by the Cisco UCS 6200 platform.

The enhanced SFP+ 10-Gigabit Ethernet transceiver module is a bidirectional device with a transmitter and receiver in the same physical package. It has a 20-pin connector on the electrical interface and duplex LC connector on the optical interface. [Table 1-6](#) lists the supported transceiver options.

**Table 1-6 Supported Transceivers**

Cisco SFP	Description
FET-10G	10G SFP+ Fabric extender transceiver module
SFP-10G-SR	10GBASE-SR SFP+ module (multimode fiber [MMF])
SFP-10G-LR	10GBASE-LR SFP+ module (single-mode fiber [SMF])
SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1 m (Twinax cable)
SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3 m (Twinax cable)
SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5 m (Twinax cable)
SFP-H10GB-ACU7M	10GBASE-CU SFP+ cable 7 m (Twinax cable)
SFP-H10GB-ACU10M	10GBASE-CU SFP+ cable 10 m (Twinax cable)
GLC-T	1000BASE-T SFP
GLC-SX-MM	GE SFP, LC connector SX transceiver (MMF)
GLC-LH-SM	GE SFP, LC connector LX/LH transceiver (SMF)
SFP-GE-T	1000BASE-T SFP, extended temperature range
SFP-GE-S	GE SFP, LC connector SX transceiver (MMF), extended temperature range and digital optical monitoring (DOM)
SFP-GE-L	GE SFP, LC connector LX/LH transceiver (SMF), extended temperature range and DOM
DS-SFP-FC4G-SW	4-Gbps Fibre Channel SW SFP, LC (for FC configured Unified ports)
DS-SFP-FC4G-LW	4-Gbps Fibre Channel LW SFP, LC (for FC configured Unified ports)
DS-SFP-FC8G-SW	8-Gbps Fibre Channel SW SFP+, LC (for FC configured Unified ports)
DS-SFP-FC8G-LW	8-Gbps Fibre Channel LW SFP+, LC (for FC configured Unified ports)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Note**

The maximum length of fiber optic runs is limited to 300 meters. This is imposed by our use of 802.3X/802.1Qbb Priority Pauses. SFP-10G-LR is supported between fabric interconnect and I/O Module, but the 300m limit still applies.

## SFP Transceivers

The SFP 1 -Gigabit Ethernet transceiver module is a bidirectional device with a transmitter and receiver in the same physical package. [Table 1-7](#) lists the supported SFP optical transceivers.

**Table 1-7**      ***Supported SFP Optical Transceivers***

Model	Description
GLC-T	1-Gigabit Ethernet copper SFP module
GLC-SX-MM	1-Gigabit Ethernet—short range (550m max) SFP module
GLC-LH-SM	1-Gigabit Ethernet—long range (10km) SFP module

**Note**

The maximum length of fiber optic runs is limited to 300 meters. This is imposed by our use of 802.3X/802.1Qbb Priority Pauses. SFP-10G-LR is supported between fabric interconnect and I/O Module, but the 300m limit still applies.

## SFP+ Copper Cables

Copper cables are available for use with the 10-Gigabit Ethernet SFP+ module. See [Table 1-8](#) for a description of these cables.

**Table 1-8**      ***Cables Used with the 10-Gbps Ethernet SFP+ Transceivers***

Model	Description
SFP-H10GB-CU1M	10GBASE-CU SFP+ 1-meter cable
SFP-H10GB-CU3M	10GBASE-CU SFP+ 3-meter cable
SFP-H10GB-CU5M	10GBASE-CU SFP+ 5-meter cable
SFP-H10GB-ACU7M=	10GBASE-CU SFP+ 7-meter cable
SFP-H10GB-ACU10M=	10GBASE-CU SFP+ 10-meter cable

On the Cisco UCS 6200 platforms, you can use an innovative Twinax copper cable that connects to standard SFP+ connectors for in-rack use, and on optical cable for longer cable runs.

For in-rack or adjacent-rack cabling, the Cisco UCS 6200 platform supports SFP+ direct-attach 10-Gigabit Ethernet copper, which integrates transceivers with Twinax cables into an energy efficient, low-cost, and low-latency solution. SFP+ direct-attach 10-Gigabit Twinax copper cables use only 0.1 watts of power per transceiver and introduce only approximately 0.25 microsecond of latency per link.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

For longer cable runs, the Cisco UCS 6200 platform supports multimode, short-reach optical SFP+ transceivers. These optical transceivers use approximately 1 W per transceiver and have a latency of less than 0.1 microsecond.

Table 1-9 shows details of the cables supported:

**Table 1-9 Supported Cables**

Connector (Media)	Cable	Distance	Power (each side)	Transceiver Latency (Link)	Standard
SFP+ CU copper	Twinax	5 m	~ 0.1 W	~ 0.1 microseconds	SFF 8431
SFP+ ACU copper	Active Twinax	7 m/ 10 m	~ 0.5 W	~ 6.8 nanoseconds	SFF 8461
SFP+ SR MMF and SR	MM OM2 MM OM3	82 m/ 300 m	1 W	~ 0 microseconds	IEEE 802.3ae

## SFP Fibre Channel Transceivers

The Cisco UCS 6200 series fabric interconnects support multimode 850nm 4 Gbps and 8 Gbps SFPs with 150m reach (see Table 1-10).

**Table 1-10 SFP Fiber Channel Transceivers**

Model	Description
Cisco DS-SFP-FC4G-SW	4 Gbps Fibre Channel-SW SFP, LC (for FC configured Unified ports)
Cisco DS-SFP-FC4G-LW	4 Gbps Fibre Channel-LW SFP, LC, (10 km reach) (for FC configured Unified ports)
Cisco DS-SFP-FC8G-SW	8-Gbps Fibre Channel SW SFP+, LC (for FC configured Unified ports)
Cisco DS-SFP-FC8G-LW	8-Gbps Fibre Channel LW SFP+, LC (for FC configured Unified ports)



### Note

The maximum length of fiber optic runs is limited to 300 meters. This is imposed by our use of 802.3X/802.1Qbb Priority Pauses.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***





## CHAPTER 2

# Installing the Cisco UCS 6200 Series Fabric Interconnect

---

This chapter describes how to install Cisco UCS 6200 Series Fabric Interconnect, and it includes the following sections:

- [Preparing for Installation, page 2-2](#)
- [Installing the Cisco UCS 6248 UP Chassis in a Cabinet or Rack, page 2-7](#)
- [Grounding the System, page 2-12](#)
- [Grounding the Interconnect, page 2-17](#)
- [Starting the System, page 2-19](#)
- [Replacing or Installing Components, page 2-21](#)
- [Repacking the Cisco UCS Fabric Interconnect for Return Shipment, page 2-31](#)



### Note

Before you install, operate, or service the system, read the [Regulatory Compliance and Safety Information for the Cisco UCS](#) for important safety information.

---



### 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.**  
Statement 1071

---

#### SAVE THESE INSTRUCTIONS



### Warning

**This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.**  
Statement 1017

---



### Warning

**Only trained and qualified personnel must be allowed to install, replace, or service this equipment.**  
Statement 1030

---

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Note**

Each new fabric interconnect requires a license. For information on licensing, see the [Cisco UCS Manager CLI Configuration Guide](#).

## Preparing for Installation

This section describes how to install the Cisco UCS 6200 and contains the following topics:

- [Installation Options, page 2-2](#)
- [Installation Guidelines, page 2-3](#)
- [Required Equipment, page 2-6](#)
- [Unpacking and Inspecting the Cisco UCS 6200 Series Fabric Interconnect, page 2-6](#)

## Installation Options

You can install the Cisco UCS 6200 Series Fabric Interconnect chassis in a perforated or solid-walled EIA cabinet or an open EIA rack (the Cisco R Series Rack is an ideal choice), using the rack-mount kit shipped with the chassis (UCS-ACC-6248UP=), for instructions on installing the chassis using the rack-mount kit shipped with the chassis, see the [“Installing the Cisco UCS 6248 UP Chassis in a Cabinet or Rack” section on page 2-7](#).

## Airflow Considerations

Airflow through the Cisco UCS 6200 Series Fabric Interconnect is from front to back. Air enters the chassis through the fan trays and power supplies mounted at the front of the chassis and exits the chassis through perforations on the rear of the chassis. To ensure proper airflow, follow these guidelines:

- Maintain ambient airflow throughout the data center to ensure normal operation.
- Consider the heat dissipation of all equipment when determining air conditioning requirements. When evaluating airflow requirements, take into consideration that hot air generated by equipment at the bottom of the rack can be drawn in the intake ports of the equipment above.
- Be sure to allow unobstructed exhaust air flow.

## Chassis Weight

When lifting the system, follow these guidelines:

- Disconnect all power and external cables before lifting the system.
- Have two people to lift the system. The Cisco UCS 6248 UP weighs 35 pounds (15.9 kg). The Cisco UCS 6296 weighs 35 lb (15.88 kg). The Cisco UCS 6296 UP weighs 50 lb (22.68 kg)
- Ensure that your footing is solid and the weight of the system is evenly distributed between your feet.
- Lift the system slowly, keeping your back straight. Lift with your legs, not with your back. Bend at the knees, not at the waist.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Installation Guidelines

When installing the Cisco UCS 6200 Series Fabric Interconnect, follow these guidelines:

- Prepare the site as described in the [Cisco UCS Site Preparation Guide](#).
- Plan your site configuration and prepare the site before installing the chassis. [Appendix C, “Site Planning and Maintenance Records,”](#) lists the recommended site planning tasks.
- Record the information listed in [Appendix C, “Site Planning and Maintenance Records,”](#) as you install and configure the fabric interconnect.
- Ensure that there is adequate space around the chassis to allow for servicing and for adequate airflow ([Appendix A, “Technical Specifications,”](#) lists airflow requirements).
- Ensure that the air conditioning meets the heat dissipation requirements listed in [Appendix A, “Technical Specifications.”](#)

**Note**

Jumper power cords are available for use in a cabinet. See the [“Jumper Power Cord”](#) section on [page B-8](#).

- Ensure that the chassis is adequately grounded. If the chassis is not mounted in a grounded rack, we recommend connecting both the system ground on the chassis and the power supply ground to an earth ground.
- Ensure that the site power meets the power requirements listed in [Appendix A, “Technical Specifications.”](#) If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

**Caution**

Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS 6200 Series Fabric Interconnect, which can have substantial current draw fluctuations because of fluctuating data traffic patterns.

- Ensure that circuits are sized according to local and national codes. For North America, the power supply requires a 15-A or 20-A circuit.

**Caution**

To prevent loss of input power, ensure the total maximum loads on the circuits supplying power to the fabric interconnect are within the current ratings for the wiring and breakers.

- Use the following screw torques when installing the chassis:
  - Captive screws: 4 in-lb (0.45 Nm)
  - M3 screws: 4 in-lb (0.45 Nm)
  - M4 screws: 12 in-lb (1.36 Nm)
  - 10-32 screws: 20 in-lb (2.26 Nm)
  - 12-24 screws: 30 in-lb (3.39 Nm)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Required Equipment

Before beginning the installation, ensure that the following items are ready:

- Number 1 and number 2 Phillips screwdrivers with torque capability
- 3/16-inch flat-blade screwdriver
- Tape measure and level
- ESD wrist strap or other grounding device
- Antistatic mat or antistatic foam

The following additional items (not found in the accessory kit) are required to ground the chassis:

- Grounding cable (6 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the Cisco UCS 6200 Series Fabric Interconnect to proper grounding facilities
- Crimping tool large enough to accommodate girth of lug
- Wire-stripping tool

## Cabinet and Rack Requirements

This section provides the requirements for the following types of cabinets and racks, assuming an external ambient air temperature range of 0 to 104°F (0 to 40°C):

- Standard perforated cabinets (60% or greater perforation front and back is required, the Cisco R Series rack is an ideal choice)
- Standard open racks



### Note

If you are selecting an enclosed cabinet, we recommend one of the thermally validated types: standard perforated or solid-walled with a fan tray.



### Note

Do not use racks that have obstructions (such as power strips), because the obstructions could impair access to field-replaceable units (FRUs). The Cisco RP series PDUs when mounted in a Cisco R Series Rack should not obstruct FRU replacement.

## General Requirements for Cabinets and Racks

The cabinet or rack must be one of the following types:

- Standard 19 in. (48.3 cm) (four-post EIA cabinet or rack, with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992. See the [“Requirements Specific to Perforated Cabinets”](#) section on page 2-5. (The Cisco R Series Rack is an ideal choice.)

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per Cisco UCS 6248 UP chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).
- The minimum vertical rack space per Cisco UCS 6296 chassis must be two RU (rack unit), equal to 3.5 in. (8.8 cm).

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- The width between the rack-mounting rails must be at least 17.72 in. (45.0 cm) if the rear of the chassis is not attached to the rack. For four-post EIA racks, this is the distance between the two front rails.
- For four-post EIA cabinets (perforated):
  - The minimum spacing for the bend radius for fiber-optic cables should have the front-mounting rails of the cabinet offset from the front door by a minimum of 3 in. (7.6 cm), and a minimum of 5 in. (12.7 cm) if cable management brackets are installed on the front of the chassis.
  - The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.5 to 34.0 in. (59.7 to 86.4 cm) to allow for rear-bracket installation.
  - A minimum of 2.5 in. (6.4 cm) of clear space should exist between the side edge of the chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of chassis air intake or exhaust vents.

**Note**

Optional jumper power cords are available for use in a cabinet. See the [“Jumper Power Cord” section on page B-8](#).

## Requirements Specific to Perforated Cabinets

A perforated cabinet is defined here as a cabinet with perforated front and rear doors and solid side walls. In addition to the requirements listed in the [“General Requirements for Cabinets and Racks” section on page 2-4](#), perforated cabinets must meet the following requirements:

- The front and rear doors must have at least a 60 percent open area perforation pattern, with at least 15 square inches of open area per rack unit of door height.
- The roof should be perforated with at least a 20 percent open area.
- The cabinet floor should be open or perforated to enhance cooling.

The Cisco R Series racks meet or exceed all these requirements.

## Requirements Specific to Standard Open Racks

In addition to the requirements listed in the [“General Requirements for Cabinets and Racks” section on page 2-4](#), if mounting the chassis in an open rack (no side panels or doors), ensure that the rack meets the following requirements:

- The minimum vertical rack space per chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).

The Cisco R Series racks meet or exceed all these requirements.

## Cable Management Guidelines

To help with cable management, you might want to allow additional space in the rack above and below the chassis to make it easier to route as many as 56 fiber or copper cables through the rack.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Required Equipment

Before beginning the installation, ensure that the following items are ready:

- Number 1 and number 2 Phillips screwdrivers with torque capability
- 3/16-in. flat-blade screwdriver
- Tape measure and level
- ESD wrist strap or other grounding device
- Antistatic mat or antistatic foam

The following additional items (not found in the accessory kit) are required to ground the chassis:

- Grounding cable (6 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the Cisco UCS 6200 Series Fabric Interconnect to proper grounding facilities
- Crimping tool large enough to accommodate girth of lug
- Wire-stripping tool

## Unpacking and Inspecting the Cisco UCS 6200 Series Fabric Interconnect



### Caution

When handling chassis components, wear an ESD strap and handle modules by the carrier edges only. An ESD socket is provided on the chassis. For the ESD socket to be effective, the chassis must be grounded through the power cable, the chassis ground, or the metal-to-metal contact with a grounded rack.



### Tip

Keep the shipping container in case the chassis requires shipping in the future.



### Note

The interconnect is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

To inspect the shipment, follow these steps:

- Step 1** Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all items, including the following:
  - Grounding lug kit
  - Rack-mount kit
  - ESD wrist strap
  - Cables with connectors
  - Any optional items ordered
- Step 2** Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:
  - Invoice number of shipper (see packing slip)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

## Installing the Cisco UCS 6248 UP Chassis in a Cabinet or Rack

This section describes how to use the rack-mount kit provided with the chassis to install Cisco UCS 6248 UP into a cabinet or rack. All Cisco UCS 6200 Series Fabric Interconnects use the same basic installation procedure.



### Caution

If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

Table 2-1 lists the items contained in the rack-mount kit provided with the chassis.

**Table 2-1** *Cisco UCS 6248 UP Rack-Mount Kit*

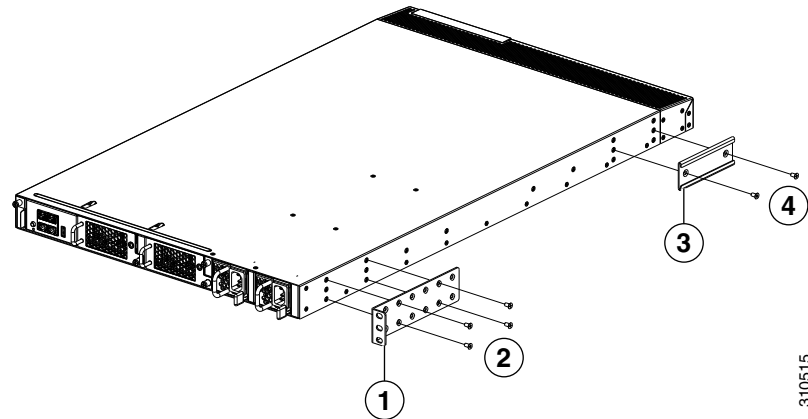
Quantity	Part Description
2	Rack-mount brackets
12	M4x0.7 x 8-mm Phillips countersink screws
2	Rack-mount guides
10	10-32 rack nuts
10	10-32 x 3/4-inch Phillips pan-head screws
2	Slider rails (20 inch minimum to a 36 inch maximum)

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

To install the chassis in a cabinet or rack using the rack-mount kit provided with the chassis, follow these steps:

- Step 1** Install the front rack-mount brackets as follows:
- Position a front rack-mount bracket against the chassis and align the screw holes as shown in [Figure 2-1](#). Then attach the front rack-mount bracket to the chassis with four M4 screws.
  - Repeat with the other front rack-mount bracket on the other side of the chassis.

**Figure 2-1 Attaching Front Rack-Mount Bracket to the Cisco UCS 6248 UP**



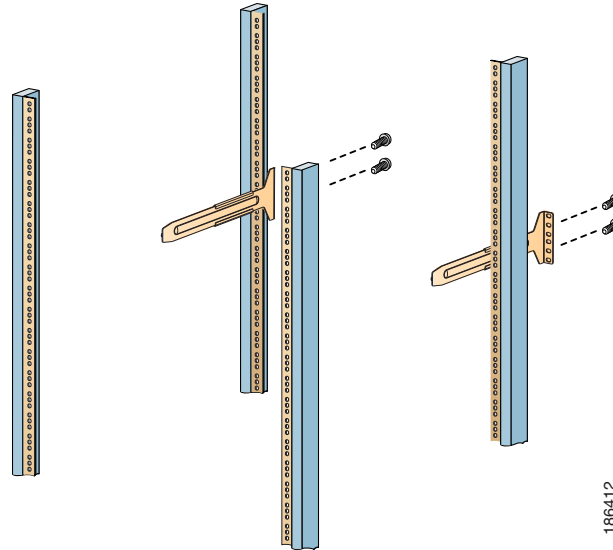
<b>1</b>	Front rack-mount bracket	<b>3</b>	Rack-mount guides
<b>2</b>	Phillips countersink screws	<b>4</b>	Phillips countersink screws

- Step 2** Install the rack-mount guides on the chassis as follows:
- Position one of the rack-mount brackets against the side of the chassis and align the screw holes. See [Figure 2-1](#).
  - Attach the bracket to the chassis with two of the flat-head M4 screws.
  - Repeat with the other rack-mount bracket on the other side of the chassis.
- Step 3** Attach the slider rails to the rack. Use 2 12-24 screws or 2 10-32 screws, depending on the rack rail thread type. For racks with square holes, insert the 12-24 cage nuts in position behind the mounting holes in the slider rails. See [Figure 2-2](#).
- Repeat with the other slider rail on the other side of the rack.
  - Use the tape measure and level to verify that the rails are horizontal and at the same height.



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 2-2**      **Installing the Slider Rails**



**Step 4**      Insert the chassis into the rack:

- a. Using both hands, position the chassis with the back of the chassis between the front posts of the rack.
- b. Align the two rack-mount guides on either side of the chassis with the slider rails installed in the rack. Slide the rack-mount glides onto the slider rails, and then gently slide the chassis all the way into the rack. If the chassis does not slide easily, try realigning the rack-mount glides on the slider rails.

**Step 5**      Stabilize the chassis in the rack by attaching the front rack-mount brackets to the front rack-mounting rails:

- a. Insert 2 screws (12-24 or 10-32, depending on rack type) through the cage nuts and the holes in one of the front rack-mount brackets and into the threaded holes in the rack-mounting rail.
- b. Repeat for the front rack-mount bracket on the other side of the chassis.

## Installing the Cisco UCS 6296 Chassis in a Cabinet or Rack

This section describes how to use the rack-mount kit provided with the chassis to install Cisco UCS 6296 into a cabinet or rack that meets the requirements. All Cisco UCS 6200 Series Fabric Interconnects use the same installation procedure.



**Caution**

If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

Table 2-2 lists the items contained in the rack-mount kit provided with the chassis.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

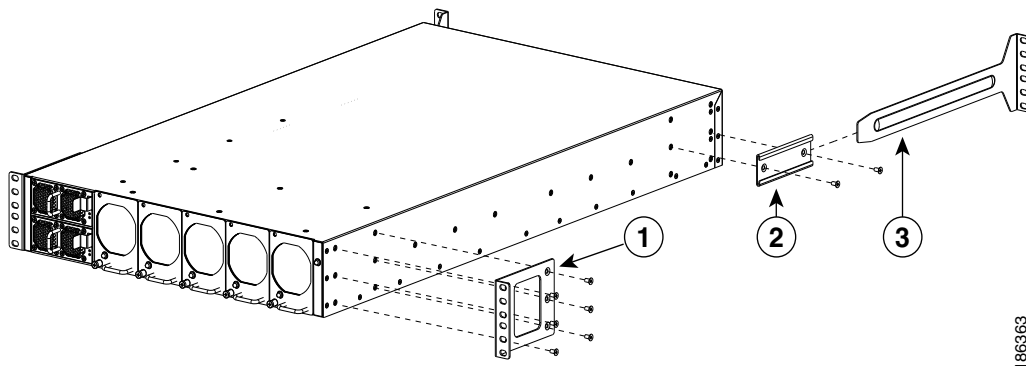
**Table 2-2 Cisco UCS 6296 Rack-Mount Kit**

Quantity	Part Description
2	Rack-mount brackets
12	M4x0.7 x 8-mm Phillips countersink screws
2	Rack-mount guides
10	10-32 rack nuts
10	10-32 x 3/4-inch Phillips pan-head screws
2	Slider rails

To install the chassis in a cabinet or rack using the rack-mount kit provided with the chassis, follow these steps:

- Step 1** Install the front rack-mount brackets as follows:
- Position a front rack-mount bracket against the chassis and align the screw holes as shown in [Figure 2-3](#). Then attach the front rack-mount bracket to the chassis with four M4 screws.
  - Repeat with the other front rack-mount bracket on the other side of the chassis.

**Figure 2-3 Attaching Front Rack-Mount Bracket to a Cisco UCS 6296**



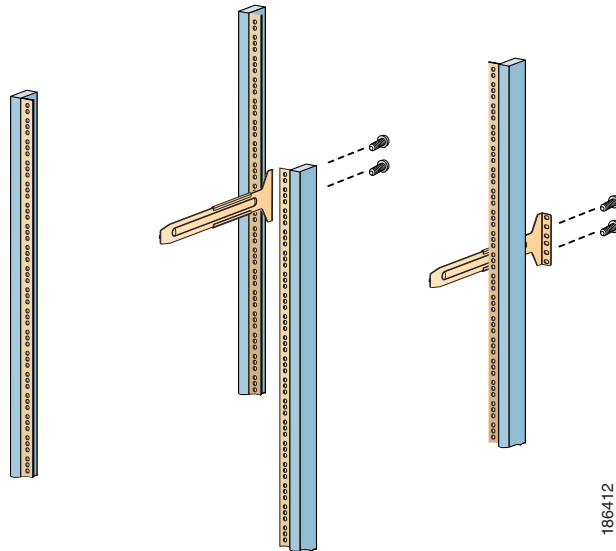
<b>1</b>	Front rack-mount bracket	<b>2</b>	Rack-mount guides	<b>3</b>	Slider rail
----------	--------------------------	----------	-------------------	----------	-------------

- Step 2** Install the rack-mount guides on the chassis as follows:
- Position one of the rack-mount brackets against the side of the chassis and align the screw holes. See [Figure 2-3](#).
  - Attach the bracket to the chassis with two of the flat-head M4 screws.
  - Repeat with the other rack-mount bracket on the other side of the chassis.
- Step 3** Attach the slider rails to the rack. Use 2 12-24 screws or 2 10-32 screws, depending on the rack rail thread type. For racks with square holes, insert the 12-24 cage nuts in position behind the mounting holes in the slider rails. See [Figure 2-4](#).
- Repeat with the other slider rail on the other side of the rack.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- b. Use the tape measure and level to verify that the rails are horizontal and at the same height.

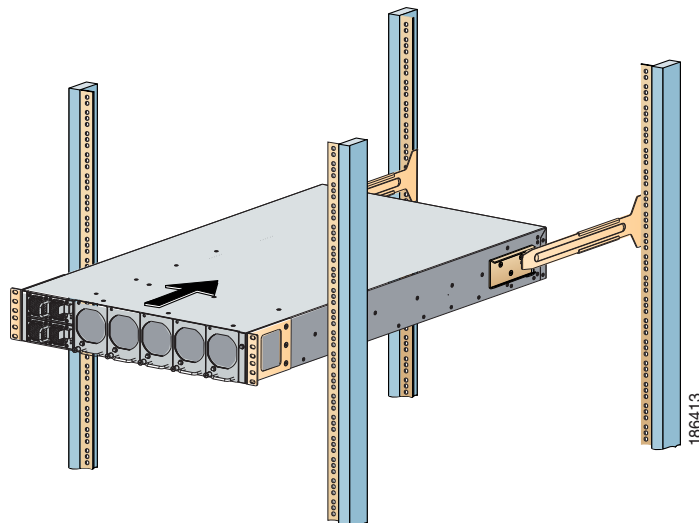
**Figure 2-4** *Installing the Slider Rails*



**Step 4** Insert the chassis into the rack:

- a. Using both hands, position the chassis with the back of the chassis between the front posts of the rack.
- b. Align the two rack-mount guides on either side of the chassis with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the chassis all the way into the rack. If the chassis does not slide easily, try realigning the rack-mount guides on the slider rails. See [Figure 2-5](#).

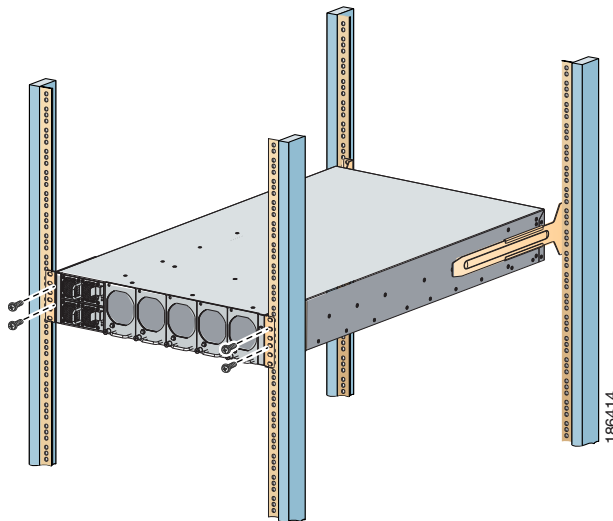
**Figure 2-5** *Sliding the Chassis Into the Rack*



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 5** Stabilize the chassis in the rack by attaching the front rack-mount brackets to the front rack-mounting rails:
- Insert 2 screws (12-24 or 10-32, depending on rack type) through the cage nuts and the holes in one of the front rack-mount brackets and into the threaded holes in the rack-mounting rail.
  - Repeat for the front rack-mount bracket on the other side of the chassis. See [Figure 2-6](#).

**Figure 2-6** *Attaching the Switch to the Rack*



## Grounding the System

This section describes the need for system grounding, explains how to prevent damage from electrostatic discharge, and includes the following topics:

[Proper Grounding Practices, page 2-12](#)

[Preventing Electrostatic Discharge Damage, page 2-14](#)

[Establishing the System Ground, page 2-16](#)

## Proper Grounding Practices

Grounding is one of the most important parts of equipment installation. Proper grounding practices ensure that the buildings and the installed equipment within them have low-impedance connections and low-voltage differentials between chassis. When you properly ground systems during installation, you reduce or prevent shock hazards, equipment damage due to transients, and data corruption. [Table 2-3](#) lists some general grounding practice guidelines.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table 2-3 Proper Grounding Guidelines**

<b>Environment</b>	<b>Electromagnetic Noise Severity Level</b>	<b>Grounding Recommendations</b>
Commercial building is subjected to direct lightning strikes.  For example, some places in the United States, such as Florida, are subject to more lightning strikes than other areas.	High	All lightning protection devices must be installed in strict accordance with manufacturer recommendations. Conductors carrying lightning current should be spaced away from power and data lines in accordance with applicable recommendations and codes. Best grounding recommendations must be closely followed.
Commercial building is located in an area where lightning storms frequently occur but is not subject to direct lightning strikes.	High	Best grounding recommendations must be closely followed.
Commercial building contains a mix of information technology equipment and industrial equipment, such as welding.	Medium to high	Best grounding recommendations must be closely followed.
Existing commercial building is not subject to natural environmental noise or man made industrial noise. This building contains a standard office environment. This installation has a history of malfunction due to electromagnetic noise.	Medium	Determine source and cause of noise if possible, and mitigate as closely as possible at the noise source or reduce coupling from the noise source to the affected equipment. Best grounding recommendations must be closely followed.
New commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system in a new building is often the least expensive route and the best way to plan for the future. Best grounding recommendations should be followed as closely as possible.
Existing commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system is always recommended. Best grounding recommendations should be followed as much as possible.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Note**

In all situations, grounding practices must comply with local National Electric Code (NEC) requirements or local laws and regulations.

**Note**

Always ensure that all of the modules are completely installed and that the captive installation screws are fully tightened. In addition, ensure that all I/O cables and power cords are properly seated. These practices are normal installation practices and must be followed in all installations.

## Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage, which can occur when modules or other devices are improperly handled, results in intermittent or complete failures. Modules consist of printed circuit boards that are fixed in metal carriers. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps to protect the board from ESD, always use an ESD grounding strap when handling modules.

For preventing ESD damage, follow these guidelines:

- Always use an ESD wrist strap and ensure that it makes maximum contact with bare skin.
- ESD grounding straps are available with banana plugs, metal spring clips, or alligator clips. All Cisco UCS 6200 Series Fabric Interconnect chassis are equipped with a banana plug connector (identified by the ground symbol next to the connector) somewhere on the front panel. We recommend that you use a personal ESD grounding strap equipped with a banana plug.
- If you choose to use the disposable ESD wrist strap supplied with most field-replaceable units or an ESD wrist strap equipped with an alligator clip, you must attach the system ground lug to the chassis in order to provide a proper grounding point for the ESD wrist strap.

**Note**

This system ground is also referred to as the network equipment building system (NEBS) ground.

- If your chassis does not have the system ground attached, you must install the system ground lug. See [“Establishing the System Ground” section on page 2-16](#) for installation instructions and location of the chassis system ground pads.

**Note**

You do not need to attach a supplemental system ground wire to the system ground lug; the lug provides a direct path to the bare metal of the chassis.

Before you install the system ground lug, follow these steps to correctly attach the ESD wrist strap:

**Step 1**

Attach the ESD wrist strap to bare skin as follows:

- a. If you are using the ESD wrist strap supplied with the FRUs, open the wrist strap package and unwrap the ESD wrist strap. Place the black conductive loop over your wrist and tighten the strap so that it makes good contact with your bare skin.
- b. Open the package and remove the ESD wrist strap. Locate the end of the wrist strap that attaches to your body and secure it to your bare skin.

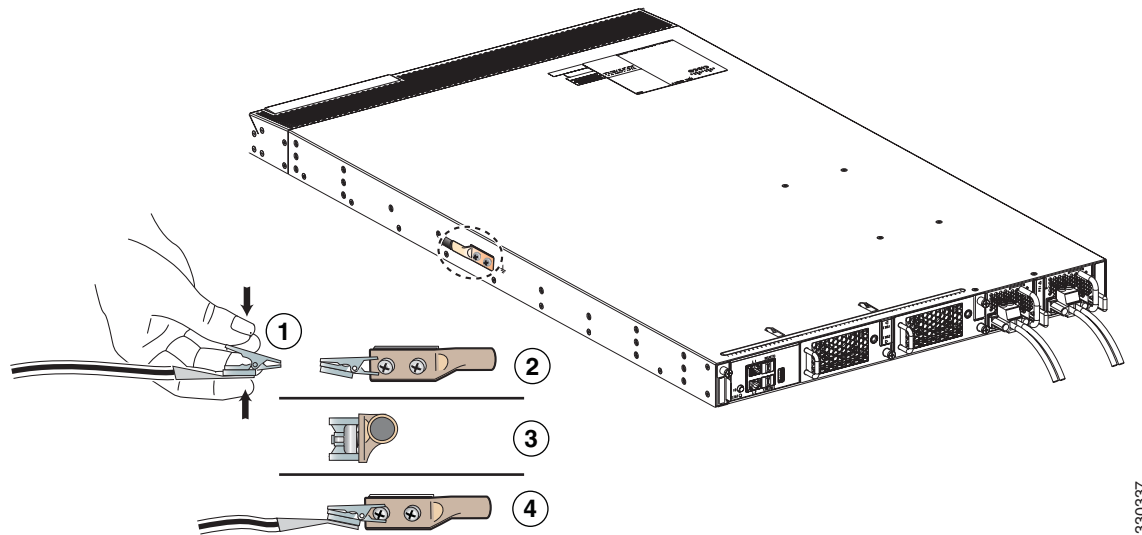
**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

**Step 2** Grasp the spring or alligator clip and momentarily touch the clip to a bare metal spot (unpainted surface) on the rack. We recommend that you touch the clip to an unpainted rack rail so that any built-up static charge is then safely dissipated to the entire rack.

**Step 3** Attach the ESD strap to the system ground in one of the following ways:

- If you are using a wrist strap that is equipped with a plug, insert the plug into an open screw hole used for the grounding lug as shown in [Figure 2-7](#).
- If you are using a wrist strap with spring or alligator clips, attach either the spring clip or the alligator clip to the ground lug screw as follows (see [Figure 2-7](#)):

**Figure 2-7 Attaching the ESD Wrist Strap to the Cisco UCS 6248 UP System Ground Lug Screw**



<b>1</b>	Open the clip by pressing its handles together.	<b>2</b>	Side view of the clip being attached to one of the screws holding the grounding lug to the chassis.
<b>3</b>	Back view of the clip attached to the clip attached to the grounding screw.	<b>4</b>	Side view of the clip attached to the grounding screw.

If you are using the ESD wrist strap that is supplied with the FRUs, squeeze the spring clip jaws open, position the spring clip to one side of the system ground lug screw head, and slide the spring clip over the lug screw head so that the spring clip jaws close behind the lug screw head.



**Note**

The spring clip jaws do not open wide enough to fit directly over the head of the lug screw or the lug barrel.

If you are using an ESD wrist strap that is equipped with an alligator clip, attach the alligator clip directly over the head of the system ground lug screw or to the system ground lug barrel.

In addition, follow these guidelines when handling modules:

- Handle carriers by available handles or edges only; avoid touching the printed circuit boards or connectors.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Place a removed component board-side-up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Never attempt to remove the printed circuit board from the metal carrier.



**Caution**

For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohm (Mohm).

## Establishing the System Ground

This section describes how to connect a system ground to the Cisco UCS 6200 Series Fabric Interconnect.



**Note**

This system ground is referred to as the network equipment building system (NEBS) ground.

You must use the NEBS ground on AC-powered systems if you are installing this equipment in a U.S. or European Central Office.

The NEBS ground provides additional grounding for EMI shielding requirements and grounding for the low-voltage supplies (DC-DC converters) on the modules, and is intended to satisfy the Telcordia Technologies NEBS requirements for supplemental bonding and grounding connections. You must observe the following system grounding guidelines for your chassis:

- You must install the NEBS ground connection with any other rack or system power ground connections that you make. The system ground connection is required if this equipment is installed in a U.S. or European Central Office.
- You must connect both the NEBS ground connection and the power supply ground connection to an earth ground. The NEBS ground connection is required if this equipment is installed in a U.S. or European Central Office.
- You do not need to power down the chassis because the Cisco UCS 6200 Series Fabric Interconnect is equipped with AC-input power supplies.

## Required Tools and Equipment

To connect the system ground, you need the following tools and materials:

- Grounding lug—A two-hole standard barrel lug. Supports up to 6 AWG wire. Supplied as part of accessory kit.
- Grounding screws—Two M4 x 8mm (metric) pan-head screws. Supplied as part of the accessory kit.
- Grounding wire—Not supplied as part of accessory kit. The grounding wire should be sized according to local and national installation requirements. Depending on the power supply and system, a 12 AWG to 6 AWG copper conductor is required for U.S. installations. Commercially available 6 AWG wire is recommended. The length of the grounding wire depends on the proximity of the chassis to proper grounding facilities.
- No. 1 Phillips head screwdriver.
- Crimping tool to crimp the grounding wire to the grounding lug.
- Wire-stripping tool to remove the insulation from the grounding wire.



*Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)*

## Grounding the Interconnect

The chassis has a grounding pad with two threaded M4 holes for attaching a grounding lug. [Figure 2-9](#) shows how to ground the Cisco UCS 6248 UP. [Figure 2-8](#) shows how to ground the Cisco UCS 6296.



**Warning**

**When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046



**Caution**

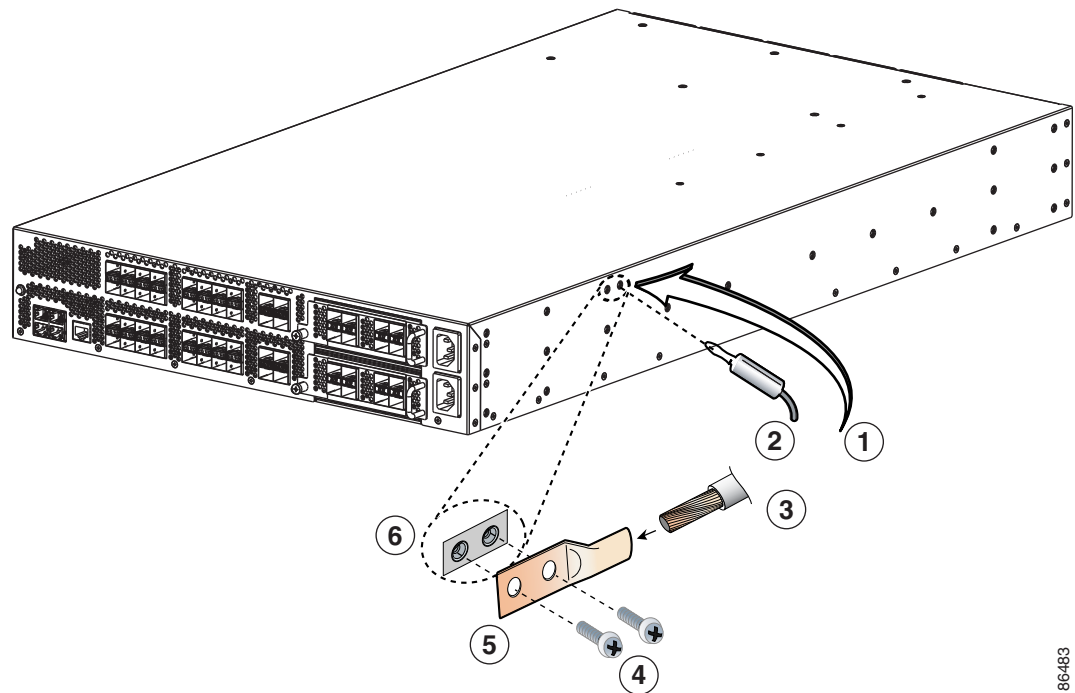
We recommend grounding the chassis, even if the rack is already grounded.



**Caution**

All power supplies must be grounded. The receptacles of the AC power cables used to provide power to the chassis must be the grounding type, and the grounding conductors should connect to protective earth ground at the service equipment.

**Figure 2-8**      *Grounding the Cisco UCS 6296 Fabric Interconnect*



186483

1	ESD socket (on switch)	2	ESD plug
3	Grounding cable	4	Screws, M4, with square cone washers
5	NRTL listed grounding lug	6	Close-up of grounding pad on switch

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**



#### Warning

**When installing or replacing the unit, the ground connection must always be made first and disconnected last.**

Statement 1046



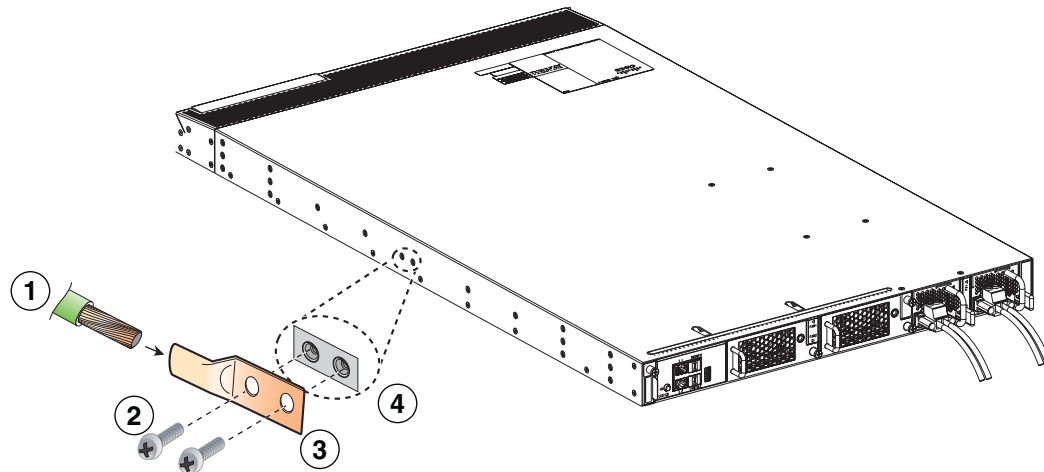
#### Caution

Grounding the chassis is required if you are using DC power supplies, even if the rack is already grounded. A grounding pad with two threaded M4 holes is provided on the chassis for attaching a grounding lug. The ground lug must be NRTL listed. In addition, the copper conductor (wires) must be used and the copper conductor must comply with NEC code for ampacity.

To attach the grounding lug and cable to the chassis, follow these steps:

- Step 1** Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.
- Step 2** Insert the stripped end of the grounding cable into the open end of the grounding lug. (See [Figure 2-9](#), callout 1.)
- Step 3** Use the crimping tool to secure the grounding cable in the grounding lug.
- Step 4** Remove the adhesive label from the grounding pad on the chassis.

**Figure 2-9 Connecting the Cisco UCS 6248 UP System Ground**



330337

- Step 5** Place the grounding lug against the grounding pad so that there is solid metal-to-metal contact, and insert the two M4 screws with washers through the holes in the grounding lug and into the grounding pad.
- Step 6** Ensure that the lug and cable do not interfere with other equipment.
- Step 7** Prepare the other end of the grounding cable and connect it to an appropriate grounding point in your site to ensure adequate earth ground.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Starting the System

This section describes how to power up the system and verify component installation.

**Note**

Do not connect the Ethernet port to the LAN until the initial system configuration has been performed. For instructions on configuring the system, see the [Cisco UCS Manager CLI Configuration Guide](#). For instructions on connecting to the console port, see the “Connecting to the Console Port” section on [page 3-1](#).

**Warning**

**When installing or replacing the unit, the ground connection must always be made first and disconnected last.**

Statement 1046

**Warning**

**The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.** Statement 1019

To power up the fabric interconnect and verify hardware operation, follow these steps:

- Step 1** Verify that empty power supply slots have filler panels installed, the faceplates of all modules are flush with the front of the chassis, and the captive screws of the power supplies, fan module, and all expansion modules are tight.
- Step 2** Verify that the power supply and the fan modules are installed. (See [Replacing or Installing Power Supplies, page 2-23](#) if necessary.)

**Note**

Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco UCS 6200 Series Fabric Interconnect to your outlet receptacle. See the “Jumper Power Cord” section on [page B-8](#).

- Step 3** Ensure that the chassis is adequately grounded as described in the “Grounding the System” section on [page 2-12](#), and that the AC or DC power available has the required power voltages (see the “Power Specifications” section on [page A-2](#)). For a DC installation, refer to [Wiring a DC Power Connector, page 2-26](#) to correctly wire the DC connector before applying a DC cable.
- Step 4** For a first-time installation, you will need to work with your network manager to determine the following parameters:

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- System name
- Password for the admin account. Choose a strong password that meets the guidelines for Cisco UCS Manager passwords. This password can not be blank.
- Management port IP address and subnet mask
- Default gateway IP address
- DNS server IP address (optional)
- Domain name for the system (optional)

**Step 5** Connect a PC or laptop directly to the console port of the primary or standalone fabric interconnect. In a cluster configuration, the primary will be the fabric interconnect that powers up first. The console port on the terminal should be set to 9600 baud, 8 data bits, no parity, 1 stop bit.

**Step 6** If the fabric interconnect will be running in a cluster with another fabric interconnect, you will need to connect ethernet cables between the L1 and L2 ports. Port L1 on fabric interconnect A connects to L1 on fabric interconnect B, and Port L2 on fabric interconnect A connects to L2 on fabric interconnect B. If the fabric interconnect and the UCS instance will be in standalone mode this will not be necessary.

**Step 7** Connect the power cable to a power source. The system should power on as soon as you connect the AC power cable or DC power connector.

**Step 8** Listen for the fans; they should begin operating when you plug in the power cable.

**Step 9** After the system boots, verify that the LED operation is as follows:

- Fan module—Status LED is green.
- Power supply—Status LED is green.
- After initialization, the system status LED is green, indicating that all chassis environmental monitors are reporting that the system is operational. If this LED is orange or red, one or more environmental monitor is reporting a problem.
- The Link LEDs for the Ethernet connector should not be on unless the cable is connected.

**Note**

The link LEDs for the Fibre Channel ports remain yellow until the ports are enabled, and the LED for the Ethernet connector port remains off until the port is connected.

**Step 10** Try removing and reinstalling a component that is not operating correctly. If it still does not operate correctly, contact your customer service representative for a replacement.

**Note**

If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: [http://www.cisco.com/en/US/support/tsd\\_cisco\\_worldwide\\_contacts.html](http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html).

**Step 11** Verify that the system software has booted and that the system has initialized without error messages. If any problems occur, see [Appendix D, “Troubleshooting Hardware Components.”](#) If you cannot resolve an issue, contact your customer service representative.

**Step 12** Complete the worksheets provided in [Appendix C, “Site Planning and Maintenance Records,”](#) for future reference.

**Step 13** Configure the primary fabric interconnect as described in the Configuration guide for your software release. The procedure is in the “System Configuration” section, “Configuring the Fabric Interconnects” chapter.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 14** Power up, connect the terminal to the console port, and configure the secondary fabric interconnect as described in the Configuration guide for your software release. The procedure is in the “System Configuration” section, “Configuring the Fabric Interconnects” chapter.

**Note**

A setup utility launches automatically the first time you access the system and guides you through the basic configuration. For instructions on how to configure the system and check module connectivity, see the [Cisco UCS Manager CLI Configuration Guide](#) or the [Cisco UCS Manager GUI Configuration Guide](#).

## Replacing or Installing Components

This section describes how to replace and install components, and contains the following topics:

- [Replacing or Installing Expansion Modules, page 2-21](#)
- [Replacing or Installing Power Supplies, page 2-23](#)
- [Replacing a Fan Module, page 2-28](#)
- [Removing a Cisco UCS 6248 UP, page 2-30](#)

**Caution**

To prevent ESD damage, wear grounding wrist straps during these procedures and handle modules by the carrier edges only.

## Replacing or Installing Expansion Modules

You can either replace existing expansion modules or install new ones where expansion modules are not installed. If you are replacing a module, you need to follow the procedures that explain how to remove and install expansion modules. If you are installing an expansion module, you need to follow only the installation procedure.

**Caution**

To prevent ESD damage, wear grounding wrist straps during these procedures. When handling the expansion modules, handle them only on their carrier edges.

**Note**

Install the Cisco UCS 6200 Series Fabric Interconnect chassis in the rack before installing expansion modules. For information about installing the chassis, see the “[Installing the Cisco UCS 6248 UP Chassis in a Cabinet or Rack](#)” section on page 2-7.

This section includes the following topics:

- [Removing an Expansion Module, page 2-22](#)
- [Installing an Expansion Module, page 2-23](#)

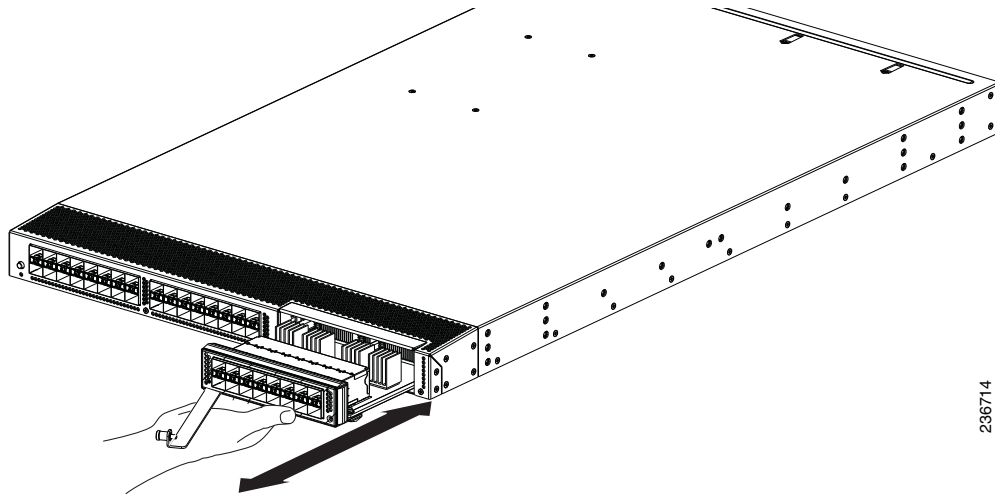
***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Removing an Expansion Module

To remove an expansion module from the chassis, follow these steps:

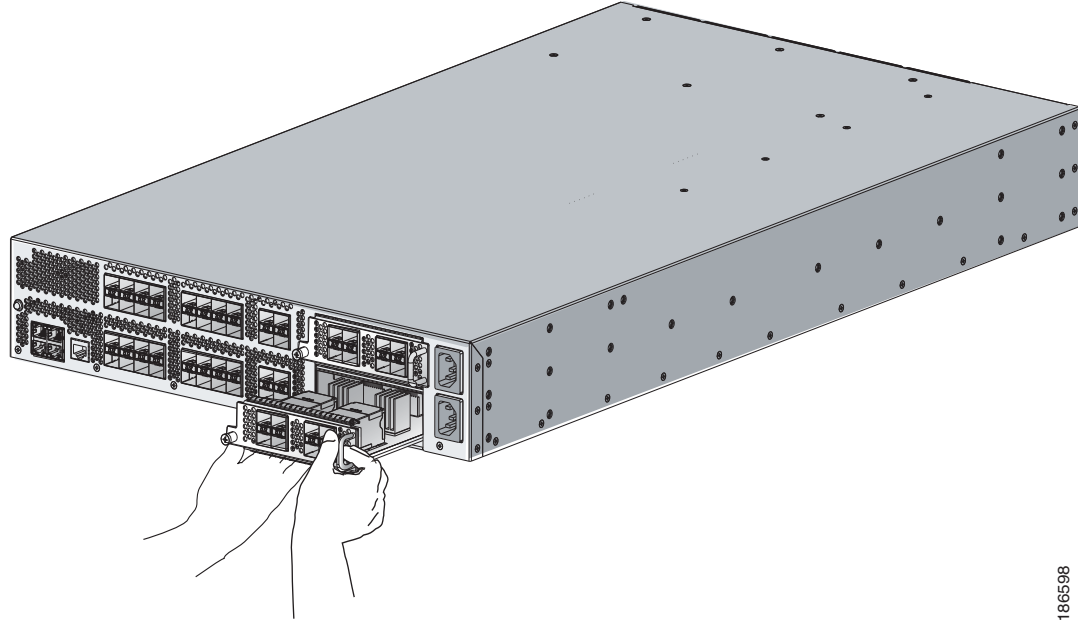
- Step 1** Ensure that the system (earth) ground connection has been made. For ground connection instructions, see the [“Grounding the System”](#) section on page 2-12.
- Step 2** Disconnect any network interface cables attached to the module.
- Step 3** Loosen the captive screw on the module.
- Step 4** Remove the module from the chassis by grasping the handle on the right side of the module and sliding the module part of the way out of the slot. Place your other hand under the module to support the weight of it. Do not touch the module circuitry. See [Figure 2-10](#) or [Figure 2-11](#).

**Figure 2-10**     *Removing an Expansion Module From the Cisco UCS 6248 UP*



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 2-11** Removing an Expansion Module From the Cisco UCS 6296



186598

- Step 5** Place the module on an antistatic mat or antistatic foam if not immediately reinstalling it in another slot.
- Step 6** If you are not installing another expansion module in its place, install a filler panel (UCS-BLKE-6200=) to keep dust out of the chassis and to maintain the designed airflow through the chassis. If you are installing a replacement expansion module, see [Installing an Expansion Module, page 2-23](#).

## Installing an Expansion Module

To install an expansion module, follow these steps:

- Step 1** Ensure that the system (earth) ground connection has been made. For ground connection instructions, see the [“Grounding the System”](#) section on page 2-12.
- Step 2** Grasp the handle of the module and place your other hand under the module to support it.
- Step 3** Gently slide the module into the opening until you cannot push it any further.
- Step 4** Tighten the captive screw on the front of the module.

## Replacing or Installing Power Supplies

The Cisco UCS 6200 Series Fabric Interconnect supports two front-end AC or DC power supplies, but may be used with one power supply. Mixing of AC and DC power supplies is not supported. If you need to replace an existing power supply, follow the procedures that explain how to remove and install power supplies. If you are installing a new power supply where one did not exist before, follow the installation procedure.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Note**

You can replace a faulty power supply while the system is operating provided the other power supply is functioning.

This section includes the following topics:

- [Removing a Power Supply, page 2-24](#)
- [Installing a Power Supply, page 2-25](#)

## Removing a Power Supply

**Caution**

If you are using the Cisco UCS 6200 Series Fabric Interconnect with one power supply, removing the power supply causes the system to shut down. If you are using two power supplies and you remove one of them, the system continues to operate.

To remove an AC or DC power supply, follow these steps:

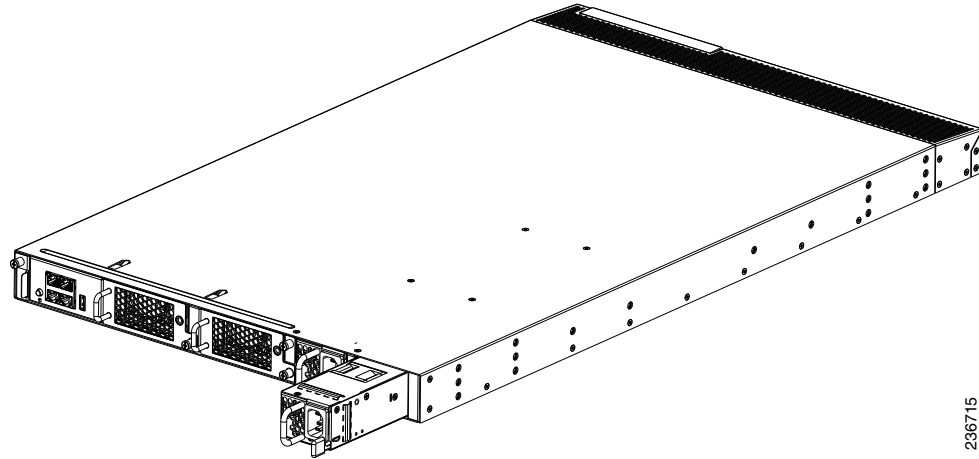
- Step 1** Ensure that the system (earth) ground connection has been made. For ground connection instructions, see the [“Grounding the System” section on page 2-12](#).
- Step 2** Remove the AC power cord or DC wiring connector.
- Step 3** Grasp the power supply handle with your left hand.



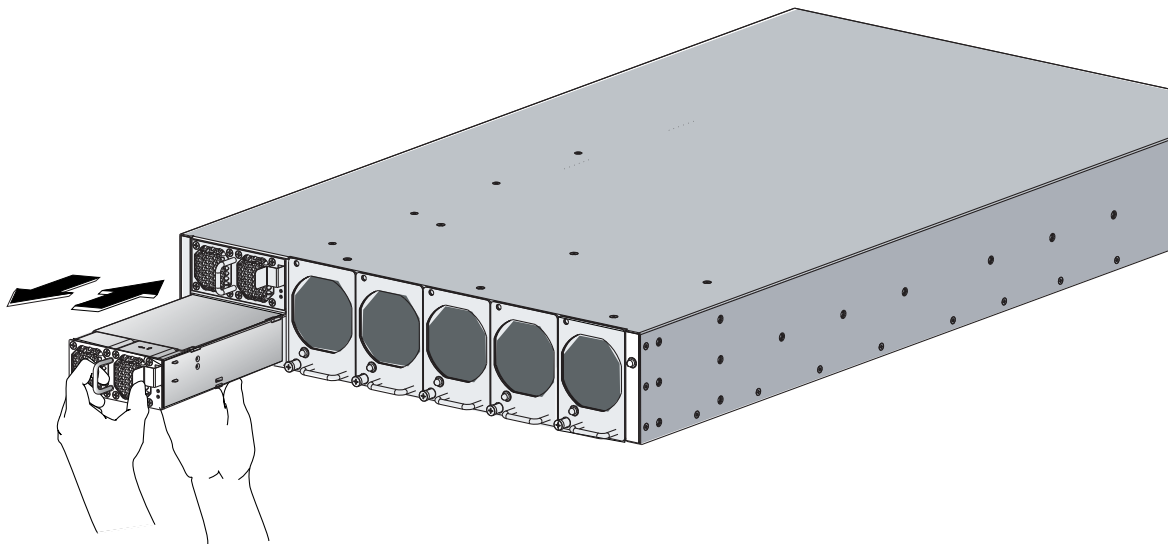
***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 4** Push against the release latch with your left thumb and slide the power supply out of the chassis. See [Figure 2-12](#) or [Figure 2-13](#).

**Figure 2-12** *Removing the Power Supply for the Cisco UCS 6248 UP (AC shown)*



**Figure 2-13** *Removing the Power Supply for the Cisco UCS 6296*



- Step 5** Place your right hand under the power supply to support it while you slide it out of the chassis.
- Step 6** If you are not replacing the power supply, install a blank power supply filler panel. If you are replacing the power supply, see [Installing a Power Supply, page 2-25](#).

## Installing a Power Supply

To install a power supply, follow these steps:

- Step 1** Ensure that the system (earth) ground connection has been made. For ground connection instructions, see the [“Grounding the System”](#) section on [page 2-12](#).

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 2** If the power supply bay has a filler panel, press the latches on the sides of the filler panel, and then slide it out of the power supply bay.
- Step 3** Hold the power supply by the handle and position it so that the release latch is on the right, and then slide it into the power supply bay, ensuring that the power supply is fully seated in the bay.
- Step 4** Plug the AC power cable or DC wiring connector into the inlet receptacle at the rear of the chassis. For a DC installation, you should secure the plug to the power supply by tightening both captive screws on the plug.



**Note** Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco UCS 6200 Series Fabric Interconnect to your outlet receptacle. See the [“Jumper Power Cord” section on page B-8](#).

- Step 5** Connect the other end of the power cable or cables to a power source. DC sources should connect negative (black wire) and then positive (red wire) connections.



**Caution** In a system with dual power supplies, connect each power supply to a separate power source. In case of a power source failure, the second source will most likely still be available.

- Step 6** Verify power supply operation by checking that the power supply LED is green.

## Wiring a DC Power Connector



**Warning** **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.** Statement 1022



**Warning** **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.** Statement 1045



**Warning** **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046



**Warning** **Installation of the equipment must comply with local and national electrical codes.** Statement 1074



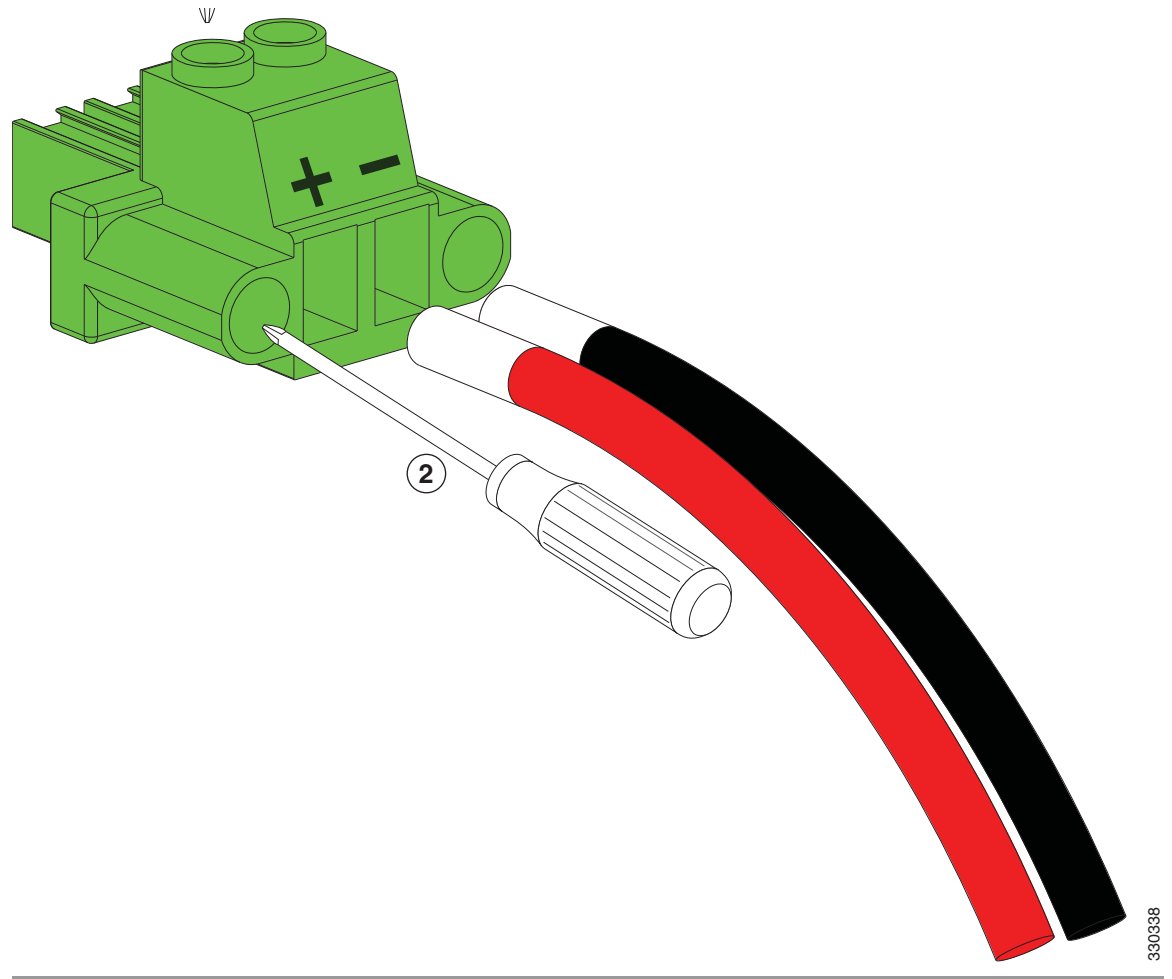
**Warning** **Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.** Statement 1075

Before installing a DC power supply to the fabric interconnect, you will need to attach DC connection wires that you provide (10 GA recommended) to the DC power connector included in the DC power supply's accessory kit. To wire the connector:

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 1** Using a 1/8" flat head screwdriver or No. 1 Phillips head screwdriver, loosen the set screws on the connector to freely accept the power wires. The connector will accept 8-24 AWG wires, use what your local electrical code calls for.
- Step 2** Strip 1/2" of insulation off the DC wires you will use.
- Step 3** Insert the black (DC negative) wire into the right aperture on the connector and tighten down the connection set screw. Finger tight or about 3 ft./lbs should be sufficient.
- Step 4** Insert the red (DC positive) wire into the left aperture on the connector and tighten down the connection set screw. Do not tighten over 0.7 Nm.

**Figure 2-14**      **Wiring the DC Power Connector**



## Fan Modules

The fan module (UCS-FAN-6248UP=) is designed to be removed and replaced while the system is operating without presenting an electrical or thermal hazard or damage to the system, provided that the replacement is performed promptly.

Figure 2-15 shows a fan module partially installed in the Cisco UCS 6248 UP.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

## Replacing a Fan Module



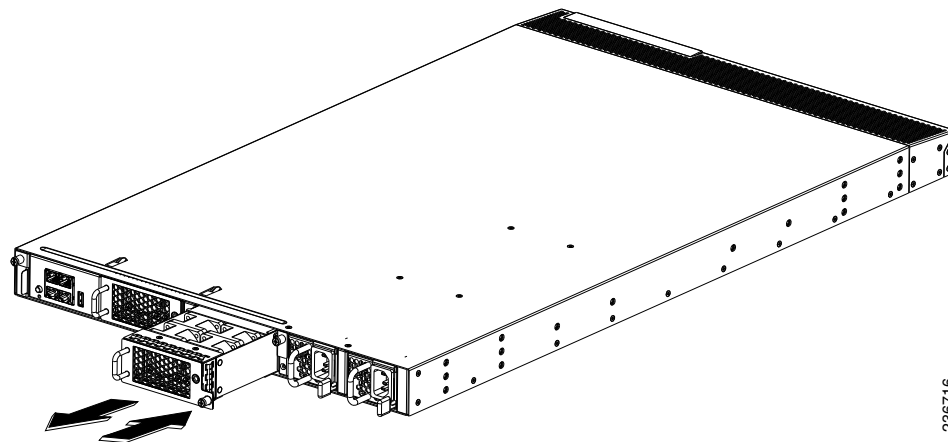
### Warning

**When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray.** Statement 258

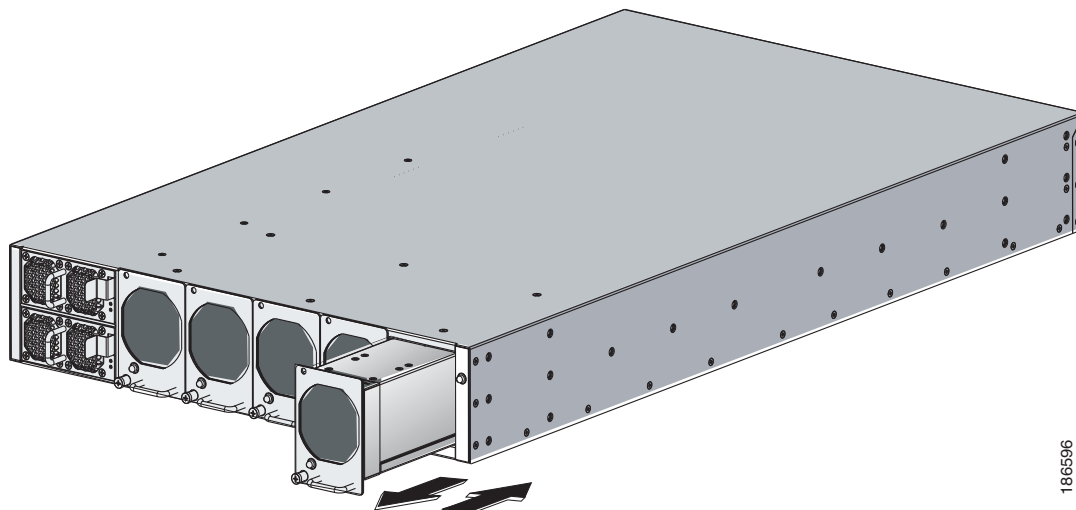
To replace a fan module, follow these steps:

- Step 1** Ensure that the system (earth) ground connection has been made. For ground connection instructions, see the [“Grounding the System”](#) section on page 2-12.
- Step 2** Loosen the captive screws on the fan module by turning them counterclockwise, using a flat-blade or number 2 Phillips head screwdriver if required.
- Step 3** Grasp the handle of fan module and pull it outward as shown in [Figure 2-15](#) or [Figure 2-16](#).

**Figure 2-15** Fan Module for the Cisco UCS 6248 UP



**Figure 2-16** Fan Module for the Cisco UCS 6296



- Step 4** Pull the fan module clear of the chassis and set it down on antistatic foam or place it in an antistatic bag.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 5** Hold the replacement fan module with the LED at the bottom.
- Step 6** Place the fan module into the front chassis cavity so it rests on the chassis, and then push the fan module into the chassis as far as it can go and the captive screw makes contact with the chassis, and tighten the captive screw. See [Figure 2-15](#).
- Step 7** Listen for the fans if the system is powered on. You should immediately hear them operating. If you do not hear them, ensure that the fan module is inserted completely in the chassis and the faceplate is flush with the outside surface of the chassis.
- Step 8** Verify that the LED is green. If the LED is not green, one or more fans are faulty. If this occurs, contact your customer service representative for a replacement part.



**Note**

If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: [http://www.cisco.com/en/US/support/tsd\\_cisco\\_worldwide\\_contacts.html](http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html).

## Preparing a Fabric Interconnect for Removal

Removing a standby fabric interconnect is non-disruptive to a UCS system. Removing an active fabric interconnect will cause the standby fabric interconnect to become active with minimal or no disruption.

Be aware that if you remove both the active and standby fabric interconnect from a UCS system, or the sole fabric interconnect from a standalone system, you are shutting down the entire UCS instance. Before doing this, perform the following tasks:

1. Perform a backup of your UCS Manager configuration as discussed in the “System Management” section, “Backing Up and Restoring the Configuration” chapter of the UCS Manager configuration guide for your software release.
1. Use UCS Manager to shut down the OS on all servers in the UCS instance. Graceful shutdown of a blade server is discussed in the “System Management” section, “Managing Blade Servers” chapter of the UCS Manager configuration guide for your software release. The related CLI commands are:

```
UCS-A# scope org
UCS-A /org # scope service-profile service-profile-name
UCS-A /org/service-profile # power down
```

2. Disable the Smart Call Home feature, as mentioned in the “System Monitoring” section, “Configuring Call Home” chapter of the UCS Manager configuration guide for your software release. The related CLI commands are:

```
UCS-A# scope monitoring
UCS-A /monitoring # scope callhome
UCS-A /monitoring/callhome # disable
```

3. Decommission every attached chassis as described in the “System Management” section, “Managing the Chassis” chapter of the UCS Manager configuration guide for your software release. The related CLI command is **decommission-chassis** *chassis-num*.
4. Power down every attached chassis as described in the installation chapter of the [Cisco UCS 5108 Server Chassis Installation Guide](#).

When powering down and removing clustered fabric interconnects, remove the secondary first, and then remove the primary.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Removing a Cisco UCS 6248 UP

**Caution**

The slider rail and front rack-mount brackets do not have a stop mechanism when sliding in and out. If the front of the chassis is unfastened from the rack and the chassis slides forward on the slider rails, it may slip off the end of the rails and fall out of the rack.

To physically remove the Cisco UCS 6248 UP from a rack, follow these steps:

- 
- Step 1** Ensure that the weight of the Cisco UCS 6248 UP is fully supported and that the chassis is being held by another person.
  - Step 2** Remove the two screws holding the grounding cable to the chassis.
  - Step 3** Disconnect the power cord and the console cables.
  - Step 4** Disconnect all cables that are connected to SFP+ transceivers.
  - Step 5** Remove the screws fastening the front rack-mount brackets to the mounting rails.
  - Step 6** Gently slide the Cisco UCS 6248 UP towards you, off of the slider rails and out of the rack.
- 

## Removing a Cisco UCS 6296

**Caution**

The slider rail and front rack-mount brackets do not have a stop mechanism when sliding in and out. If the front of the chassis is unfastened from the rack and the chassis slides forward on the slider rails, it may slip off the end of the rails and fall out of the rack.

To physically remove the Cisco UCS 6296 from a rack, follow these steps:

- 
- Step 1** Ensure that the weight of the Cisco UCS 6296 is fully supported and that the chassis is being held by another person.
  - Step 2** Remove the two screws holding the grounding cable to the chassis.
  - Step 3** Disconnect the power cord and the console cables.
  - Step 4** Disconnect all cables that are connected to SFP+ transceivers.
  - Step 5** Remove the screws fastening the front rack-mount brackets to the mounting rails.
  - Step 6** Gently slide the Cisco UCS 6296 towards you, off of the slider rails and out of the rack.
-

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Repacking the Cisco UCS Fabric Interconnect for Return Shipment

If you need to return the fabric interconnect, remove the chassis from the rack by following the steps in “[Removing a Cisco UCS 6248 UP](#)” section on page 2-30 or “[Removing a Cisco UCS 6296](#)” section on page 2-30, and repack it for shipment. If possible, use the original packing materials and container to repack the chassis. Contact your Cisco customer service representative to arrange for return shipment to Cisco.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***





## CHAPTER 3

# Connecting the Cisco UCS 6200 Series Fabric Interconnect

---

The Cisco UCS 6200 Series Fabric Interconnect provides the following types of ports:

- RS-232 port—create a local management connection.
- Ethernet ports, encrypted and unencrypted—to connect to a LAN.
- Fibre Channel ports—connect to a SAN.

This chapter includes the following sections:

- [Preparing for Network Connections, page 3-1](#)
- [Connecting to the Console Port, page 3-1](#)
- [Connecting Ports, page 3-4](#)
- [Connecting to an SFP+ Ethernet or Fibre Channel Port, page 3-4](#)
- [Connecting to a Fibre Channel Port, page 3-7](#)

## Preparing for Network Connections

When preparing your site for network connections to the Cisco UCS 6200 Series Fabric Interconnect, consider the following for each type of interface, and gather all the required equipment before connecting the ports:

- Cabling required for each interface type
- Distance limitations for each signal type
- Additional interface equipment required



**Tip**

You can save time and confusion when making cabling changes if you make copies of [Table C-5 on page C-5](#) and keep them accurate to your current configuration.

## Connecting to the Console Port

The console port is an RS-232 port with an RJ-45 interface. (See [Figure 3-1](#).) The console port is an asynchronous (async) serial port; any device connected to this port must be capable of asynchronous transmission.

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

We recommend using this port to create a local management connection to set the IP address and other initial configuration settings before connecting the system to the network for the first time.

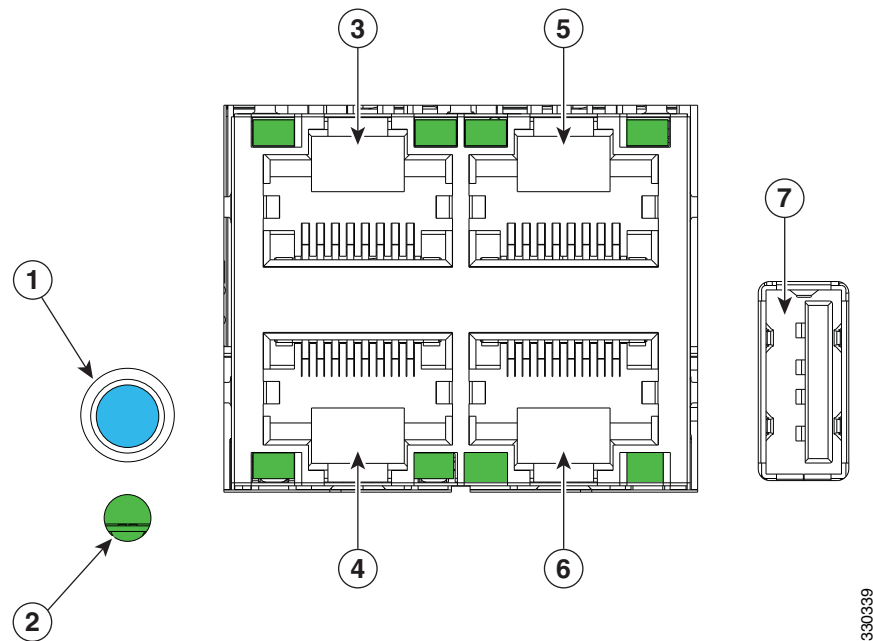


**Caution**

You can use the console port to connect to a modem. If you do not connect it to a modem, connect it either before powering on the system or after the system has completed the boot process.

The front connector ports are in a 2x2 stacked RJ-45 jack. [Figure 3-1](#) shows a close-up view of the Ethernet connector ports, including the console port.

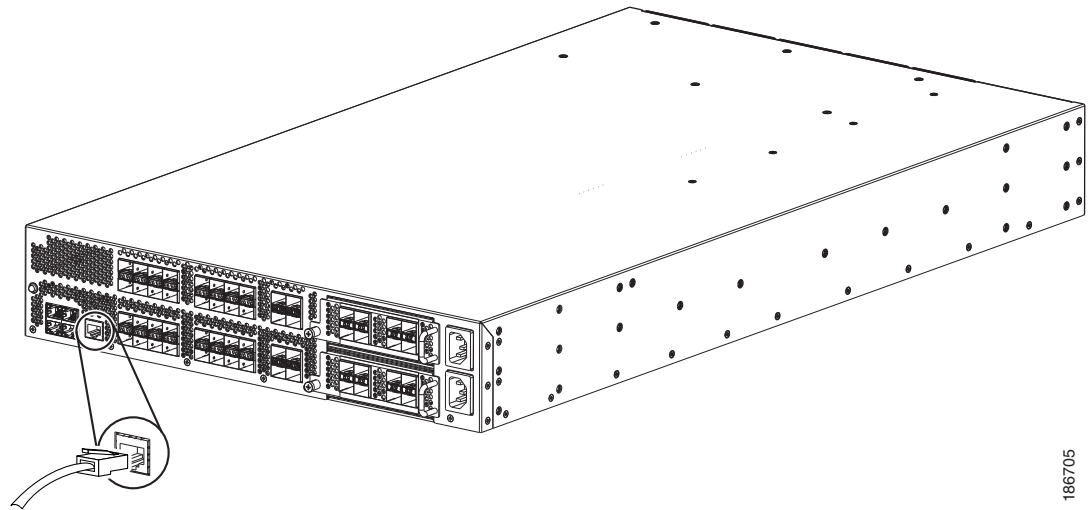
**Figure 3-1 Management Connector Ports, LEDs**



<b>1</b>	Beaconing LED/button	<b>5</b>	Network management port
<b>2</b>	System Status LED	<b>6</b>	Console port
<b>3</b>	UCS cross connect port L1	<b>7</b>	USB port
<b>4</b>	UCS cross connect port L2		

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Figure 3-2** Connecting to the Console Port on a Cisco UCS 6296



You can use the console port to perform the following:

- Configure the Cisco UCS 6200 Series Fabric Interconnect from the CLI.
- Monitor network statistics and errors.
- Configure SNMP agent parameters.
- Download software updates.



**Note**

To connect the console port to a computer terminal, the computer must support VT100 terminal emulation. The terminal emulation software (frequently an application such as HyperTerminal or Procomm Plus) makes communication between the Cisco UCS 6200 Series Fabric Interconnect and a computer possible during setup and configuration.

To connect the console port to a computer terminal, follow these steps:

- Step 1** Configure the terminal emulator program to match the following default port characteristics: 9600 baud, 8 data bits, 1 stop bit, no parity.
- Step 2** Connect the RJ-45 connector of the console cable to the console port (see [Figure 3-1](#)) and the DB-9 connector to the computer serial port. Depending on the laptop you use for the initial configuration, you may also want a USB 2.0 to Serial (9-pin) DB-9 RS-232 Adapter Cable.



**Note**

For configuration instructions, see the [Cisco UCS Manager CLI Configuration Guide](#).

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Connecting Ports

**Caution**

To prevent an IP address conflict, do not connect the management port to the network until the initial configuration is complete. For configuration instructions, see the [Cisco UCS Manager GUI Configuration Guide](#).

The Ethernet connector port has an RJ-45 interface.

To connect the Ethernet connector port to an external hub, switch, or router, follow these steps:

- 
- Step 1** Connect the appropriate modular cable to the Ethernet connector port:
- Use modular, RJ-45, straight-through UTP cables to connect the Ethernet connector port to an Ethernet switch port or hub.
  - Use a cross-over cable to connect to a router interface.
- Step 2** Connect the other end of the cable to the device.
- 

## Connecting to an SFP+ Ethernet or Fibre Channel Port

This section includes the following topics:

- [Installing or Removing SFP+ Transceivers, page 3-4](#)
- [Installing or Removing Cables into SFP or SFP+ Transceivers, page 3-6](#)
- [Maintaining SFP Transceivers and Fiber-Optic Cables, page 3-10](#)

## Installing or Removing SFP+ Transceivers

This section describes installing and removing transceivers, and includes the following topics:

- [Installing a Transceiver, page 3-4](#)
- [Removing a Transceiver, page 3-5](#)

### Installing a Transceiver

Use an SFP+ transceiver to connect to an Ethernet or Fibre channel port.

**Caution**

Excessively installing and removing an SFP or SFP+ transceiver can shorten its life. Do not remove and install transceivers unless it is absolutely necessary. We recommend disconnecting cables before installing or removing transceivers to prevent damage to the cable or transceiver.

To install a transceiver, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

- Step 2** Remove the dust cover from the port cage.
- Step 3** Remove the dust cover from the port end of the transceiver.
- Step 4** Insert the transceiver into the port:
- If the transceiver has a Mylar tab, position the transceiver with the tab on the bottom, and then gently insert the transceiver into the port until it clicks into place.
  - If the transceiver has a bale clasp, position the transceiver with the clasp on the bottom, close the clasp by pushing it up over the transceiver, and then gently insert the transceiver into the port until it clicks into place.

**Caution**

If the transceiver does not install easily, ensure that it is correctly positioned and the tab or clasp are in the correct position before continuing.

**Note**

If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.

## Removing a Transceiver

Use an SFP+ transceiver to connect to an Ethernet or Fibre channel port.

**Caution**

Excessively installing and removing an SFP or SFP+ transceiver can shorten its life. Do not remove and install transceivers unless it is absolutely necessary. We recommend disconnecting cables before installing or removing transceivers to prevent damage to the cable or transceiver.

To remove an SFP+ transceiver, follow these steps:

- Step 1** Attach an ESD wrist strap and follow its instructions for use.
- Step 2** If a cable is installed in the transceiver:
- Record the cable and port connections for later reference.
  - Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.
  - Insert a dust plug into the cable end of the transceiver.

**Caution**

If the transceiver does not remove easily in the next step, push the transceiver completely in and then ensure that the latch is in the correct position before continuing.

- Step 3** Remove the transceiver from the port:
- If the transceiver has a Mylar tab latch, gently pull the tab straight out (do not twist), and then pull the transceiver out of the port.
  - If the transceiver has a bale clasp latch, open the clasp by pressing it downwards, and then pull the transceiver out of the port.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Note**

If you cannot remove the SFP+ transceiver, reseal it by returning the bale clasp to the up position. Press the SFP+ transceiver inward and upward into the cage. Next, lower the bale clasp and pull the SFP+ transceiver straight out with a slight upward lifting force. Be careful not to damage the port cage during this process.

- Step 4** Insert a dust cover into the port end of the transceiver and place the transceiver on an antistatic mat or into a static shielding bag if you plan to return it to the factory.
- Step 5** If another transceiver is not being installed, protect the optical cage by inserting a clean cover.

## Installing or Removing Cables into SFP or SFP+ Transceivers

This section includes the following topics:

- [Installing a Cable into a Transceiver, page 3-6](#)
- [Removing a Cable from a Transceiver, page 3-7](#)

### Installing a Cable into a Transceiver

**Caution**

To prevent damage to the copper cables, do not place more tension on them than the rated limit and do not bend to a radius of less than 1 inch if there is no tension in the cable, or 2 inches if there is tension in the cable.

**Caution**

To prevent possible damage to the cable or transceiver, install the transceiver in the port before installing the cable in the transceiver.

To install a cable into a transceiver, follow these steps:

- Step 1** Attach an ESD wrist strap and follow its instructions for use.
- Step 2** Remove the dust cover from the connector on the cable.
- Step 3** Remove the dust cover from the cable end of the transceiver.
- Step 4** Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place.

**Caution**

If the cable does not install easily, ensure that it is correctly positioned before continuing.

For instructions on verifying connectivity, see the [Cisco UCS Manager GUI Configuration Guide](#).

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Removing a Cable from a Transceiver

**Caution**

To prevent damage to the copper cables, do not place more tension on them than the rated limit and do not bend to a radius of less than 1 inch if there is no tension in the cable, or 2 inches if there is tension in the cable.

**Caution**

When pulling a cable from a transceiver, grip the body of the connector. Do not pull on the jacket sleeve, because this action can compromise the fiber-optic termination in the connector.

**Caution**

If the cable does not remove easily, ensure that any latch present on the cable has been released before continuing.

To remove the cable, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.
  - Step 2** Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.
  - Step 3** Insert a dust plug into the cable end of the transceiver.
  - Step 4** Insert a dust plug onto the end of the cable.
- 

## Connecting to a Fibre Channel Port

This section includes the following topics:

- [Installing or Removing SFP Transceivers, page 3-7](#)
- [Installing or Removing Cables into SFP Transceivers, page 3-9](#)
- [Maintaining SFP Transceivers and Fiber-Optic Cables, page 3-10](#)

## Installing or Removing SFP Transceivers

**Caution**

Excessively removing and installing an SFP transceiver can shorten its life. Do not remove and install transceivers more often than necessary. We recommend that you disconnect cables before installing or removing SFP transceivers to prevent damage to the cable or transceiver.

Use an SFP transceiver to connect to an Fibre Channel port.

This section includes the following topics:

- [Installing an SFP Transceiver, page 3-8](#)
- [Removing an SFP Transceiver, page 3-8](#)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Installing an SFP Transceiver

**Caution**

Excessively removing and installing an SFP transceiver can shorten its life. Do not remove and install transceivers more often than necessary. We recommend that you disconnect cables before installing or removing SFP transceivers to prevent damage to the cable or transceiver.

To install an SFP transceiver, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.
- Step 2** Remove the dust cover from the port cage.
- Step 3** Remove the dust cover from the port end of the transceiver.
- Step 4** Insert the transceiver into the port:
- If the transceiver has a Mylar tab, position the transceiver with the tab on the bottom, and then gently insert the transceiver into the port until it clicks into place.
  - If the transceiver has a bale clasp, position the transceiver with the clasp on the bottom, close the clasp by pushing it up over the transceiver, and then gently insert the transceiver into the port until it clicks into place.

**Caution**

If the transceiver does not install easily, ensure that it is correctly positioned and the tab or clasp are in the correct position before continuing.

**Note**

If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.

## Removing an SFP Transceiver

To remove an SFP transceiver, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.
- Step 2** If a cable is installed in the transceiver:
- a. Record the cable and port connections for later reference.
  - b. Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.
  - c. Insert a dust plug into the cable end of the transceiver.

**Caution**

If the transceiver does not remove easily in the next step, push the transceiver completely in and then ensure that the latch is in the correct position before continuing.



***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Step 3** Remove the transceiver from the port:

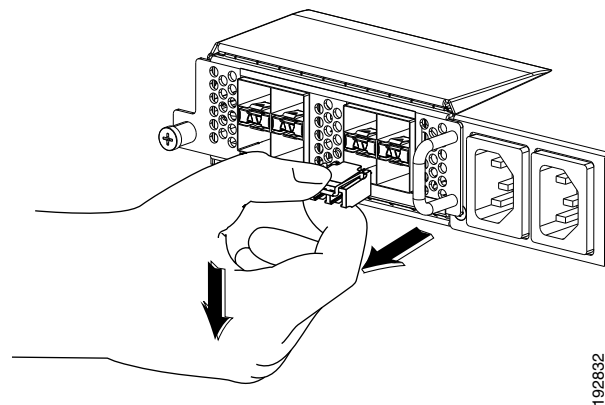
- If the transceiver has a Mylar tab latch, gently pull the tab straight out (do not twist), and then pull the transceiver out of the port.
- If the transceiver has a bale clasp latch, open the clasp by pressing it downwards, and then pull the transceiver out of the port.



**Note**

If you have difficulty removing a bale clasp SFP transceiver, reseal the SFP by returning the bale clasp to the up position. Press the SFP inward and upward into the cage. Next, lower the bale clasp and pull the SFP straight out with a slight upward lifting force (see [Figure 3-3](#)). Be careful not to damage the port cage during this process.

**Figure 3-3** *Alternate Removal Method for Bale Clasp SFP Transceivers*



**Step 4** Insert a dust cover into the port end of the transceiver and place the transceiver on an antistatic mat or into a static-shielding bag if you plan to return it to the factory.

**Step 5** If another transceiver is not being installed, protect the optical cage by inserting a clean cover.

## Installing or Removing Cables into SFP Transceivers



**Caution**

To prevent damage to the fiber-optic cables, do not place more tension on them than the rated limit and do not bend to a radius of less than 1 inch if there is no tension in the cable, or 2 inches if there is tension in the cable.

This section includes the following topics:

- [Installing a Cable into an SFP Transceiver, page 3-10](#)
- [Removing a Cable from an SFP Transceiver, page 3-10](#)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Installing a Cable into an SFP Transceiver

**Caution**

To prevent possible damage to the cable or transceiver, install the transceiver in the port before installing the cable in the transceiver.

To install a cable into a transceiver, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.
  - Step 2** Remove the dust cover from the connector on the cable.
  - Step 3** Remove the dust cover from the cable end of the transceiver.
  - Step 4** Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place.

**Caution**

If the cable does not install easily, ensure that it is correctly positioned before continuing.

For instructions on verifying connectivity, see the [Cisco UCS Manager CLI Configuration Guide](#).

---

## Removing a Cable from an SFP Transceiver

**Caution**

When pulling a cable from a transceiver, grip the body of the connector. Do not pull on the jacket sleeve, because this action can compromise the fiber-optic termination in the connector.

**Caution**

If the cable does not remove easily, ensure that any latch present on the cable has been released before continuing.

To remove the cable, follow these steps:

- 
- Step 1** Attach an ESD wrist strap and follow its instructions for use.
  - Step 2** Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.
  - Step 3** Insert a dust plug into the cable end of the transceiver.
  - Step 4** Insert a dust plug onto the end of the cable.
- 

## Maintaining SFP Transceivers and Fiber-Optic Cables

SFP and SFP+ transceivers and fiber-optic cables must be kept clean and dust-free to maintain high signal accuracy and prevent damage to the connectors. Attenuation (loss of light) is increased by contamination and should be below 0.35 dB.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

Consider the following maintenance guidelines:

- Transceivers are static sensitive. To prevent ESD damage, wear an ESD wrist strap that is connected to the chassis.
- Do not remove and insert a transceiver more often than is necessary. Repeated removals and installation can shorten its useful life.
- Keep all optical connections covered when not in use. If they become dusty, clean before using to prevent dust from scratching the fiber-optic cable ends.
- Do not touch ends of connectors to prevent fingerprints and other contamination.
- Clean regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to fiber-optic cleaning procedures for your site.
- Inspect routinely for dust and damage. If damage is suspected, clean and then inspect fiber ends under a microscope to determine if damage has occurred.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***



## APPENDIX **A**

# Technical Specifications

This appendix includes the following sections:

- [System Specifications, page A-1](#)
- [Power Specifications, page A-2](#)
- [Transceiver Specifications, page A-3](#)



**Note**

Specifications for cables and connectors are provided in [Appendix B, “Cable and Port Specifications.”](#)

## System Specifications

[Table A-1](#) lists the specifications for the fabric interconnects.

**Table A-1**      **Physical Specification**

Description	Specification
<b>Physical (Cisco UCS 6248 UP)</b>	
Dimensions (H x W x D)	1.72 in. x 17.3 in. x 29.5 in. (4.4 x 43.9 x 74.9 cm)
Weight (with two power supplies and one expansion module installed)	35 lb (15.875 kg)
<b>Physical (Cisco UCS 6296 UP)</b>	
Dimensions (H x W x D)	3.47 in. (8.8 cm) x 17.3 in. (43.9 cm) x 30.0 in. (76.2 cm)
Weight (with two power supplies and two expansion modules installed)	50 lb (22.680 kg)
<b>Environmental</b>	
Temperature, operating	32 to 104°F (0 to 40°C)
Temperature, nonoperating	-40 to 158°F (-40 to 70°C)
Humidity (RH), noncondensing	5 to 95%
Altitude	0 to 10000 ft (0 to 3000 m)

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## Power Specifications

The power supplies connect to the system through panel mount connectors and connectors attach to the baseboard through cables. There are three connectors on the baseboard, two for power delivery, and one for power supply control signals.

**Table A-2 Specifications for the Cisco UCS 6248UP DC Power Supply (UCS-PSU-6248UP-DC=)**

DC Power Supply Properties	Cisco UCS 6248UP fabric interconnect
Maximum output power	750 W
Input voltage	-40 to -72 VDC
DC-input current at max voltage	25 A maximum @ -40 VDC input
Efficiency	88 to 92% (50 to 100% load)
Maximum input KVA rating	820
DC input terminal block	If a replacement DC connector is needed, a Phoenix Contact part number PC 5/ 2-STF-7,62, order number 1975697 or direct equivalent. Connector information is available at: <a href="http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=1975697">http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=1975697</a>
Output holdup time	4 ms
RoHS compliance	Yes
Hot swappable	Yes
Heat dissipation	2497 BTU/hr (750 W)

**Table A-3 Specifications for the Cisco UCS 6248UP AC Power Supply (UCS-PSU-6248UP-AC=)**

AC Power Supply Properties	Cisco UCS 6248UP fabric interconnect
Maximum output power	750 W
Input voltage	90 to 264 VAC
Frequency	50 to 60 Hz
Efficiency	87 to 92% (50 to 100% load)
RoHS compliance	Yes
Hot swappable	Yes
Heat dissipation	2497 BTU/hr (600 W)

**Table A-4 Specifications for the Cisco UCS 6296 750W Power Supply (N10-PAC2-750W=)**

Description	Specification
AC-input voltage	90 to 264 VAC
AC-input frequency	50 to 60 Hz nominal (Range: 47 to 63 Hz)
AC-input current	9.2 Amps @ 90 VAC

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table A-4**      **Specifications for the Cisco UCS 6296 750W Power Supply (N10-PAC2-750W=)**

Description	Specification
Maximum Input VA	828 VA @ 90 VAC
Maximum output power per power supply	750 W @ 12 VDC (up to two power supplies)
Maximum inrush current	35 A <sub cycle duration
Maximum Heat Output	2561 BTU/hr
Maximum hold up time	12 ms
Power supply output voltage	12 VDC
Efficiency Rating	89% (Climate Savers Gold qualified)

## Transceiver Specifications

Table A-5 lists general specifications for the 10-Gigabit Ethernet SFP+ transceiver module.

**Table A-5**      **General Specifications for the 10-Gigabit Ethernet SFP+ Transceiver Module**

Description	Short Range	
Connector type	LC	
Wavelength	850 nm	
Core size—Cable distance	50 microns—300 m	62.5 microns—33 m

Specifications for these transceivers is at:

[http://www.cisco.com/en/US/docs/interfaces\\_modules/transceiver\\_modules/installation/note/78\\_15160.html](http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15160.html)

## Environmental Conditions and Power Requirement Specifications for SFP+ Transceivers

Table A-6 lists the environmental conditions and power requirement specifications for the 10-Gigabit Ethernet SFP+ transceiver module.

**Table A-6**      **Environmental Conditions and Power Requirement Specifications for the 10-Gigabit Ethernet SFP+ Transceiver Module**

Parameter	Symbol	Minimum	Maximum
Storage temperature	T <sub>S</sub>	-40°C (-40°F)	85°C (185°F)
Case temperature	T <sub>C</sub>	0°C (32°F)	70°C (158°F)
Relative humidity	RH	5%	95%
Module supply voltage	V <sub>CC</sub> T,R	3.1 V	3.5 V

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## General Specifications for Cisco Fibre Channel SFP Transceivers

Table A-7 lists the general specifications for Cisco Fibre Channel SFP transceivers at 4 Gbps.

**Table A-7** General Specifications for Cisco Fibre Channel SFP Transceivers at 4 Gbps

Description	Short Wavelength	
Connector type	LC	
Wavelength	850 nm	
Fibre type	MMF	
Core size—Cable distance <sup>1</sup>	50 microns—328.08 yd (300 m)	62.5 microns—164.04 yd (150 m)
Transmit power	-9 to -2.5 dBm	

1. Approximate; actual distance may vary depending on fiber quality and other factors.

## Environmental Conditions and Power Requirements Specification for SFP Transceivers

Table A-8 provides the maximum environmental and electrical ratings for Cisco Fibre Channel SFP transceivers.

**Table A-8** Environmental Conditions and Power Requirements Specifications for SFP Transceivers

Parameter	Symbol	Minimum	Maximum
Storage temperature <sup>1</sup>	T <sub>S</sub>	-40°C (-40°F)	85°C (185°F)
Case temperature <sup>1, 2</sup>	T <sub>C</sub>	0°C (32°F)	70°C (158°F)
Relative humidity <sup>1</sup>	RH	5%	95%
Module supply voltage <sup>1</sup>	V <sub>CC</sub> T,R	3.1 V	3.5 V

1. Absolute maximum ratings are those values beyond which damage to the device may occur if these limits are exceeded for other than a short period of time.
2. Functional performance is not intended, device reliability is not implied, and damage to the device may occur over an extended period of time between absolute maximum ratings and the recommended operating conditions.





## APPENDIX **B**

# Cable and Port Specifications

---

This appendix provides cable and port specifications, and includes the following sections:

- [Accessory Kit for the Cisco UCS Fabric Interconnect, page B-1](#)
- [Console Port, page B-2](#)
- [Supported Power Cords and Plugs, page B-3](#)
- [Jumper Power Cord, page B-8](#)

## Accessory Kit for the Cisco UCS Fabric Interconnect

The Cisco UCS 6248 Fabric Interconnect accessory kit includes the following items:

- 2 slider rails
- 2 rack-mount guides
- 2 rack-mount brackets
- 12 M4 x 0.7 x 8-mm Phillips countersunk screws
- 10 10-32 rack nuts
- 10 10-32 x 3/4-inch Phillips pan-head screws
- 1 console cable with an RJ-45-RS-232 adapter and a DB9 adapter
- 1 ground lug kit
- 1 ESD wrist strap
- 1 power cord clip (a wire clip that is used to retain the power cord)
- 1 pointer document (specifies where to find the online product documentation)



### Note

---

Additional parts can be ordered from your customer service representative.

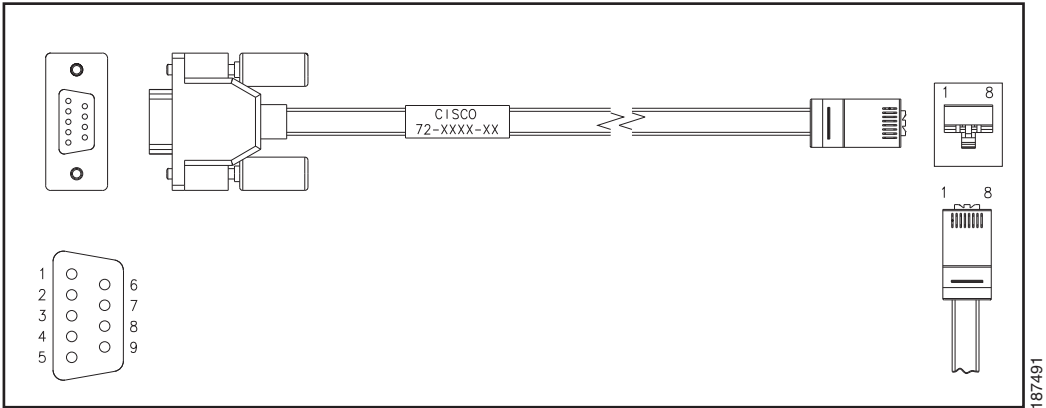
---

[Send document comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

# Console Cable

The console cable has an RJ-45 connector on one end and a DB9 connector on the other; this cable is used to connect into the RS-232 console (see [Figure B-1](#)) connection on a laptop.

Figure B-1 Console Cable



[Table B-1](#) lists the pinouts for the RJ-45 connector on the console cable.

Table B-1 Cable Connector Pinouts

Signal Name	P1, P1-45 Pins	P2, DB-9 Pins	Signal Name
RTS	1	8	CTS
DTR	2	6	DSR
TXD	3	2	ZXD
GND	4	5	GND
GND	5	5	GND
ZXD	6	3	TXD
DSR	7	4	DTR
CTS	8	7	RTS

# Console Port

The console port is an asynchronous RS-232 serial port with an RJ-45 connector.

[Table B-2](#) lists the pinouts for the console port on the Cisco UCS 6200 Series Fabric Interconnect.

Table B-2 Console Port Pinouts

Pin	Signal
1	RTS
2	DTR
3	TxD
4	GND

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table B-2 Console Port Pinouts (continued)**

Pin	Signal
5	GND
6	RxD
7	DSR
8	CTS

Depending on the laptop you use for the initial configuration, you may also want a USB 2.0 to Serial (9-pin) DB-9 RS-232 Adapter Cable as well as a terminal program like Hyperterminal or PuTTY (set to connect at 9600 baud, 8 data bits, 1 stop bit, no parity).

## Supported Power Cords and Plugs

Each power supply has a separate power cord. Standard power cords or jumper power cords are available for connection to a power distribution unit having IEC 60320 C19 outlet receptacles. The jumper power cords, for use in cabinets, are available as an optional alternative to the standard power cords.

The standard power cords have an IEC C19 connector on the end that plugs into the power supplies. The optional jumper power cords have an IEC C19 connector on the end that plugs into the power supplies, and an IEC C20 connector on the end that plugs into an IEC C19 outlet receptacle.



**Note**

Only the regular power cords or jumper power cords provided with the chassis are supported.

[Table B-3](#) lists the power cords for the Cisco UCS 6200 Series Fabric Interconnect and provides their lengths in feet and meters.

**Table B-3 Power Cords for the Cisco UCS 6200 Series Fabric Interconnect**

Description	Length		Power Cord Reference Illustration
	Feet	Meters	
SFS-250V-10A-AR Power Cord, 250 VAC 10 A IRAM 2073 Plug Argentina	8.2	2.5	<a href="#">Figure B-2</a>
CAB-9K10A-AU 250 VAC 10 A 3112 Plug, Australia	8.2	2.5	<a href="#">Figure B-3</a>
SFS-250V-10A-CN Power Cord, 250 VAC 10 A GB 2009 Plug China	8.2	2.5	<a href="#">Figure B-4</a>
CAB-9K10A-EU Power Cord, 250 VAC 10 A M 2511 Plug Europe	8.2	2.5	<a href="#">Figure B-5</a>
SFS-250V-10A-ID Power Cord, 250 VAC 16A EL-208 Plug South Africa, United Arab Emirates, India	8.2	2.5	<a href="#">Figure B-6</a>

**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

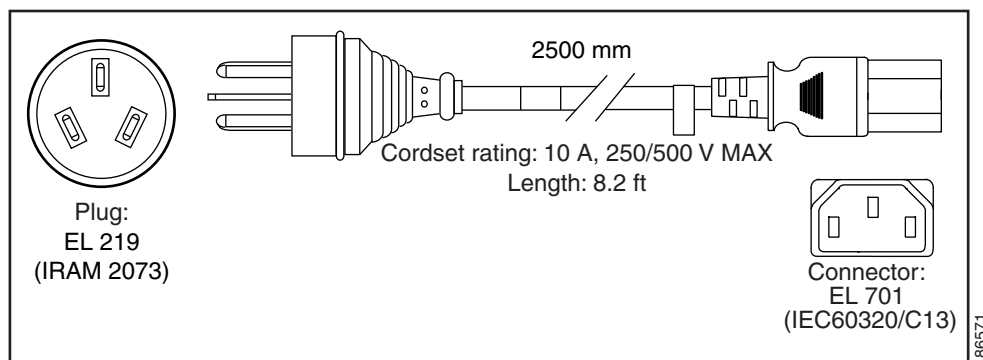
**Table B-3 Power Cords for the Cisco UCS 6200 Series Fabric Interconnect (continued)**

Description	Length		Power Cord Reference Illustration
	Feet	Meters	
SFS-250V-10A-IS Power Cord, 250 VAC 10 A SI32 Plug Israel	8.2	2.5	<a href="#">Figure B-7</a>
CAB-9K10A-IT Power Cord, 250 VAC 10 A CEI 23-16 Plug Italy	8.2	2.5	<a href="#">Figure B-8</a>
CAB-9K10A-SW Power Cord, 250 VAC 10 A MP232 Plug Switzerland	8.2	2.5	<a href="#">Figure B-9</a>
CAB-9K10A-UK Power Cord, 250 VAC 10 A BS1363 Plug (13 A fuse) United Kingdom	8.2	2.5	<a href="#">Figure B-10</a>
CAB-AC-250V/13A Power Cord, 250 VAC 13 A IEC60320 Plug North America	6.6	2.0	<a href="#">Figure B-11</a>
CAB-N5K6A-NA Power Cord, 250 VAC 13 A NEMA 6-15 Plug, North America	8.2	2.5	<a href="#">Figure B-12</a>
CAB-C13-C14-JMPR Cabinet Jumper Power Cord, 250 VAC 13 A, C13-C14 Connectors	2.2	0.7	<a href="#">Figure B-13</a>

## AC Power Cord Illustrations

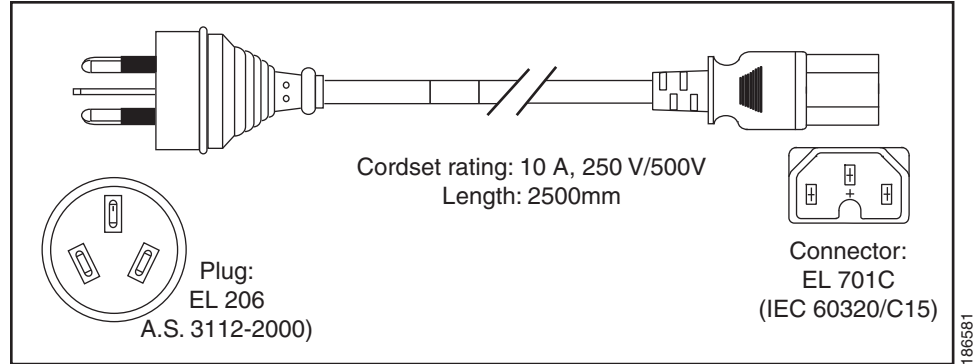
This section contains the AC power cord illustrations.

**Figure B-2 SFS-250V-10A-AR**

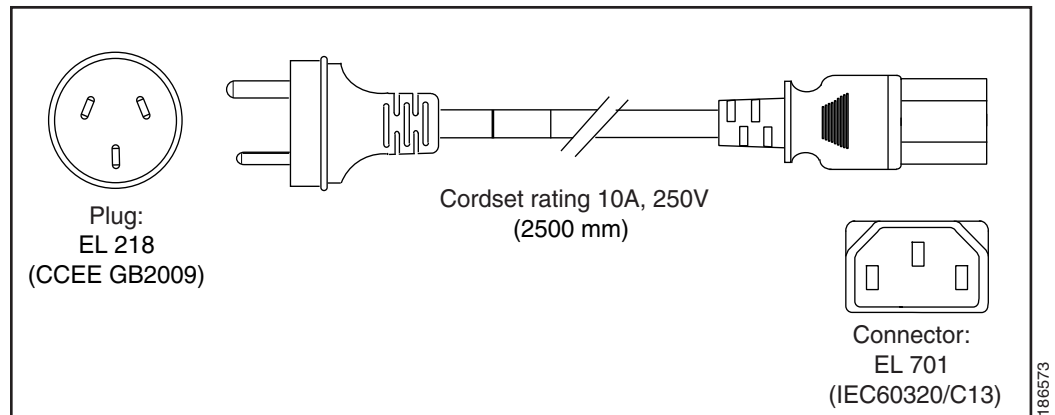


**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

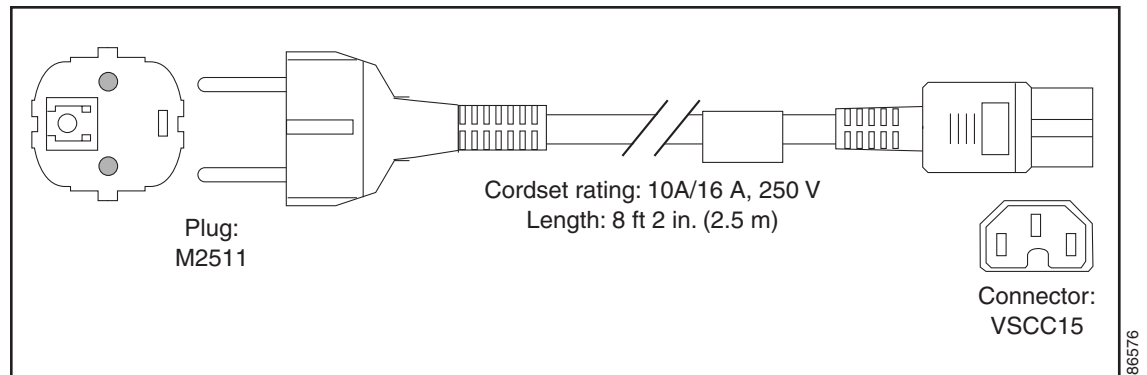
**Figure B-3 CAB-9K10A-AU**



**Figure B-4 SFS-250V-10A-CN**



**Figure B-5 CAB-9K10A-EU**



[Send document comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

Figure B-6 SFS-250V-10A-ID

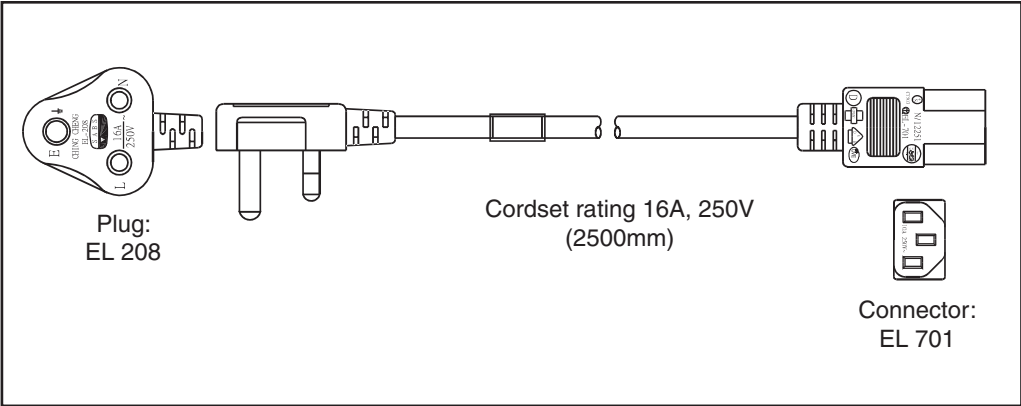


Figure B-7 SFS-250V-10A-IS

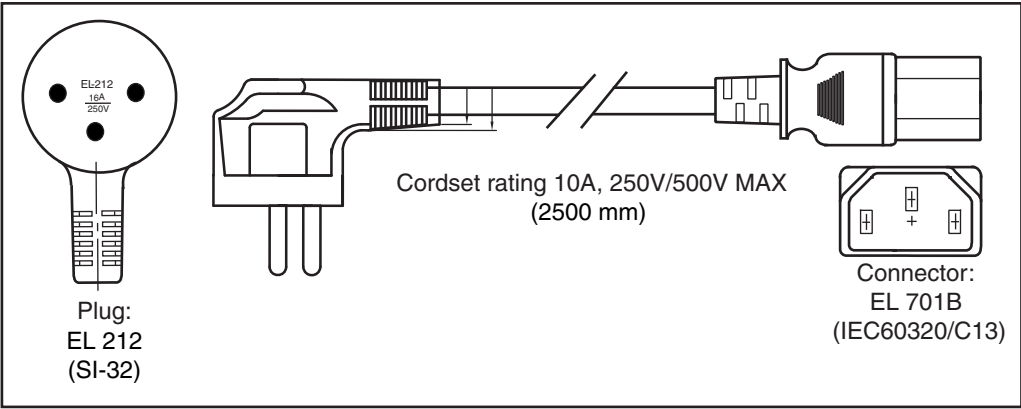
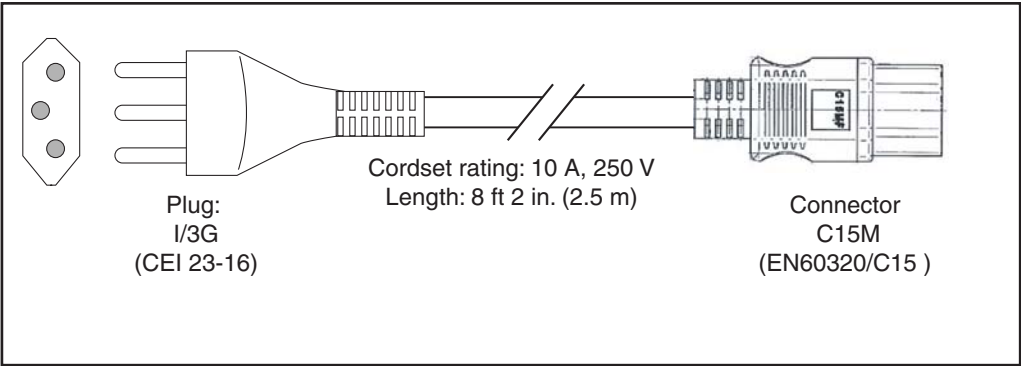
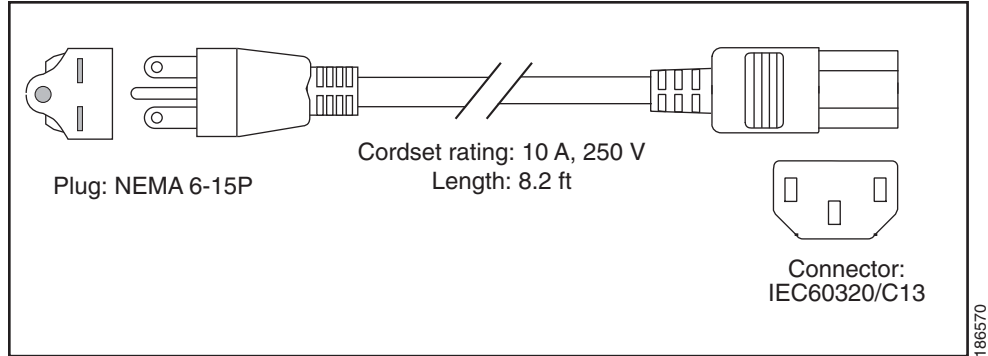


Figure B-8 CAB-9K10A-IT

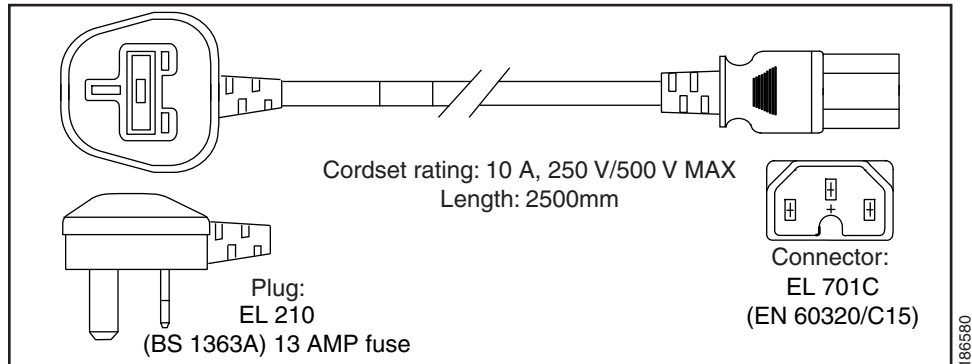


**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

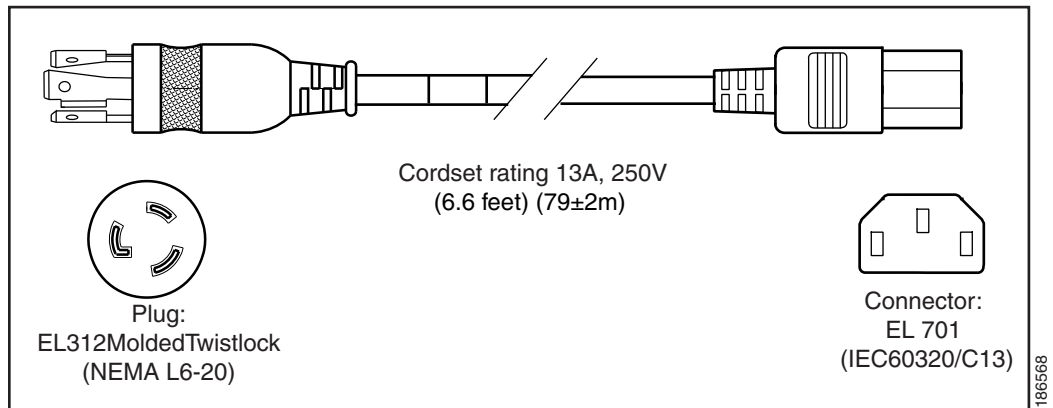
**Figure B-9 CAB-9K10A-SW**



**Figure B-10 CAB-9K10A-UK**

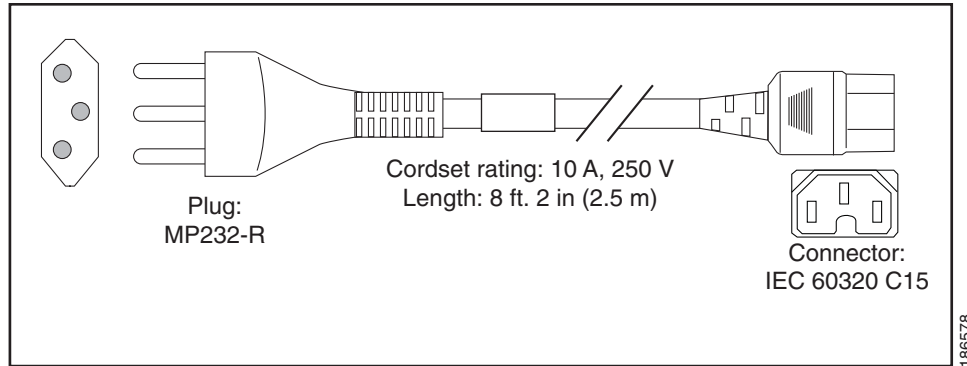


**Figure B-11 CAB-AC-250V/13A**



**Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)**

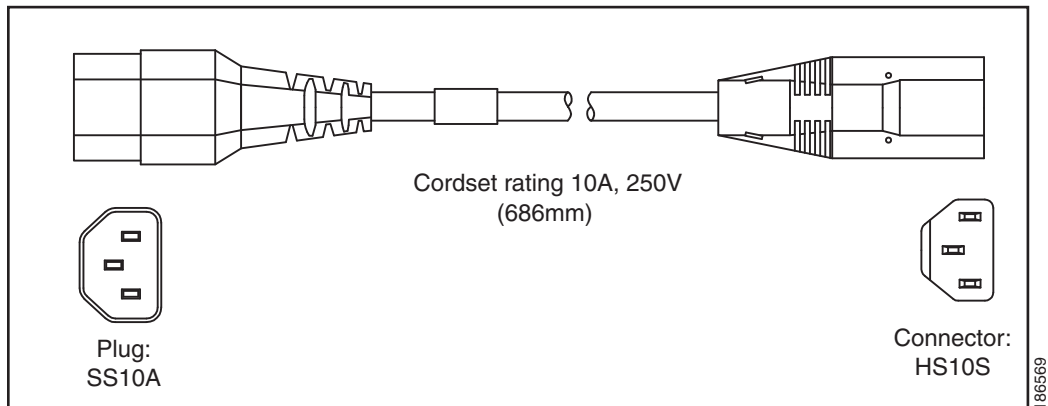
**Figure B-12 CAB-N5K6A-NA**



## Jumper Power Cord

Figure B-13 shows the plug connector on the optional jumper power cord for the Cisco UCS 6200 Series Fabric Interconnect. The plug plugs in to the Cisco UCS 6200 Series Fabric Interconnect power supply, while the connector plugs into the receptacle of a power distribution unit for a cabinet.

**Figure B-13 CAB-C13-C14-JMPR, Jumper Power Cord**







## APPENDIX **C**

# Site Planning and Maintenance Records

---

This appendix includes the following records to use when installing the Cisco UCS 6200 Series Fabric Interconnect:

- [Site Preparation Checklist, page C-1](#)
- [Contact and Site Information, page C-3](#)
- [Chassis and Module Information, page C-4](#)



### Note

---

For software configuration and management information, refer to the [Cisco UCS Manager CLI Configuration Guide](#) or the [Cisco UCS Manager GUI Configuration Guide](#).

---

## Site Preparation Checklist

Planning the location and layout of your equipment is essential for successful system operation, ventilation, and accessibility. [Table C-1](#) lists the site planning tasks that we recommend completing before installing the Cisco UCS 6100 Series Fabric Interconnect.

Consider heat dissipation when sizing the air-conditioning requirements for an installation. See [Table A-6 on page A-3](#) for the environmental requirements, and the “[Power Specifications](#)” section on [page A-2](#) for power and heat ratings.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table C-1 Site Planning Checklist**

Task No.	Planning Activity	Verified By	Time	Date
1	Space evaluation: <ul style="list-style-type: none"> <li>• Space and layout</li> <li>• Floor covering</li> <li>• Impact and vibration</li> <li>• Lighting</li> <li>• Maintenance access</li> </ul>			
2	Environmental evaluation: <ul style="list-style-type: none"> <li>• Ambient temperature</li> <li>• Humidity</li> <li>• Altitude</li> <li>• Atmospheric contamination</li> <li>• Air flow</li> </ul>			
3	Power evaluation: <ul style="list-style-type: none"> <li>• Input power type</li> <li>• Power receptacles<sup>1</sup></li> <li>• Receptacle proximity to the equipment</li> <li>• Dedicated circuit for power supply</li> <li>• Dedicated (separate) circuits for redundant power supplies</li> <li>• UPS<sup>2</sup> for power failures</li> </ul>			
4	Grounding evaluation: <ul style="list-style-type: none"> <li>• Circuit breaker size</li> <li>• CO ground (AC- powered systems)</li> </ul>			
5	Cable and interface equipment evaluation: <ul style="list-style-type: none"> <li>• Cable type</li> <li>• Connector type</li> <li>• Cable distance limitations</li> <li>• Interface equipment (transceivers)</li> </ul>			
6	EMI <sup>3</sup> evaluation: <ul style="list-style-type: none"> <li>• Distance limitations for signaling</li> <li>• Site wiring</li> <li>• RFI<sup>4</sup> levels</li> </ul>			

1. Verify that the power supply installed in the chassis has a dedicated AC source circuit.

2. UPS = uninterruptible power supply.

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

3. EMI = electromagnetic interference.
4. RFI = radio frequency interference.

## Contact and Site Information

Use the following worksheet ([Table C-2](#)) to record contact and site information.

**Table C-2**      **Contact and Site Information**

<b>Contact person</b>	
<b>Contact phone</b>	
<b>Contact e-mail</b>	
<b>Building/site name</b>	
<b>Data center location</b>	
<b>Floor location</b>	
<b>Address (line 1)</b>	
<b>Address (line 2)</b>	
<b>City</b>	
<b>State</b>	
<b>Zip code</b>	
<b>Country</b>	

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

# Chassis and Module Information

Use the following worksheets ([Table C-3](#) and [Table C-4](#)) to record information about the chassis and modules.

Contract Number \_\_\_\_\_

Chassis Serial Number \_\_\_\_\_

Product Number \_\_\_\_\_

**Table C-3**      **Network-Related Information**

<b>System IP address</b>	
<b>System IP netmask</b>	
<b>Hostname</b>	
<b>Domain name</b>	
<b>IP broadcast address</b>	
<b>Gateway/router address</b>	
<b>DNS address</b>	
<b>Modem telephone number</b>	

**Table C-4**      **Module Information**

Slot	Module Type	Module Serial Number	Notes
1	Fixed		
2	Expansion		

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table C-5 Fabric Interconnect Port Connection Record**

Fabric Interconnect A or B		Connected to					
Slot	Port	Chassis	I/OM	Port	LAN or SAN Pin Group	Port Channel Group	Connection Notes
1	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

**Table C-5 Fabric Interconnect Port Connection Record**

Fabric Interconnect A or B		Connected to					
Slot	Port	Chassis	I/OM	Port	LAN or SAN Pin Group	Port Channel Group	Connection Notes
2	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						



## APPENDIX **D**

# Troubleshooting Hardware Components

---

This appendix describes how to identify and resolve problems that might occur with the hardware components of the Cisco UCS 6200 Series Fabric Interconnect. It includes the following sections:

- [Overview, page D-1](#)
- [SNMP Traps, page D-1](#)
- [System Hardware Best Practices, page D-2](#)

## Overview

The key to success when troubleshooting the system hardware is to isolate the problem to a specific system component. The first step is to compare what the system is doing to what it should be doing. Because a startup problem can usually be attributed to a single component, it is more efficient to isolate the problem to a subsystem rather than troubleshoot each separate component in the system.

Problems with the initial power up are often caused by a module that is not firmly connected to the backplane or a power supply that has been disconnected from the power cord connector.

Overheating can also cause problems with the system, though typically only after the system has been operating for an extended period of time. The most common cause of overheating is the failure of a fan module.

## SNMP Traps

You can set SNMP traps to monitor fans, power supplies, and temperature settings, or to test a call home application. Use the following NX-OS commands to set SNMP traps:

- **test pfmtest-SNMP-trap fan**
- **test pfmtest-SNMP-trap power supply**
- **test pfmtest-SNMP-trap temp-sensor**

For details on using SNMP, refer to the [MIB Quick Reference for Cisco UCS](#).

***Send document comments to [ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)***

## System Hardware Best Practices

Use the recommendations in this section to ensure the proper installation, initialization, and operation of the system. This section includes the following topics:

- [Installation Best Practices, page D-2](#)
- [Initialization Best Practices, page D-2](#)
- [System Operation Best Practices, page D-2](#)

### Installation Best Practices

When installing the chassis, follow these best practices:

- Plan your site configuration and prepare the site before installing the chassis.
- Verify that you have the appropriate power supplies for your chassis configuration.
- Install the chassis following the rack and airflow guidelines presented in this guide.
- Verify that the chassis is adequately grounded.

### Initialization Best Practices

When the initial system boot is complete, verify the following:

- Power supplies are supplying power to the system.
- Fan modules are operating normally.
- The system software boots successfully. See the [Cisco UCS Manager CLI Configuration Guide](#) appropriate to your software version.

### System Operation Best Practices

To ensure proper operation of your system, take the following actions:

- Make a copy of the running configuration to CompactFlash for a safe backup.
- Never use the **init system** CLI command unless you understand that you will lose the running and startup configuration as well as the files stored on bootflash:.