



Cisco SFS 3012R Multifabric Server Switch Hardware Installation Guide

Release 2.8.0

Corporate Headquarters

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

Text Part Number: OL-11187-01



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

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

The 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.

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

Cisco SFS 3012R Multifabric Server Switch Hardware Installation Guide
© 2006 Cisco Systems, Inc. All rights reserved.



Preface vii

Audience	vii
Organization	vii
Conventions	viii
Statement 1071—Warning Definition	ix
Related Documentation	xiv
Obtaining Documentation	xv
Cisco.com	xv
Product Documentation DVD	xv
Ordering Documentation	xv
Documentation Feedback	xvi
Cisco Product Security Overview	xvi
Reporting Security Problems in Cisco Products	xvi
Product Alerts and Field Notices	xvii
Obtaining Technical Assistance	xvii
Cisco Technical Support & Documentation Website	xvii
Submitting a Service Request	xviii
Definitions of Service Request Severity	xviii
Obtaining Additional Publications and Information	xix

CHAPTER 1

Cisco SFS 3012R Server Switch Overview 1-1

Introduction	1-1
Features	1-2
Performance	1-2
Unified Fabric	1-2
Transparent Topology	1-2
Redundancy and High-Availability	1-2
Scalability	1-3
Cisco SFS 3012R Server Switch Chassis	1-4
Cisco SFS 3012R Server Switch Components	1-5
Controller Modules	1-5
Ethernet and Fibre Channel Gateways	1-7
InfiniBand Switch Modules	1-9

Power Supply Modules 1-10
Blower Modules 1-11

CHAPTER 2

Installing and Booting the Cisco SFS 3012R Server Switch 2-1

Safety 2-1
Preparing for Installation 2-3
Installing Cisco SFS 3012R Server Switch Components 2-3
Mounting the Cisco SFS 3012R Server Switch on a Rack 2-4
Attaching a Serial Console Cable to a PC or Terminal 2-8
Booting the Cisco SFS 3012R Server Switch and Configuring Basic Connectivity 2-8
 Assigning a Static IP Address 2-9
 Obtaining an IP Address with DHCP 2-9
Connecting InfiniBand Hosts 2-10
Managing the Cisco SFS 3012R Server Switch 2-12

CHAPTER 3

Installing and Removing Server Switch Field Replaceable Units (FRUs) 3-1

Installing a Controller Module 3-2
Adding or Replacing Ethernet or Fibre Channel Gateways 3-3
Installing an InfiniBand Switch Module 3-4
Removing an InfiniBand Switch Module 3-7
Installing a Power Supply Module 3-7
Removing a Power Supply Module 3-9
Installing a Blower Module 3-9
Removing a Blower Module 3-11

CHAPTER 4

Viewing and Updating the Software Image 4-1

Viewing the Software Image Version 4-1
 Viewing the Software Image Version with the CLI 4-2
 Viewing the Software Image Version with the Element Manager GUI 4-3
Updating the Software Image 4-4
 Updating the Software Image with the CLI 4-5
 Updating the Software Image with the Element Manager GUI 4-6
Deleting a Software Image 4-9
 Deleting an Image with the CLI 4-9
 Deleting an Image with the Element Manager GUI 4-10

CHAPTER 5**Cisco SFS 3012R Server Switch LEDs 5-1**

- Cisco SFS 3012R Server Switch System Status LED 5-2
- Power Supply LEDs 5-3
- Blower Module LEDs 5-4
- Controller LEDs 5-5
- InfiniBand LEDs 5-7
 - InfiniBand Switch Module LEDs 5-7
 - InfiniBand Port LEDs 5-8
- Fibre Channel LEDs 5-9
 - Fibre Channel Gateway LEDs 5-9
 - Fibre Channel Port LEDs 5-10
- Ethernet Gateway LEDs 5-11
 - Ethernet Gateway LEDs 5-12
 - Ethernet Port LEDs 5-12

APPENDIX A**Specifications and Compliance A-1**

- General Specifications A-1
- Electrical Specifications A-2
- Certifications/Regulatory A-2
- Laser Specifications A-2

INDEX



Preface

Audience

The intended audience is the administrator responsible for installing, configuring, and managing server switch equipment. This administrator should have experience administering similar networking or storage equipment.

Organization

This publication is organized as follows:

Chapter	Title	Description
Chapter 1	Cisco SFS 3012R Server Switch Overview	Describes the server switch features including its performance, topology, availability, and scalability. Introduces the components that populate the chassis.
Chapter 2	Installing and Booting the Cisco SFS 3012R Server Switch	Provides step-by-step procedures for installing and booting the Cisco SFS 3012R Server Switch.
Chapter 3	Installing and Removing Server Switch Field Replaceable Units (FRUs)	Provides installation and removal instructions for field replaceable units (FRUs) such as controller modules, expansion modules, InfiniBand switch modules, power modules, and blower modules.
Chapter 4	Viewing and Updating the Software Image	Provides step-by-step procedures for viewing and updating the software image on all modules in the Cisco SFS 3012R Server Switch.
Chapter 5	Cisco SFS 3012R Server Switch LEDs	Explains the LEDs.
Appendix A	Specifications and Compliance	Provides details about product specifications and compliance certifications.

Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands, command options, and keywords are in boldface . Bold text indicates text that you must enter as-is.
<i>italic font</i>	Arguments in commands for which you supply values are in <i>italics</i> . Italics not used in commands indicate emphasis.
Menu1 > Menu2 > Item...	Series indicate a pop-up menu sequence to open a form or execute a desired function.
[]	Elements in square brackets are optional.
{ x y z }	Alternative keywords are grouped in braces and separated by vertical bars. Braces can also be used to group keywords and/or arguments; for example, { interface interface type }.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in <code>screen font</code> .
boldface screen font	Information you must enter is in boldface screen font .
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Notes use the following conventions:



Note

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

Cautions use the following conventions:



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Statement 1071—Warning Definition

This section repeats in multiple languages the basic warning appropriate for the Cisco SFS 3012R Server Switch. Refer to the *Regulatory Compliance and Safety Information for the Cisco SFS 7000P, SFS 7008P, and SFS 3012R Switches* for translations of all warning messages.



Warning

IMPORTANT SAFETY INSTRUCTIONS

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

SAVE THESE INSTRUCTIONS

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

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**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 rejtő 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.

ORIZZE 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**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 للصدمة 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

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 upoznati 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 συνήθεις 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 prevedените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОБИЕ НАПАТСТВИЈА

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

Related Documentation

For additional information about the Cisco SFS 3012R Server Switch and related products and interfaces, refer to the following publications:

- *Regulatory Compliance and Safety Information for the Cisco SFS 7000P, SFS 7008P, and SFS 3012R Switches*
- *Cisco SFS 7000 Series Product Family Command Reference*
- *Cisco SFS 7000 Series Product Family Element Manager User Guide*

- *Cisco SFS 7000 Series Product Family Chassis Manager User Guide*
- *Cisco SFS 7008 InfiniBand and Cisco 3012 Multifabric Server Switches Optional Shelf Kit, Contents and Installation Guide*
- *Cisco SFS 3000 Series Product Family Fibre Channel Gateway User Guide*
- *Cisco SFS 3000 Series Product Family Ethernet Gateway User Guide*

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. This section explains the product documentation resources that Cisco offers.

Cisco.com

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

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

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

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

Product Documentation DVD

The Product Documentation DVD is a library of technical product documentation on a portable medium. The DVD enables you to access installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the HTML documentation and some of the PDF files found on the Cisco website at this URL:

<http://www.cisco.com/univercd/home/home.htm>

The Product Documentation DVD is created and released regularly. DVDs are available singly or by subscription. Registered Cisco.com users can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at the Product Documentation Store at this URL:

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

Ordering Documentation

You must be a registered Cisco.com user to access Cisco Marketplace. Registered users may order Cisco documentation at the Product Documentation Store at this URL:

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

If you do not have a user ID or password, you can register at this URL:

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

Documentation Feedback

You can provide feedback about Cisco technical documentation on the Cisco Technical Support & Documentation site area by entering your comments in the feedback form available in every online document.

Cisco Product Security Overview

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

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

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

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

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

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

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

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

Reporting Security Problems in Cisco Products

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

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

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

- For nonemergencies—psirt@cisco.com

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

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



Tip

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

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

Vulnerability Policy page at this URL:

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

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

If you do not have or use PGP, contact PSIRT to find other means of encrypting the data before sending any sensitive material.

Product Alerts and Field Notices

Modifications to or updates about Cisco products are announced in Cisco Product Alerts and Cisco Field Notices. You can receive Cisco Product Alerts and Cisco Field Notices by using the Product Alert Tool on Cisco.com. This tool enables you to create a profile and choose those products for which you want to receive information.

To access the Product Alert Tool, you must be a registered Cisco.com user. (To register as a Cisco.com user, go to this URL: <http://tools.cisco.com/RPF/register/register.do>) Registered users can access the tool at this URL: <http://tools.cisco.com/Support/PAT/do/ViewMyProfiles.do?local=en>

Obtaining Technical Assistance

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

Cisco Technical Support & Documentation Website

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

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

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

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



Note

Use the **Cisco Product Identification Tool** to locate your product serial number before submitting a request for service online or by phone. You can access this tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link, clicking the **All Tools (A-Z)** tab, and then choosing **Cisco Product Identification Tool** from the alphabetical list. This tool offers three search options: by product ID or model name; by tree view; or, for certain products, by copying and pasting

show command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

**Tip**

Displaying and Searching on Cisco.com

If you suspect that the browser is not refreshing a web page, force the browser to update the web page by holding down the Ctrl key while pressing F5.

To find technical information, narrow your search to look in technical documentation, not the entire Cisco.com website. On the Cisco.com home page, click the **Advanced Search** link under the Search box and then click the **Technical Support & Documentation** radio button.

To provide feedback about the Cisco.com website or a particular technical document, click **Contacts & Feedback** at the top of any Cisco.com web page.

Submitting a Service Request

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

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

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

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

Asia-Pacific: +61 2 8446 7411

Australia: 1 800 805 227

EMEA: +32 2 704 55 55

USA: 1 800 553 2447

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

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

Definitions of Service Request Severity

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

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

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

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

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

Obtaining Additional Publications and Information

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

- The Cisco Online Subscription Center is the website where you can sign up for a variety of Cisco e-mail newsletters and other communications. Create a profile and then select the subscriptions that you would like to receive. To visit the Cisco Online Subscription Center, go to this URL:
<http://www.cisco.com/offer/subscribe>
- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco channel product offerings. To order and find out more about the *Cisco Product Quick Reference Guide*, go to this URL:
<http://www.cisco.com/go/guide>
- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:
<http://www.cisco.com/go/marketplace/>
- Cisco Press publishes a wide range of general networking, training, and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:
<http://www.ciscopress.com>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the *Internet Protocol Journal* at this URL:
<http://www.cisco.com/ipj>
- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:
<http://www.cisco.com/en/US/products/index.html>
- Networking Professionals Connection is an interactive website where networking professionals share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:
<http://www.cisco.com/discuss/networking>
- “What’s New in Cisco Documentation” is an online publication that provides information about the latest documentation releases for Cisco products. Updated monthly, this online publication is organized by product category to direct you quickly to the documentation for your products. You can view the latest release of “What’s New in Cisco Documentation” at this URL:
<http://www.cisco.com/univercd/cc/td/doc/abtnicd/136957.htm>

- World-class networking training is available from Cisco. You can view current offerings at this URL:
<http://www.cisco.com/en/US/learning/index.html>



Cisco SFS 3012R Server Switch Overview

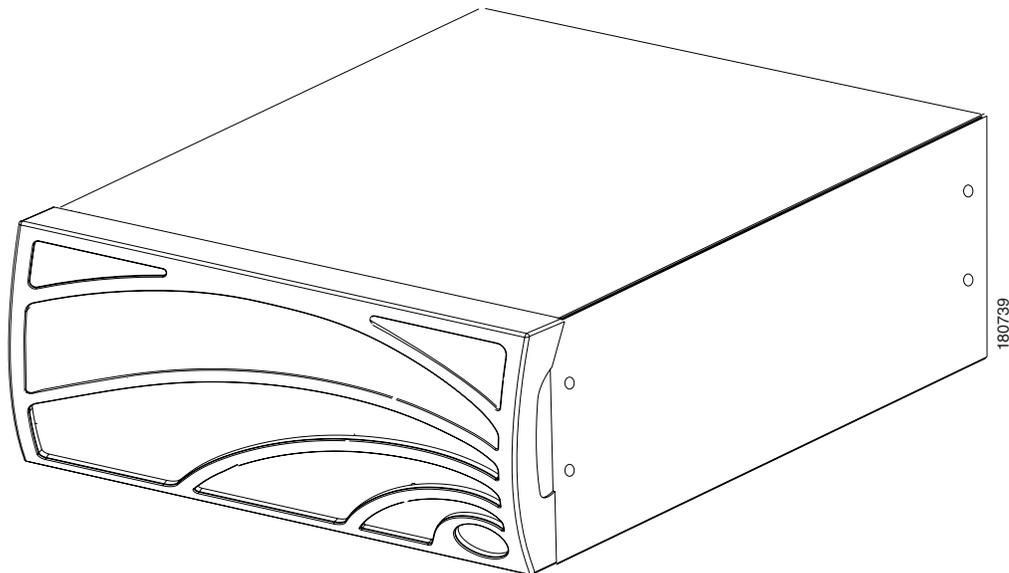
The following sections appear in this chapter:

- Introduction, page 1-1
- Features, page 1-2
- Cisco SFS 3012R Server Switch Chassis, page 1-4
- Cisco SFS 3012R Server Switch Components, page 1-5

Introduction

The Cisco SFS 3012R Server Switch provides data center managers with a high-performance, low-latency interconnect that runs Fibre Channel and Ethernet traffic transparently over an InfiniBand backplane. Figure 1-1 displays the front of the Cisco SFS 3012R Server Switch (with the bezel attached).

Figure 1-1 Cisco SFS 3012R Server Switch Chassis - Front View (Bezel End)



Features

The Cisco SFS 3012R Server Switch provides unprecedented levels of availability, scalability, and manageability for deploying server clusters and on-demand computing. Server switch modules provide up to one terabit of internal bandwidth, and Ethernet or Fibre Channel field-replaceable interface modules enable up to 72 Ethernet ports or up to 24 Fibre Channel ports and up to 24 InfiniBand ports in a single chassis.

Performance

Expressly designed to apply networking principles to computing problems, the Cisco SFS 3012R Server Switch uses a switched InfiniBand fabric to interconnect server resources at 10 Gbps. The combination of high bandwidth and low latency allows resources to be disaggregated and dynamically reassembled without the limits of the shared PCI bus.

Unified Fabric

The Cisco SFS 3012R Server Switch integrates storage, server, and networking I/O into one unified fabric. With only one interface module in each host, you can manage all resources on one fabric and eliminate the need to install and manage multiple Ethernet, Fibre Channel, and inter-process communications (IPC) modules. The Cisco SFS 3012R Server Switch aggregates and load balances all types of I/O, significantly reducing the number of managed ports in your environment and increasing availability.

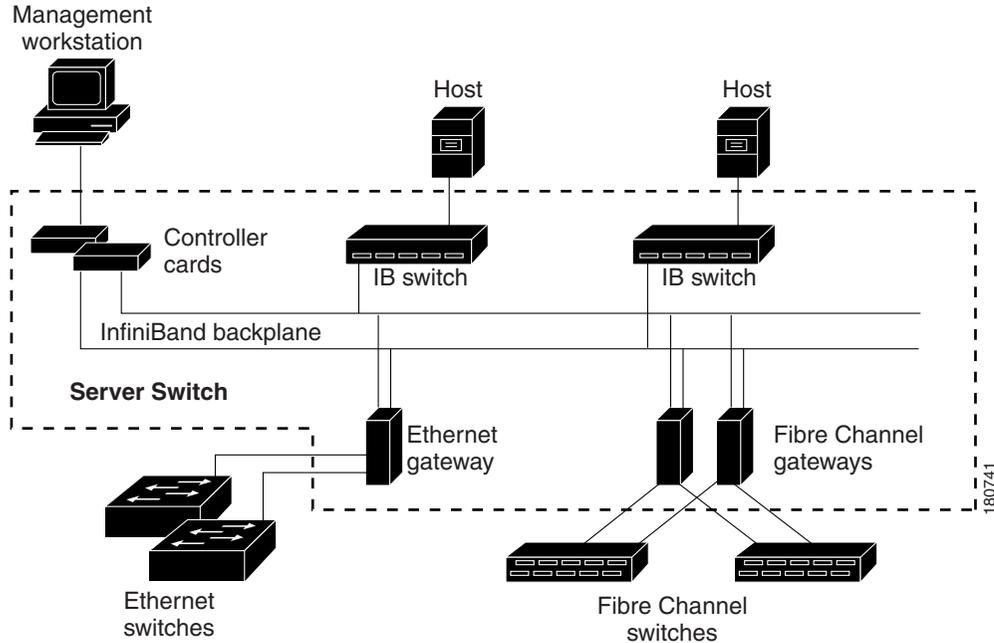
Transparent Topology

Based on the Transparent Topology architecture, the Cisco SFS 3012R Server Switch creates virtual IP and Fibre Channel interfaces on every server, allowing existing IP and storage area network (SAN) resources to seamlessly extend to server clusters. Using Fibre Channel gateways, SAN management technologies can access each individual node, enabling critical storage management and security models, such as Fibre Channel fabric zoning and storage-based logical unit number (LUN) zoning. By adding Ethernet gateways, IT managers can also enable full Internet Protocol (IP) connectivity, extending the value of server clusters to the rest of the enterprise.

Redundancy and High-Availability

The Cisco SFS 3012R Server Switch is architected for full redundancy within a single box. Every component in the data path can be dual-connected from end to end. For example, a server with a 2-port Host Channel Adaptor (HCA) can be dual-attached to the two InfiniBand switch modules on the Cisco SFS 3012R Server Switch. Each gateway is also dual attached to the dual switch module. In turn, the gateway modules are dual attached to Ethernet or Fibre Channel networks in pairs. With the addition of centralized load balancing and port aggregation, Ethernet and Fibre Channel uplink connections can be trunked and load balanced, allowing the Cisco SFS 3012R Server Switch to reroute around failures. Each independently removable component is hot-swappable.

Figure 1-2 shows the internal Cisco SFS 3012R Server Switch architecture. Components within the dotted line reside within the Cisco SFS 3012R Server Switch chassis.

Figure 1-2 Fully Redundant System Architecture

The Cisco SFS 3012R Server Switch can be used in a variety of networking environments, including database tiers, application tiers, and Web tiers. The Cisco SFS 3012R Server Switch provides 10 Gbps per port connectivity to servers, 1 Gbps per port connectivity to Ethernet networks, and 2 Gbps per port connectivity to Fibre Channel networks. You can also aggregate uplinks for greater bandwidth and redundancy.

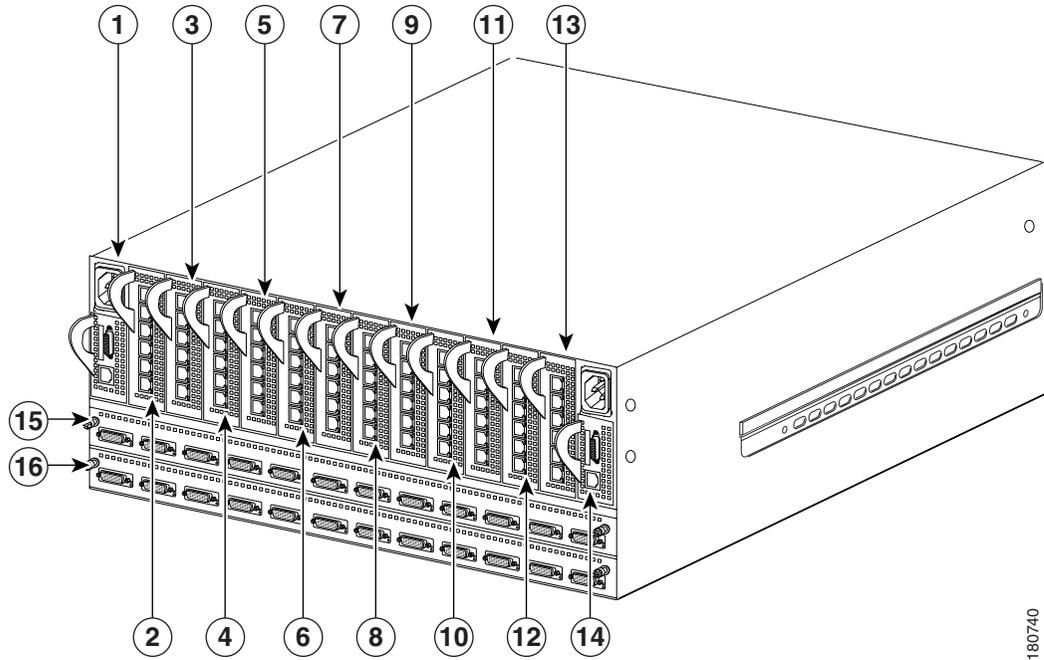
Scalability

You can populate the cable end of the Cisco SFS 3012R Server Switch with additional Fibre Channel gateways, Ethernet gateways, and a second InfiniBand switch module to increase the port count of your server switch. A second InfiniBand switch module adds 12 InfiniBand ports. Each additional Fibre Channel gateway adds 2 Fibre Channel ports. Each additional Ethernet gateway adds 4 or 6 Ethernet ports.

Cisco SFS 3012R Server Switch Chassis

Figure 1-3 displays the back of the Cisco SFS 3012R Server Switch and numbers the slots on the chassis.

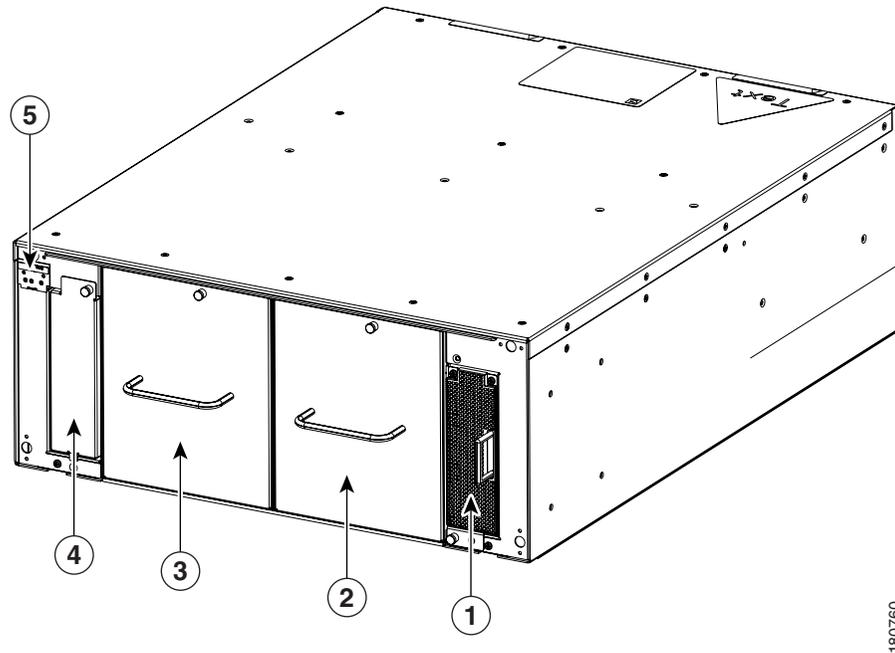
Figure 1-3 Cisco SFS 3012R Server Switch Chassis - Back View (cable End) with Slot Numbers



1	Slot 1—Primary Controller module	15	Slot 15—InfiniBand switch module
2 - 13	Slots 2 through 13—Expansion gateways (Ethernet or Fibre Channel)	16	Slot 16—InfiniBand switch module
14	Slot 14—Standby Controller module		

The vertical slots at the top of the cable end of the Cisco SFS 3012R Server Switch are numbered 1 to 14 from left to right. The horizontal slots at the bottom of the cable end of the chassis are numbered 15 to 16 from top to bottom. Field replaceable units (FRUs) with interfaces populate the cable end of the chassis. FRUs such as power supplies and blower modules populate the front of the chassis, behind the bezel, as shown in Figure 1-4.

Figure 1-4 Cisco SFS 3012R Server Switch Chassis, Front View, Bezel Removed



1	Power supply	4	Power supply (shown empty and covered with blanking panel)
2	Blower module 1	5	System and Blower modules LEDs
3	Blower module 2		

Cisco SFS 3012R Server Switch Components

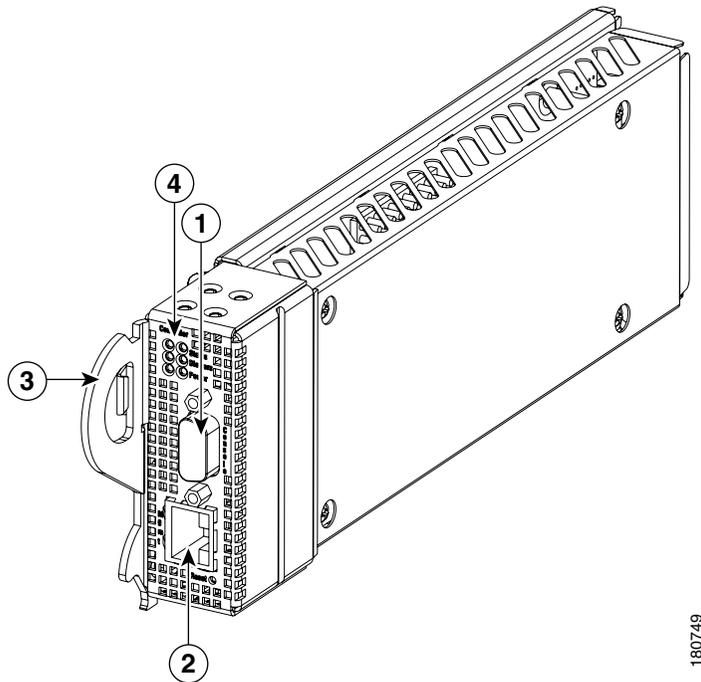
The Cisco SFS 3012R Server Switch components support scalability and high availability. They are all field replaceable. These components include the following:

- Controller modules
- Input/output (I/O) gateways; Fibre Channel and Ethernet
- InfiniBand switch modules
- Power supplies
- Blower modules

Controller Modules

Controller modules manage the Cisco SFS 3012R Server Switch and provide Ethernet and Serial Console port access to the server switch. You can install controller modules in slots 1 and 14 of the Cisco SFS 3012R Server Switch. Figure 1-5 displays the Cisco SFS 3012R Server Switch controller module.

Figure 1-5 Cisco SFS 3012R Server Switch Controller Module



1	Serial console port	3	Ejector lever
2	Management Ethernet port	4	Controller module LEDs

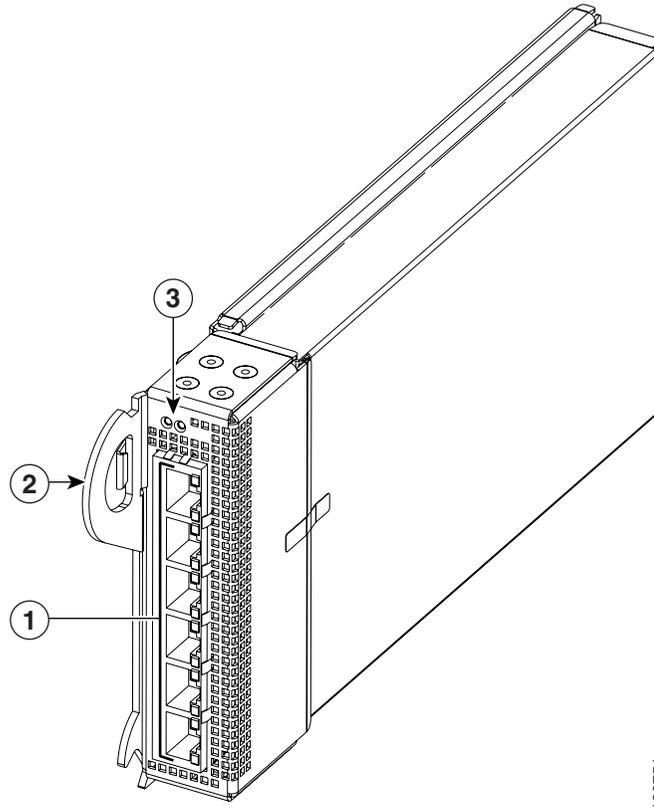
The following points apply to the controller modules:

- Each Cisco SFS 3012R Server Switch comes with one active controller and, optionally, one warm standby controller.
- Upon power-up, the controller in slot 1 becomes the master (active). The controller in slot 14, if present, becomes the standby.
- The startup configuration file can be synchronized between the active and the standby controllers. The Command Line Interface (CLI) prompts users to synchronize the controllers.
- When the master controller fails or reboots, the standby controller automatically takes over as the new master. All I/O modules (InfiniBand switch modules, Fibre Channel gateways and Ethernet gateways) reboot when a failover occurs.
- Users can force a fail-over with the Element Manager graphic user interface (GUI) or with the CLI.
- The software upgrade/install process upgrades both the master controller and the standby controller at the same time. You do not need to upgrade them separately.
- A subnet manager (SM) runs on each controller module. The SM can manage a single Cisco SFS 3012R Server Switch or redundant Cisco SFS 3012R Server Switches.

Ethernet and Fibre Channel Gateways

Ethernet and Fibre Channel gateways connect the Cisco SFS 3012R Server Switch and InfiniBand-connected hosts to IP and Fibre Channel networks. All gateways are dual-connected to the redundant InfiniBand backplane of the Cisco SFS 3012R Server Switch. Figure 1-6 displays an Ethernet gateway. Figure 1-7 displays a Fibre Channel gateway.

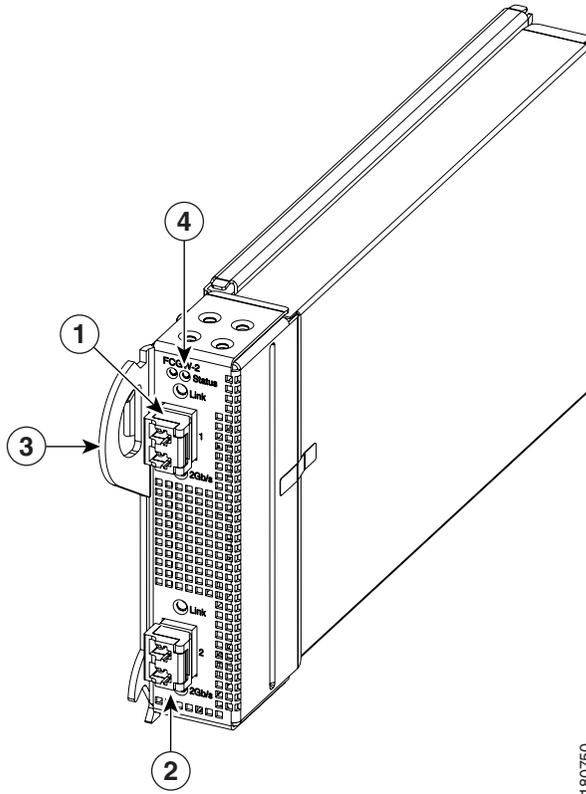
Figure 1-6 Ethernet Gateway Expansion Module



180751

1	Ethernet ports	3	Ethernet gateway status LEDs
2	Ejector handle		

Figure 1-7 Fibre Channel Gateway Expansion Module



180750

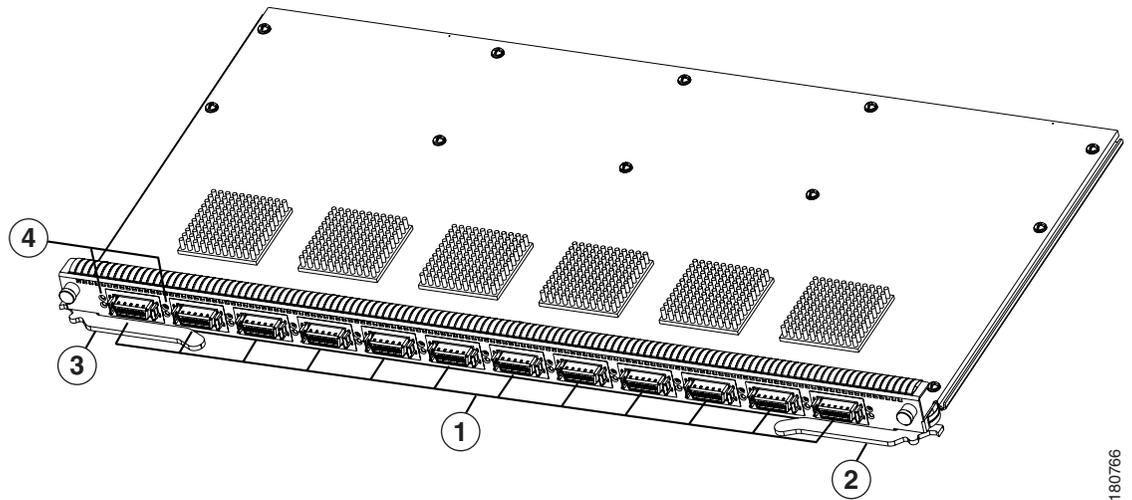
1	Fibre Channel port 1	3	Ejector handle
2	Fibre Channel port 2	4	Fibre Channel gateway status LEDs

InfiniBand Switch Modules

InfiniBand switch modules connect the Cisco SFS 3012R Server Switch to InfiniBand-attached hosts and other switches in the InfiniBand network. The Cisco SFS 3012R Server Switch supports one or two InfiniBand switch modules. The 12-port InfiniBand switch expansion module is shown in Figure 1-8. The switch module provides the following:

- 4x InfiniBand connections to each of the 12 gateway slots
- 12 InfiniBand ports per switch module

Figure 1-8 *InfiniBand Switch Module*

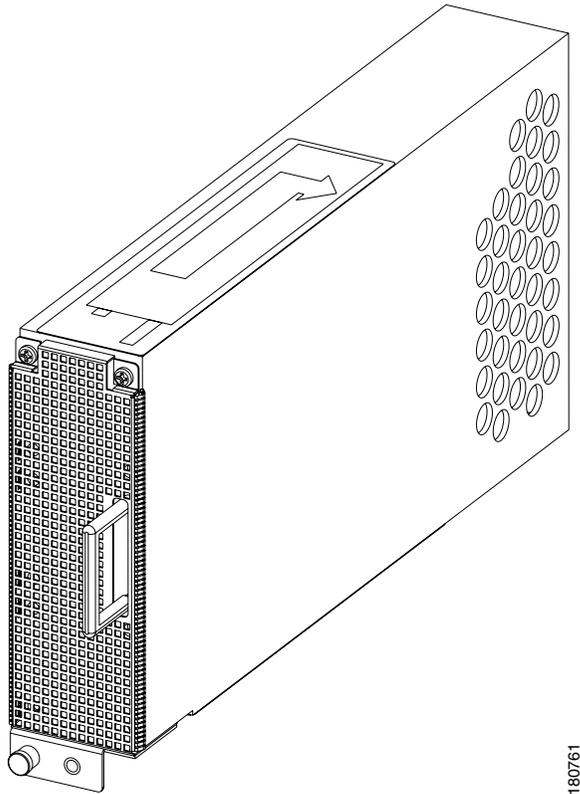


1	InfiniBand ports	3	Ejector lever (left)
2	Ejector lever (right)	4	Status LEDs

Power Supply Modules

Power supply modules reside in slots on the left-hand side and right-hand side of the front (bezel end) of the Cisco SFS 3012R Server Switch as shown in Figure 1-4. Redundant power supplies support hot swaps. When your server switch includes only one power supply, you can add a second power supply while the chassis runs. If you have two power supplies installed, you can remove either one of them without removing power from the chassis. Figure 1-9 shows a power supply module.

Figure 1-9 Power Supply Module

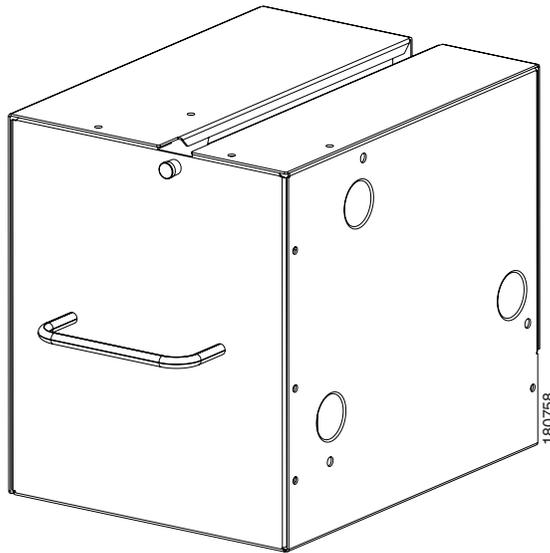


Blower Modules

The hot-swappable blower modules (fans) of your Cisco SFS 3012R Server Switch maintain the internal temperature of your server switch. You do not need to turn off power to the chassis to replace a blower module. You access the blower module from the front (bezel end) of the Cisco SFS 3012R Server Switch chassis as shown in Figure 1-4. Each blower module contains two blowers, so a fully functional system has four functional blowers. Three blowers must be functional for continuous operation.

Figure 1-10 shows a blower module.

Figure 1-10 Blower Module





Installing and Booting the Cisco SFS 3012R Server Switch

This chapter explains how to mount your Cisco SFS 3012R Server Switch on a rack, boot the Cisco SFS 3012R Server Switch, and configure basic services. For advanced configuration information, refer to the *Cisco SFS 7000 Series Product Family Command Reference* or the *Cisco SFS 7000 Series Product Family Element Manager User Guide*.

The following sections appear in this chapter:

- Safety, page 2-1
- Preparing for Installation, page 2-3
- Installing Cisco SFS 3012R Server Switch Components, page 2-3
- Mounting the Cisco SFS 3012R Server Switch on a Rack, page 2-4
- Attaching a Serial Console Cable to a PC or Terminal, page 2-8
- Booting the Cisco SFS 3012R Server Switch and Configuring Basic Connectivity, page 2-8
- Connecting InfiniBand Hosts, page 2-10
- Managing the Cisco SFS 3012R Server Switch, page 2-12

Safety



Warning

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94



Warning

Voltage is present on the backplane when the system is operating. To reduce risk of an electric shock, keep hands and fingers out of the power supply bays and backplane areas. Statement 166



Warning

Read the installation instructions before connecting the system to the power source. Statement 1004

**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**

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

**Warning**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

Statement 1030

**Warning**

Ultimate disposal of this product should be handled according to all national laws and regulations.

Statement 1040

**Warning**

This equipment must be installed and maintained by service personnel as defined by AS/NZS 3260. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open, or both. Statement 1043

**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**

Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure. Statement 1057

Preparing for Installation

**Warning**

Two people are required to lift the chassis. Grasp the chassis underneath the lower edge and lift with both hands. To prevent injury, keep your back straight and lift with your legs, not your back. To prevent damage to the chassis and components, never attempt to lift the chassis with the handles on the power supplies or on the interface processors, or by the plastic panels on the front of the chassis. These handles were not designed to support the weight of the chassis. Statement 5

Prepare for your installation by unpacking the product, and ensuring other necessary components are available, as described in the following steps.

-
- Step 1** Remove all components from the Cisco SFS 3012R Server Switch shipping container, and identify them.
 - Step 2** Place the chassis on a secure, clean surface.
 - Step 3** Verify that you have a Cisco SFS 7008 InfiniBand and Cisco SFS 3012 Multifabric Server Switches Shelf Kit at hand (ordered and shipped separately, product number SFS-7008P-RKIT).
 - Step 4** Verify that you have at hand all Ethernet gateways and Fibre Channel gateways that you will need to increase the port count of your Cisco SFS 3012R Server Switch.
 - Step 5** Prepare a management workstation (not included), such as a PC running terminal-emulation software (not included), and a straight-through M/F DB-9 serial cable (included).
-

Installing Cisco SFS 3012R Server Switch Components

We recommend that you install all Ethernet or Fibre Channel gateway modules before you mount the Cisco SFS 3012R Server Switch, as described in the “Adding or Replacing Ethernet or Fibre Channel Gateways” section on page 3-3. These components are not preinstalled in the Cisco SFS 3012R Server Switch chassis. However, you can add or change modules after mounting the Cisco SFS 3012R Server Switch chassis in the rack. For details about installing Fibre Channel gateways, see the *Cisco SFS 3000 Series Product Family Fibre Channel Gateway User Guide*. For details about installing Ethernet gateways, see the *Cisco SFS 3000 Series Product Family Ethernet Gateway User Guide*.

**Note**

All cable connections to Ethernet gateways must use shielded RJ45 CAT5 Ethernet cables.

All other server switch modules are preinstalled in your Cisco SFS 3012R Server Switch before shipping. You can, if needed, still add or replace these components before mounting the Cisco SFS 3012R Server Switch chassis. These components include the following:

- Switch modules
- Controller modules
- Power supplies
- Blower modules

Instructions for installing or replacing these components appear in Chapter 3, “Installing and Removing Server Switch Field Replaceable Units (FRUs)”.

Mounting the Cisco SFS 3012R Server Switch on a Rack



Warning

Two people are required to lift the chassis. Grasp the chassis underneath the lower edge and lift with both hands. To prevent injury, keep your back straight and lift with your legs, not your back. To prevent damage to the chassis and components, never attempt to lift the chassis with the handles on the power supplies or on the interface processors, or by the plastic panels on the front of the chassis. These handles were not designed to support the weight of the chassis. Statement 5



Warning

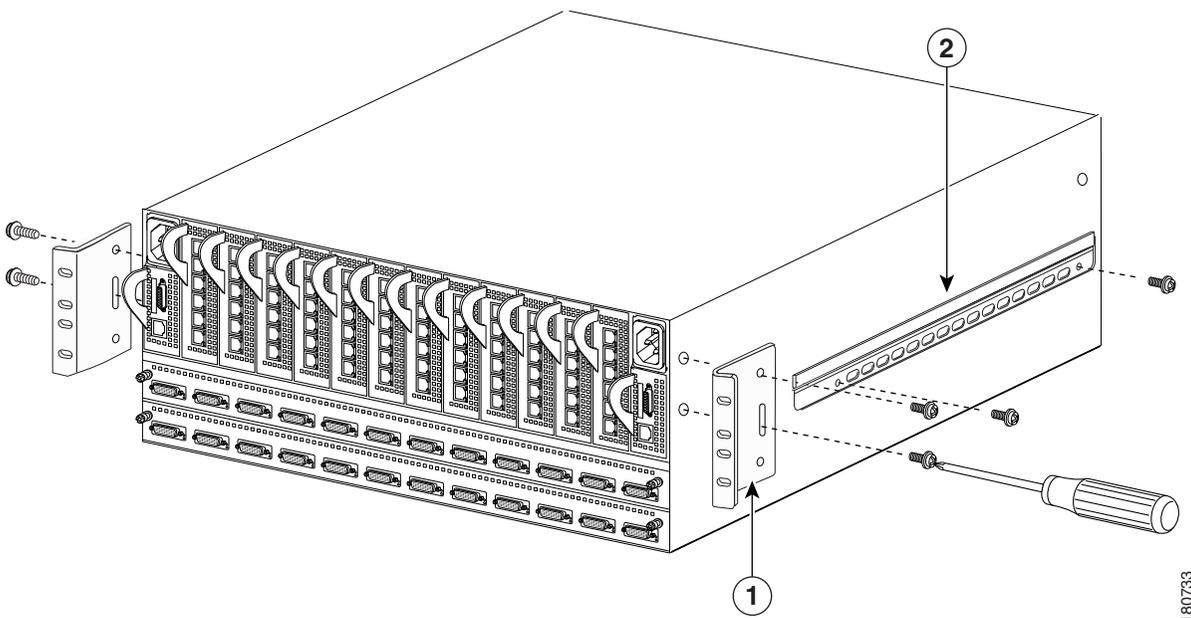
To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006

To install the Cisco SFS 3012R Server Switch on a rack, perform the following steps:

- Step 1** Open the plastic bag that contains the mounting hardware.
- Step 2** Attach the rack-mounting brackets to the sides of the chassis with the screws provided, as shown in Figure 2-1. Use the top and middle holes of the rack-mounting brackets.

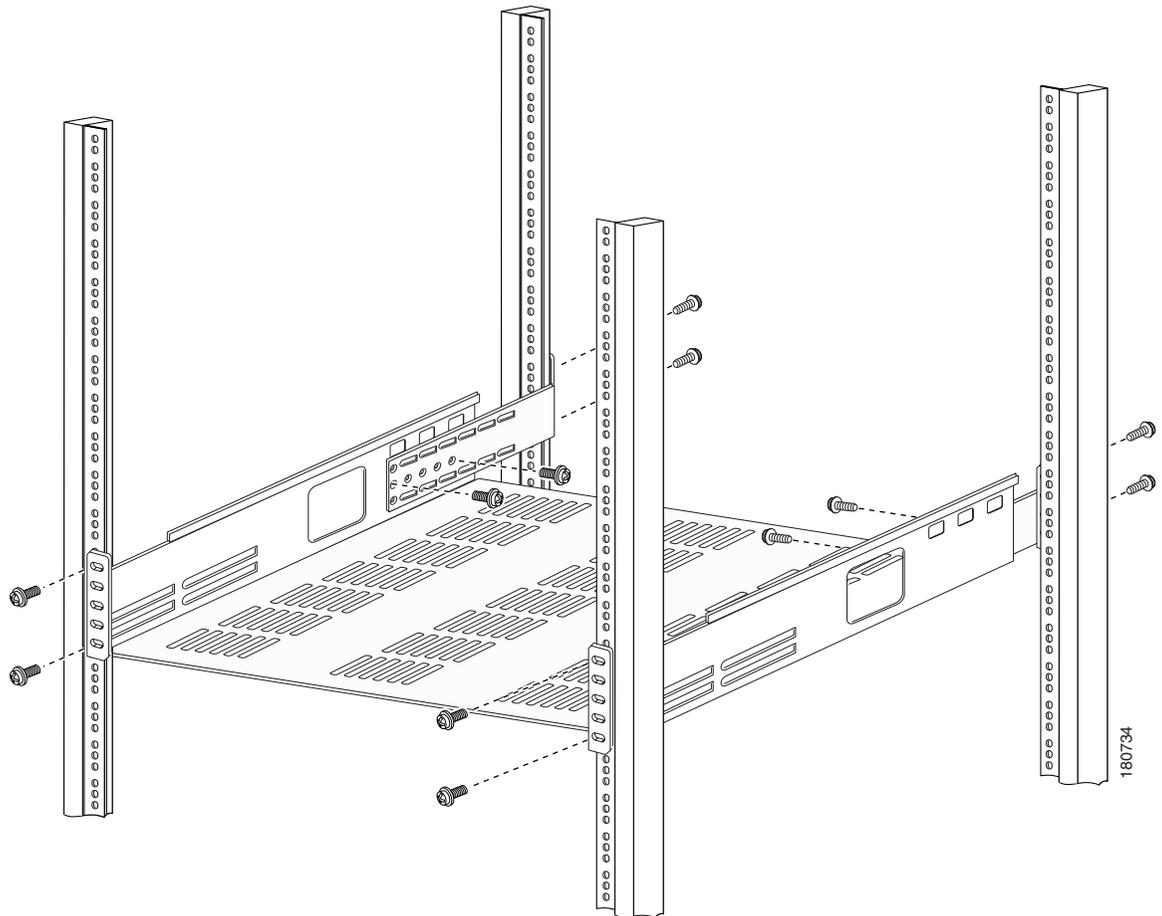
Figure 2-1 Positioning and Fastening the Rack-Mounting Brackets and Shelf Rails



1	Mounting bracket	2	Shelf rail
---	------------------	---	------------

- Step 3** Attach the shelf rails to either side of the Cisco SFS 3012R Server Switch chassis as follows:
- Unpack the shelf assembly kit (ordered and shipped separately).
 - Identify the shelf rails labeled TS360/SFS 3012.
 - Attach the rails to the chassis with the four screws provided, as shown in Figure 2-1.
- Step 4** Mount the shelf onto the rack, as shown in Figure 2-2, using the procedure outlined below. (For additional details about the shelf installation procedure, see “Install the Shelf Kit” in the *Cisco SFS 7008 InfiniBand and Cisco 3012 Multifabric Server Switches Optional Shelf Kit, Contents and Installation Guide*, which ships with the shelf assembly.)
- Unpack the shelf assembly, and remove the extension brackets.
 - Verify that the shelf position provides sufficient clearance for the Cisco SFS 3012R Server Switch and all cables.
 - Use four screws that fit your rack (not included) to attach the extension brackets to the rack posts at the rack end at which the bezel end of the chassis will sit. Each bracket must wrap around the inside of the rack post and attach by its flange to the side of the rack post that faces away from the rack.
 - Slide the shelf onto the installed extension brackets until the shelf flange makes contact with the rack posts at the rack end at which the cable end of the chassis will sit.

Figure 2-2 Attaching the Shelf to the Rack



- e. Secure the shelf end to the post with four screws (not included) that fit your rack, but do not tighten the screws.

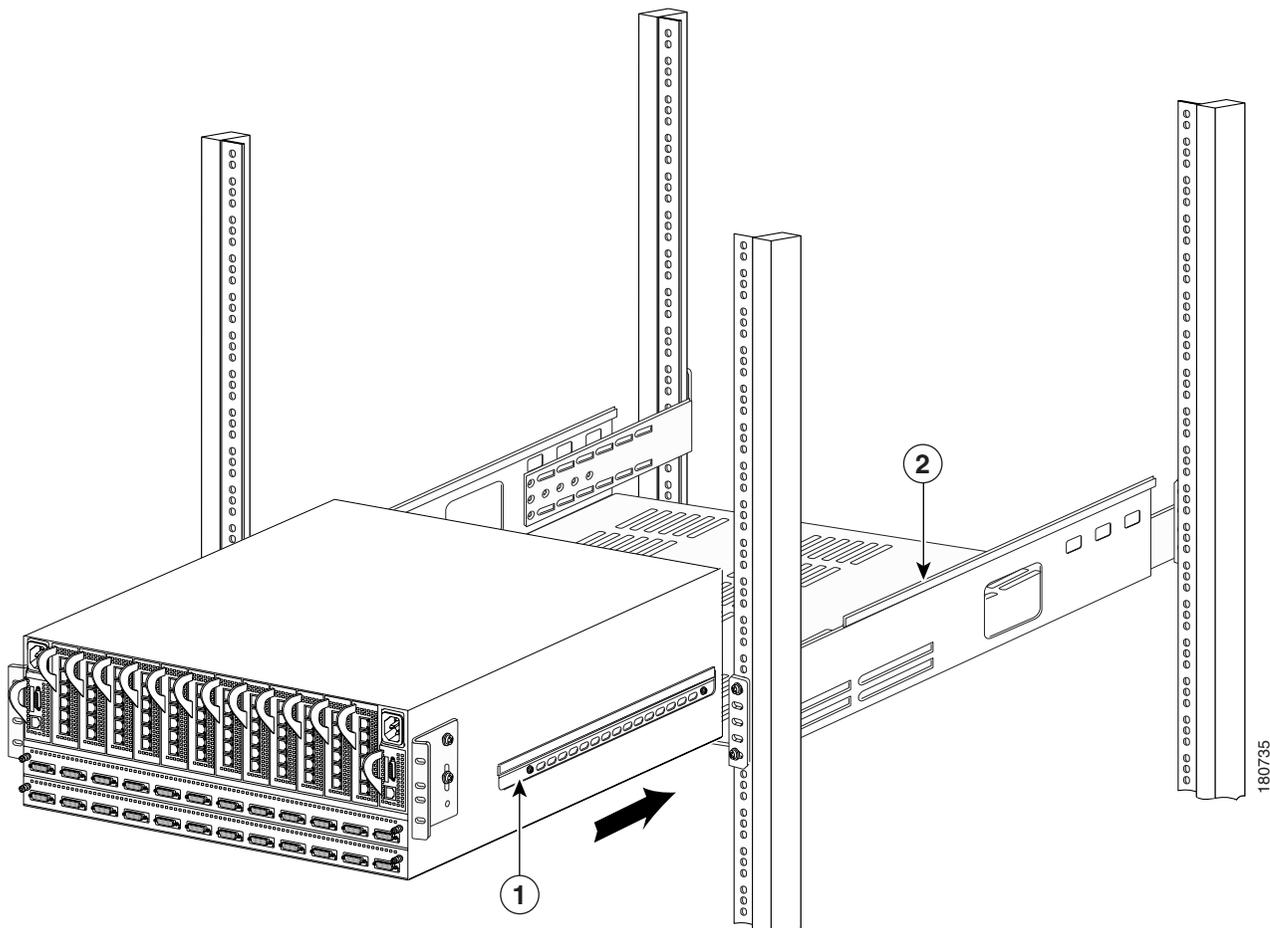


Note When you install the shelf assembly, do not fully tighten the screws at the cable end of the shelf. When you slide the chassis onto the shelf, you might need to reposition the shelf to align the holes in the rack-mounting brackets with the rack holes.

- f. Secure the extension brackets to the shelf with the screws provided. The screw heads must face inside the shelf.

Step 5 Slide the Cisco SFS 3012R Server Switch onto the shelf, as shown in Figure 2-3. Engage the shelf rails with the shelf guides, and continue sliding the chassis until the rack-mounting brackets on the chassis make contact with the rack posts.

Figure 2-3 Positioning and Sliding the Chassis onto the Shelf

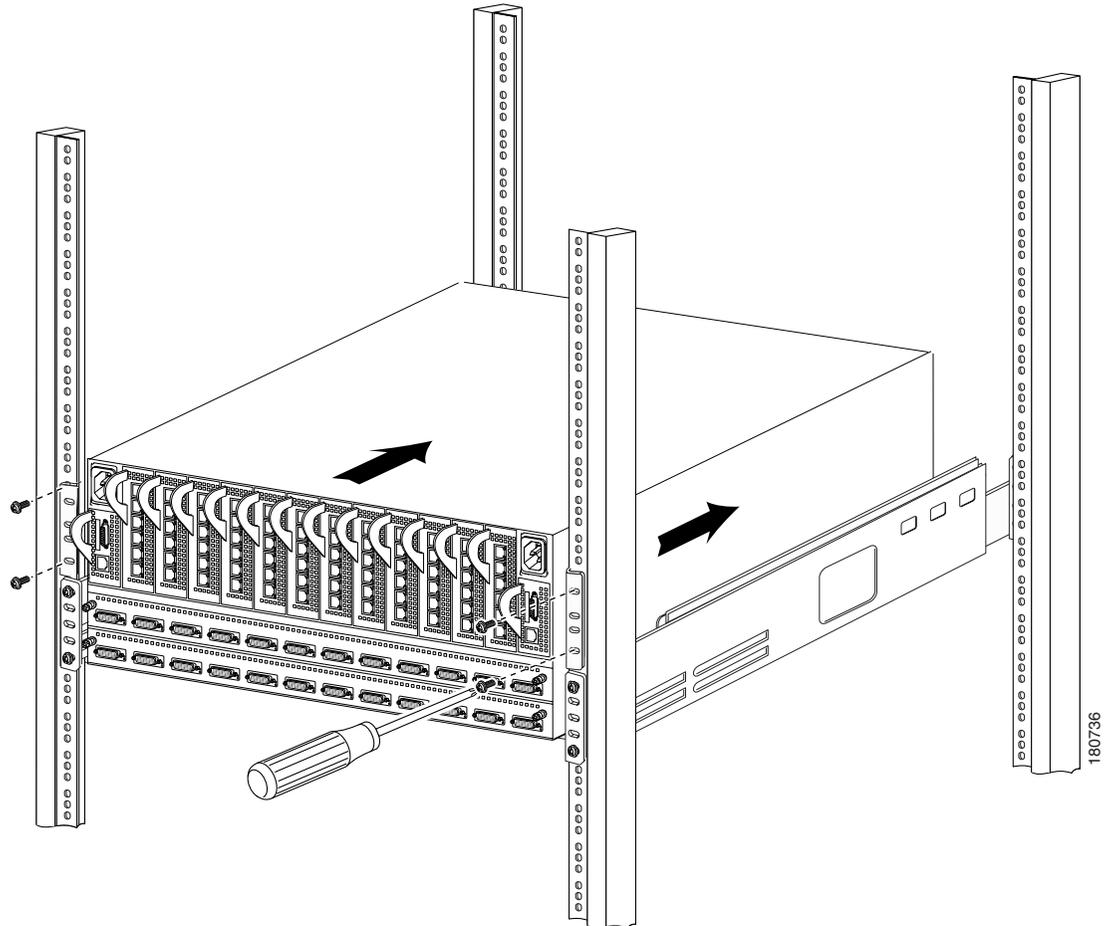


1	Shelf rail	2	Shelf guide
---	------------	---	-------------

Step 6 Adjust the cable end of the shelf that you left loose in Step 4 so that the holes in rack-mounting brackets align with the holes in the rack.

- Step 7** Use 4 standard rack screws (not included) to secure the rack-mounting brackets to the rack posts, as shown in Figure 2-4.

Figure 2-4 *Securing the Chassis to the Rack*



- Step 8** Firmly tighten the shelf screws at the cable end.

Attaching a Serial Console Cable to a PC or Terminal

Step 1 Connect the cable from the serial console port on the controller module to your terminal or management workstation. Use the straight-through M/F serial cable, which is provided in the package.



Note For detailed information about how to connect the serial console cable, see the documentation included with the serial cable kit.

Step 2 Open a terminal emulation window using a program such as HyperTerminal for Windows. Set your terminal parameters to the following:

- Baud: 9600 bps
- Data Bits: 8
- Parity: None
- Stop Bits: 1
- Flow control: None

Booting the Cisco SFS 3012R Server Switch and Configuring Basic Connectivity



Warning

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034

To configure basic connectivity, you must power-on the server switch and configure it from a terminal or workstation through the serial console port. To configure basic Ethernet connectivity, you can apply a static IP address to the Cisco SFS 3012R Server Switch, or you can configure the chassis to obtain an IP address from a DHCP server.

With the management console already running an appropriate terminal emulation program as described in the “Attaching a Serial Console Cable to a PC or Terminal” section on page 2-8, power-on and logon to your Cisco SFS 3012R Server Switch as described in the following steps:

Step 1 Connect a power cord to your Cisco SFS 3012R Server Switch, and then plug the cord into an appropriate power source. The Cisco SFS 3012R Server Switch boots.

Step 2 After the system boots, press the **Enter** key several times to display the CLI login prompt.

Login:

Step 3 Enter **super** as your user ID and password to log in as a user with administrative privileges.

```
Login: super
Password: super
SFS-3012R>
```

Assigning a Static IP Address

To configure basic Ethernet connectivity with a static IP address, perform the following steps:

-
- Step 1** Attach an Ethernet cable (not provided) from the management port to the Ethernet router or switch.
- Step 2** Enter the **enable** command.
- ```
SFS-3012R> enable
SFS-3012R#
```
- Step 3** Enter the **configure** command.
- ```
SFS-3012R# configure
SFS-3012R(config)#
```
- Step 4** Enter the **interface mgmt-ethernet** command.
- ```
SFS-3012R(config)# interface mgmt-ethernet
```
- Step 5** Enter the IP address of the management port followed by the net mask, as shown in this example:
- ```
SFS-3012R(config-if-mgmt-ethernet)# ip address 10.10.0.22 255.255.255.0
```
- Step 6** Set the default gateway of the management port, as shown in this example:
- ```
SFS-3012R(config-if-mgmt-ethernet)# gateway 10.10.0.1
```
- Step 7** Enable the management port with the **no shutdown** command.
- ```
SFS-3012R(config-if-mgmt-ethernet)# no shutdown
```
- Step 8** Save the configuration to preserve it between reboots.
- ```
SFS-3012R(config-if-mgmt-ethernet)# exit
SFS-3012R(config)# exit
SFS-3012R# copy running-config startup-config
```
- 

You can now establish a Telnet session to your Cisco SFS 3012R Server Switch or enter the IP address of your Cisco SFS 3012R Server Switch in a web browser to launch Chassis Manager.

## Obtaining an IP Address with DHCP

To obtain an IP address dynamically, follow these steps.

- 
- Step 1** Attach an Ethernet cable (not provided) from the management port to the Ethernet router or switch.
- Step 2** Enter the **enable** command.
- ```
SFS-3012R> enable
SFS-3012R#
```
- Step 3** Enter the **configure** command.
- ```
SFS-3012R# configure
SFS-3012R(config)#
```

**Step 4** Enter the **interface mgmt-ethernet** command.

```
SFS-3012R(config)# interface mgmt-ethernet
```

**Step 5** Enter the **addr-option dhcp** command to configure the chassis to obtain the IP address from the DHCP server.

```
SFS-3012R(config-if-mgmt-ethernet)# addr-option dhcp
```

**Step 6** Enable the management port with the **no shutdown** command.

```
SFS-3012R(config-if-mgmt-ethernet)# no shutdown
```

**Step 7** Save the configuration to preserve it between reboots.

```
SFS-3012R(config-if-mgmt-ethernet)# exit
SFS-3012R(config)# exit
SFS-3012R# copy running-config startup-config
```

**Step 8** Enter the **show interface mgmt-ethernet** command to determine your IP address, as shown in the following example:

```
SFS-3012R# show interface mgmt-ethernet
```

```
=====
 Mgmt-Ethernet Information
=====
 mac-address : 00:05:ad:00:1e:1c
 auto-negotiate : enabled
 admin-status : up
 oper-status : up
 ip-addr : 172.29.230.60
 mask : 255.255.0.0
 gateway-addr : 172.29.230.1
 addr-option : static
```

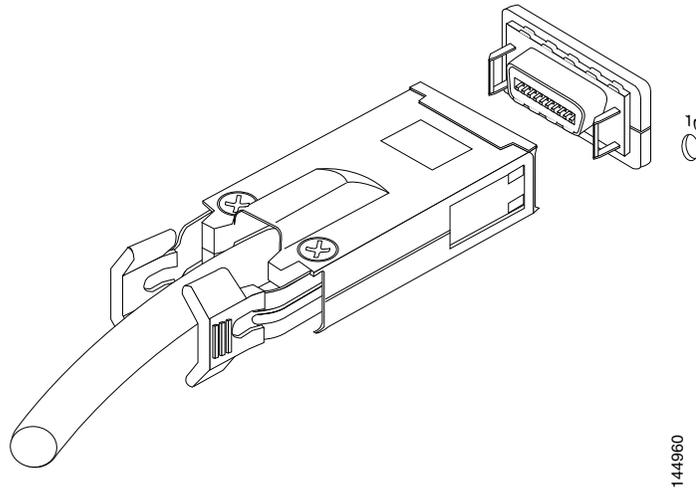
You can now establish a Telnet session to your Cisco SFS 3012R Server Switch or enter the IP address of your Cisco SFS 3012R Server Switch in a web browser to launch Chassis Manager.

## Connecting InfiniBand Hosts

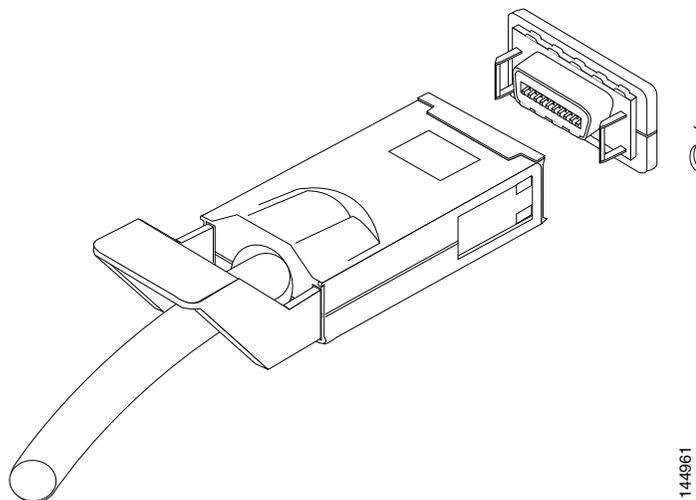
This section provides a brief overview for connecting your InfiniBand hosts. For detailed instructions, see the documentation for the specific Host Channel Adapter (HCA).

Use InfiniBand cables to connect the HCA in your host to the InfiniBand switch module of your Cisco SFS 3012R Server Switch. To plug in an InfiniBand cable, push the connector into the interface until you hear and feel a click. See Figure 2-5 and Figure 2-6.

**Figure 2-5** *InfiniBand Cable with Pinch Connector*



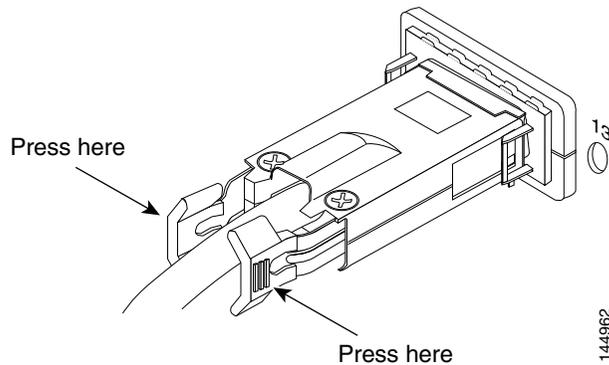
**Figure 2-6** *InfiniBand Cable with Pull Connector*



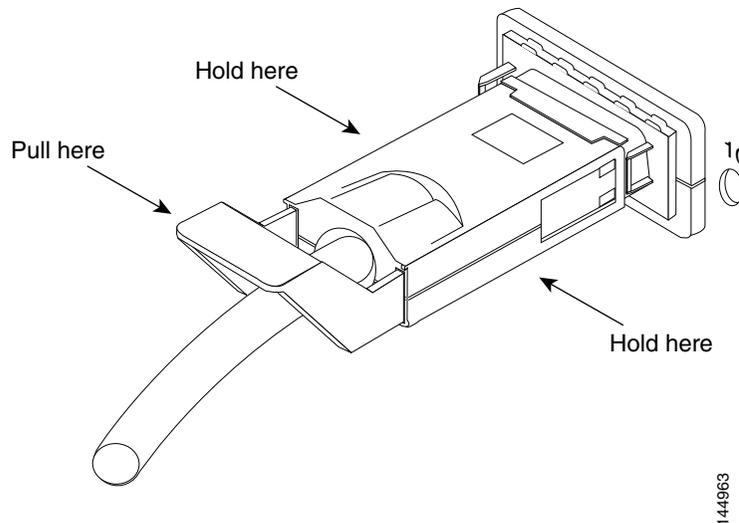
**Note**

If your host does not provide enough free space around a given InfiniBand port, verify that your InfiniBand cable connector engages fully. Wiggle your connector back and forth to be sure that both sides of the connector have locked firmly into place.

To remove a cable with a pinch connector, pinch both sides of the back of the connector, as shown in Figure 2-7, and pull the connector away from the port.

**Figure 2-7 Removing a Pinch Connector**

To remove a cable with a pull connector, grasp the connector with one hand and push it toward the port, and then pull the latch away from the port with your other hand and gently wiggle the connector away from the port, as shown in Figure 2-8.

**Figure 2-8 Removing a Pull Connector**

## Managing the Cisco SFS 3012R Server Switch

You can manage the Cisco SFS 3012R Server Switch with the following methods:

- Command Line Interface (CLI)—a text-based interface accessible through a direct serial connection, Telnet over IP, or SSH over IP.
- Element Manager (GUI)—A graphical interface installed on a workstation, accessible over IP.
- Chassis Manager (GUI)—A graphical interface that you access with a web browser.

Refer to the *Cisco SFS 7000 Series Product Family Element Manager User Guide*, *Cisco SFS 7000 Series Product Family Chassis Manager User Guide*, and the *Cisco SFS 7000 Series Product Family Command Reference* for more information about managing the Cisco SFS 3012R Server Switch.



## Installing and Removing Server Switch Field Replaceable Units (FRUs)

---

This chapter provides step-by-step instructions for performing the following procedures:

- Installing a Controller Module, page 3-2
- Adding or Replacing Ethernet or Fibre Channel Gateways, page 3-3
- Installing an InfiniBand Switch Module, page 3-4
- Removing an InfiniBand Switch Module, page 3-7
- Installing a Power Supply Module, page 3-7
- Removing a Power Supply Module, page 3-9
- Installing a Blower Module, page 3-9
- Removing a Blower Module, page 3-11

The components of the Cisco SFS 3012R Server Switch support the scalability and high availability of the server switch. The sections in this chapter discuss how to use, install, remove, and swap FRUs to maximize the potential of your Cisco SFS 3012R Server Switch.

You can install the following components in your chassis:

- Controller modules
- I/O gateways (Fibre Channel and Ethernet)
- InfiniBand switch modules
- Power supplies
- Blower modules



### Caution

Never place your hand inside an empty card or module bay. You should never have cause to place a hand anywhere inside the Cisco SFS 3012R Server Switch chassis. Unused module bays should always have a Cisco SFS 3012R Server Switch blanking panel over the bay to ensure proper safety, ventilation, and cooling.

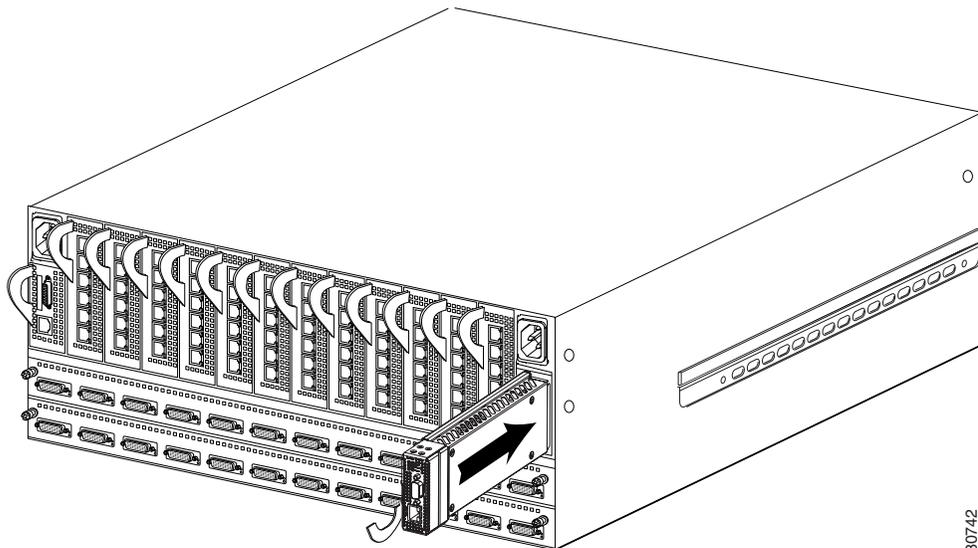
---

# Installing a Controller Module

To install a controller module, perform the following steps:

- Step 1** Ground yourself with an approved ground wrist strap.
- Step 2** Remove the blanking panel if one resides in the slot.
- Step 3** Remove the controller module from any packaging.
- Step 4** Extend the ejector lever on the module completely.
- Step 5** Insert the controller module into slot 1 (left-most) or slot 14 (right-most) so that the ejector lever sits on the bottom-left-hand side of the module, as shown in Figure 3-1.
- Step 6** Push the controller module firmly into the slot. The ejector lever begins to close.

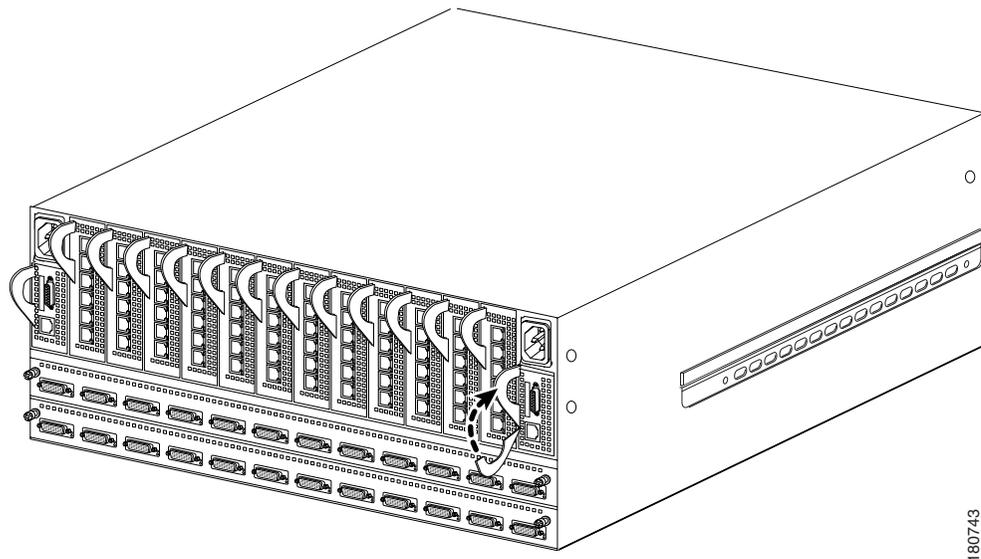
**Figure 3-1** Inserting the Controller Module



180742

**Step 7** Push the ejector lever up until it clicks into place, as shown in Figure 3-2.

**Figure 3-2** Closing the Ejector Lever



## Adding or Replacing Ethernet or Fibre Channel Gateways

You can add, remove, and swap I/O gateways while your Cisco SFS 3012R Server Switch runs. However, if the software image on your gateway does not match the software image that runs on your server switch, you must install the correct software on your gateway. For details, refer to the **install** command in the *Cisco SFS 7000 Series Product Family Command Reference*.

Chapter 4, “Viewing and Updating the Software Image” provides instructions for viewing and updating the software image. To update a single gateway, use the standard installation procedure, but do not reboot the chassis. You can simply enable and disable the individual gateway to activate the new software image.

To install a gateway, perform the following steps:

- Step 1** Ground yourself using an approved ground wrist strap.
- Step 2** Remove the blanking panel if one resides in the slot.
- Step 3** Remove the gateway module from any packaging.
- Step 4** Extend the ejector lever on the gateway completely.
- Step 5** Insert the gateway into an expansion module slot such that the ejector lever sits on the bottom-left-hand side of the module.



---

**Note** You can install gateways in slots 2 (second from left) through 13 (second from right). Populate your Cisco SFS 3012R Server Switch from left to right.

---

- Step 6** Push the gateway module firmly into the slot. The ejector lever begins to close.
- Step 7** Push the ejector lever up until it clicks into place.
- Step 8** Follow the procedures in Chapter 4, “Viewing and Updating the Software Image” to update or verify the software image on the gateway module.
- 



---

**Note** All cable connections to Ethernet gateways must use shielded RJ45 CAT5 Ethernet cables.

---

## Installing an InfiniBand Switch Module

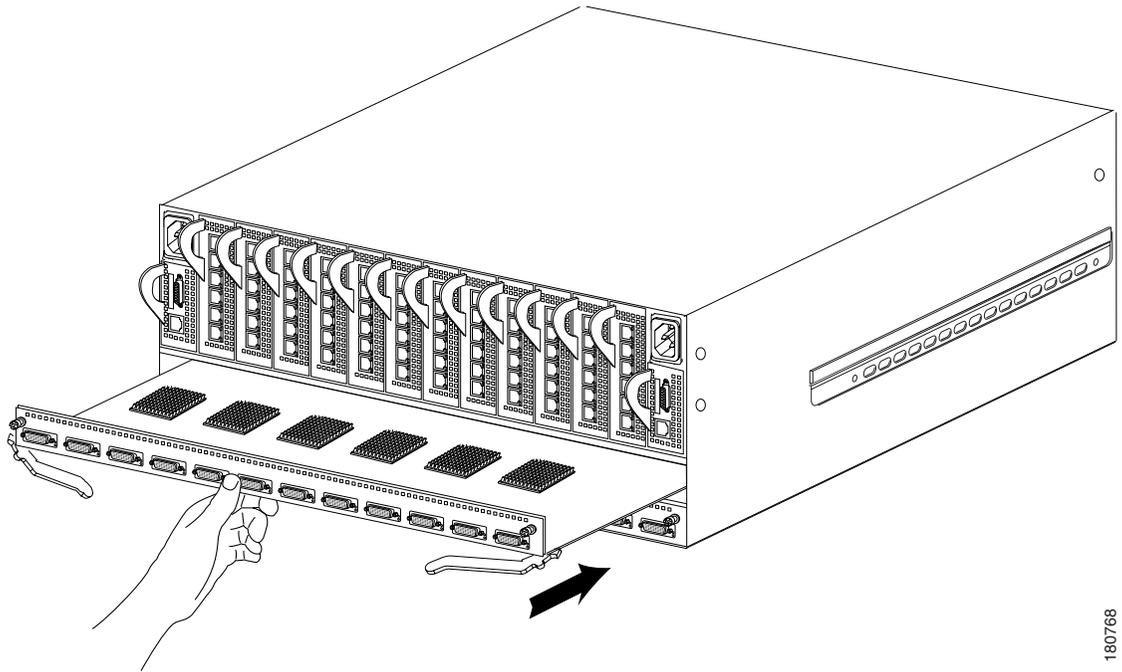
To install an InfiniBand switch module, perform the following steps:

---

- Step 1** Ground yourself using an approved ground wrist strap.
- Step 2** Remove the blanking panel if one resides in the slot with a number 1 Phillips-head screwdriver.
- Step 3** Remove the switch module from any packaging.
- Step 4** Extend the ejector levers on the left-hand side and on the right-hand side of the switch module completely.
- Step 5** Insert the switch module into slot 15 or slot 16 such that the ejector levers sit on the bottom of the switch module.

**Step 6** Press the switch module firmly into the slot so the fasteners begin to close, as shown in Figure 3-3.

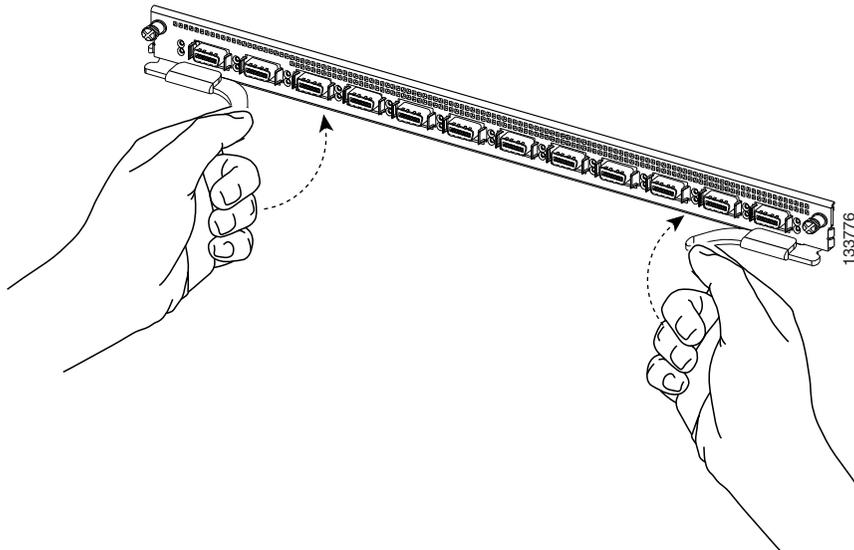
**Figure 3-3** Inserting a Switch Module



180768

**Step 7** Close both fastener levers simultaneously and completely.

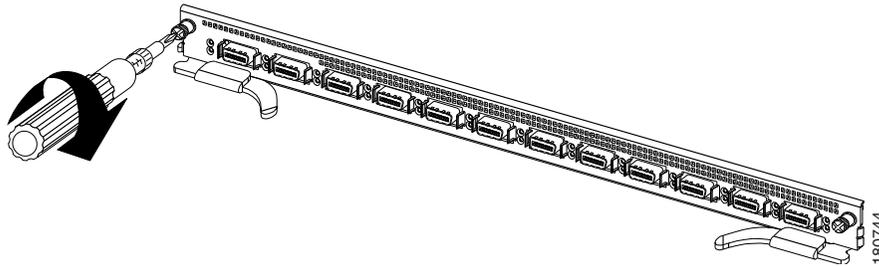
**Figure 3-4** Closing Switch Ejector Levers



133776

**Step 8** Tighten the screws on either side of the switch module to secure it to the chassis.

**Figure 3-5** Securing an InfiniBand Switch Module



**Step 9** Verify that the system image on the InfiniBand switch module is consistent with the image on other cards in the chassis and update the image, if necessary. Use the **show card** command to determine the current image, as shown in the following example:

```
SFS-3012R# show card all
=====
Card Information
=====
 admin oper admin oper oper
slot type type status status code

1* controller controller up up normal
7 fc2port2G fc2port2G up up normal
8 fc2port2G fc2port2G up up normal
14 controller controller up up standby
15 ib12port4x ib12port4x up down wrong-image
16 ib12port4x ib12port4x up up normal

=====
 Card Boot Information
=====Pr
 boot boot boot
slot stage status image

1 done success TopspinOS-2.8.0/build068
7 done success TopspinOS-2.8.0/build068
8 done success TopspinOS-2.8.0/build068
14 done success TopspinOS-2.8.0/build068
15 none none TopspinOS-2.8.0/build060
16 done success TopspinOS-2.8.0/build068
SFS-3012R#
```

To interpret the output, examine the information for the slot in which you just installed the InfiniBand switch module. If the oper status is shown as “down” and the oper-code as “wrong-image” (as shown for slot 15 in the example), then the module needs to have its image updated.

See Chapter 4, “Viewing and Updating the Software Image” for instructions about updating the software image on the InfiniBand switch module.

## Removing an InfiniBand Switch Module

To remove an InfiniBand switch module from the Cisco SFS 3012R Server Switch chassis, perform the following steps:

- 
- Step 1** Make sure the Cisco SFS 3012R Server Switch chassis is securely seated in the rack.
- Step 2** If you are removing the InfiniBand module from slot 16 (the lower module), you must power down the chassis before removing the module.



**Note** The InfiniBand module in slot 16 is not hot-swappable. The InfiniBand module in slot 15 is hot-swappable if a functional module is installed in slot 16.

---

- Step 3** Properly ground yourself to avoid potential electrostatic discharge and damage to the module.
- Step 4** Facing the cable end of the Cisco SFS 3012R Server Switch chassis, unfasten both screws on the InfiniBand switch module.
- Loosen the screws until you are sure the module is no longer attached to the chassis. Do not attempt to remove the screws from the module.
- Step 5** Open both ejector levers simultaneously, and pull the switch module toward you.
- Step 6** Either replace the module immediately or install a blanking panel over the empty chassis bay to ensure appropriate cooling.



**Note** The blanking panel is a flat sheet of metal with the same dimensions as the InfiniBand switch module faceplate.

---

## Installing a Power Supply Module



**Warning**

**Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

---



**Caution**

Never place your hand inside an empty module bay or anywhere inside the Cisco SFS 3012R Server Switch.

---



**Caution**

Unused module bays should always have a switch filler panel over the bay to ensure proper safety, ventilation, and cooling.

---

To insert a power supply, perform the following steps:

- 
- Step 1** Ground yourself using an approved ground wrist strap.
  - Step 2** Remove the blanking panel if one resides in the slot.
  - Step 3** Remove the power supply module from any packaging.
  - Step 4** Insert the power supply into an open slot such that the pull handle sits toward the outside of the chassis, away from the blower module. The arrow on top of the power supply or underneath the power supply must always point to the outside of the chassis.

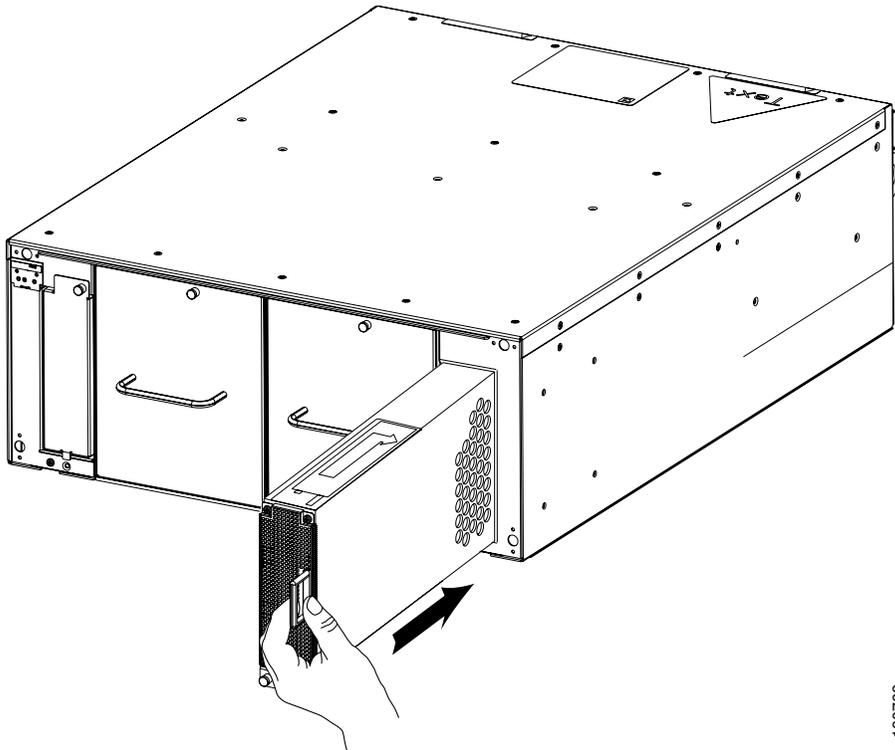



---

**Note** The power supplies should be inserted in opposite directions of each other.

---

- Step 5** Press the power supply firmly into the chassis.



180762




---

**Note** The power socket on the back (cable end) of the Cisco SFS 3012R Server Switch corresponds to the power supply module on the same side of the server switch.

---

## Removing a Power Supply Module

**Caution**

Never place your hand inside an empty module bay or anywhere inside the Cisco SFS 3012R Server Switch.

To remove the power supply, perform the following steps:

- 
- Step 1** Ground yourself using an approved ground wrist strap.
  - Step 2** Remove the power cord from the power supply.
  - Step 3** Disengage the power supply by pulling it toward you.
  - Step 4** Slide the power supply out of the chassis.
  - Step 5** Either replace the power supply immediately or fasten a blanking panel to the empty chassis bay to ensure appropriate cooling.

**Note**

The blanking panel is a flat sheet of metal with the same dimensions as the power module faceplate.

**Caution**

Never operate the device without a blanking panel or power supply module in place because the device might overheat.

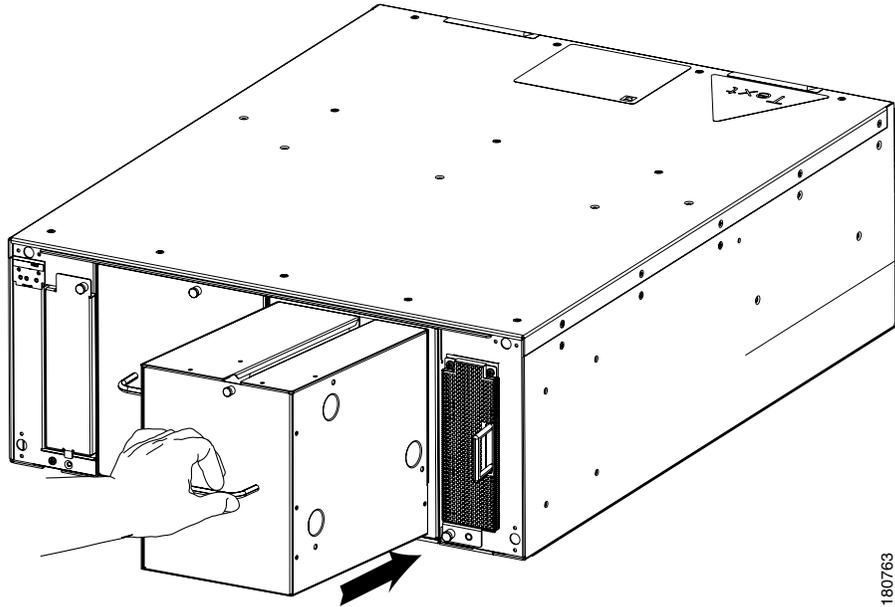
## Installing a Blower Module

To insert a blower module, perform the following steps:

- 
- Step 1** Ground yourself using an approved ground wrist strap.
  - Step 2** Remove the blower module from any packaging.

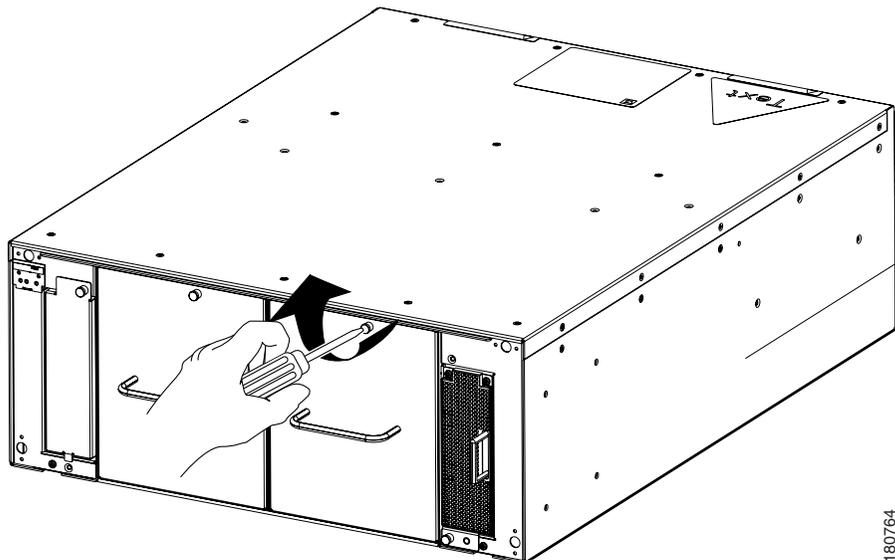
- Step 3** Insert the blower module into an open slot until it is fully seated so that the captive screw sits at the top of the module, as shown in Figure 3-6.

**Figure 3-6** Inserting a Power Supply



- Step 4** Tighten the captive screw on the front panel to secure the module to the chassis, as shown in Figure 3-7.

**Figure 3-7** Securing a Blower Module



# Removing a Blower Module

To remove a blower module, perform the following steps:

- 
- Step 1** Ground yourself using an approved ground wrist strap.
  - Step 2** Unfasten the captive screw.
  - Step 3** Pull the blower module toward you until it completely disengages from the chassis.
  - Step 4** Insert a replacement blower module into the empty chassis bay to ensure appropriate cooling.



**Note** Each blower module contains two blowers for a total of four blowers. The system can tolerate one out of four blowers failing. When you remove a blower module, you have three minutes to replace it with a fully-functioning blower module.

---





## Viewing and Updating the Software Image

---

Sections in this chapter provide instructions on the following procedures:

- Viewing the Software Image Version, page 4-1
- Updating the Software Image, page 4-4
- Deleting a Software Image, page 4-9

You can update the software image on all cards in the chassis at once, or on individual cards. You typically perform these operations when:

- A new software image is made available by Cisco
- Checking periodically for updates
- Adding a new module to your server switch
- Installing the chassis, if the pre-installed image is already out of date



### Note

It is possible to have different versions of software installed on different slots. To update an individual Fibre Channel or Ethernet gateway, perform the steps as described here, but you do not need to reboot the chassis. After the copy and installation, you can enable and disable an individual gateway to activate the new image.

---

You can view and update the software image using the CLI or with the Element Manager.

## Viewing the Software Image Version

This section describes how to obtain and interpret the information you need while updating the software image. You need to know the following:

- The version of the software image you have running on each module
- Whether or not the same version of the software image runs on each module
- Whether or not the most current software image you have is the most current available
- Whether or not you have images that you have downloaded but not yet installed
- Whether or not you have obsolete images that can be deleted

## Viewing the Software Image Version with the CLI

Use the CLI to view software versions on the chassis as follows:

- Step 1** To view the primary software image version for all cards in the chassis, use the show **card-inventory** command, as shown in the following example:

```
SFS-3012R# show card-inventory
=====
 Card Resource/Inventory Information
=====
 slot-id : 1
 used-memory : 77040 (kbytes)
 free-memory : 50272 (kbytes)
 used-disk-space : 45048 (kbytes)
 free-disk-space : 57331 (kbytes)
 last-image-source : TopspinOS-2.0.0/build495
 primary-image-source : TopspinOS-2.0.0/build495
 image : TopspinOS-2.0.0/build495
 cpu-descr : PPC 440GP Rev. C - Rev 4.129 (pvr 4012 0481)
 fpga-firmware-rev : 6
 ib-firmware-rev : 200000000

 slot-id : 10
 used-memory : 47676 (kbytes)
 free-memory : 34948 (kbytes)
 used-disk-space : 8909 (kbytes)
 free-disk-space : 33361 (kbytes)
 last-image-source : TopspinOS-2.0.0/build495
 primary-image-source : TopspinOS-2.0.0/build495
 image : TopspinOS-2.0.0/build495
<output truncated>
```

Interpret the display as follows:

- Look for the **primary-image-source** field for each slot. The slots are identified in Figure 1-3 on page 1-4.
- Determine whether or not any slot has a software image version (**primary-image-source**) that is older than the others. This slot will need its image updated.
- Compare your most recent image with the most recent image available. Check the Cisco.com site or your ftp site for details about image availability. Consider updating to the newer image, if available.
- If you need to download a new image, note the amount of memory and disk space available. Check also the file size of the new image that you will download from the Cisco.com website or from the ftp site and determine whether or not you need to create space.
- Examine the files listed in the image field of the display. Any file listed in the image field that is neither the last-image-source nor the primary-image-source is a candidate for deletion.

- Step 2** Use the **dir image** command to view all existing boot images on the chassis, and determine whether or not they are currently installed, as shown in the following example:

```
SFS-3012R> enable
SFS-3012R# dir image
=====
Existing Boot-Images on System
=====
slot date-created size file-name

1 Tue Nov 25 18:46:32 2003 30695264 Topspin360-TopspinOS-2.0.0-build212.img
```

```

1 Tue Nov 25 19:34:08 2003 19228160 TopspinOS-2.0.0/build211
1 Tue Nov 25 19:32:16 2003 15539200 TopspinOS-2.0.0/build212
SFS-3012R#

```

Interpret the display as follows:

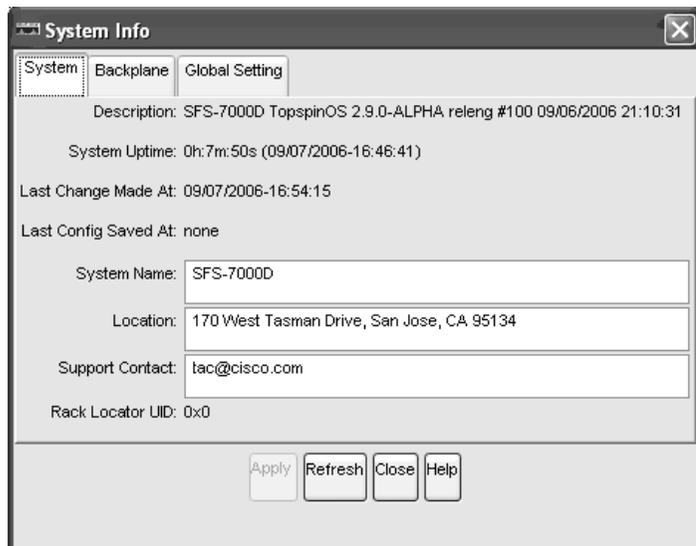
- a. Identify files that have been installed and the files that have been downloaded but not installed:
  - A **.img** file is an image file that is not installed.
  - An installed image file has a slash (/) in the name.
- b. Determine if the version of any uninstalled (.img) file is the version that you need to install. If it is, then you do not need to download it again.
- c. Determine whether any uninstalled file is obsolete. An obsolete file is a candidate for deletion.

## Viewing the Software Image Version with the Element Manager GUI

Use the Element Manager GUI to view the software version(s) on the chassis as follows:

- Step 1** Launch Element Manager.
- Step 2** View the software version of the controller:
  - a. Select **Maintenance > System Info** to view the version of software installed on the controller, as shown in Figure 4-1.

**Figure 4-1** Viewing the Software Image Version of the Controller Module



- b. Note the software image version identified in the Description field and compare it with the most recent version available on the CCO website or your FTP site. Consider updating to the newer version, if one is available.

- Step 3** View the software version on individual cards in the chassis:
- Double-click on any module in the main GUI.
  - Click the **Inventory** tab. The properties window appears for that module, as shown in Figure 4-2.

**Figure 4-2** Viewing Current Image of an Individual Module



- View the **Current Image Source** field. If you find a module that has a different image from the others, you can update a single module by re-installing the image on the chassis, but reboot only the module that needs to be updated.

## Updating the Software Image

This section provides instructions on how to update the software image using either the CLI or Element Manager. These procedures include variances depending on whether you are updating the entire chassis with a new version or updating one gateway to bring it inline with the rest.

## Updating the Software Image with the CLI

Use the CLI to update the software image as follows:

**Step 1** Copy the image to the chassis controller.



**Note** Perform this step only if the .img file containing the desired software image is not already on the controller. This situation usually occurs when updating the entire chassis to a new software version, although it is possible that the software version already exists on the chassis but has not yet been installed. If you are updating a single module to bring it into line with the other modules, then it is usually not necessary to download the .img file again, unless it has been removed from the controller.

To update the version of software image for the server switch, you need to copy the image to the server switch. This task can be accomplished through the CLI using FTP and the following **copy** command syntax:

```
copy ftp://<remote-login>:<remote-passwd>@<remote-system>/<filename>.img [<slot-number of the controller>]:image:<filename>.img
```

This example shows the copy operation:

```
SFS-3012R# copy ftp://bob:mypassword@10.0.0.5/Topspin-360-TopspinOS-2.1.0-build497.img
image:Topspin-360-2.1.0-build497.img
TopspinOS-2.1.0-build497.img
```

**Step 2** Activate the image. After downloading the image file to the chassis controller, you must install it for it to become active. The **install** command installs the specified image file into the system.

Before running the install command, ensure that the following conditions are true:

- Image files have been copied into the image file-system.
- The file name must have the .img extension.
- All cards must have an oper-status of “Up”.

In the privileged-execute mode, enter the following command syntax:

```
install image:image-file-name.img
```

This example shows that the **install** command was successful:

```
SFS-3012R# install image:Topspin-360-TopspinOS-2.1.0-build497.img
*****operation completed successfully
```



**Note** If you do not have enough available memory to install an additional image, delete an old image. See the “Deleting a Software Image” section on page 4-9.

**Step 3** Specify the new boot image to be used.

- a. Find the name of your new system image by entering the **dir image** command. Copy the name of the new image.

- b. Enter **boot-config primary-image-source**, and then paste the copied image file name, as shown in the following example:

```
SFS-3012R# configure
SFS-3012R(config)# boot-config primary-image-source TopspinOS-2.1.0/build497
SFS-3012R(config)# exit
```

- Step 4** Reboot the chassis using the **reload** command.



**Note** You can also use the **card shutdown** and **card no shutdown** commands to reboot an individual module if you do not need to update the entire chassis.

```
SFS-3012R# reload
```

- Step 5** Save the system configuration when prompted, and confirm that you wish to proceed with the reload, as shown in the following example:

```
System configuration has been modified. Save?
[yes(default)/no/*.cfg] yes
Proceed with reload? [confirm]
SFS-3012R#
```

- Step 6** Following reboot, use the **show card-inventory** command to view the new primary image for all cards and verify the update.

## Updating the Software Image with the Element Manager GUI

Use Element Manager to update the software image as follows:

- Step 1** Launch the Element Manager GUI.
- Step 2** Select **Maintenance > File Management**. The **File Management** window appears.



**Note** Perform steps 3 and 4 only if the .img file containing the required image is not on the controller. This situation usually occurs when updating the entire chassis to a new software version, although it is possible that the software version already exists on the chassis but has not yet been installed. If you are updating a single module to bring it into line with the other modules, then it is usually not necessary to download the .img file again, unless it has been removed from the controller.

- Step 3** Click the **Import** button.  
The **Import File** window appears.

**Figure 4-3 Copying an Image File to the Server Switch**

- Select **Image** from the **File Type** drop-down menu.
- Click the **Remote FTP Sever** radio button from the **Copy From** section (or click the **Remote SCP Server** radio button if you will download from an SCP server).
- Enter the name or IP address of the FTP server from which to copy the file in the **Server Name or IP Address** field.
- Enter the network name of a recognized user in the **User Name** field.
- Enter the password for the specified user in the **Password** field.
- Enter the path and name of the image file on the FTP server in the **File Path and Name** field. Image file names must include the “.img” extension.
- Enter a local file name in the **Copy To** field for saving the image on the controller module. The local file name must have a .img extension.

- Step 4** Click the **Copy** button to copy the file onto the controller of the sever switch. Wait until the transfer is complete. The window will automatically refresh to show the latest copied image file.
- Step 5** Activate the image. After downloading the image file to the chassis controller, it must be installed to become active.

Before activating the image, ensure that the following conditions are true:

- The file name has the .img extension.
- All cards have an oper-status of “Up”.

Activate the image as follows:

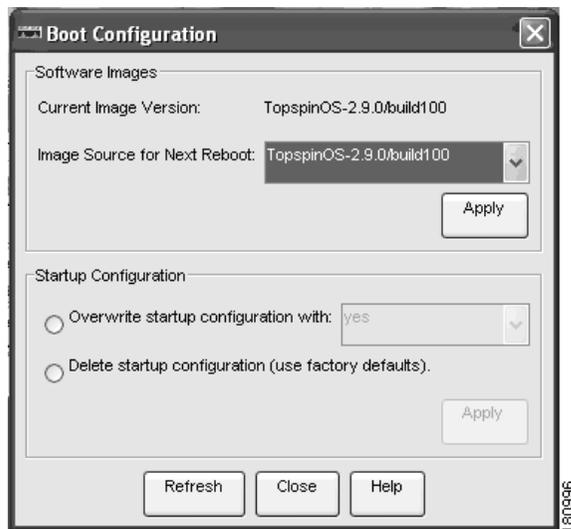
- Click on the desired .img file in the **File Management** window.
- Click the **Install** button.
- Click **Yes** to the warning asking if you wish to proceed.

**Note**

If you do not have enough available memory to install an additional image, delete an old image. See the “Deleting an Image with the Element Manager GUI” section on page 4-10.

- Step 6** Specify the new boot image to be used.
- Select **Maintenance-> Boot Config...**The **Boot Configuration** window appears, as shown in Figure 4-4.

**Figure 4-4 Specifying the Boot Configuration**



- Select the new boot image from the **Image Source for Next Reboot** drop-down menu.
- Click the **Apply** button.

- Step 7** Reboot the chassis.

**Note**

You can update the software on an individual gateway by enabling and disabling the gateway.

- Select **Maintenance-> Reboot**

- b. Click *yes* in the **Save changes to the system configuration** dialog box.
- c. Click **Ok** in the **The chassis will now be rebooted** dialog box.

## Deleting a Software Image

The following files are candidates for deletion through either the CLI or the Element Manager:

- .img files. A .img file is an image file that is not installed.
- An installed image file that is neither the last loaded image (the current image) nor the image specified during boot configuration as the image source for the next reboot. These files are identified by the CLI **show card-inventory** command as:
  - last-image-source
  - primary-image-source

These files are specified by the Element Manager as:

- Current Image Version
- Image Source for Next Reboot



### Caution

Do not delete the last loaded image or the image specified during boot configuration as the image source for the next reboot.

## Deleting an Image with the CLI

Delete an image (.img file) from the switch using the **delete** command with the following syntax:

```
delete [slot-number:]file-system:file
```

The following example deletes an image file from slot 1. (Slots 1 and 14 can contain controller cards.)

```
SFS-3012R# delete 1:image:Topspin360-TopspinOS-2.0.0-build488.img
Delete file 14:Topspin360-TopspinOS-2.0.0-build488.img? [yes(default) | no] yes

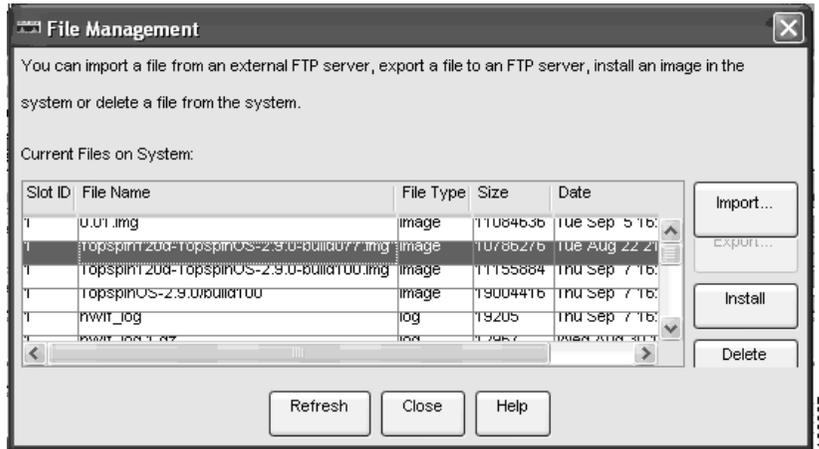
```

## Deleting an Image with the Element Manager GUI

Delete a software image with Element Manager as follows:

- 
- Step 1** Select **Maintenance > File Management**.
  - Step 2** Click on the .img file that you want to delete, as shown in Figure 4-5.

**Figure 4-5** Deleting an Image File



- Step 3** Click the **Delete** button.
  - Step 4** Click **Yes** in the Delete file? dialog box.
-



## Cisco SFS 3012R Server Switch LEDs

---

The following sections appear in this chapter:

- Cisco SFS 3012R Server Switch System Status LED, page 5-2
- Power Supply LEDs, page 5-3
- Blower Module LEDs, page 5-4
- Controller LEDs, page 5-5
- InfiniBand LEDs, page 5-7
- Fibre Channel LEDs, page 5-9
- Ethernet Gateway LEDs, page 5-11

LEDs on your Cisco SFS 3012R Server Switch and installed components indicate hardware status. The sections in this chapter explain the LED indications for the chassis and the components in the chassis.

LED indicators exist on the following components:

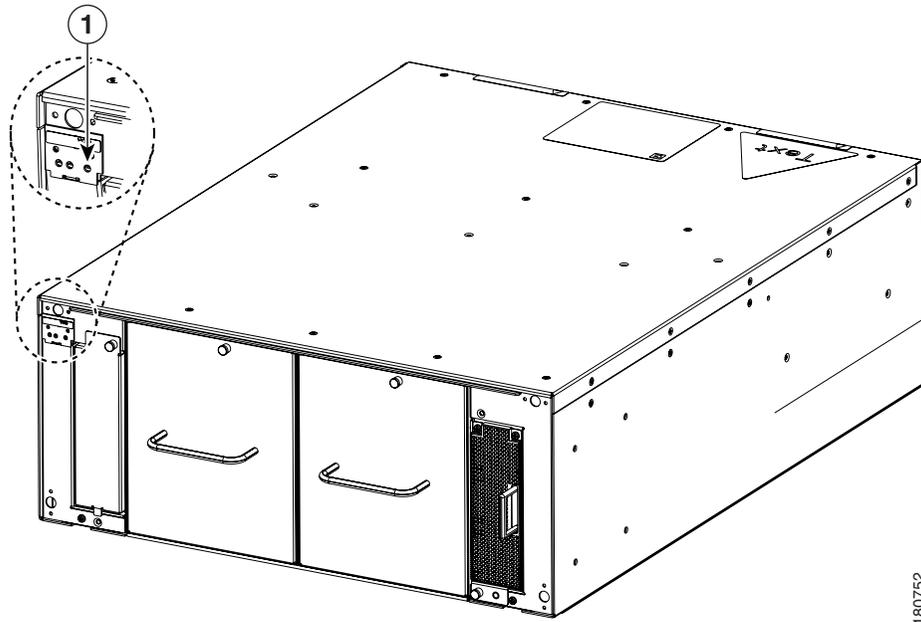
- Power supplies
- Blowers
- Controller modules
- InfiniBand switch modules
- Fibre Channel gateways
- Ethernet gateways
- Cisco SFS 3012R Server Switch chassis, bezel end

The LEDs have special significance depending upon the chassis component. This section describes the LED indicators of each component.

# Cisco SFS 3012R Server Switch System Status LED

The Cisco SFS 3012R Server Switch system status LED appears on the top-left corner of the front (bezel end) of the server switch. You can view the system status LED with the bezel on or off, as shown in Figure 5-1. Table 5-1 describes system status LED indications.

**Figure 5-1** Location of System LED



1	System status LED
---	-------------------

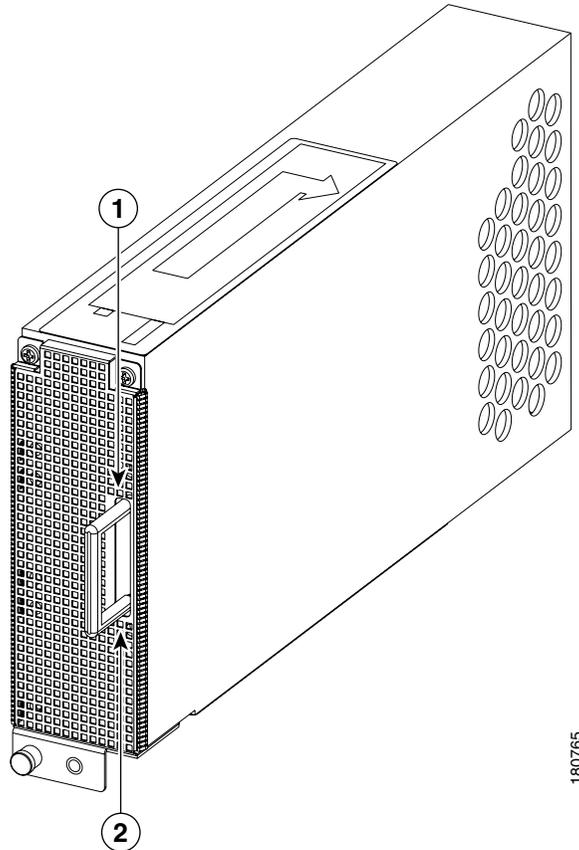
**Table 5-1** System Status LED Indications

LED State	Indication
Solid green	Chassis runs with no errors.
Solid yellow	A module on the chassis has failed.
Off	No system power.

# Power Supply LEDs

Power supply status LEDs are located above and below the pull handle, as shown in Figure 5-2. Table 5-2 and Table 5-3 interpret the power supply LEDs.

**Figure 5-2** Power Supply LEDs



<b>1</b>	DC power supply LED	<b>2</b>	AC power supply LED
----------	---------------------	----------	---------------------

**Table 5-2** AC Power Supply LED

LED State	Indication
Solid green	AC input present.
Off	AC input absent.

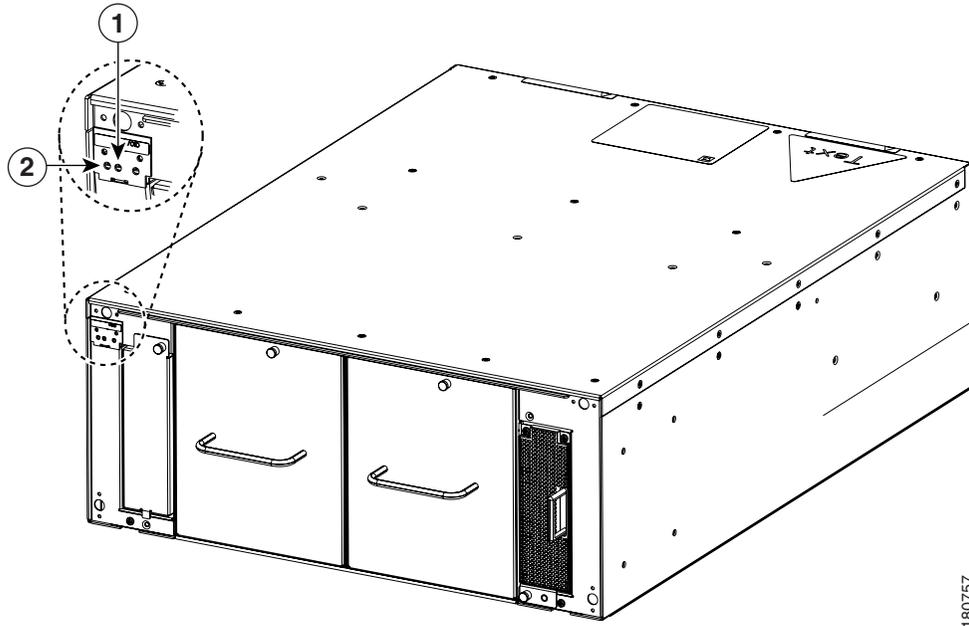
**Table 5-3** DC Power Supply LED

LED State	Indication
Solid green	DC outputs from the power supply fall within regulated limits.
Off	DC outputs from the power supply exceed limits.

# Blower Module LEDs

Blower module LEDs are located immediately to the left of the system status LED on the bezel end of the Cisco SFS 3012R Server Switch as shown in Figure 5-3. Each blower LED is a dual-color green/yellow LED. Table 5-4 explains Blower module LED indications.

**Figure 5-3** Blower Module LEDs



<b>1</b>	Blower 1 (the right blower) status LED	<b>2</b>	Blower 2 (the left blower) status LED.
----------	----------------------------------------	----------	----------------------------------------

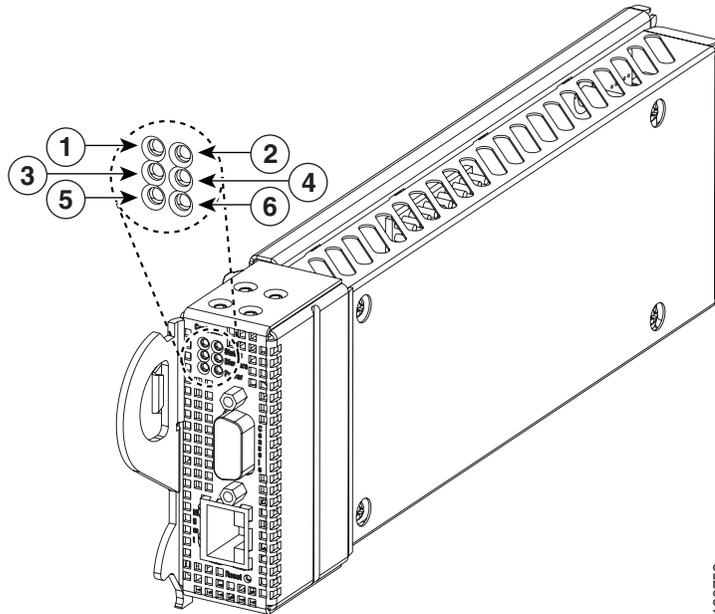
**Table 5-4** Blower LED Indications

LED State	Indication
Solid green	Blower runs with no errors.
Solid yellow	A blower has failed.
Off	No system power.

# Controller LEDs

Controller modules include module status LEDs as well as Management Ethernet port LEDs. The controller LEDs are shown in Figure 5-4 and described in the callout table below it. Table 5-5, Table 5-6, and Table 5-7 interpret the controller module status LEDs.

**Figure 5-4** Controller LEDs



<b>1</b>	Controller status LED (green)	<b>4</b>	Blower status LED (yellow)
<b>2</b>	Controller status LED (yellow)	<b>5</b>	Power status LED (green)
<b>3</b>	Blower status LED (green)	<b>6</b>	Power status LED (yellow)

**Table 5-5** Controller Status LEDs

Controller LED States	Indication
Green on, yellow off	Controller module runs with no errors.
Green off, yellow on	Controller module has a problem that requires user intervention.
Green off, yellow off	No power to the controller module.

**Table 5-6** Blower Status LEDs

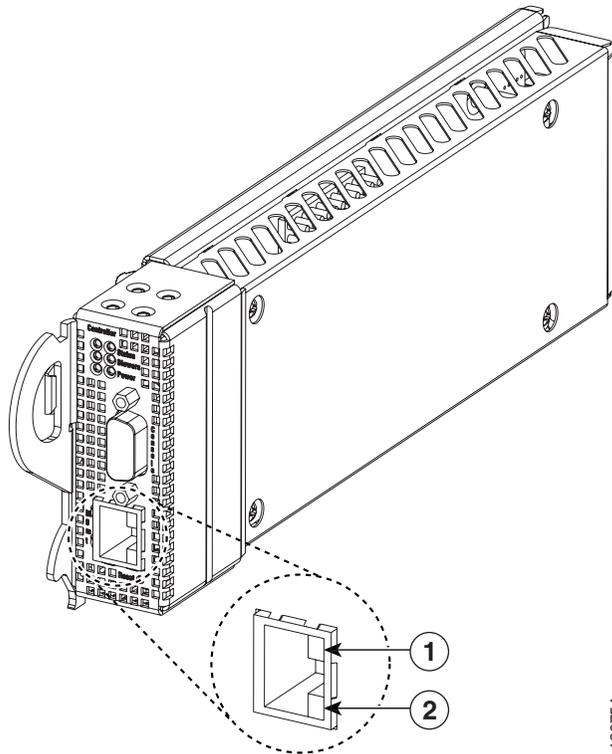
Blower LED States	Indication
Green on, yellow off	Blowers run with no errors.
Green off, yellow on	Blowers have a problem that requires user intervention. See blower module LEDs on the front of the chassis for details about the problem.
Green off, yellow off	No power to the blowers.

**Table 5-7 Power Status LEDs**

Power LED States	Indication
Green on, yellow off	Power supplies run with no errors.
Green off, yellow on	Power supplies have a problem that requires user intervention. See Power supply LEDs on the front of the chassis for additional details.
Green off, yellow off	No power to the chassis.

Figure 5-5 shows the location of the Management Ethernet port LEDs. Table 5-8 explains the LEDs.

**Figure 5-5 Location of Management Ethernet Port LEDs**



<b>1</b>	Port Link LED	<b>2</b>	Port Activity LED
----------	---------------	----------	-------------------

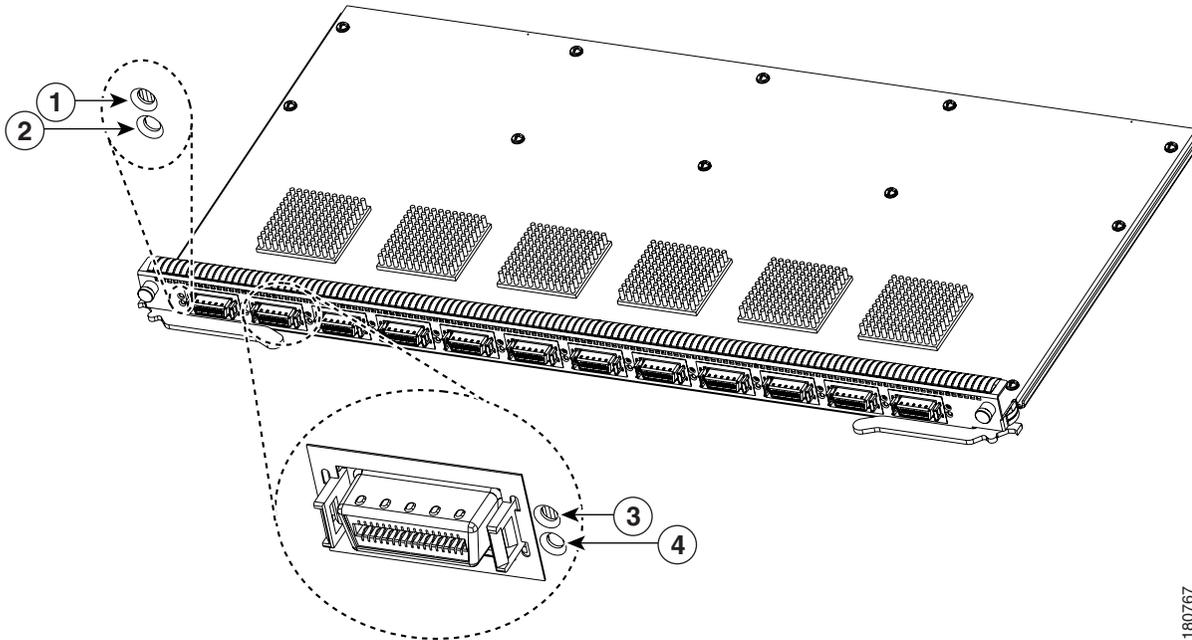
**Table 5-8 Management Ethernet LED Indications**

LED State	Indication
Port Link LED off	No physical link.
Port Link LED solid.	Successful physical link.
Port Activity LED off	No logical link.
Port Activity LED blinking	Traffic runs over the port.
Port Activity LED solid	Logical link established.

# InfiniBand LEDs

Each InfiniBand switch module includes two LEDs that provide status about the module itself and LEDs that provide information about each InfiniBand port, as shown in Figure 5-6.

**Figure 5-6** InfiniBand Switch Module and InfiniBand Port LEDs



180767

1	InfiniBand switch module LED (green)	3	InfiniBand port logical link status LED
2	InfiniBand switch module LED (yellow)	4	InfiniBand port physical link status LED

## InfiniBand Switch Module LEDs

Each InfiniBand switch module includes two LEDs (one green and one yellow) at one side of the interface-end of the module, as shown in Figure 5-6.

Table 5-9 explains InfiniBand switch module LED indications.

**Table 5-9** Infiniband Switch Module LED Indications

LED States	Indication
Green off, yellow off	No power to the switch module.
Green solid, yellow off	InfiniBand switch module runs with no errors.
Yellow solid, green off	InfiniBand switch module has a problem that requires user intervention.

## InfiniBand Port LEDs

Two port LEDs (both green) appear next to each InfiniBand port on the switch module, as shown in Figure 5-6.

Both the top and bottom InfiniBand port LEDs are solid green. The top LED indicates a logical link has taken place. (A logical link is established when the subnet manager makes a sweep. A logical link must be established if you are to use the port.) The bottom LED indicates a physical link has occurred. (A physical link requires that the drivers on the attached InfiniBand host have been installed and are running).

Table 5-10 explains InfiniBand port LED indications.

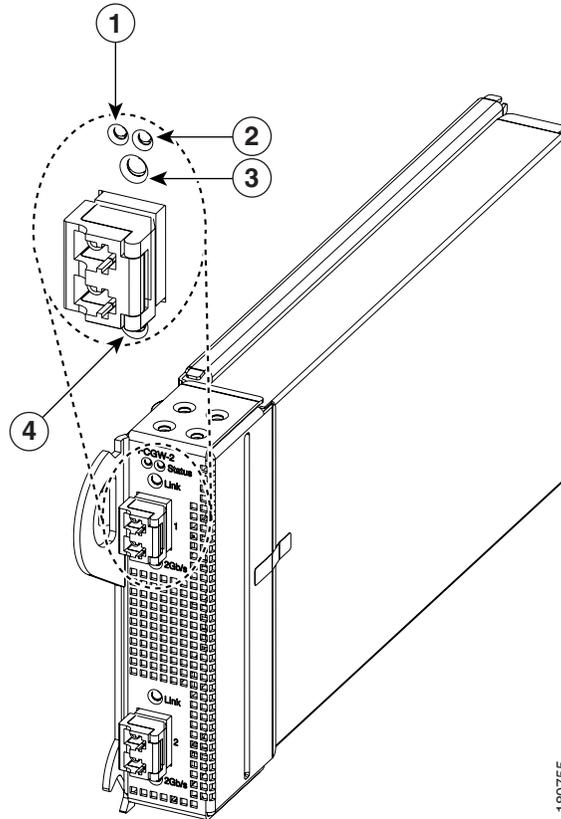
**Table 5-10 Management Ethernet LED Indications**

LED States	Indication
Bottom LED off	No Rx-Character detected.
Bottom LED on	Valid Rx-Character detected.
Bottom LED on, top LED on	Link is OK.
Bottom LED on, top LED off	Logical link not established.

# Fibre Channel LEDs

The location of the Fibre Channel gateway LEDs and Fibre Channel port LEDs for port 1 are shown in Figure 5-7.

**Figure 5-7** Location of Fibre Channel Gateway and Fibre Channel Port LEDs



<b>1</b>	Fibre Channel gateway LED (yellow)	<b>3</b>	Fibre Channel port status LED
<b>2</b>	Fibre Channel gateway LED (green)	<b>4</b>	Fibre Channel port activity LED

## Fibre Channel Gateway LEDs

The Fibre Channel gateway provides one yellow LED and one green LED. Table 5-11 lists and describes the LED indications.

**Table 5-11** Gateway LED Indications

LED States	Indication
Yellow on, green off	Auxiliary power has reached the gateway.
Green on, yellow off	Gateway runs successfully.
Green on, yellow on	An error has occurred.

## Fibre Channel Port LEDs

Fibre Channel Port LEDs are adjacent to each Fibre Channel port. They indicate port status and activity. Each port has a one bi-color, green/yellow, LED to indicate port status. When you enable a Fibre Channel interface module, and a Fibre Channel device is already connected, the run light (LED) of the Fibre Channel interface port changes from yellow to green, indicating that a connection has been established between the Fibre Channel device and the port.

Table 5-12 explains the Fibre Channel port status LED.

**Table 5-12** *Interpreting the Fibre Channel Port Status LEDs*

LED State	Indication
Off	Optic module or cable is not attached.
Solid yellow	A cable is attached, but the port is offline.
Slow pulsing yellow (2 second intervals)	Fiber installed and port is disabled as the result of diagnostics or port access is denied through CLI or Element Manager.
Fast pulsing yellow (half-second intervals)	Signal detected but port fault is also detected.
Solid green	The port is online, and a signal is detected.
Slow pulsing green (2 second intervals)	The port is online with a loop-back cable attached or an incompatible device.
Fast pulsing green (half-second intervals)	The port is online but running some internal diagnostics.
Sporadic flickering green	The port is online, and packet traffic is detected.

Table 5-13 explains the Fibre Channel port activity LED.

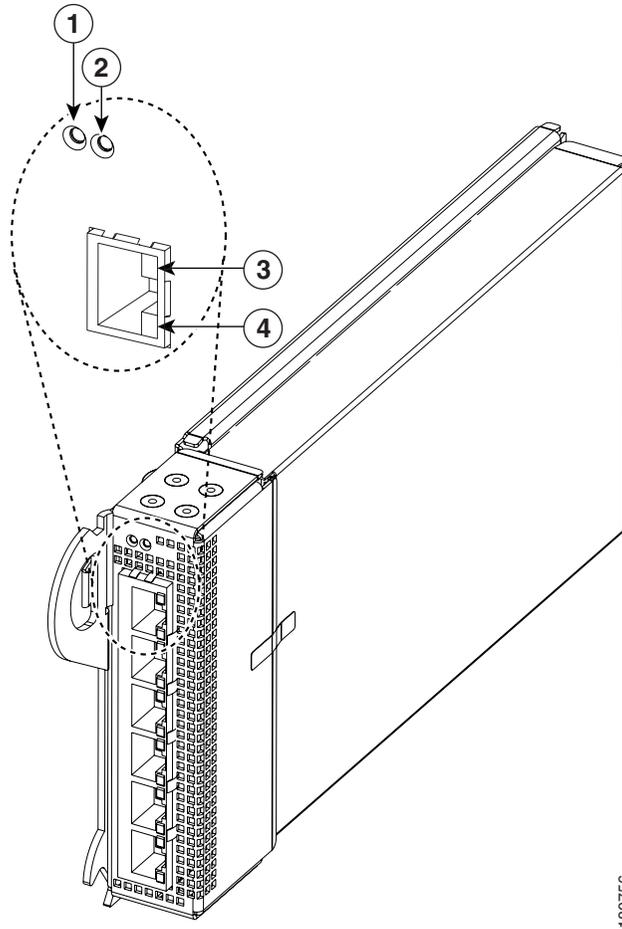
**Table 5-13** *Interpreting the Fibre Channel Port Activity LEDs*

LED State	Indication
Off	1 Gbps
Solid green	2 Gbps

# Ethernet Gateway LEDs

Figure 5-8 shows the location of the Ethernet gateway LEDs and the Ethernet port LEDs.

**Figure 5-8** Location of Ethernet Gateway and Ethernet Port LEDs



180756

<b>1</b>	Ethernet gateway LED (yellow)	<b>3</b>	Ethernet port status LED
<b>2</b>	Ethernet gateway LED (green)	<b>4</b>	Ethernet port activity LED

The Ethernet gateway provides one yellow LED and one green LED. Table 5-14 and Table 5-15 list and describe the LED indications.

## Ethernet Gateway LEDs

**Table 5-14 Ethernet Gateway LED Indications**

LED States	Indication
Yellow on, green off	Auxiliary power has reached the gateway.
Green on, yellow off	Gateway runs successfully.
Green on, yellow on	An error has occurred.

## Ethernet Port LEDs

Ethernet port LEDs are located on the Ethernet ports. Figure 5-8 shows the location of the Ethernet port LEDs for one port.

Table 5-15 explains Ethernet port LED indications.

**Table 5-15 Ethernet Port LED Indications**

LED State	Indication
Status LED off	No physical link.
Status LED solid	Successful physical link.
Activity LED off	No logical link.
Activity LED blinking	Traffic runs over the port.
Activity LED solid	Logical link established but traffic does not yet run.



# Specifications and Compliance

This appendix details the Cisco SFS 3012R Server Switch specifications and compliance certifications.

## General Specifications

**Table A-1**      *General Specifications*

Specification	Detail
Operating Temperature Range	0 to 35°C
Non-Operating Temperature Range	-40 to 65 °C
Operating Temperature Gradient	20°C maximum per 60 min
Operating Altitude	0 - 10,000 ft
Non-Operating Alt.	0 - 35,000 ft
Operating Humidity Range	20 to 80%, Non-condensing
Non-Operating Humidity Ranges	5 to 95%, Non-condensing
Operating Humidity Gradient	Maximum per 60 min: 10%
Non-Operating Humidity Gradient	0.1, maximum per 60 min
Operating Shock	5G, 11ms half-sine wave
Non-Operating Shock	10G, 11ms half-sine wave
Operating Vibration, Sinusoidal	5G, 5 to 300Hz, 15 minute dwell
Non-Operating Vibration, Sinusoidal	3 axis with the following parameters <ul style="list-style-type: none"> <li>• “X and Y axis: 0.0004 G<sup>2</sup> / Hz flat from 5-500Hz (0.472 GRMS)</li> <li>• Z-axis: 0.0008 G<sup>2</sup> / Hz flat from 5-500Hz (0.629GRMS)</li> </ul>
Weight	< 95 pounds, fully configured
Management Interfaces	<ul style="list-style-type: none"> <li>• Console RS-232, DB-9 connector</li> <li>• Management: 10/100 Ethernet RJ-45</li> </ul>

# Electrical Specifications

**Table A-2 Electrical Specifications**

Category	Specification
AC Power	Auto-ranging 90-264VAC, 47-63Hz. Dual independent IEC connectors, left and right justified.
Power Dissipation	< 650 W maximum

# Certifications/Regulatory

**Table A-3 Certifications/Regulatory**

Certifications
EMC: Class A Radiated and Conducted Emissions per FCC Part 15, subpart B (USA) and ICES-003 (Canada)
Safety: UL60950, 3rd ed. (USA) and CSA 22.2 No. 60950:2000 (Canada)
EMC: Class A Radiated and Conducted Emissions per EN 55022, Harmonics and Flicker tests per EN 61000-3-2,3 and Radiated and Conducted Immunity tests per EN 55024
Safety: EN60950 Declaration of Conformity to EN60950, EN55022, and EN55024 plus the CE mark on the device.
EMC: Class A Radiated and Conducted Emissions per VCCI V-3/02.04

# Laser Specifications

**Table A-4 Laser Specifications**

PID	Application	Optical Parameters
SFSXFCHR02F02K9	Fibre Channel	*CDRH/IEC Laser Class: I/1 Maximum Data rate: 2.125GB/s Wavelength: 850 nm I/O connector:
*Standards used: CDRH - 21CFR Chapter I§ 1040.10; IEC - IEC60825-1:1994		



---

## A

- architecture **1-2**
- audience **vii**

---

## B

- basic connectivity **2-8**
- blower modules
  - features of **1-11**
  - installing **3-9 to 3-10**
  - LEDs **5-4**
  - location of **1-5**
  - removing **3-11**
- boot-config command **4-5**

---

## C

- Cisco SFS 3012R Server Switch
  - booting **2-8**
  - components
    - features of **1-5 to 1-11**
    - installing **3-1 to 3-11**
    - removing **3-1 to 3-11**
  - features of **1-1 to 1-3**
  - installing **2-1 to 2-12**
  - LEDs **5-1 to 5-12**
  - managing **2-12**
  - rack mounting **2-4 to 2-7**
- configure basic connectivity **2-8**
- connectivity, basic **2-8**
- console **2-8**
- console cable **2-8**

- controller modules
  - features of **1-5**
  - installing **3-2 to 3-3**
  - LEDs **5-5**
  - location of **1-4**
  - slot numbers for **1-4**

---

## D

- DHCP **2-9**
- dir image command **4-2**
- documentation
  - cisco.com **xv**
  - conventions **viii**
  - DVD **xv**
  - feedback **xvi**
  - obtaining **xv**
  - ordering **xv**
  - organization **vii**

---

## E

- Ethernet connectivity, configuring for management **2-9 to 2-10**
- Ethernet gateways
  - features of **1-7**
  - installing **3-3 to 3-4**
  - LEDs **5-11**
  - location of **1-4**
  - slot numbers for **1-4**
- Ethernet port LEDs **5-12**

**F**

## Fibre Channel gateways

- features of **1-7 to 1-8**
- installing **3-3 to 3-4**
- LEDs **5-9**

Fibre Channel port LEDs **5-10**field notices **xvii**

## field replaceable units

- features of **1-5 to 1-11**
- installing **3-1 to 3-11**
- removing **3-1 to 3-11**

FRU. See field replaceable units

**G**

## gateways

- features of **1-7**
- installing **3-3 to 3-4**

**H**high availability **1-2****I**

## InfiniBand cable

- installing
  - pinch connector **2-10**
  - pull connector **2-11**
- removing
  - pinch connector **2-11**
  - pull connector **2-12**

InfiniBand hosts, connecting **2-10 to 2-12**

## InfiniBand switch modules

- features of **1-9**
- installing **3-4 to 3-6**
- LEDs **5-7**

- location of **1-4**
  - port LEDs **5-8**
  - removing **3-7**
  - slot numbers for **1-4**
  - verifying software for **3-6**
- install command **4-5**
- installing the chassis in a rack **2-4**
- IP address
- dynamic **2-9**
  - static **2-9**

**L**

## LEDs

- blower module **5-4**
- controller module **5-5**
- Ethernet gateway **5-11**
- Ethernet port **5-12**
- Fibre Channel **5-9**
- Fibre Channel Port **5-10**
- InfiniBand **5-7**
- InfiniBand port **5-8**
- power supply **5-3**
- system status **5-2**

**P**

- performance **1-2**
- power supplies
- features of **1-10**
  - installing **3-7 to 3-8**
  - LEDs **5-3**
  - location of **1-5**
  - removing **3-9**
- product alerts **xvii**
- product security **xvi**
- publications
- obtaining additional **xix**

---

**R**

racking the chassis 2-4  
rack shelf, assembling and installing 2-5  
redundancy 1-2  
related manuals xiv

---

**S**

safety information ix to xiv, 2-1  
scalability 1-3  
security, reporting problems xvi  
serial console 2-8  
serial console cable 2-8  
service requests  
    severity, definitions of xviii  
    submitting xviii  
shelf, assembling and installing 2-5  
show card command 3-6  
show card inventory command 4-2  
slot numbers, location and use 1-4  
software image  
    deleting with CLI 4-9  
    deleting with Element Manager 4-10  
    updating with CLI 4-5  
    updating with Element Manager 4-6 to 4-9  
    viewing with CLI 4-2  
    viewing with Element Manager 4-3  
system architecture 1-2  
system status LED 5-2

---

**T**

technical assistance, obtaining xvii  
topology 1-2



## Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>