



## **Cisco SFS 7000P and SFS 7000D InfiniBand Server Switches Hardware Installation Guide**

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- Move the equipment farther away from the television or radio.
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## Preface

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This preface describes who should read the *Cisco SFS 7000P and SFS 7000D InfiniBand Server Switches Hardware Installation Guide*, how it is organized, and its document conventions.

## Audience

Only trained and qualified service personnel (as defined in IEC 60950 and AS/NZS3260) should install, replace, or service the equipment described in this publication.

## Organization

This publication is organized as follows:

Chapter	Title	Description
Chapter 1	<a href="#">Product Overview</a>	Provides an overview of the Cisco SFS 7000P and SFS 7000D Server Switches features.
Chapter 2	<a href="#">Preparation for Installation</a>	Provides an overview about safety and site preparation requirements.
Chapter 3	<a href="#">Installing the Switches</a>	Describes how to install the switches in a rack.
Chapter 4	<a href="#">Installing Field Replaceable Units</a>	Describes how to install and remove field-replaceable units (FRUs) on the switches.
Chapter 5	<a href="#">Managing the Switch</a>	Provides upgrade procedures for switch components.
Chapter 6	<a href="#">Hardware Diagnostic Tests</a>	Describes how to monitor the performance of the switches.
Appendix A	<a href="#">Specifications and Compliance Certifications</a>	Provides specifications and compliance information.
Appendix B	<a href="#">Acronyms and Abbreviations</a>	Defines the acronyms and abbreviations that are used in this publication.

# Conventions

This publication uses the following conventions:

Convention	Description
<b>boldface font</b>	Commands, command options, and keywords are in <b>boldface</b> .
<i>italic font</i>	Arguments for which you supply values are in <i>italics</i> .
[ ]	Elements in square brackets are optional.
{ x   y   z }	Alternative keywords are grouped in braces and separated by vertical bars.
[ x   y   z ]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in <code>screen font</code> .
<b>boldface screen font</b>	Information you must enter is in <b>boldface screen font</b> .
<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.

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.



Warnings use the following conventions:



Warning

### IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

### SAVE THESE INSTRUCTIONS

Waarschuwing

### BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

### BEWAAR DEZE INSTRUCTIES

Varoitus

### TÄRKEITÄ TURVALLISUUSOHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelyyn 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 rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto 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 للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في آخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز. قم بحفظ هذه الإرشادات

**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	<p><b>ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ</b></p> <p>Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθειες πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.</p> <p><b>ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ</b></p>
אזהרה	<p><b>הוראות בטיחות חשובות</b></p> <p>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.</p> <p><b>שמור הוראות אלה</b></p>
Опoмена	<p>пoстoи кaј eлeктpичнитe кoлa и тpeбa дa ги пoзнaвaтe стaндapднитe пoстaпки зa спpeчyвaњe нa нeсpeќни слyчaи. Искoристeтe гo бpoјoт нa изјaвaтa штo ce нaoѓa нa кpaјoт нa сeкoe пpeдyпpeдyвaњe зa дa гo нaјдeтe нeгoвиoт пepиoд вo пpeвeдeнитe бeзбeднoсни пpeдyпpeдyвaњa штo ce испoрaчaни сo ypeдoт.</p> <p><b>ЧУВАЈТE ГИ OВИE НAПAТCTBИЈA</b></p>
Ostrzeżenie	<p><b>WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA</b></p> <p>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.</p> <p><b>NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ</b></p>
Upozornenie	<p><b>DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY</b></p> <p>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.</p> <p><b>USCHOVAJTE SI TENTO NÁVOD</b></p>

**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 more information about the Cisco SFS 7000 switch product family, refer to these publications:

- *Cisco SFS 7000D InfiniBand Server Switch Installation and Configuration Note*
- *Cisco SFS 7000P InfiniBand Server Switch Installation and Configuration Note*
- *Cisco SFS 7008P InfiniBand Server Switch Installation and Configuration Note*
- *Cisco SFS 7008P InfiniBand Server Switch Hardware Installation Guide*
- *Cisco SFS 7000 Series Product Family Chassis Manager User Guide*
- *Cisco SFS 7000 Series Product Family Element Manager User Guide*
- *Cisco SFS 7000 Series Product Family Command Reference*
- *Regulatory Compliance and Safety Information for the Cisco SFS 7000P, SFS 7000D, SFS 7008P, and SFS 3012R Server Switches*
- *InfiniBand SDR, DDR, and QDR Technical Overview*

## 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](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](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](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](mailto: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](mailto:psirt@cisco.com)

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

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



### Tip

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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](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.

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## 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>





# Product Overview

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The Cisco SFS 7000P and SFS 7000D Server Switches provide high-class data center infrastructure that interconnect discreet server resources together into high-performance, low-latency fabric switches.

The Cisco SFS 7000P and SFS 7000D Server Switches are described in the following sections:

- [Introduction to Switches, page 1-1](#)
- [Switch Connectors, page 1-2](#)
- [Switch Components, page 1-2](#)
- [System Features, page 1-3](#)
- [Administrative Features, page 1-5](#)

## Introduction to Switches

The Cisco SFS 7000P and SFS 7000D Server Switches offer features that are described in the following sections. [Figure 1-1](#) shows an illustration of the Cisco SFS 7000P Server Switch, and [Figure 1-2](#) shows an illustration of the Cisco SFS 7000D Server Switch.

**Figure 1-1** Cisco SFS 7000P Server Switch

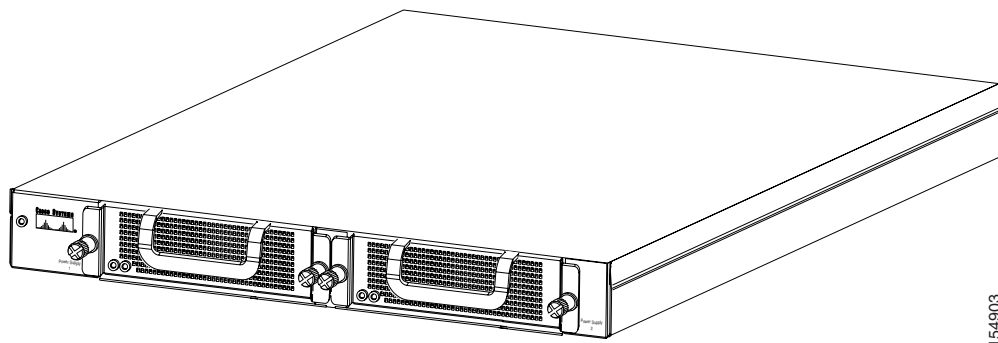
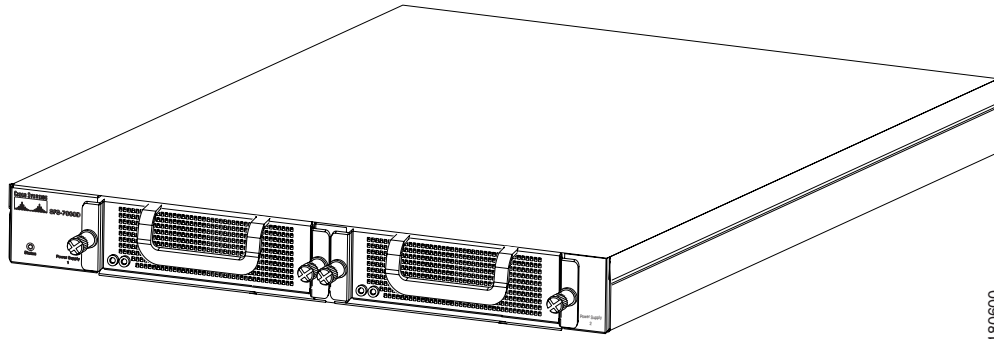


Figure 1-2 Cisco SFS 7000D Server Switch



## Switch Connectors

The Cisco SFS 7000P Server Switch uses the following connectors:

- Twenty-four 10-Gbps 4x copper InfiniBand ports for server and interswitch connectivity
- One 10/100 Ethernet RJ-45 management-Ethernet port for out-of-band management
- One RJ-45 console port used to configure and monitor the Cisco SFS 7000P Server Switch

The Cisco SFS 7000D Server Switch uses the following connectors:

- Twenty-four dual-speed 20-Gbps 4x copper InfiniBand ports that are capable of operating in either 20-Gbps DDR or 10-Gbps SDR mode for server and interswitch connectivity
- One 10/100 Ethernet RJ-45 management-Ethernet port for out-of-band management
- One RJ-45 console port used to configure and monitor the Cisco SFS 7000D Server Switch



### Note

There is a performance degradation if you mix 10-Gbps and 20-Gbps InfiniBand ports.

## Switch Components

This section describes the following components of the Cisco SFS 7000P and SFS 7000D Server Switches and contains these sections:

- [LEDs, page 1-3](#)
- [Power Supply Bay, page 1-3](#)
- [Power Supply Module, page 1-3](#)

## LEDs

The Cisco SFS 7000P and SFS 7000D Server Switches feature the following LEDs:

- Chassis LEDs—Show overall system status, power status, and fan status. LEDs and their use are described in the [“Chassis Status LEDs” section on page 5-1](#).
- InfiniBand Port LEDs—Show link status, diagnostics, and network traffic. LEDs and their uses are described in the [“InfiniBand Port LEDs” section on page 5-3](#).

## Power Supply Bay

The chassis provides dual independent IEC connectors that are left- and right-justified.

## Power Supply Module

The power supply module, which contains the power supply and fan unit, has the following features:

- Redundant and hot-swappable— The replacement of any one power supply module does not disrupt the operation of the device and can be successfully completed without removing the device from a rack or disconnecting any cables.
- Auto-ranging 90 to 264 VAC, 47 to 63 Hz.
- Redundant, hot-swappable cooling.

See the [“Installing a Power Supply Module” section on page 4-2](#) for more information.

## System Features

This section describes the system features of the Cisco SFS 7000P and SFS 7000D Server Switches and includes the following topics:

- [InfiniBand Connectivity, page 1-3](#)
- [Scalability, page 1-4](#)
- [High Availability, page 1-4](#)
- [Nonblocking Architecture, page 1-5](#)

## InfiniBand Connectivity

The Cisco SFS 7000P and SFS 7000D Server Switches can be used in a variety of networking environments, including database tiers, application tiers, and World Wide Web tiers.

The Cisco SFS 7000P Server Switch provides 10 Gbps connectivity to servers, while the Cisco SFS 7000D Server Switch provides 20 Gbps DDR or 10 Gbps SDR modes for connectivity to servers.

**Note**

Copper passive DDR cables are limited to 8 meters in length. If you want to use a longer SDR cable in place of a DDR cable, the port must be configured manually to run an SDR rate.

## Scalability

The embedded subnet manager running on the Cisco SFS 7000P and SFS 7000D Server Switches can manage up to 1,152 hosts.

## High Availability

High availability operates at the hardware, port, and fabric level. These features are described below.

### Hardware

High availability at the hardware level means that the Cisco SFS 7000P and SFS 7000D Server Switches feature hot-swappable redundant power and cooling.

### Ports

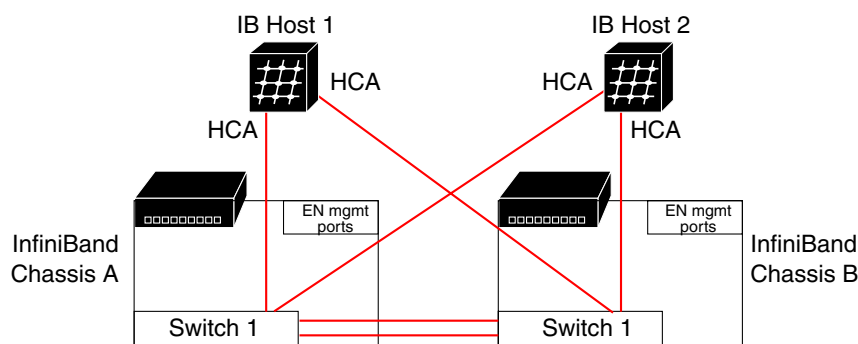
High availability is supported at the ports level such that if any single InfiniBand port fails, none of the other ports have interrupted service.

### Fabric

High availability is supported at the fabric level as well. For redundancy, InfiniBand HCAs can be dual-connected to a redundant pair of switches.

When an InfiniBand fabric includes more than one Cisco SFS 7000P Server Switch or Cisco SFS 7000D Server Switch, and the subnet manager fails on the Cisco SFS 7000P Server Switch or the Cisco SFS 7000D Server Switch that is acting as the master, another subnet manager takes over within seconds. (See [Figure 1-3](#).)

**Figure 1-3** Example of Redundant InfiniBand Fabric



— InfiniBand connections

154001



#### Note

A performance degradation occurs if you mix 10-Gbps and 20-Gbps InfiniBand ports.



## Nonblocking Architecture

The Cisco SFS 7000P and SFS 7000D Server Switches provide nonblocking switch element architecture with full bisectional bandwidth for the switch chassis.

## Administrative Features

This section describes the administrative features of the Cisco SFS 7000P and SFS 7000D Server Switches and includes these topics:

- [Real-Time Clock, page 1-5](#)
- [Latency, page 1-5](#)
- [Nonvolatile Memory, page 1-5](#)
- [Diagnostics, page 1-5](#)
- [Diagnostics, page 1-5](#)

## Real-Time Clock

A real-time clock maintains correct time regardless of power conditions or connectivity.

## Latency

The Cisco SFS 7000P Server Switch has port to port latency of less than 200ns.

The Cisco SFS 7000D Server Switch has port to port latency of less than 140ns

## Nonvolatile Memory

The nonvolatile memory supports the following items:

- Three stored system images (not including recovery image)
- One week of log files at normal verbosity and one day of log files at maximum verbosity

## Diagnostics

The following tests are used to determine operational status:

- POST is performed on all system components and is required during power-on to determine operational readiness.
- Tests are available to check the operational status of the redundant component periodically during normal operation, including the logic required to perform the transition from faulted or primary to redundant component. The test reports the detection of an abnormal status.
- Some other diagnostics that you can perform are card self-test, chassis self-test, and fan self-test.

See [Chapter 6, “Hardware Diagnostic Tests”](#) for more information.





## Preparation for Installation

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Planning a proper location for the Cisco SFS 7000P and SFS 7000D Server Switches and the proper layout of your equipment rack is essential for successful system operation. This chapter describes how to prepare your site for switch installation and contains these sections:

- [Safety, page 2-1](#)
- [Site Requirements, page 2-1](#)
- [Power Requirements, page 2-5](#)
- [Site Preparation Checklist, page 2-6](#)

## Safety

Safety warnings appear throughout this document in procedures that may harm you if performed incorrectly. A warning symbol precedes each warning statement. The warnings below are general warnings that are applicable to the entire publication.



**Warning**

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

---



**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

---

## Site Requirements

These sections describe some of the basic site requirements that you should be aware of as you prepare to install your Cisco SFS 7000P and SFS 7000D Server Switches. Environmental factors can adversely affect the performance and longevity of your system. Planning a proper location for the switch and layout of your equipment rack or wiring closet is essential for successful system operation. You should install the switch in an enclosed, secure area, ensuring that only qualified personnel have access to the switch and control of the environment. Equipment that is placed too closely together or placed in inadequately ventilated areas can cause system overtemperature conditions leading to premature component failures. In addition, poor equipment placement can make chassis panels inaccessible and difficult to maintain.

The switch requires a dry, clean, well-ventilated, and air-conditioned environment. To ensure normal operation, maintain ambient airflow. If the airflow is blocked or restricted, or if the intake air is too warm, an overtemperature condition can occur. The switch environmental monitor can then shut down the system to protect the system components.

Multiple switches can be rack-mounted with little or no clearance above and below the chassis. However, when mounting a switch in a rack with other equipment, or when placing it on the floor near other equipment, ensure that the exhaust from other equipment does not blow into the air intake vent of the switch chassis.

## Temperature

Temperature extremes can cause a system to operate at reduced efficiency and cause a variety of problems, including premature aging and failure of chips and failure of mechanical devices. Extreme temperature fluctuations can cause chips to become loose in their sockets. Ensure that the system is operating in an environment that does not exceed the specifications in [Table A-1 on page A-1](#). Ensure that the chassis has adequate ventilation. Do not place the chassis within a closed-in wall unit or on top of cloth, which can act as insulation. Do not place it where it will receive direct sunlight, particularly in the afternoon. Do not place it next to a heat source of any kind, including heating vents during winter. Adequate ventilation is particularly important at high altitudes. Make sure that all slots and openings on the system remain unobstructed, especially the fan vent on the chassis. Clean the installation site at regular intervals to avoid buildup of dust and debris, which can cause a system to overheat. If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so can damage internal components.

## Humidity

High-humidity conditions can cause moisture migration and penetration into the system. This moisture can cause corrosion of internal components and degradation of properties, such as electrical resistance, thermal conductivity, physical strength, and size. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system. Ensure that the system is operating in an environment that does not exceed the specifications in [Table A-1 on page A-1](#). Buildings in which climate is controlled by air-conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range.

## Altitude

Operating a system at high altitude (low pressure) reduces the efficiency of forced and convection cooling and can result in electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency. Ensure that the system is operating in an environment that does not exceed the specifications in [Table A-1 on page A-1](#).

## Dust and Particles

Exhaust fans cool power supplies and system fan trays cool systems by drawing in air and exhausting air out through various openings in the chassis. However, fans also ingest dust and other particles, causing contaminant buildup in the system and increased internal chassis temperature. A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the mechanical components in the system. In addition to regular cleaning, follow these precautions to avoid contamination of your equipment:

- Do not permit smoking anywhere near the system.
- Do not permit food or drink near the system.

## Corrosion

Corrosion of system connectors is a gradual process that can eventually lead to intermittent failures of electrical circuits. The oil from a person's fingers or prolonged exposure to high temperature or humidity can corrode the gold-plated edge connectors and pin connectors on various components in the system. To prevent corrosion, avoid touching contacts on boards and cards, and protect the system from extreme temperatures and moist, salty environments.

## Electromagnetic and Radio Frequency Interference

EMI and RFI from a system can adversely affect devices such as radio and TV receivers operating near the system. Radio frequencies emanating from a system can also interfere with cordless and low-power telephones. Conversely, RFI from high-power telephones can cause spurious characters to appear on the system monitor. RFI is defined as any EMI with a frequency above 10 kHz. This type of interference can travel from the system to other devices through the power cable and power source or through the air like transmitted radio waves. The FCC publishes specific regulations to limit the amount of EMI and RFI emitted by computing equipment. Each system meets these FCC regulations. To reduce the possibility of EMI and RFI, follow these guidelines:

- Operate the system only when the chassis cover is installed.
- Ensure that all expansion slots are covered either by a card-mounting bracket or by a metal filler bracket and that all drive bays have either a drive or a metal insert installed.
- Ensure that the screws on all peripheral cable connectors are securely fastened to their corresponding connectors on the back of the chassis.
- Always use shielded cables with metal connector shells for attaching peripherals to the system.

When wires are run for any significant distance in an electromagnetic field, interference can occur between the field and the signals on the wires. This fact has two implications for the construction of plant wiring:

- Bad wiring practice can result in radio interference emanating from the plant wiring.
- Strong EMI, especially when it is caused by lightning or radio transmitters, can destroy the signal drivers and receivers in the chassis and even create an electrical hazard by conducting power surges through lines into equipment.

**Note**

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To predict and remedy strong EMI, you might need to consult experts in RFI.

---

If you use twisted-pair cable in your plant wiring with sufficient distribution of grounding conductors, the plant wiring is unlikely to emit radio interference. If you exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal when applicable.

If the wires exceed the recommended distances or if wires pass between buildings, carefully consider the effect of a lightning strike in your vicinity. The electromagnetic pulse caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic devices. If you have had problems of this sort in the past, you may want to consult experts in electrical surge suppression and shielding.

## Shock and Vibration

Cisco SFS 7000P and SFS 7000D Server Switches have been shock- and vibration-tested for operating ranges, handling, and office vibration and criteria, transportation vibration and criteria, and packaged equipment shock. (See [Table A-1 on page A-1](#).)

## Power Source Interruptions

Systems are especially sensitive to variations in voltage supplied by the AC power source. Overvoltage, undervoltage, and transients (or spikes) can erase data from memory or even cause components to fail. To protect against these types of problems, power cables should be grounded properly. Also, place the system on a dedicated power circuit (rather than sharing a circuit with other heavy electrical equipment). In general, do not allow the system to share a circuit with any of the following:

- Copy machines
- Air conditioners
- Vacuum cleaners
- Space heaters
- Power tools
- Teletype machines
- Laser printers
- Facsimile machines
- Any other motorized equipment

Besides these appliances, the greatest threats to a system power supply are surges or blackouts that are caused by electrical storms. Whenever possible, turn off the system and any peripherals, and unplug them from their power sources during thunderstorms. If a blackout occurs—even a temporary one—while the system is turned on, turn off the system immediately and disconnect it from the electrical outlet. Leaving the system on may cause problems when the power is restored; all other appliances left on in the area can create large voltage spikes that can damage the system.

## Preventing Electrostatic Discharge Damage

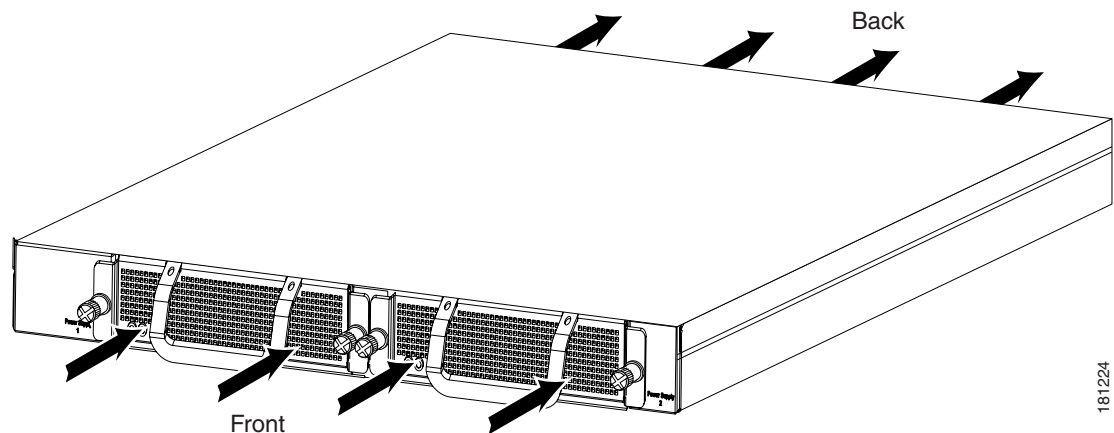
ESD damage, which can occur when modules or other FRUs are improperly handled, results in intermittent or complete failures. Modules consist of printed circuit boards that are fixed in metal carriers. EMI shielding and connectors are integral components of the carrier. Although the metal carrier helps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

## Air Flow


**Note**

The air flows from front to back through the Cisco SFS 7000P and SFS 7000D Server Switches. (See [Figure 2-1](#).)

**Figure 2-1** Air Flow Direction in the Cisco SFS 7000P and SFS 7000D Server Switches



Follow these guidelines to ensure proper airflow:

- Maintain ambient airflow throughout the data center to ensure normal operation.
- If installing in an enclosed cabinet, ensure that the cabinet has adequate ventilation, and allow at least 2.5 inches (6.4 cm) of clearance between the chassis vents and the cabinet wall.
- If placing the switch adjacent to a device that exhausts air towards the switch, the horizontal distance between the devices should be a minimum of 6 inches (15.2 cm).
- Ensure that cables do not obstruct the airflow through the chassis.
- Consider heat dissipation of all equipment when determining the air-conditioning requirements, as specified in the hardware installation guide. When evaluating airflow requirements, consider that hot air generated by equipment at the bottom of the rack can be drawn into the intake ports of the equipment above.

## Power Requirements

Follow these requirements when preparing your site for the switch installation:

- In systems configured with two power supplies, connect each of the two power supplies to a separate input power source. If you fail to do this, your system might be susceptible to total power failure due to a fault in the external wiring or a tripped circuit breaker.
- To prevent a loss of input power, be sure that the total maximum load on each source circuit is within the current ratings of the wiring and breakers.
- The AC power receptacles used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles should connect to protective earth ground at the service equipment.

# Site Preparation Checklist

Table 2-1 lists the site planning activities that you should perform prior to installing the Cisco SFS 7000P and SFS 7000D Server Switches. Completing each activity helps ensure a successful switch installation.

**Table 2-1 Site Planning Checklist**

Task No.	Planning Activity	Verified By	Time	Date
1	Space evaluation: <ul style="list-style-type: none"> <li>• Space and layout</li> <li>• Floor covering</li> <li>• Impact and vibration</li> <li>• Lighting</li> <li>• Maintenance access</li> </ul>			
2	Environmental evaluation: <ul style="list-style-type: none"> <li>• Ambient temperature</li> <li>• Humidity</li> <li>• Altitude</li> <li>• Atmospheric contamination</li> <li>• Airflow</li> </ul>			
3	Power evaluation: <ul style="list-style-type: none"> <li>• Receptacle proximity to the equipment</li> <li>• Dedicated (separate) circuits for redundant power supplies</li> <li>• UPS for power failures</li> </ul>			
4	Grounding evaluation: <ul style="list-style-type: none"> <li>• Circuit breaker size</li> </ul>			
5	EMI evaluation: <ul style="list-style-type: none"> <li>• Distance limitations for signaling</li> <li>• Site wiring</li> <li>• RFI levels</li> </ul>			





## Installing the Switches

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This chapter describes how to install and manage the Cisco SFS 7000P and SFS 7000D Server Switches hardware and contains these sections:

- [Safety, page 3-2](#)
- [Pre-installation Instructions, page 3-2](#)
- [Rack-Mounting the Switches, page 3-3](#)
- [Configuring Basic Connectivity, page 3-7](#)
- [Connecting Network Devices, page 3-11](#)
- [Managing the System, page 3-14](#)



**Warning**

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**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

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**Warning**

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

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**Warning**

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**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

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**Warning**

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**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

---

## Safety



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

**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

**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

**Class 1M laser radiation when open. Do not view directly with optical instruments.** Statement 1053



Warning

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

## Pre-installation Instructions



Caution

Before attempting any installation, read [Chapter 2, “Preparation for Installation.”](#)

To safely and successfully prepare the environment for your Cisco SFS 7000P and SFS 7000D Server Switches, you need to do the following:

- Check the contents of the switch package—For more information, see the parts list in the installation and configuration note that shipped with your switch.
- Always use an approved ESD-preventative ankle or wrist strap.
- Make sure you have the correct cables and sufficient ventilation.
- Prepare a management workstation, such as a PC running a terminal program, with the cable and adapter required for your specific configuration.

# Rack-Mounting the Switches

**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

This section describes how to install the Cisco SFS 7000P and SFS 7000D Server Switches in an equipment rack.

## Requirements

In addition to the accessories provided with the switch, you need the following:

- A number 2 Phillips screwdriver
- 8 rack screws specific to your rack
- Any associated mounting clips to secure the brackets to your rack (two for each rail of the rack)

**Caution**

Installing the rack to the system with screws other than the ones recommended could be hazardous.

- A rack with enough clearance for the server switch cables
- Two people to perform the installation (highly recommended)

**Note**

The Cisco SFS 7000P and SFS 7000D Server Switches weigh more than 22 pounds (10 kilograms) each.

## Rack-Mounting the Switch

To mount the Cisco SFS 7000P and SFS 7000D Server Switches in a rack, follow these steps:

- Step 1** Remove the switch, rack-mount brackets, contents of accessory kit, and documentation from the box.
- Step 2** Place the switch on a secure, clean surface.
- Step 3** Record the MAC address and the Globally Unique Identifier (GUID) number for future reference.

The MAC address and GUID number are available on sticker labels placed on top of the switch.

- Step 4** Check the slot in the rack for sufficient clearance.
- Step 5** Determine the desired method of installation, and follow the appropriate steps:
- [Installing the Switch with One Person, page 3-4](#)
  - [Installing the Switch with Two People, page 3-6](#)

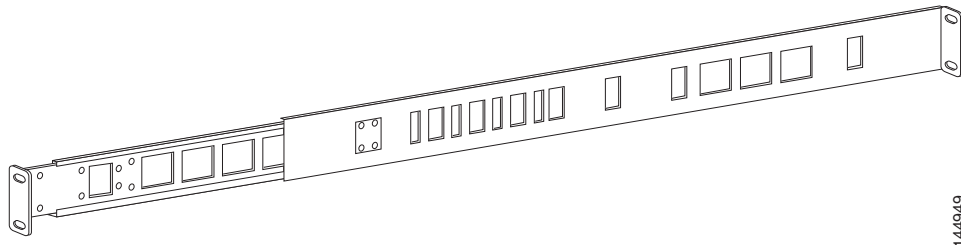
## Installing the Switch with One Person

Because it can be difficult for one person to align the switch correctly along both rack rails, the following installation method is easier with two people but can be accomplished with one person.

To install the switch with one person, follow these steps:

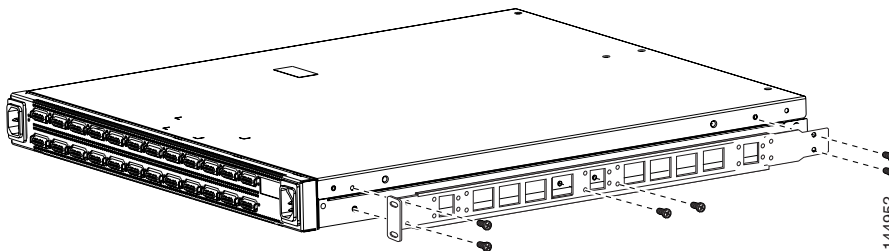
- Step 1** Separate one set of the rack brackets. (See [Figure 3-1](#).)
- Each side is assembled to its counterpart but should be separated before you attach them to the switch when you use this installation method.

**Figure 3-1** Assembled Rack Brackets



- Step 2** Attach the bracket that has the screw holes to the side of the switch, with the flange facing away from the switch, as shown in [Figure 3-2](#).

**Figure 3-2** Attaching One Rail to Switch Chassis

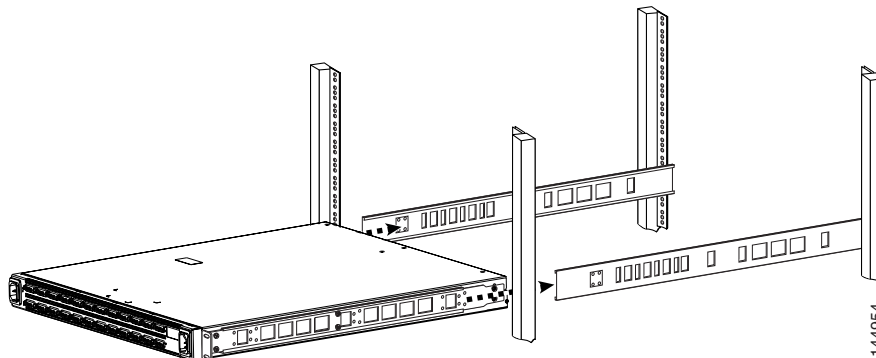


The standard method is to face the flange toward the front of the switch. However, you can also mount the flange toward the back if you want to mount the switch backward in the switch (service-side forward), as shown in [Figure 3-2](#).

- Step 3** Repeat [Step 1](#) and [Step 2](#) on the opposite side of the switch to attach the second bracket.
- The two counterparts to these sliding rack brackets (that do not have screw holes) should still be unattached.

- Step 4** Check the rack for clearance for the switch. The switch can be installed either directly on top of another device or be suspended from the rack posts.
- Step 5** Attach the remaining two rack brackets to your rack.
- Position a bracket toward the back of the rack with the flange facing away from the rack. The flange should go around the outside of the rack post, as shown in [Figure 3-3](#).

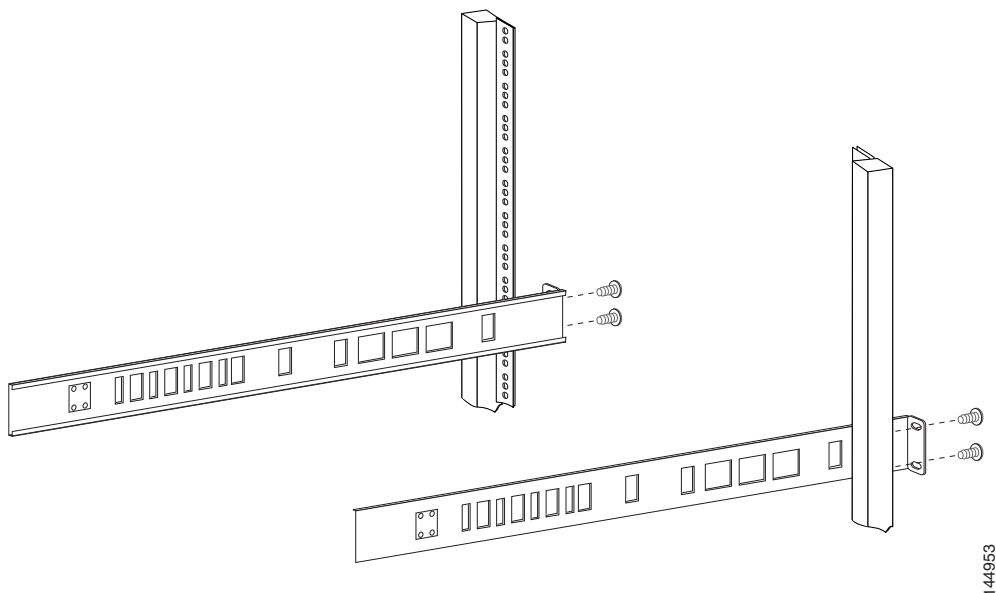
**Figure 3-3** Holding Bracket Inside of Rack



**Note** If you are rack-mounting the switch backward, the bracket should be installed to the front of the rack.

- Secure the bracket with the screws through the back of the rack, as shown in [Figure 3-4](#).
- Repeat on the other side of the rack.

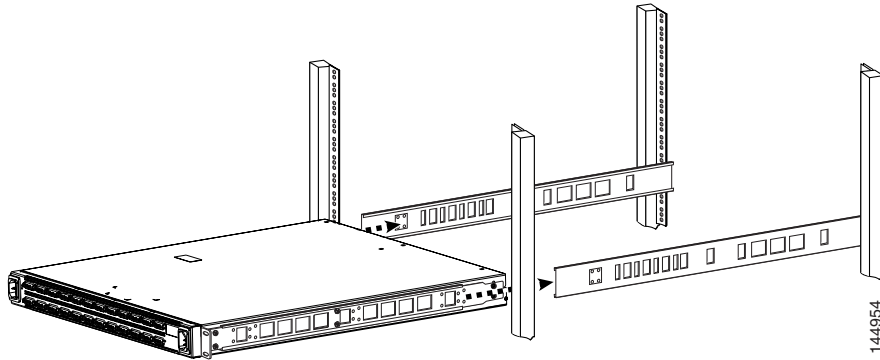
**Figure 3-4** Secure Rail Bracket to Rack with Screws



- Step 6** Lift the switch unit, and align the sliding brackets to the switch with the brackets attached to the posts before sliding them together.

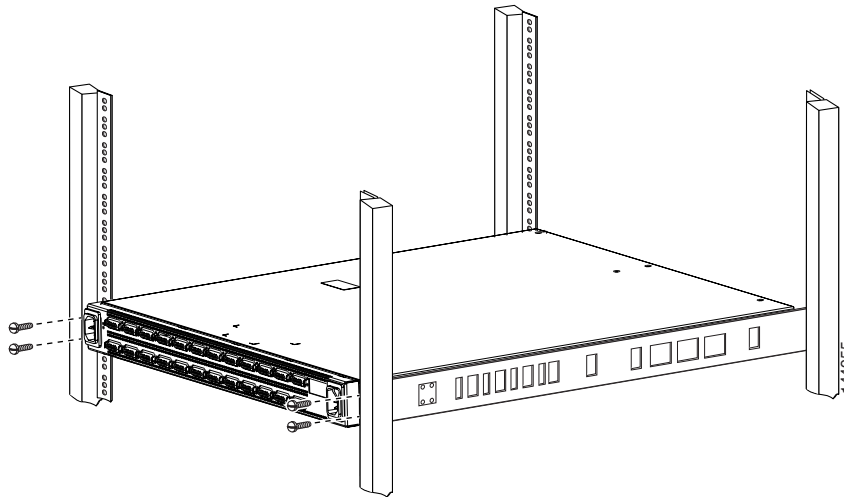
- Step 7** Carefully push the switch unit into the rack, as shown in [Figure 3-5](#).  
If the brackets do not slide easily, the alignment might be off. Pull the switch back toward you, and realign the brackets.

**Figure 3-5** *Sliding the Switch Into the Rack*



- Step 8** Maintain at least six inches between the cooling vents and any obstructions.  
**Step 9** Secure the switch with your screws through the front of the rack, as shown in [Figure 3-6](#).

**Figure 3-6** *Secure Switch with Screws through the Front of the Rack*



## Installing the Switch with Two People

The following installation method requires two people to mount the switch into the rack. One person holds the switch while another person secures it to the rack.

To install the switch with two people, follow these steps:

- Step 1** Separate the assembled rack brackets. (See [Figure 3-1](#).)

- Step 2** Attach the rack bracket that has screw holes to the sides of the switch by using the screws provided. When attaching the rack bracket, the flanges of the rack bracket should be facing away from the switch. (See [Figure 3-2](#).)
- Step 3** Attach the rack brackets to their counterparts before inserting the switch into the rack.
- Step 4** Insert the switch into the rack with the rack bracket attached. You must tilt the switch unit to one side to avoid hitting the sides of the rack bracket as they pass around the back rails. Return the switch unit to a horizontal position after the switch is inside the rack. The rear bracket flanges should wrap around the outside of the back rack post. (See [Figure 3-4](#).)
- Step 5** Have one person hold the switch while another person secures the switch to the rack. If required, adjust the length of the rack brackets to fit the dimensions of the rack posts.
- Step 6** Maintain at least six inches between the cooling vents and any obstructions.
- Step 7** Attach the rack bracket to the back of the rack posts with screws that fit your rack.
- Step 8** Attach the front rails to the front of the rack with screws that fit your rack. (See [Figure 3-6](#).)
- 

## Configuring Basic Connectivity

The following sections appear in this section:

- [Obtaining an IP Address, page 3-7](#)
- [Connecting the 10/100 Ethernet Management Port, page 3-10](#)
- [Powering Up the Chassis, page 3-10](#)

## Obtaining an IP Address

### Obtaining an IP Address from the DHCP Server for Ethernet Management

This section describes how to obtain an IP address from the Dynamic Host Configuration Protocol (DHCP) server by default.



**Note**

DHCP is enabled by default in the Cisco SFS 7000D Server Switch. To obtain an IP address for the Cisco SFS 7000P Server Switch, see [“Obtaining a Static IP Address for Ethernet Management” section on page 3-8](#).

To obtain an IP address using the default enabled DHCP, you must obtain the MAC address. The MAC address is printed on a label on your Cisco SFS 7000D Server Switch in the following format: *AA:BB:CC:DD:EE:FF*. (See the instructions in the [“Rack-Mounting the Switch” section on page 3-3](#) for when to make a note of the MAC address.) You must configure your DHCP server to the MAC address before you attempt to obtain an IP address using DHCP.

Use the MAC address to configure your DHCP server to allocate an IP address of your choice to the Cisco SFS 7000D Server Switch management interface. Otherwise, the DHCP server (if present) allocates the first available IP address from the designated pool of addresses. In the latter case you can

find out which address was allocated by logging to the CLI on the serial console and using the **show interface mgmt-eth** command. See the *Cisco SFS 7000 Series Product Family Command Reference* for further details on using CLI commands.

Use the IP address, to Telnet to the Cisco SFS 7000D Server Switch.

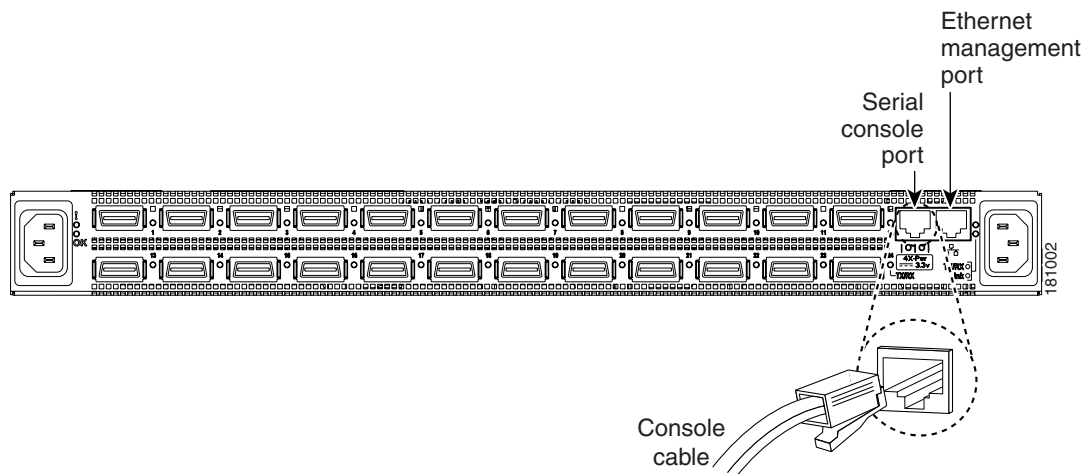
## Obtaining a Static IP Address for Ethernet Management

A Cisco SFS 7000P Server Switch user must configure a static IP Address for Ethernet Management. A Cisco SFS 7000D Server Switch user can configure a static IP address and connect to a serial console port only if a DHCP server is not available.

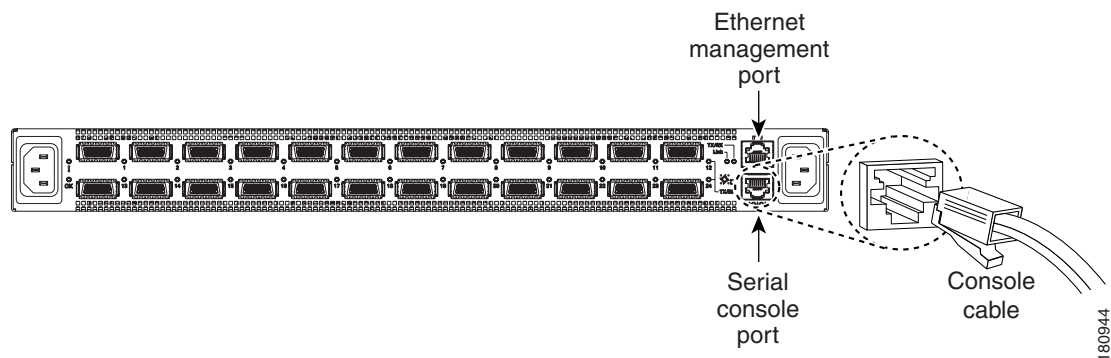
To configure a static IP address, you must connect the serial console port to a PC serial for access to the server switch.

Before you configure the switch, ensure that the unit is connected properly. This section describes how to attach a serial console cable to a PC. The serial console port, located on the rear panel of the Cisco SFS 7000P and SFS 7000D Server Switches, is shown in [Figure 3-7](#) and [Figure 3-8](#).

**Figure 3-7** Connecting the Console Cable to a Serial Console Port on the Cisco SFS 7000P Server Switch



**Figure 3-8** Connecting the Console Cable to a Serial Console Port on the Cisco SFS 7000D Server Switch





You can connect the serial console port to a PC serial port for local administrative access to the switch. A terminal emulation software product, such as HyperTerminal, makes communication between your switch and your PC possible during setup and configuration.

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

- 
- Step 1** Configure the baud rate and character format of the PC terminal emulation program to match the following management port default characteristics:
- Baud: 9600 bps
  - Data Bits: 8
  - Parity: None
  - Stop Bits: 1
- Step 2** Connect the supplied DB-9/RJ-45 female adapter or DB-25/RJ-45 female adapter (depending on your PC connection) to the PC serial port.
- Step 3** Connect one end of the supplied console cable (a flat rollover RJ-45 cable) to the serial console port. (See [Figure 3-7](#) and [Figure 3-8](#).) Connect the other end to the DB-9/RJ-45 female adapter or DB-25/RJ-45 adapter at the PC serial port.
- 

After you connect the serial console port, you may configure a static IP address for the Ethernet management interface by following these steps:

- 
- Step 1** Wait for the login prompt.
- Login:
- Step 2** Enter the username and password. The default username is **super**, and the default password is **super**.
- Login: **super**  
Password: **super**  
SFS-7000D>
- Step 3** Enter the **enable** command.
- SFS-7000D> **enable**  
SFS-7000D #
- Step 4** Enter the **configure** command to enter the configuration mode.
- SFS-7000D # **configure**  
SFS-7000D(config)#
- Step 5** Enter the **interface mgmt-ethernet** command to enter the config-if-mgmt-ethernet mode.
- SFS-7000D(config)# **interface mgmt-ethernet**  
SFS-7000D(config-if-mgmt-ethernet)#
- Step 6** Enable the static address option, which turns off the default-enabled DHCP.
- SFS-7000D(config)# **address-option static**
- Step 7** Enter the IP address of the management interface, followed by the netmask, which enables the optional static address.
- SFS-7000D(config-if-mgmt-ethernet)# **ip address ip address netmask**

- Step 8** Set the default gateway for the management interface. See your system administrator for a gateway address.

```
SFS-7000D(config-if-mgmt-ethernet)# gateway ip address
```

- Step 9** Enable the management interface by entering the **no shutdown** command.

```
SFS-7000D(config-if-mgmt-ethernet)# no shutdown
```

- Step 10** Save the configuration to preserve it between reboots.

```
SFS-7000D(config-if-mgmt-ethernet)# exit
SFS-7000D(config)# exit
SFS-7000D# copy running-config startup-config
```

## Connecting the 10/100 Ethernet Management Port

The autosensing 10/100 Ethernet management port is located on the rear panel/port connectors side of the Cisco SFS 7000P and SFS 7000D Server Switches. (See [Figure 3-7](#) and [Figure 3-8](#).) The Ethernet management port is used for out-of-band management of the Cisco SFS 7000P and SFS 7000D Server Switches.

Use the CAT-5 twisted pair RJ-45 straight-through cable to connect the 10/100 Ethernet management port to external hubs, switches, and routers.

## Powering Up the Chassis



### Warning

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

When you power up the chassis, use only the power cable provided with your InfiniBand system.

To power up the chassis, follow these steps:

- Step 1** Remove the power cords from the shipping package.

Two power cords are available: UL-rated, 10 amps and 125 VAC or greater.

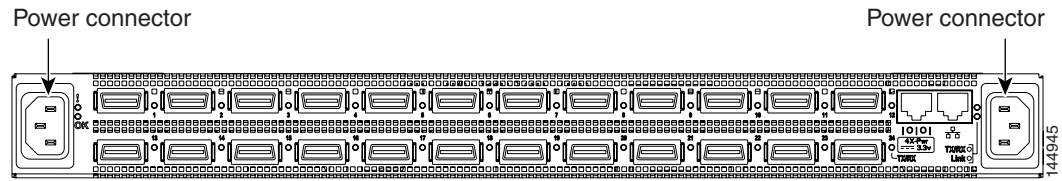
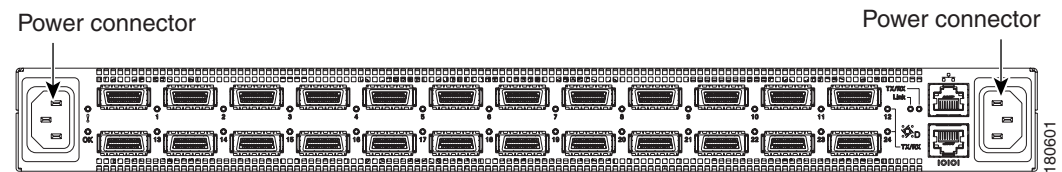
- Step 2** Inspect the power cord to determine if it provides the proper plug and is appropriately certified for use with your electrical system. Discard the cord if it is inappropriate for your national electrical system, and obtain the proper cord, as required by your national electrical codes or ordinances.

Grounding is supplied by the ground prong on the three-prong power plug. Do not attach a separate ground cable, and do not use adapter plugs. Do not remove the ground prong from the cable. Be sure that the ground connection on the power supply is correct and functioning before applying power to the switch.

- Step 3** Connect the power cords to the power connectors on the rear of the switch.

The system automatically boots up. You can watch the operation status by using the serial console.

For power connector locations for the Cisco SFS 7000P Server Switch, see [Figure 3-9](#). For power connector locations for the Cisco SFS 7000D Server Switch, see [Figure 3-10](#).

**Figure 3-9** Power Connector Locations for the Cisco SFS 7000P Server Switch**Figure 3-10** Power Connector Locations for the Cisco SFS 7000D Server Switch

**Step 4** Connect the other end of each AC power cable into a 90-to 264-VAC power outlet operating between 47 Hz and 63 Hz.

The switch automatically starts and boots up. Use the correct external power source. Attach the switch only to approved power sources, as indicated by the electrical ratings label. If you are unsure of the correct power-source to use, contact your support personnel or your local power company.

**Step 5** Check the LEDs on the front of the Server Switch.

When the device first powers up, it performs a POST. (See the “LEDs” section on page 5-1.)

**Step 6** Log in and assign a network address after you see the login prompt.

The default login is: *super*, and the default password is: *super*.

For additional management information, see the *Cisco SFS 7000 Series Product Family Command Reference*.

## Connecting Network Devices

This section describes how to connect the InfiniBand switches to other network devices. These InfiniBand switches can then be interconnected to InfiniBand devices such as InfiniBand-enabled servers.

The Cisco SFS 7000P and SFS 7000D Server Switches support the following types of connectors:

- Serial console port
- Ethernet Management port—RJ-45 jack for unshielded twisted-pair connections
- Cisco SFS 7000P Server Switch—4x 10-Gbps InfiniBand connectors and  
Cisco SFS 7000D Server Switch—4x 10/20-Gbps InfiniBand connectors



### Note

There is a performance degradation if you mix 10-Gbps and 20-Gbps InfiniBand ports.

## Connecting InfiniBand Devices



### Warning

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056

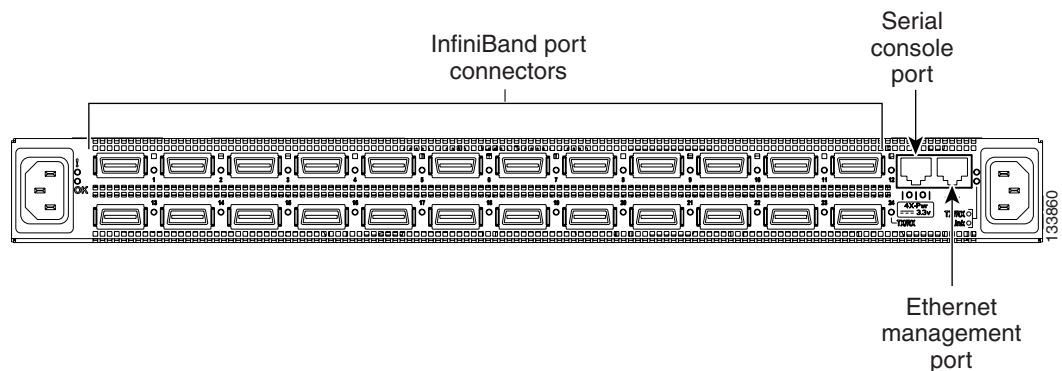
To use InfiniBand to connect to other workstations or switches, you need standard 4x InfiniBand cables. InfiniBand cables can be used to connect any two InfiniBand devices, whether a switch or a host. (Figure 3-11 and Figure 3-12 show InfiniBand ports on the Cisco SFS 7000P and SFS 7000D Server Switches.) For more information about InfiniBand cables, see the *InfiniBand SDR, DDR, and QDR Technology Overview*.



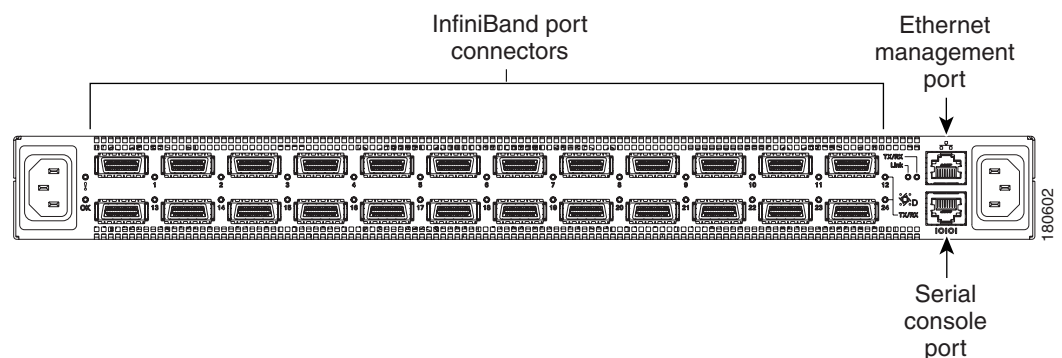
### Note

Copper passive DDR cables are limited to 8 meters in length. If you want to use a longer SDR cable in place of a DDR cable, the port must be configured manually to run an SDR rate.

**Figure 3-11** Port Connections for the Cisco SFS 7000P Server Switch



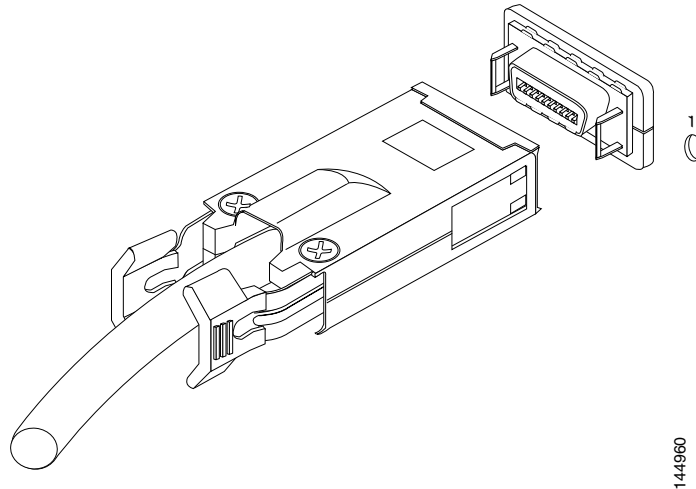
**Figure 3-12** Port Connections for the Cisco SFS 7000D Server Switch



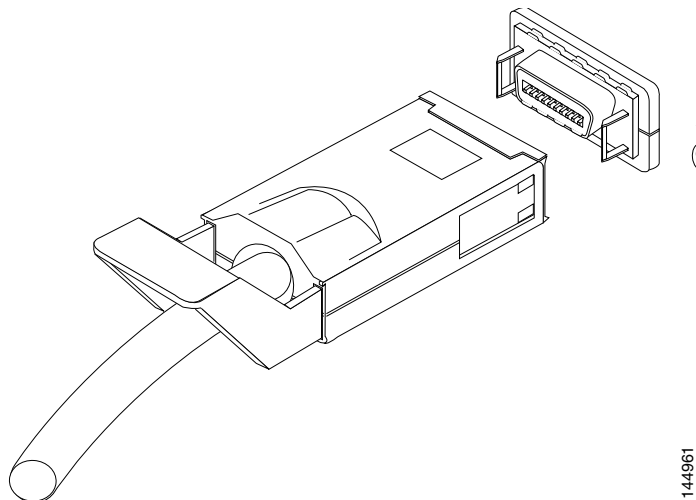
To connect InfiniBand devices, follow these steps:

- Step 1** Connect InfiniBand cables from the host to the InfiniBand switch.
- To connect an InfiniBand cable, push the connector into the interface until you hear or feel a click. [Figure 3-13](#) shows an InfiniBand cable with a pinch connector, and [Figure 3-14](#) shows an InfiniBand cable with a pull connector.

**Figure 3-13** InfiniBand Cable with Pinch Connector



**Figure 3-14** InfiniBand Cable with Pull Connector

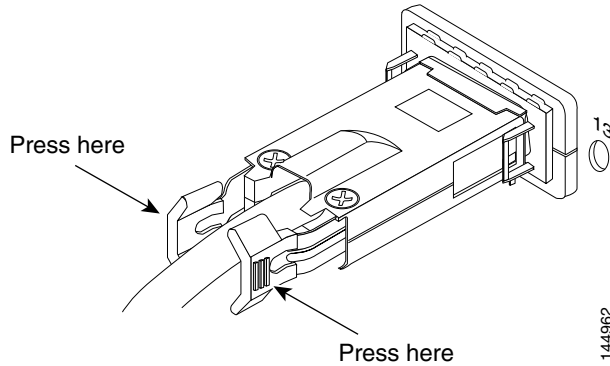


**Note**

If your host does not provide an ample amount of space around an InfiniBand port, double-check that your InfiniBand cable connector engages fully. Move your connector back and forth to be sure that both sides of the connector have locked firmly into place.

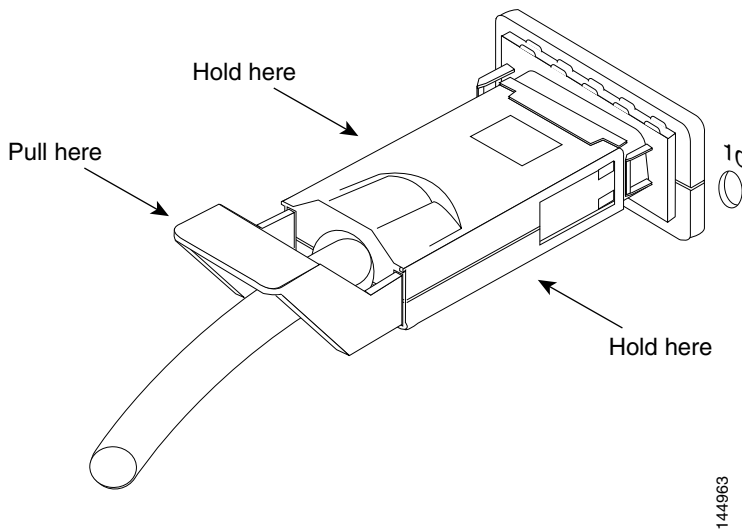
- To remove a cable with a pinch connector, pinch both sides of the back of the connector and pull the connector away from the port. (See [Figure 3-15](#).)

**Figure 3-15 Removing a Pinch Connector**



- c. To remove a cable with a pull connector, grasp the connector with one hand and push it *toward* the port, then pull the latch away from the port with your other hand and gently move the connector back and forth and away from the port. (See [Figure 3-16](#).)

**Figure 3-16 Removing a Pull Connector**



## Connecting Ethernet Management Devices

To connect the Ethernet management port to external devices such as switches, routers, and hubs, use an Ethernet cable. For the location of the Ethernet management port, see [Figure 3-11](#) and [Figure 3-12](#).

## Managing the System

You can manage the InfiniBand system using the following methods:

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

See the *Cisco SFS 7000 Series Product Family Command Reference*, *Cisco SFS 7000 Series Product Family Chassis Manager User Guide*, and the *Cisco SFS 7000 Series Product Family Element Manager User Guide* for more information about managing InfiniBand systems.







## Installing Field Replaceable Units

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This chapter describes how to install the following FRUs in the Cisco SFS 7000P and SFS 7000D Server Switches:

- [Power Supply Modules, page 4-1](#)
- [Installing a Power Supply Module, page 4-2](#)
- [Removing Power Supply Modules, page 4-4](#)

### Power Supply Modules

The Cisco SFS 7000P and SFS 7000D Server Switches power supply modules are hot-swappable. You can add a second module without powering off a switch. If you have two power supply modules installed, you can remove one of them without removing power from the switch.

### Locating the Power Supply Unit

The Cisco SFS 7000P and SFS 7000D Server Switches can have up to two power supply modules. Each power supply module contains a power supply and a fan unit. Both power modules are located at the front of the switch. When facing the front of the switch, the power supply modules are located in the left and right slots of the switch.

### Failed Power Supply Modules

The status of a power supply module can be checked using the CLI, the Chassis Manager, or the Element Manager. The available information includes the status, the VPD, the description of the error, or an error code.

If you suspect that a power supply module has failed, check the LEDs and view the status through the Element Manager. For more information about LEDs, see the [“Power Supply LEDs” section on page 5-3](#).

In most cases, vital information can be retrieved from the console port of the management Ethernet port. (See the [“Diagnostics” section on page 1-5](#).)

See the *Cisco SFS 7000 Series Product Family Chassis Manager User Guide* or *Cisco SFS 7000 Series Product Family Element Manager User Guide* for more information.

# 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 7000P and SFS 7000D Server Switches.

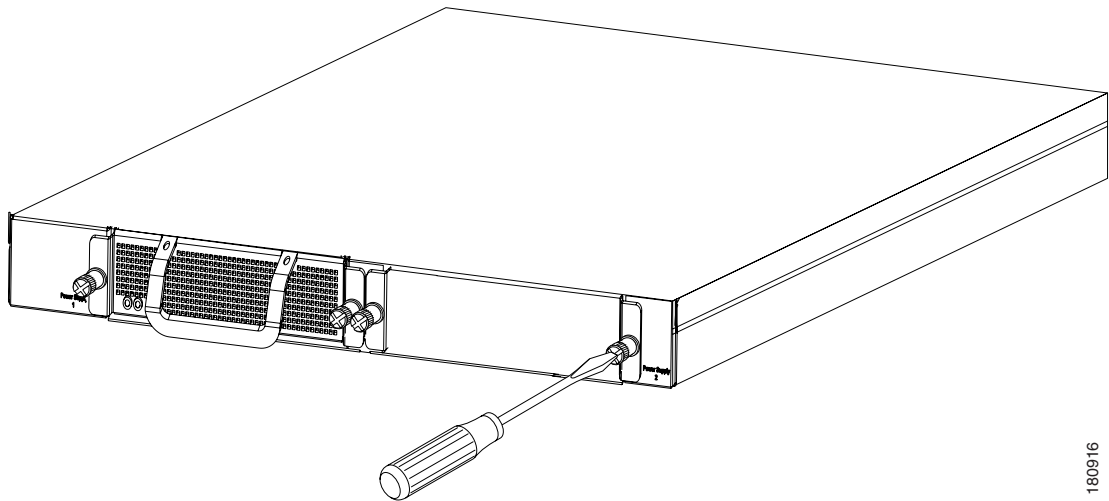

**Caution**

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

To insert a power supply module, follow these steps:

- Step 1** Ground yourself appropriately.
- Step 2** Remove the filler panel from the power supply bay with a number 1 Phillips or a slotted screwdriver, if it is still in place. (See [Figure 4-1](#).)

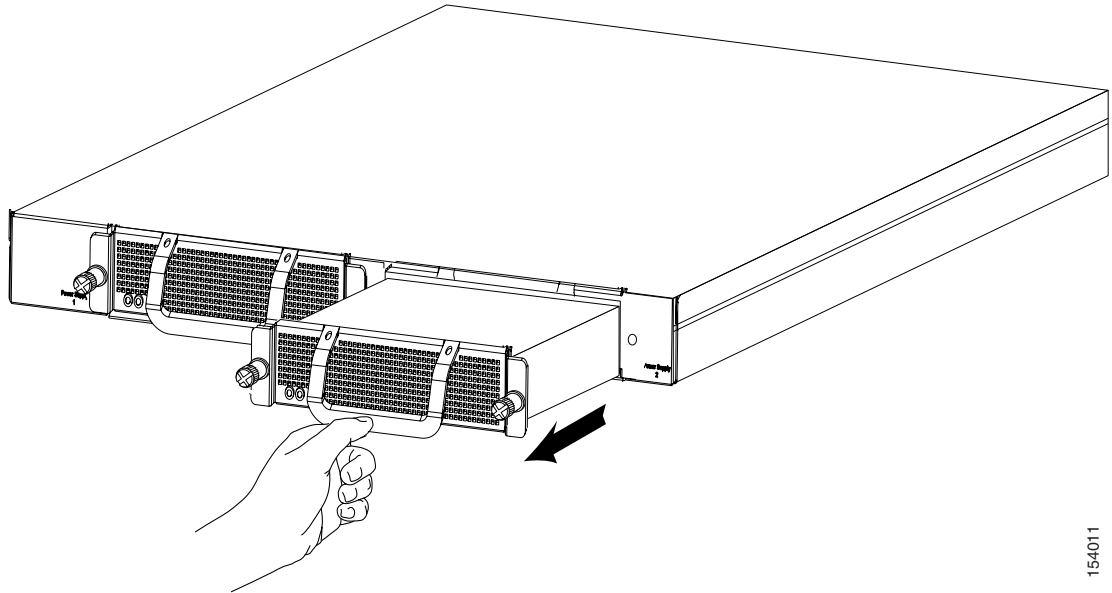
**Figure 4-1** Removing a Filler Panel from the Switch



180916

- Step 3** Remove the power supply module if one is in place by pulling on the black handle. (See [Figure 4-2](#).)

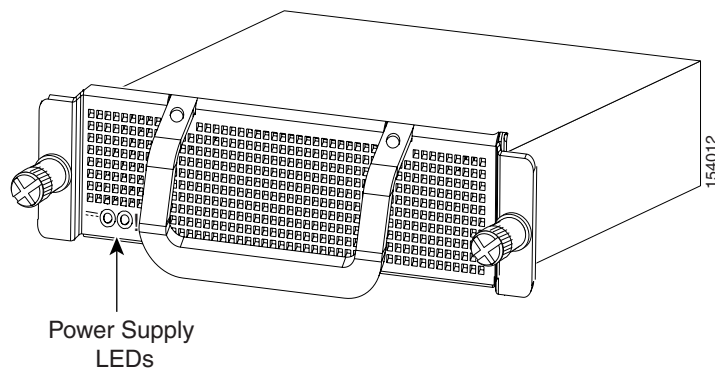
**Figure 4-2** Removing the Power Supply from the Switch



154011

- Step 4** Insert the new power supply module into the open slot until it is fully seated. You might need to push the unit with your thumbs to ensure that it is seated completely in the bay.
- Step 5** Secure fasteners with a number 1 Phillips or a slotted screwdriver.
- Step 6** Check the LEDs to verify the status of the module. (See [Figure 4-3](#) for the location of the LEDs.)  
For more information, see the “[Power Supply LEDs](#)” section on page 5-3.

**Figure 4-3** Power Supply LEDs



154012

# Removing Power Supply Modules


**Caution**

Do not remove the power supply module without first removing the screws. Use a number 1 Phillips or a slotted screwdriver.

To remove a power supply module, follow these steps:

**Step 1** Make sure you have a number 1 Phillips or a slotted screwdriver to disengage the fasteners.

**Step 2** Ground yourself appropriately.


**Caution**

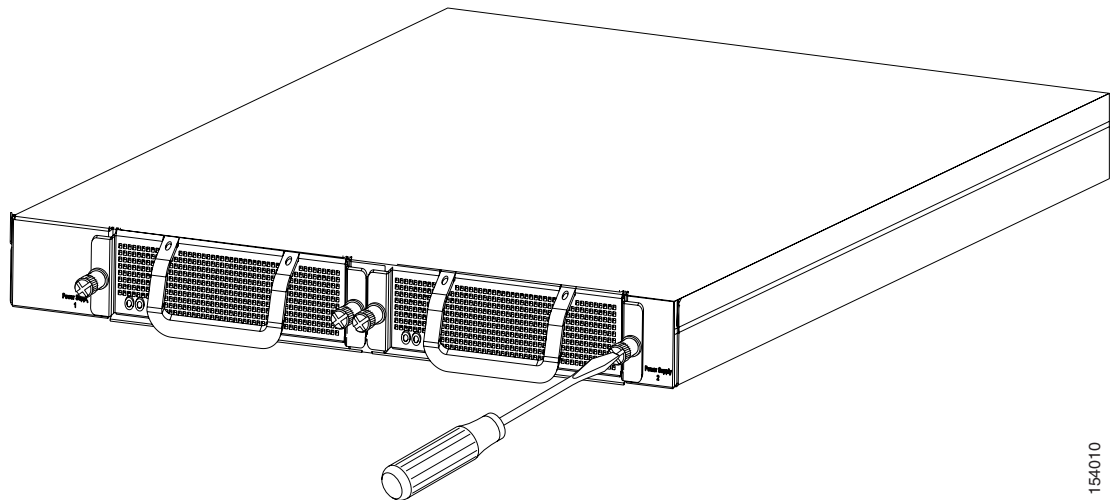
Never place your hand inside an empty card or module bay or anywhere inside the Cisco SFS 7000P and SFS 7000D Server Switches.

**Step 3** Locate the power supply module that you want to remove.

If you have two power supply modules installed, you can remove one of them without removing power from the switch.

**Step 4** Unscrew the fasteners that hold the power supply module in place. (See [Figure 4-4](#).)

**Figure 4-4** Removing the Screws from the Power Supply of the Switch



**Step 5** Pull the unit from the bay.

**Step 6** Install the filler panel in place of the power supply module, or install a new power supply module. If you are installing a new power supply module, see the [“Installing a Power Supply Module”](#) section on [page 4-2](#).


**Caution**

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



# Managing the Switch

This chapter describes how to manage the Cisco SFS 7000P and SFS 7000D Server Switches hardware. The following sections appear in this chapter:

- [LEDs, page 5-1](#)
- [Managing the System with Element Manager, page 5-4](#)
- [Displaying System Information, page 5-6](#)

## LEDs

The Cisco SFS 7000P and SFS 7000D Server Switches have the following types of LED indicators:

- [Chassis Status LEDs, page 5-1](#)
- [InfiniBand Port LEDs, page 5-3](#)
- [Power Supply LEDs, page 5-3](#)

## Chassis Status LEDs

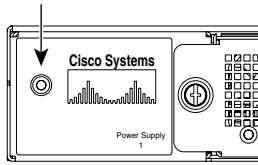
The front of the chassis has a single bi-color chassis status LED. The rear of the chassis has one green and one yellow chassis status LED that convey the identical information as the single chassis status LED in the front of the chassis. See [Table 5-1](#) for information about interpreting the chassis status LED and see [Figure 5-1](#) through [Figure 5-4](#) for the locations of the chassis status LEDs.

**Table 5-1** *Interpreting the Chassis Status LED*

Color	Indication
Off	No system power or LED failure.
Yellow (solid)	Operator intervention required. A system error was detected, such as a fan error, a POST failure, or a power supply failure. The ! label (available on the back of the chassis) indicates a failure.
Yellow (blinking)	Initiated automatically during the LED test that follows the application of power (16 seconds).
Solid green	Indicates proper operation and no critical errors.

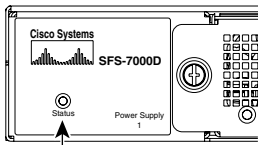
**Figure 5-1 Front View of Cisco SFS 7000P Server Switch Showing Chassis Status LED**

Bi-color chassis status LED



180716

**Figure 5-2 Front View of Cisco SFS 7000D Server Switch Showing Chassis Status LED**

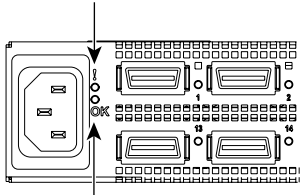


Bi-color chassis status LED

180718

**Figure 5-3 Rear View of Cisco SFS 7000P Server Switch Showing Chassis Status LEDs**

Yellow chassis status LED

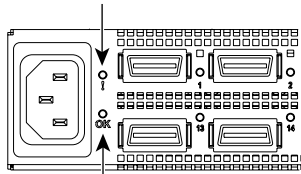


Green chassis status LED

180717

**Figure 5-4 Rear View of Cisco SFS 7000D Server Switch Showing Chassis Status LEDs**

Yellow chassis status LED



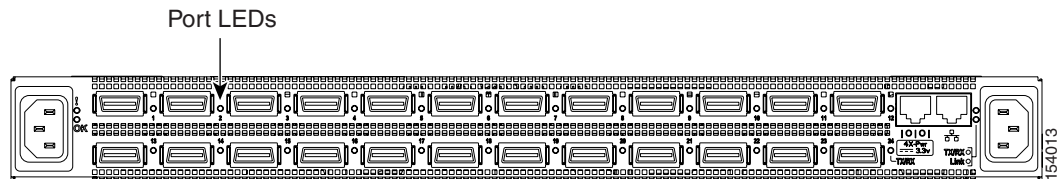
Green chassis status LED

180719

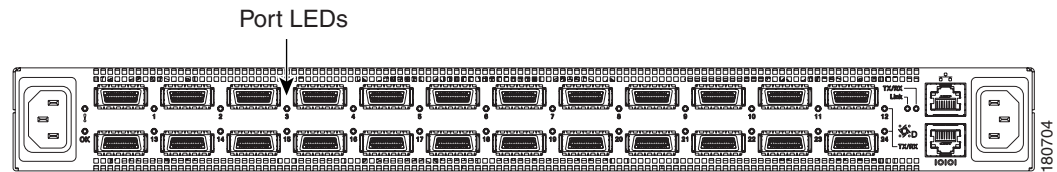
## InfiniBand Port LEDs

The InfiniBand port LED is located next to each InfiniBand port. The InfiniBand LED represents the logical link and the logical link activity. For InfiniBand port LED locations. See [Figure 5-5](#) for the Cisco SFS 7000P Server Switch and [Figure 5-6](#) for the Cisco SFS 7000D Server Switch.

**Figure 5-5** InfiniBand Port LEDs Location for the Cisco SFS 7000P Server Switch



**Figure 5-6** InfiniBand Port LEDs Location for the Cisco SFS 7000D Server Switch



[Table 5-2](#) describes the InfiniBand Port LED operation.

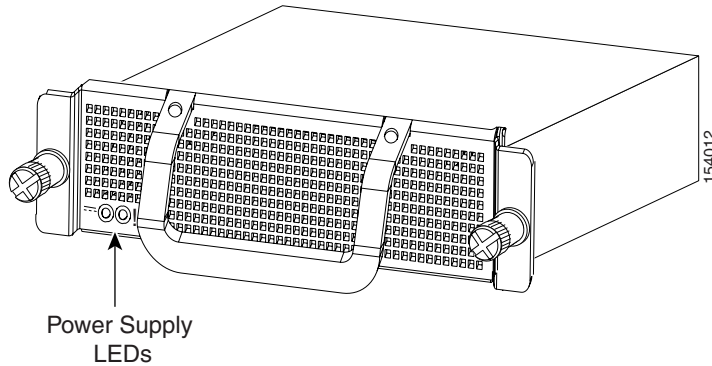
**Table 5-2** InfiniBand Port LED

Color	Indication
Off	Logical link is not established.
Solid green	Logical link is established.
Blinking green	Logical link is established with activity.

## Power Supply LEDs

Each power supply module contains a power supply and a fan. The power supply module LEDs are located on the bottom left corner of each power supply module. For the location of the LEDs, see [Figure 5-7](#). For LED descriptions, see [Table 5-3](#).

- The green LED is labeled with a DC symbol.
- The yellow LED is labeled with an exclamation point (!).

**Figure 5-7** Power Supply and Fan LEDs Location**Table 5-3** Power Supply Module LEDs

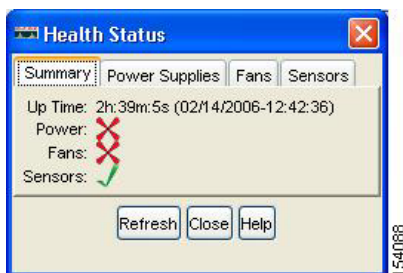
Color	Indication
Green (off)	No DC input.
Green (solid)	AC connected, DC output OK.
Yellow (off)	No failure on the power supply.
Yellow (solid)	Operator intervention required. Failure detected within the power supply.

## Managing the System with Element Manager

For information about installing the Element Manager, see the *Cisco SFS 7000 Series Product Family Element Manager User Guide*.

To view the Health Status window, perform the following steps:

- 
- Step 1** Launch the Element Manager.
  - Step 2** Select **Health > Status**. The Health Status window opens. (See [Figure 5-8](#).)

**Figure 5-8** Health Status Window



## Using the Summary Tab

Use the Summary tab to view the status of the power, fans, and temperature sensors simultaneously. (See [Figure 5-8](#).)

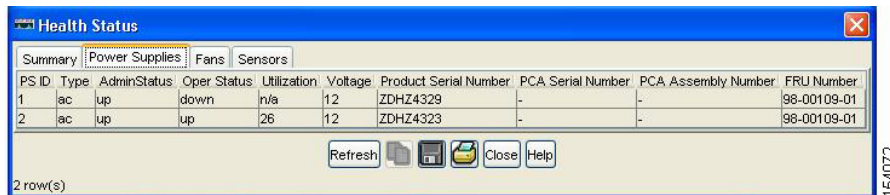
The Summary tab has the following fields:

- Power
  - A green check indicates that at least one power source is connected and functioning properly.
  - A red check indicates that the power supply AC is disconnected.
- Fans
  - A green check indicates that at least one fan is present and functions properly.
  - A red check indicates a fan failure.
- Sensors
  - A green check indicates that the system temperature is at an acceptable level.
  - A red check indicates a high-temperature warning.

## Using the Power Supplies Tab

Use the **Power Supplies** tab to view the operating status of the power supplies. (See [Figure 5-9](#).)

**Figure 5-9** Health Status Power Supplies Window



PS ID	Type	AdminStatus	Oper Status	Utilization	Voltage	Product Serial Number	PCA Serial Number	PCA Assembly Number	FRU Number
1	ac	up	down	n/a	12	ZDHZ4329	-	-	98-00109-01
2	ac	up	up	26	12	ZDHZ4323	-	-	98-00109-01

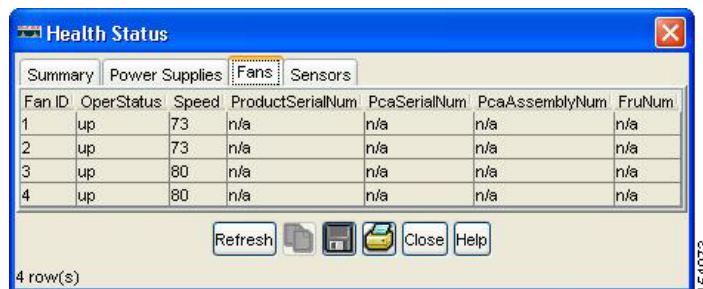
2 row(s)

154072

## Using the Fans Tab

Use the **Fans** tab to view the operating status of the fans. (See [Figure 5-10](#).)

**Figure 5-10** Health Status Fans Window



Fan ID	OperStatus	Speed	ProductSerialNum	PcaSerialNum	PcaAssemblyNum	FruNum
1	up	73	n/a	n/a	n/a	n/a
2	up	73	n/a	n/a	n/a	n/a
3	up	80	n/a	n/a	n/a	n/a
4	up	80	n/a	n/a	n/a	n/a

4 row(s)

154073

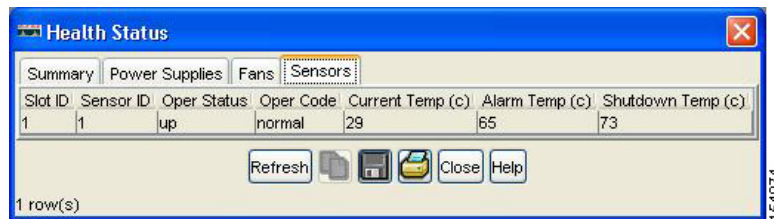
In the OperStatus field, a status of *up* indicates that the fan is operating correctly within the power supply module.

In the Speed field, the integer represents a percentage. The percentage changes based on the ambient temperature of the unit and increases as the temperature rises.

## Using the Sensors Tab

Use the Sensors tab to view the operating status of the temperature sensor of the system. (See [Figure 5-11](#).)

**Figure 5-11** Health Status Sensors Window



In the OperStatus field, a status of *up* indicates that the sensor functions properly.

The temperature fields show temperatures in Celsius. The Current Temp field shows the current internal temperature. The Alarm Temp field shows the temperature at which the system goes above its internal temperature limit. The Shutdown Temp field shows the temperature at which the system powercycles. For operating and non-operating temperatures, see [Table A-1 on page A-1](#).

## Displaying System Information

You can use CLI commands to monitor the power supplies, fans, and sensors.

### Displaying Power Supply Information

To display information about the power supply, enter the **show power-supply** command.

```
SFS-7000P# show power-supply
```

```
=====
Power-supply Information
=====
ps      type      oper-status  utilization  voltage
-----
1       AC        up           50           12
2       AC        up           50           12
=====
Power-supply Seeprom
=====
ps      product      pca          pca          fru
serial-number  serial-number  number      number
-----
1       200000       820000      820000      1
2       200000       820000      820000      1
```

## Displaying Fan Information

To display information about the fans, enter the **show fan** command.

An oper-status of up means that the fan is operating correctly within the power supply module.

In the **Speed** field, the integer represents a percentage. The percentage changes based on the ambient temperature of the unit and increases as the temperature rises.

```
SFS-7000P# show fan
=====
                          Fan Information
=====
fan  oper-status  speed(%)
-----
1    up          73
2    up          73
3    up          73
4    up          73
=====
                          Fan Seeprom
=====
          product          pca          pca          fru
fan  serial-number  serial-number  number  number
-----
1
2
3
4
```

## Displaying Sensor Information

To display information about the sensors, enter the **show sensor** command.

```
SFS-7000P# show sensor
=====
                          Sensor Information
=====
sensor oper-status oper-code  temperature(c)  alarm-temp(c)  shutdown-temp(c)
-----
1/1    up          normal    29              65              73
```

The temperature fields show temperatures in Celsius. The **Current Temp** field shows the current internal temperature. The **Alarm Temp** field shows the temperature at which the system goes above its internal temperature limit. The **Shutdown Temp** field shows the temperature at which the system power cycles. For operating and non-operating temperatures, see [Table A-1 on page A-1](#).





## Hardware Diagnostic Tests

---

This chapter describes how to run diagnostic tests on the hardware for the Cisco SFS 7000P and SFS 7000D Server Switches, and it contains the following sections:

- [About Diagnostic Tests, page 6-1](#)
- [Displaying Hardware Errors, page 6-8](#)

### About Diagnostic Tests

Hardware diagnostic tests can be performed through the CLI or the Element Manager GUI. For instructions about how to run a test with the Element Manager GUI, see the *Cisco SFS 7000 Series Product Family Element Manager User Guide*. A POST is run automatically on various components at power-on.

The following sections refer to running and displaying tests with the CLI. For complete diagnostic command information, see the *Cisco SFS 7000 Series Product Family Command Reference*.

### LED Tests

LED tests allow you to set a particular LED to blink in a specific way so that you can more easily identify a specific component in a rack. See [Chapter 5, “Managing the Switch”](#) for more information on LEDs.

### Self-Tests

The Cisco SFS 7000P and SFS 7000D Server Switches provide the following diagnostic tests:

- Card Self-Test
- Chassis Self-Test
- Fan Self-Test
- Power Supply Self-Tests

## Running Card Self-Test

The term *cards* in this section refers to fabric controllers, management I/O modules, node cards, and the chassis ID module. Fans and power supplies are not included in the card tests; they can be tested through the standard chassis test or as individual components.

The following tests are available to locate and diagnose one or more cards in the chassis:

- LED
- Self-test

The example below shows how to run a card self-test.



### Note

The sample text in the steps below shows command output for the Cisco SFS 7000P Server Switch. For the Cisco SFS 7000D Server Switch, you would see a similar display.

To perform a diagnostic self-test on a card, follow these steps:

**Step 1** Enter the **diag card number** command.

```
SFS-7000P> enable
SFS-7000P# config
SFS-7000P(config)# diag card 11
SFS-7000P(config-diag-card-11)# test self-test
SFS-7000P(config-diag-card-11)# start
```

**Step 2** Exit the test to view the progress of the test.

The test takes approximately 5 to 8 minutes.

```
SFS-7000P(config-diag-card-11)# exit
SFS-7000P(config)# exit
```



### Note

You can stop the diagnostic self-test at any time by entering the **stop** command.

**Step 3** Enter the **show diagnostic card #** command.

```
SFS-7000P# show diagnostic card 1

=====
                        Diagnostic Tests For Cards
=====
      test : self-test
      slot-id : 1
      iterations : 1
      action : start
      result : success
      percentage-completed : 100
      result-string : Card Test Completed, Final report : Passed=1, Failed=0,
Total=1
```

**Step 4** If the test fails, enter the **more syslog:hwif\_log** command to see the log information.

## Running Chassis Self-Test

The following tests are available to locate and diagnose the chassis:

- LED
- Standard
- Extended
- Extended Memory

The example below shows how to run a chassis standard test.



### Note

The sample text in the steps below shows command output for the Cisco SFS 7000P Server Switch. For the Cisco SFS 7000D Server Switch, you would see a similar display.

The chassis standard test runs a diagnostic test on the following units in a chassis:

- The power supply and fan unit contained in the power supply module
- The base card

To perform a chassis standard test, follow these steps:

**Step 1** Start the test by entering the **diag chassis test standard** command and the **start** command.

```
SFS-7000P> enable
SFS-7000P# config
SFS-7000P(config)# diag chassis test standard
SFS-7000P(config-diag-chassis)# start
SFS-7000P(config-diag-chassis)#
```

**Step 2** Display the status of the test by entering the **show diag chassis** command.

```
SFS-7000P(config-diag-chassis)# exit
SFS-7000P(config)# exit
SFS-7000P# show diag chassis
=====
Diagnostic Tests For Chassis
=====
      module-type : chassis
      module-number : 1
          test : standard
      iterations : 1
          option : none
          action : start
          result : success
      percentage-completed : 100
      result-string : Standard System Test Completed, Final report : Passed=1, Failed=0,
Total=1
SFS-7000P#
```

**Step 3** Display any errors on individual components by entering the **show diag post** command.

```
SFS-7000P-1# show diag post
```

```
=====
                                Post Status
=====
fru-slot          post-status      post-error
-----
card(1)          failed          _FRU_LIM_CARDTYPE_ERR
card(3)          failed          _FRU_SEEPROM_PROGRAM_ERR
card(5)          passed          none
card(6)          passed          none
card(7)          passed          none
card(8)          passed          none
card(9)          passed          none
card(11)         failed          _FRU_POWER_CONTROLLER_CONFIG_ERR
card(12)         passed          none
card(13)         passed          none
card(15)         passed          none
card(16)         passed          none
card(17)         passed          none
fan(1)           passed          none
=====
```

## Running Fan Self-Test

The procedures in this section describe the fan module tests and provide sample text from performing a fan test.



### Note

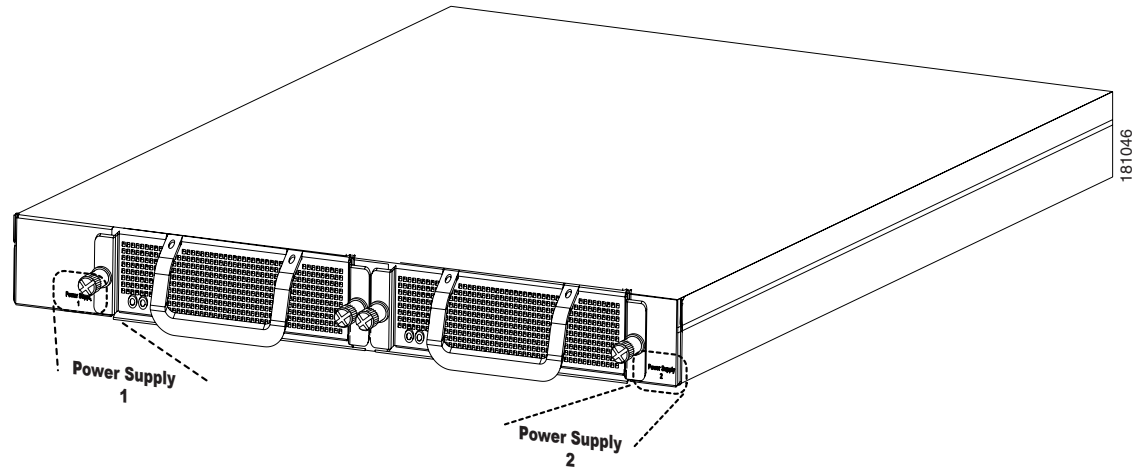
The sample text in the steps below shows command output for the Cisco SFS 7000P Server Switch. For the Cisco SFS 7000D Server Switch, you would see a similar display.

To perform a diagnostic self-test on a fan, follow these steps:

**Step 1** Identify the number of the fan you want to diagnose, if you do not already know the number. Power supply 1 contains fan number 1, and power supply 2 contains fan number 2. (See [Figure 6-1](#).)



**Figure 6-1 Power Supply Numbers on the Cisco SFS 7000P and SFS 7000D Server Switches**



Enter the **show diagnostic fan** command.

```
SFS-7000P# show diagnostic fan

=====
Diagnostic Tests For Fan
=====
module-type : fan
module-number : 2
test : self-test
iterations : 1
action : start
result : success
percentage-completed : 100
result-string : Fan Self Test Completed, Final report : Passed=1, Failed=0,
Total=1
```

**Step 2** Enter the **diag fan id** command.

```
SFS-7000P# config
SFS-7000P(config)# diag fan 1
SFS-7000P(config-diag-fan-1)# test self-test
SFS-7000P(config-diag-fan-1)# start
SFS-7000P(config-diag-fan-1)# exit
SFS-7000P(config)# exit
SFS-7000P# show diag fan

=====
Diagnostic Tests For Fan
=====
module-type : fan
module-number : 1
test : self-test
iterations : 1
action : start
result : in-progress
percentage-completed : 70
result-string : Self Test, Current report : In progress...
SFS-7000P#
```

**Step 3** Display the progress of the test by entering the **show diag fan** command.

```
SFS-7000P(config-diag-fan-1)# exit
SFS-7000P(config)# exit
```

```
SFS-7000P# show diag fan
=====
Diagnostic Tests For Fan
=====
module-type : fan
module-number : 1
test : self-test
iterations : 1
action : start
result : success
percentage-completed : 100
result-string : Fan Self Test Completed, Final report : Passed=1, Failed=0, Total=1
SFS-7000P#
```

**Step 4** Display any errors that appear in the result string by entering the **show diag fru-error** command.

```
SFS-7000P# show diag fru-error
=====
Fru-Error
=====
fru-slot      fru-error
-----
card(1)      none
card(2)      none
card(7)      none
card(8)      none
card(9)      none
card(10)     none
card(11)     none
card(12)     none
card(13)     none
card(14)     none
card(15)     none
card(17)     none
fan(1)       none
fan(2)       none
```

**Step 5** Reboot the chassis when the self-test is complete.

```
SFS-7000P# reload
System configuration is modified. Save? [yes(default) | no | filename] y
Proceed with reload? [yes(default) | no] y
```

## Running Power Supply Tests

The following tests are available to locate and diagnose fan modules:

- LED Test
- Self-Test



### Note

The sample text in this section shows command output for the Cisco SFS 7000P Server Switch. For the Cisco SFS 7000D Server Switch, you would see a similar display.

## Running a LED Test on the Power Supply

You can use the LED test to identify a specific power supply by entering these commands:

```
SFS-7000P> enable
SFS-7000P# config
SFS-7000P(config)# diag power-supply 1
SFS-7000P(config-diag-power-supply-1)# test led
SFS-7000P(config-diag-power-supply-1)# start
SFS-7000P(config-diag-power-supply-1)# stop
SFS-7000P(config-diag-power-supply-1)#
```

## Running a Self-Test on a Power Supply

To perform a diagnostic self-test on a power supply, follow these steps:

- Step 1** Determine the ID of the power supply that you want to diagnose, if you do not already know the number. Enter the **show power-supply** command.

```
SFS-7000P# show power-supply
=====
Power-supply Information
=====
ps      type      admin-status  oper-status  utilization  voltage
-----
1       AC        up            up           n/a         48
2       AC        up            up           15          47
```

- Step 2** Specify the type of test (self-test is chosen by default) by entering the **diag power-supply id** command.

```
SFS-7000P> enable
SFS-7000P# config
SFS-7000P(config)# diag power-supply 2
SFS-7000P(config-diag-power-supply-2)# test self-test
```

- Step 3** Start the test.

```
SFS-7000P(config-diag-power-supply-2)# start
```

- Step 4** Display the progress of the test by entering the **show diag fan** command.

```
SFS-7000P(config-diag-power-supply-2)# exit
SFS-7000P(config)# exit
SFS-7000P# show diagnostic power-supply
=====
Diagnostic Tests For Power Supply
=====
module-type : power-supply
module-number : 2
test : self-test
iterations : 1
action : start
result : success
percentage-completed : 100
result-string : Power Supply Self Test Completed, Final report : Passed=1,
Failed=0, Total=1
```

- Step 5** Display any errors that appear in the result string by entering the **show diag fru-error** command.

```
SFS-7000P# show diag fru-error
```

```

=====
                        Fru-Error
=====
fru-slot          fru-error
-----
card(9)           none
card(10)          none
card(11)          none
card(12)          none
card(13)          none
card(14)          none
card(15)          none
card(17)          none
fan(1)            none
fan(2)            none
fan(3)            none
fan(4)            none
power-supply(1)  none
power-supply(2)  none
SFS-7000P#

```

**Step 6** Reboot the chassis when the self-test is complete.

```

SFS-7000P# reload
System configuration is modified. Save? [yes(default) | no | filename] y
Proceed with reload? [yes(default) | no] y

```

## Displaying Hardware Errors



### Note

The sample text in the steps below shows command output for the Cisco SFS 7000P Server Switch. For the Cisco SFS 7000D Server Switch, you would see a similar display.

To display POST results, non-fatal errors that can be recovered, informational logging (such as firmware updates), and hardware errors follow these steps:

**Step 1** Enter the **more syslog:hwif\_log** command to see the contents of the hardware log file.

```

SFS-7000P> enable
SFS-7000P# more syslog:hwif_log
Thu Mar  4 10:57:49 2004: POST: SEEPROM: PASSED
Thu Mar  4 10:57:49 2004: POST: FPGA: PASSED
Thu Mar  4 10:57:49 2004: POST: SUMMIT: PASSED
Thu Mar  4 10:57:50 2004: POST: RTC: PASSED
Thu Mar  4 10:57:54 2004: POST: FAN: PASSED
Thu Mar  4 10:57:54 2004: card_startup.x : card is starting up
Thu Mar  4 10:57:54 2004: Anafa2Init: a2update set to IGNORE
Thu Mar  4 10:58:16 2004: Anafa2 POST: firmware check PASSED
Thu Mar  4 19:01:55 2004: POST: SEEPROM: PASSED
Thu Mar  4 19:01:55 2004: POST: FPGA: PASSED
Thu Mar  4 19:01:55 2004: POST: SUMMIT: PASSED
Thu Mar  4 19:01:56 2004: POST: RTC: PASSED
Thu Mar  4 19:02:00 2004: POST: FAN: PASSED
Thu Mar  4 19:02:00 2004: card_startup.x : card is starting up
Thu Mar  4 19:02:00 2004: Anafa2Init: a2update set to IGNORE
<output truncated>

```

You can also view POST error codes with the **show diagnostic post** command. This command displays the results of each POST that executes at power-up.

```
SFS-7000P# show diagnostic post
```

```
=====
                                Post Status
=====
fru-slot      post-status  error-codes
-----
card(1)      failed      1:0:0:0
fan(1)       passed      0:0:0:0
fan(2)       passed      0:0:0:0
power-supply(1) passed      0:0:0:0
```

**Step 2** Display FRU errors on your switch by entering the **show diagnostic fru-error** command.

```
SFS-7000P# show diagnostic fru-error
```

```
=====
                                Fru-Error
=====
fru-slot      fru-error
-----
card(1)      _FRU_POWER_CONTROLLER_CONFIG_ERR
fan(1)       none
fan(2)       none
power-supply(1) none
```

Table 6-1 lists the hardware errors that are logged for the power supply.

**Table 6-1 Cisco SFS 7000P and SFS 7000D Server Switches Power Supply Errors**

Error Number	Description
1	Power supply DC fail error
2	Power supply fan fail error
3	Power supply I2C communication error





# Specifications and Compliance Certifications

This appendix describes the Cisco SFS 7000P and SFS 7000D Server Switches specifications and compliance certifications.

## Chassis and Management Interface

Table A-1 lists the general specifications for the Cisco SFS 7000P and SFS 7000D Server Switches.

**Table A-1** Cisco SFS 7000P and SFS 7000D Server Switches and Management General Specifications

Item	Specification
Operating temperature	0 to 45°C (32°F to 113°F)—Cisco SFS 7000P Server Switch 0 to 40°C (32°F to 104°F)—Cisco SFS 7000D Server Switch
Nonoperating temperature	-40 to 70°C (-40 to 158°F)
Operating temperature gradient	20°C (68°F) max. per 60 min
Operating altitude	0 to 3,048 m (0 to 10,000 ft)
Nonoperating altitude	0 to 12,192 m (0 to 40,000 ft)
Operating humidity:	8 to 80% non-condensing
Nonoperating humidity:	5 to 90% RH at 65°C (149°F) for 24 hours, non-condensing
Operating humidity gradient	10% maximum per 60 min
Operating shock	5 G max., 11 ms half-sine wave, 10 G max. 5 ms half-sine wave
Nonoperating shock	10 G max., 11 ms half-sine wave
Operating vibration, sinusoidal	0.25 G max., 3-200 Hz 15 min
Nonoperating vibration, sinusoidal	0.50 G max., 3-200 Hz 15 min
Nonoperating vibration, random	2.09 Grms, 3-axis, bottom/top, left/right, front/back
Max. operating inclination	15 degree
<b>Physical Characteristics</b>	
Dimensions	1 RU, fits in standard 19-in. (48.26 cm) rack
Length	21 in. (53.34 cm)
Weight	Maximum weight is 22 lb (10 kg)

## Electrical Specifications

Table A-2 lists the electrical specifications for the Cisco SFS 7000P and SFS 7000D Server Switches.

**Table A-2** *Cisco SFS 7000P and SFS 7000D Server Switches Electrical Specifications*

Category	Specification
AC input	Auto-ranging 90 to 264 VAC, 47 to 63 Hz
Power consumption	Power with external powered <sup>1</sup> devices is 125 Watts Power without external powered devices is 65 Watts—Cisco SFS 7000P Server Switch Power without external powered devices is 80 Watts—Cisco SFS 7000D Server Switch

1. External powered device current is measured at 3.3 volts 0.4 amperes per port.



## Acronyms and Abbreviations

Table B-1 defines the acronyms and abbreviations that are used in this publication.

**Table B-1** List of Acronyms and Abbreviations

Acronym	Expansion
API	Application Program Interface
C	Celsius
CLI	command-line interface
DDR	double data rate
EMI	electromagnetic interference
ESD	electrostatic discharge
FCC	Federal Communications Commission
FRU	field-replaceable unit
GUI	graphical user interface
GUID	globally unique identifier
HCA	Host Channel Adapter
kHz	kilohertz
OEM	original equipment manufacturer
POST	power-on self test
RFI	radio frequency interference
SDR	single data rate
SNMP	Simple Network Management Protocol
SSH	secure shell
TV	television
VPD	vital product data

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