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Cisco Nexus 3000 Series Hardware Installation Guide

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Cisco Nexus 3000 Series Hardware Installation Guide

CONTENTS

Preface

This preface describes the audience, organization, and conventions of the *Cisco Nexus 3000 Series Hardware Installation Guide*. It also provides information on how to obtain related documentation.

Audience

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

Organization

This guide is organized as follows:

Chapter and Title	Description
Chapter 1, "Overview of the Cisco Nexus 3000 Series Switches"	Provides an overview of the Cisco Nexus 3000 Series switches.
Chapter 2, "Installing the Cisco Nexus 3000 Series Switches"	Describes how to install the Cisco Nexus 3000 Series switches.
Chapter 3, "Connecting to the Network"	Describes how to connect the Cisco Nexus 3000 Series switches to the Network.
Chapter 4, "Replacing Components"	Describes how to replace the field replaceable units (FRUs) on Cisco Nexus 3000 Series switches.
Appendix A, "Cabinet and Rack Specifications"	Provides guidelines for selecting an enclosed cabinet or rack for your Cisco Nexus 3000 Series switch.
Appendix B, "Technical Specifications"	Lists specifications for the Cisco Nexus 3000 Series switches and components including modules, power supplies, and transceivers.
Appendix C, "Cable and Connector Specifications"	Lists cable and port specifications for the Cisco Nexus 3000 Series switches.
Appendix D, "LED Descriptions"	Describes the statuses indicated by the Cisco Nexus 3000 Series chassis and component LEDs.
Appendix D, "Site Planning and Maintenance Records"	Provides site planning and maintenance records.

Conventions

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

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

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

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

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

Warning **IMPORTANT SAFETY INSTRUCTIONS**

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

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

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

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

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

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

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

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

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

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

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

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

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

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

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

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

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

SPARA DESSA ANVISNINGAR

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto 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 legemesbeskadigelse. 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 أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.

قم بحفظ هذه الإرشادات

Upozorenje

VAŽNE SIGURNOSNE NAPOMENE

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

SAČUVAJTE OVE UPUTE

Upozornění

DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

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

USCHOVEJTE TYTO POKYNY

Προειδοποίηση

ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

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

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה

הוראות בטיחות חשובות

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

שמור הוראות אלה

ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА

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

ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie

WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

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

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ

Upozornenie

DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY

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

USCHOVAJTE SI TENTO NÁVOD

Opozorilo

POMEMBNI VARNOSTNI NAPOTKI

Ta opozorilni simbol pomeni nevarnost. Nahajate se v situaciji, kjer lahko pride do telesnih poškodb. Preden pričnete z delom na napravi, se morate zavedati nevarnosti udara električnega toka, ter tudi poznati preventivne ukrepe za preprečevanje takšnih nevarnosti. Uporabite obrazložitveno 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

Documentation for the Cisco Nexus 3000 Series Switch is available at the following URL:

http://www.cisco.com/en/US/products/ps11541/tsd_products_support_series_home.html

The following are related Cisco Nexus 3000 Series documents:

Send document comments to nexus3k-docfeedback@cisco.com

Release Notes

Cisco Nexus 3000 Series Release Notes for Cisco NX-OS Release 5.0(3)U2(1)

Configuration Guides

Cisco Nexus 3000 Series Configuration Limits for Cisco NX-OS Release 5.0(3)U2(1)

Cisco Nexus 3000 Series NX-OS Layer 2 Switching Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series NX-OS Multicast Routing Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series NX-OS Security Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series NX-OS System Management Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series NX-OS Unicast Routing Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series NX-OS Unitast Configuration Guide, Release 5.0(3)U2(2)

Cisco Nexus 3000 Series Verified Scalability Guide for Cisco NX-OS Release 5.0(3)U2(2)

Installation and Upgrade Guides

Cisco Nexus 3000 Series Hardware Installation Guide

Regulatory Compliance and Safety Information for the Cisco Nexus 5000 Series, Cisco Nexus 3000 Series, and Cisco Nexus 2000 Series

Licensing Guide

Cisco NX-OS Licensing Guide

Command References

Cisco Nexus 3000 Series NX-OS Command Reference

Technical References

Cisco Nexus 3000 Series MIBs Reference

Error and System Messages

Cisco NX-OS System Messages Reference

Obtaining Documentation and Submitting a Service Request

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

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

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

CHAPTER 1

Overview of the Cisco Nexus 3000 Series Switches

This chapter provides an overview of the Cisco Nexus 3000 Series switches, which includes the Cisco Nexus 3016, 3048, and 3064 switches. You can order these switches with fan trays and power supplies that provide forward or reverse airflow for cooling and power supplies that connect to AC or DC power sources.

This chapter includes the following sections:

Cisco Nexus 3016 Switch

The Cisco Nexus 3016 switch is a 1 rack unit (RU) switch that supports 16 fixed 40-Gigabit Ethernet downlink (host-facing) and uplink (network-facing) ports, two fixed 100/1000 management ports, one RS-232 console port, and one USB port. The switch includes one or two AC or DC power supply units and one fan tray module, both of which provide either forward or reverse airflow for cooling. The switch includes the Layer 3 license. To specify the appropriate Cisco Nexus 3016 switch bundle, see Table 1-1.

Table 1-1 Cisco Nexus 3016 Switch Bundles

Power Supply	Airflow Direction	Layer 3 License	Part Number
Select when ordering	Select when ordering	No	N3K-C3016-10GE
AC	Forward	Yes	N3K-C3016-FA-L3
AC	Reverse	Yes	N3K-C3016-BA-L3
DC	Forward	Yes	N3K-C3016-FD-L3
DC	Reverse	Yes	N3K-C3016-BD-L3

This section includes the following topics:

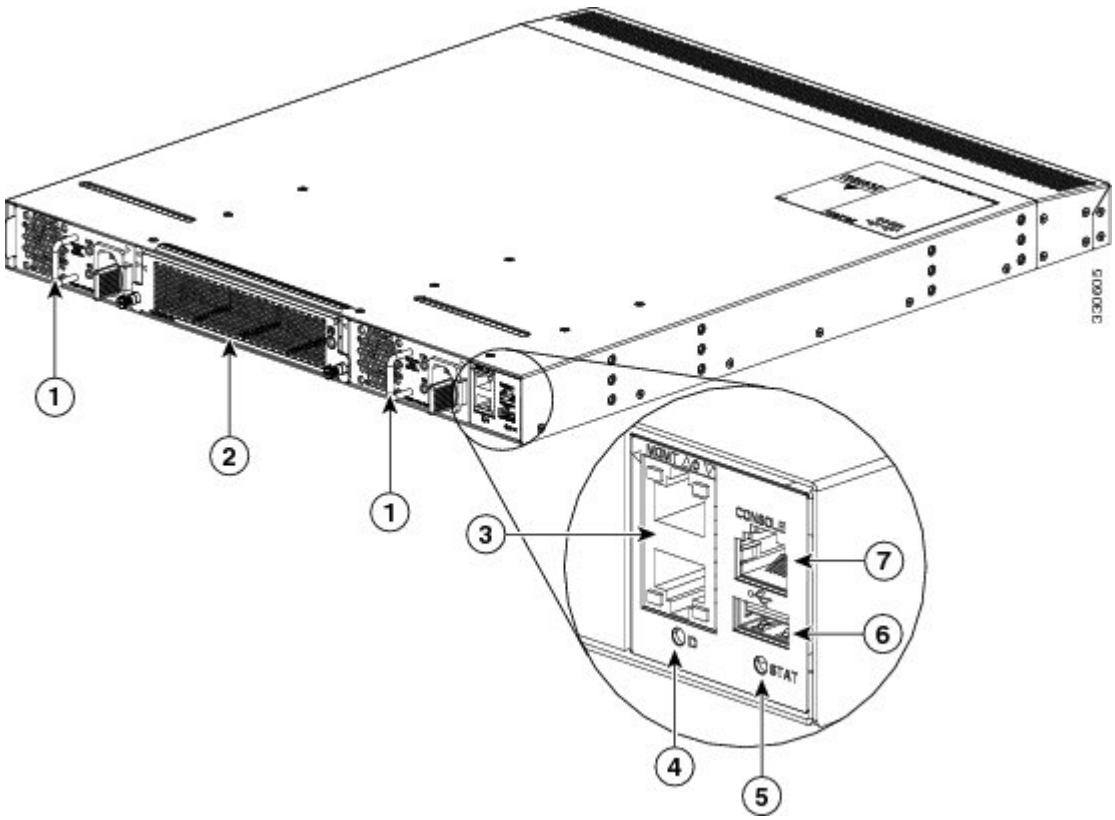
Chassis for the Cisco Nexus 3016 Switch

The 1-RU Cisco Nexus 3016 chassis (part number N3K-C3016-40GE) is 1.72 inches (4.37 cm) high, 17.3 inches (43.9 cm) wide, and 19.7 inches (50.8 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray modules are accessible from the front for easy replacement. You can order this switch with forward airflow or reverse airflow depending on whether the front of the switch is on a cold aisle (forward airflow) or on a hot aisle (reverse airflow).

Fully populated with two power supplies and a fan tray, the switch weighs 20.5 pounds (9.3 kg) and can be easily installed by one or two people.

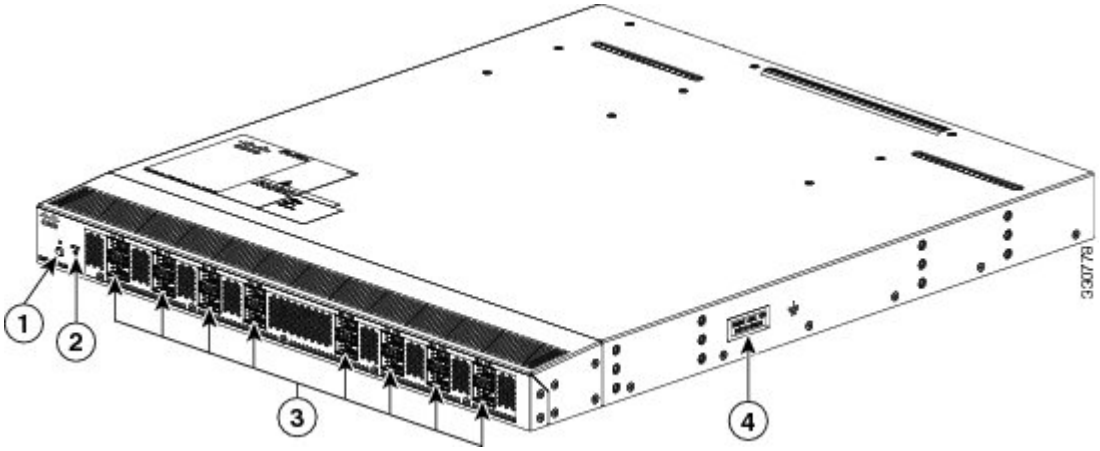
Figure 1-1 shows the front of the Cisco Nexus 3016 chassis and identifies the components that you use to install and connect the chassis. Figure 1-2 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-1 Front View of the Cisco Nexus 3016 Switch



1	AC or DC power supply (2) (AC power supply shown)	5	Status LED
2	Fan tray (1)	6	USB port (1)
3	Management ports (2)	7	Console port (1)
4	ID LED		

Figure 1-2 Rear View of the Cisco Nexus 3016 Switch



1	ID LEDs	3	40-Gigabit uplink or downlink ports (16)
2	Status LED	4	Grounding pad

Ports for the Cisco Nexus 3016 Switch

The Cisco Nexus 3016 switch chassis includes the following ports:

- 40-Gigabit Ethernet uplink or downlink ports (16 ports)
- 100/1000 Ethernet management ports (2 ports)
- Console port (1 port)
- USB port (1 port)

The chassis has 16 40-Gigabit Ethernet ports that you can connect to hosts (uplink connections) or servers (downlink connections), which are often in the same rack or a nearby rack. Each of these ports uses a QSFP+ transceiver which is connected to one or four optical or copper cables. If one cable is used, it has a QSFP+ transceiver on the other end. If four cables are used, each of those cables has an SFP+ transceiver on the other end. The ports are numbered from left to right from 1 to 16 with the odd-numbered ports on top and the even-numbered ports on the bottom.

Two 100/1000 Ethernet management ports enable you to manage switch operations. You can connect to the switch through these two ports by using an RJ-45 connector on a copper cable.

One console port enables you to initially configure the switch and to perform troubleshooting operations. You use an RJ-45 connector with a copper cable to connect to this port.

One USB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3016 Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-2.

Table 1-2 Cisco Nexus 3016 Power Supply Part Numbers

Power Source	Airflow Direction	Power Supply Part Number
AC	Forward	N2200-PAC-400W=
AC	Reverse	N2200-PAC-400W-B=
DC	Forward	N2200-PDC-400W=
DC	Reverse	N3K-PDC-350W-B=

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with forward airflow or reverse airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running reverse airflow and you must order power supplies with reverse airflow (each module has a black stripe). If there is no black stripe across the front of these modules, the switch is running forward airflow and you must order replacement modules with forward airflow (modules that do not have a black stripe).

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

For power supply specifications, see the "Power Specifications" section on page B-2. For information about the power supply LEDs and what they indicate, see the "Power Supply Status" section on page D-3.

Fan Tray for the Cisco Nexus 3016 Switch

The Cisco Nexus 3016 switch ships with one fan tray, which is the same fan tray used by the Cisco Nexus 3064 switch (part number N3K-C3064-FAN for forward airflow or N3K-C3064-FAN-B for reverse airflow). You can hot swap the fan tray during operations but must replace it within two minutes or the switch can reach an overtemperature condition and shut down.

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running reverse airflow and you must order a fan tray with reverse airflow. If there is no black stripe across the front of these modules, the switch has forward airflow and you must order replacement modules with forward airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Port Connections for the Cisco Nexus 3016 Switch

You use QSFP+ transceivers with the 16 networking ports used for uplinking and downlinking. For low-cost connections to switches in the same or adjacent racks, use QSFP+ transceivers with copper cables. For long distance connections, use the QSFP transceivers connected to optical cables.

Table 1-3 describes the QSFP+ transceivers and cable connections that you can use with the 16 ports used for uplinks and downlinks.

Table 1-3 QSFP+ Transceivers and Cables Used with the Cisco Nexus 3016 Switch Uplink and Downlink Ports

Part Number	Transceivers and Cables
QSFP-40G-SR4	40-Gigabit SR4 QSFP transceiver on both ends of an optical cable. Used for distances up to 100 meters.
QSFP-H40G-CU1M	40-Gigabit transceiver with a 1-meter passive copper cable
QSFP-H40G-CU3M	40-Gigabit transceiver with a 3-meter passive copper cable
QSFP-H40G-CU5M	40-Gigabit transceiver with a 5-meter passive copper cable
QSFP-4SFP10G-CU1M	40-Gigabit transceiver connected to four 1-meter passive copper cables, each connected to an SFP+ transceiver
QSFP-4SFP10G-CU3M	40-Gigabit transceiver connected to four 3-meter passive copper cables, each connected to an SFP+ transceiver
QSFP-4SFP10G-CU5M	40-Gigabit transceiver connected to four 5-meter passive copper cables, each connected to an SFP+ transceiver

Cisco Nexus 3048 Switch

The Cisco Nexus 3048 switch is a 1 rack unit (RU) switch that supports 48 fixed 10/100/1000 Ethernet downlink (server-facing) ports, four fixed 10-Gigabit Ethernet uplink (network-facing) ports, two fixed 100/1000 management ports, and one console port. The switch includes one or two AC or DC power supply units and one fan tray module, both of which provide either forward or reverse airflow for cooling. The switch includes a Layer 3 license. To order the appropriate Cisco Nexus 3048 switch bundle, see Table 1-4.

Table 1-4 Cisco Nexus 3048 Switch Bundles

Power Supply	Airflow Direction	Layer 3 License	Part Number
Select when ordering	Select when ordering	No	N3K-C3048TP-1GE
AC	Forward	Yes	N3K-C3048-FA-L3
AC	Reverse	Yes	N3K-C3048-BA-L3
DC	Forward	Yes	N3K-C3048-FD-L3
DC	Reverse	Yes	N3K-C3048-BD-L3

This section includes the following topics:

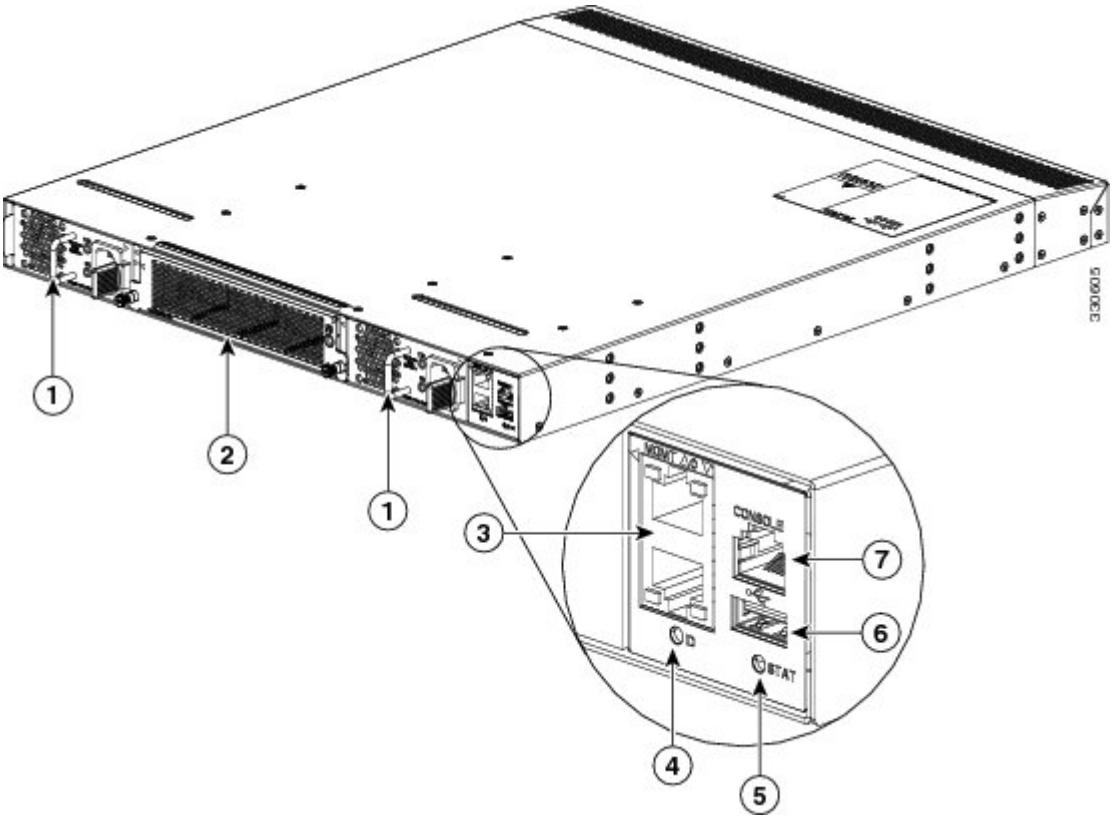
Chassis for the Cisco Nexus 3048 Switch

The 1-RU Cisco Nexus 3048 chassis (part number N3K-C3048TP-1GE) is 1.72 inches (4.37 cm) high, 17.3 inches (43.9 cm) wide, and 19.7 inches (50.8 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray forward airflow or reverse airflow depending on whether the front of the switch is on a cold aisle (forward airflow) or on a hot aisle (reverse airflow). You can also order the switch with AC or DC power supplies.

Fully populated with two power supplies and a fan tray, the switch weighs 20.5 pounds (9.3 kg) and can be easily installed by one or two people.

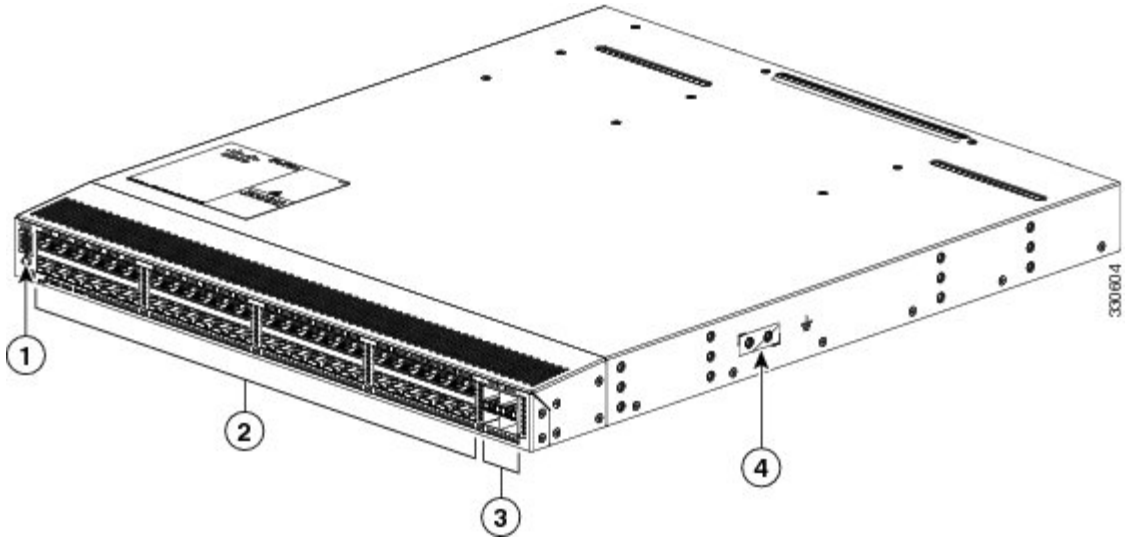
Figure 1-3 shows the front of the Cisco Nexus 3048 chassis and identifies the components that you use to install and connect the chassis. Figure 1-4 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-3 Front View of the Cisco Nexus 3048 Switch



1	AC or DC power supply (2) (AC power supplies shown)	**5**	Status LED
2	Fan tray (1)	**6**	USB port (1)
3	Management ports (2)	**7**	Console port (1)
4	ID LED		

Figure 1-4 Rear View of the Cisco Nexus 3048 Switch



1	ID and Status LEDs	**3**	1- and 10-Gigabit Ethernet uplink ports (4)
2	10/100/1000 Ethernet downlink ports (48)	**4**	Grounding pad

Ports for the Cisco Nexus 3048 Switch

The Cisco Nexus 3048 switch chassis includes the following ports:

- 10/100/1000 Ethernet downlink ports (48 ports)
- 1- and 10-Gigabit Ethernet uplink ports
- 100/1000 Ethernet management ports (2 ports)
- Console port (1 port)
- USB port (1 port)

The chassis has 48 10/100/1000 Ethernet downlink ports that you connect to servers, which are often in the same rack or a nearby rack. You use RJ-45 connectors with copper cables to connect the switch to the servers. The ports are numbered from left to right from 1 to 48 with the odd-numbered ports on top and the even-numbered ports on the bottom.

You use up to four 1- and 10-Gigabit Ethernet uplink ports to connect the switch to one to four hosts or switches. You use an SFP or SFP+ transceiver for each of these ports.

Two 100/1000 Ethernet management ports enable you to manage switch operations. You can connect to the switch through these two ports by using an RJ-45 connector on a copper cable.

One console port enables you to initially configure the switch and to perform troubleshooting operations. You use an RJ-45 connector with a copper cable to connect to this port.

One USB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3048 Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-5.

Table 1-5 Cisco Nexus 3048 Power Supply Part Numbers

Power Source	Airflow Direction	Power Supply Part Number
AC	Forward	N2200-PAC-400W=
AC	Reverse	N2200-PAC-400W-B=
DC	Forward	N2200-PDC-400W=
DC	Reverse	N3K-PDC-350W-B=

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with front-to-back airflow or back-to-front airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running back-to-front airflow and you must order power supplies with back-to-front airflow. If there is no black stripe across the front of these modules, the switch is running front-to-back airflow and you must order replacement modules with front-to-back airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

For power supply specifications, see the "Power Specifications" section on page B-2. For information about the power supply LEDs and what they indicate, see the "Power Supply Status" section on page D-3.

Fan Tray for the Cisco Nexus 3048 Switch

The Cisco Nexus 3048 switch ships with one fan tray, which provides forward airflow from the fan tray to the port connector end exhaust (spares part number N3K-C3048-FAN=) or reverse airflow from the port connectors end of the chassis to the fan tray for exhaust (spares part number N3K-C3048-FAN-B). You can hot swap the fan tray during operations but must replace it within two minutes or the switch can reach an overtemperature condition and shut down.

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow that is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running reverse airflow and you must order a fan tray with reverse airflow. If there is no black stripe across the front of these modules, the switch has forward airflow and you must order replacement modules with forward airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Port Connections for the Cisco Nexus 3048 Switch

You use RJ-45 connectors with copper cables for the downlink ports, management ports, and console port, and you use SFP or SFP+ transceivers for the uplink ports.

The 4 uplink ports support SFP and SFP+ transceivers that are either connected to copper cables or can be connected to optical cables. Table 1-6 describes the SFP+ transceivers and cable connections that you can use. Table 1-7 describes the SFP transceivers and cable connections that you can use.

Table 1-6 SFP Transceivers and Cables for the Cisco Nexus 3048 Switch Uplink Ports

Part Number	Transceivers and Cables
GLC-T	1000BASE-T SFP transceiver
GLC-SX-MM	Gigabit Ethernet multimode fiber (MMF) SFP transceiver with an LC connector of type SX
GLC-LH-SM	Gigabit Ethernet single-mode fiber (SMF) SFP transceiver with an LC connector of type LX/LH

Table 1-7 SFP+ Transceivers and Cables for the Cisco Nexus 3048 Switch Uplink Ports

Part Number	Transceivers and Cables
SFP-10G-SR	10-Gigabit Ethernet—short range SFP+ module
SFP-10G-LR	10-Gigabit Ethernet—long range SFP+ module
SFP-H10GB-CU1M	10-Gigabit Ethernet transceiver connected to a passive 1-meter copper cable
SFP-H10GB-CU3M	10-Gigabit Ethernet transceiver connected to a passive 3-meter copper cable
SFP-H10GB-CU5M	10-Gigabit Ethernet transceiver connected to a passive 5-meter copper cable
SFP-H10GB-ACU7M	10-Gigabit Ethernet transceiver connected to an active 7-meter copper cable
SFP-H10GB-ACU10M	10-Gigabit Ethernet transceiver connected to an active 10-meter copper cable

Cisco Nexus 3064 Switch

The Cisco Nexus 3064 is a 1 rack unit (RU) switch that supports 48 fixed 1- and 10-Gigabit Ethernet host ports, four fixed 40-Gigabit Ethernet network ports, two fixed 100/1000 management ports, and one console port. The switch includes one or two AC or DC power supply units and one fan tray module, both of which provide forward or reverse airflow for cooling. The switch includes a Layer 3 license. The Cisco Nexus 3064 delivers ultra-low nominal latency and supports power-on auto provisioning and consumes low power. To order the appropriate Cisco Nexus 3064 switch bundle, see Table 1-8.

Table 1-8 Cisco Nexus 3064 Switch Bundles

Power Supply	Airflow Direction	Layer 3 License	Part Number
Select when ordering	Select when ordering	No	N3K-C3064PQ-10GE N3K-C3064PQ-10GX
AC	Forward	Yes	N3K-C3064-E-FA-L3 N3K-C3064-X-FA-L3
AC	Reverse	Yes	N3K-C3064-E-BA-L3 N3K-C3064-X-BA-L3
DC	Forward	Yes	N3K-C3064-E-FD-L3 N3K-C3064-X-FD-L3
DC	Reverse	Yes	N3K-C3064-E-BD-L3 N3K-C3064-X-BD-L3

This section includes the following topics:

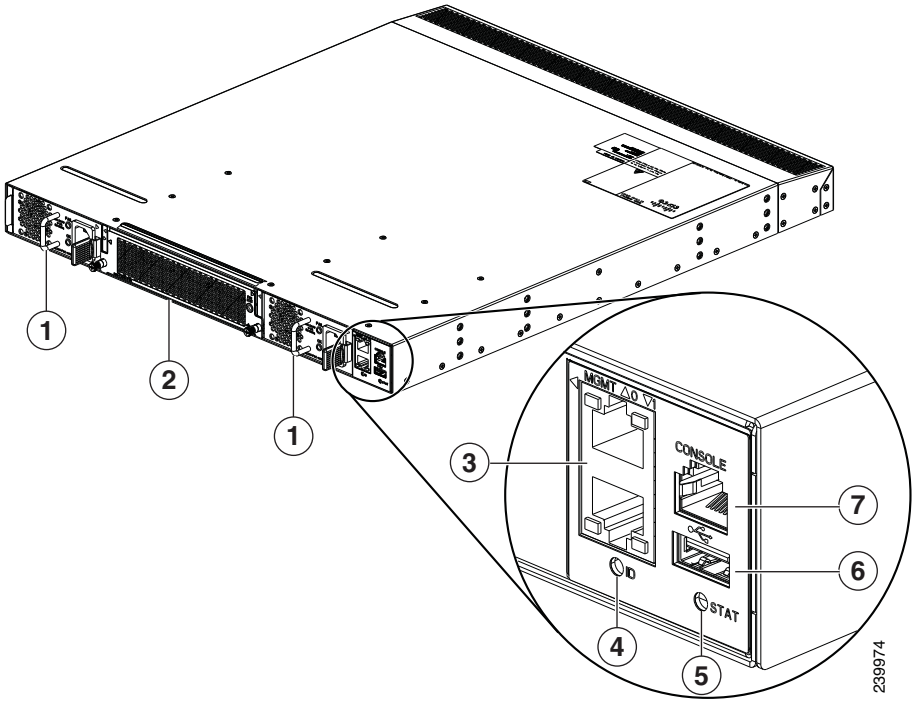
Chassis for the Cisco Nexus 3064 Switch

The 1-RU Cisco Nexus 3064 chassis (part number N3K-C3064PQ-10GE or N3K-C3064PQ-10GX) is 1.72 inches (4.37 cm) high, 17.3 inches (43.9 cm) wide, and 19.7 inches (45.0 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray modules are accessible from the front for easy replacement. You can order this switch with forward or reverse airflow depending on whether the front of the switch is in a cold aisle (forward airflow) or in a hot aisle (reverse airflow). You can also order the switch with AC or DC power supplies.

Fully populated with two power supplies and a fan tray, the switch weighs 20.5 pounds (9.3 kg) and can be easily installed by one or two people.

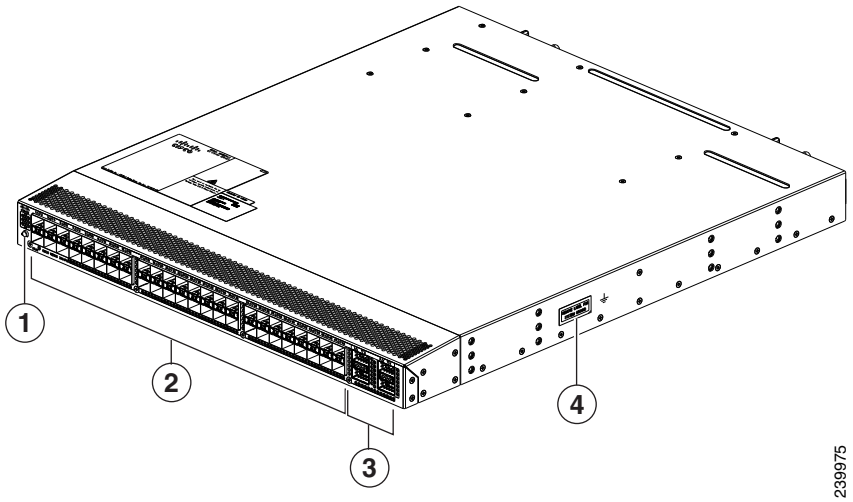
Figure 1-5 shows the front of the chassis and identifies the components that you use to install and connect the chassis. Figure 1-6 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-5 Front View of the Cisco Nexus 3064 Switch



1	AC or DC power supply (2) (AC power supply shown)	**5**	Status LED
2	Fan tray (1)	**6**	USB port (1)
3	Management ports (2)	**7**	Console port (1)
4	ID LED		

Figure 1-6 Rear View of the Cisco Nexus 3064 Switch



1	ID and Status LEDs	**3**	40-Gigabit Ethernet uplink ports (4)
2	1- and 10-Gigabit Ethernet downlink ports (48)	**4**	Grounding pad

Ports for the Cisco Nexus 3064 Switch

The switch chassis includes the following ports:

- 1- and 10-Gigabit Ethernet downlink ports (48 ports)
- 40-Gigabit Ethernet uplink ports (4 ports, each handling 4 x 10-Gigabit Ethernet)
- 100/1000 Ethernet management ports (2 ports)
- Console port (1 port)
- USB port (1 port)

The chassis has 48 1- and 10-Gigabit Ethernet downlink ports that you connect to servers, which are often in the same rack or a nearby rack. You use Small Form factor Pluggable Plus (SFP+) transceivers with copper or optical cables to connect the switch to the servers. The ports are numbered from left to right from 1 to 48 with the odd-numbered ports on top and the even-numbered ports on the bottom.

You use up to four 40-Gigabit Ethernet uplink ports to connect the switch to one to four hosts or switches. You use a Quad SFP+ (QSFP+) transceiver for each of these ports. That transceiver is either already connected to four copper cables, each handling 10 Gigabits of data, with a SFP+ transceiver on each cable, or you connect an optical cable to the QSFP+ transceiver and to another QSFP+ transceiver on another switch.

Two 100/1000 Ethernet management ports enable you to manage switch operations. You can connect to the switch through these two ports by using an RJ-45 connector on a copper cable.

One console port enables you to initially configure the switch and to perform troubleshooting operations. You use an RJ-45 connector with a copper cable to connect to this port.

One USB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3064 Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-9.

Table 1-9 Cisco Nexus 3064 Power Supply Part Numbers

Power Source	Airflow Direction	Power Supply Part Number
AC	Forward	N2200-PAC-400W=
AC	Reverse	N2200-PAC-400W-B=
DC	Forward	N2200-PDC-400W=
DC	Reverse	N3K-PDC-350W-B=

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with front-to-back airflow or back-to-front airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running back-to-front airflow and you must order power supplies with back-to-front airflow. If there is no black stripe across the front of these modules, the switch is running front-to-back airflow and you must order replacement modules with front-to-back airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

For power supply specifications, see the "Power Specifications" section on page B-2. For information about the power supply LEDs and what they indicate, see the "Power Supply Status" section on page D-3.

Fan Tray for the Cisco Nexus 3064 Switch

The Cisco Nexus 3064 switch ships with one fan tray, which provide either forward or reverse airflow for cooling. You can hot swap the fan tray during operations but must replace it within two minutes or the switch can reach an overtemperature condition and shut down.

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow that is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running reverse airflow and you must order a fan tray with reverse airflow. If there is no black stripe across the front of these modules, the switch has forward airflow and you must order replacement modules with forward airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Port Connections for the Cisco Nexus 3064 Switch

You can use QSFP+, SFP+, and SFP transceivers with copper or optical cables for the uplink and downlink ports, RJ-45 connectors for the management ports, RJ-45 connector for the console port, and a USB A connector for the USB port.

The four uplink ports support QSFP+ transceivers, each of which can be connected to a single 40-Gigabit optical cable, a 40-Gigabit copper cable, or four 10-Gigabit copper cables with SFP+ transceivers. Table 1-10 describes the QSFP+ transceivers and cable connections that you can use.

Table 1-10 QSFP+ Transceivers and Cables Used with the Cisco Nexus 3064 Switch

Part Number	Transceivers and Cables
QSFP-40G-SR4	40-Gigabit SR4 QSFP transceiver on both ends of an optical cable. Used for distances up to 100 meters.
QSFP-H40G-CU1M	40-Gigabit transceiver with a 1-meter passive copper cable
QSFP-H40G-CU3M	40-Gigabit transceiver with a 3-meter passive copper cable
QSFP-H40G-CU5M	40-Gigabit transceiver with a 5-meter passive copper cable
QSFP-4SFP10G-CU1M	40-Gigabit transceiver connected to four 1-meter passive copper cables, each connected to an SFP+ transceiver
QSFP-4SFP10G-CU3M	40-Gigabit transceiver connected to four 3-meter passive copper cables, each connected to an SFP+ transceiver
QSFP-4SFP10G-CU5M	40-Gigabit transceiver connected to four 5-meter passive copper cables, each connected to an SFP+ transceiver

The 48 downlink ports support SFP+ and SFP transceivers that are either connected to copper cables or can be connected to optical cables. Table 1-11 describes the SFP+ transceivers and cable connections that you can use. Table 1-12 describes the SFP transceivers and cable connections that you can use.

Table 1-11 SFP+ Transceivers and Cables for the Cisco Nexus 3064 Switch

Part Number	Transceivers and Cables
SFP-10G-SR	10-Gigabit Ethernet—short range SFP+ module
SFP-10G-LR	10-Gigabit Ethernet—long range SFP+ module
SFP-H10GB-CU1M	10-Gigabit Ethernet transceiver connected to a 1-meter copper cable
SFP-H10GB-CU3M	10-Gigabit Ethernet transceiver connected to a 3-meter copper cable
SFP-H10GB-CU5M	10-Gigabit Ethernet transceiver connected to a 5-meter copper cable
SFP-H10GB-ACU7M	10-Gigabit Ethernet transceiver connected to an active 7-meter copper cable
SFP-H10GB-ACU10M	10-Gigabit Ethernet transceiver connected to an active 10-meter copper cable

Table 1-12 SFP Transceivers and Cables for the Cisco Nexus 3064 Switch

Part Number	Transceivers and Cables
GLC-T	1000BASE-T SFP transceiver
GLC-SX-MM	Gigabit Ethernet multimode fiber (MMF) SFP transceiver with an LC connector of type SX
GLC-LH-SM	Gigabit Ethernet single-mode fiber (SMF) SFP transceiver with an LC connector of type LX/LH

Cisco Nexus 3132Q Switch

The Cisco Nexus 3132Q Switch is a high-performance switch that is a member of the Cisco Nexus 3100 switches. The Nexus 3100 switches are second-generation Cisco Nexus 3000 series switches and offer improved port density, scalability, and features compared to the first-generation switches.

The Cisco Nexus 3132Q is a 1 rack unit (RU), 40-Gbps Quad Small Form-Factor Pluggable (QSFP)-based switch with 32 Enhanced QSFP (QSFP+) ports. It also has 4 SFP+ ports that are internally multiplexed with the first QSFP port. Each QSFP+ port can operate in native 40-Gbps or 4 x 10-Gbps modes. This switch is a true phy-less switch that is optimized for low latency and low power consumption. It supports both forward and reverse (port side exhaust and port side intake) airflow schemes. The Cisco Nexus 3132Q is well suited for data centers that require a cost-effective, power-efficient line-rate Layer 2 and 3 access or leaf switch.

This section includes the following topics:

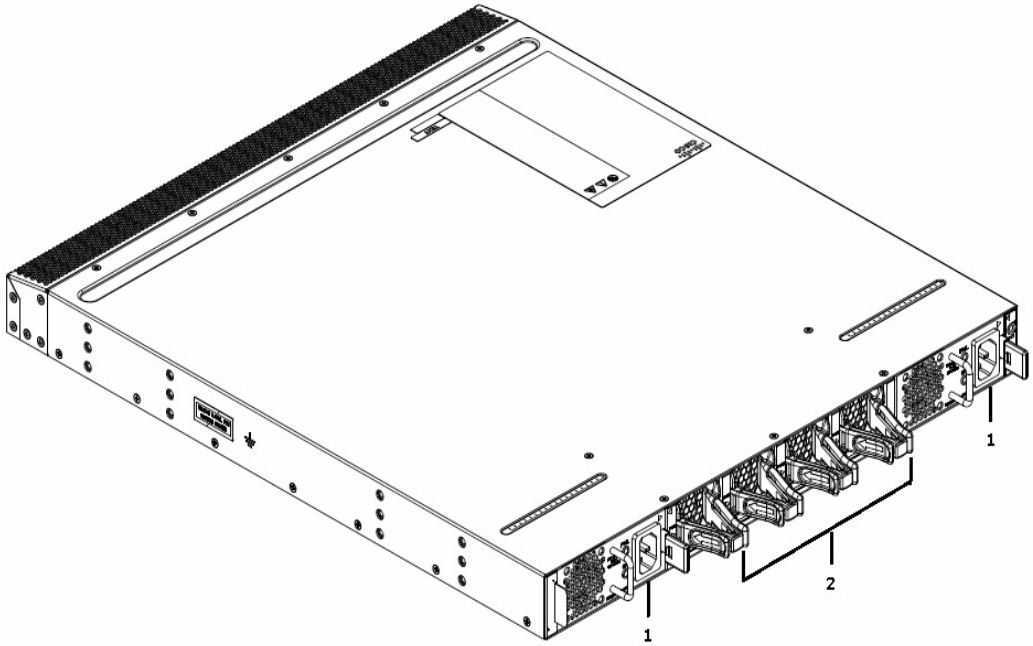
Chassis for the Cisco Nexus 3132Q Switch

The 1-RU Cisco Nexus C3132Q chassis (part number N3K-C3132Q-40GE) is 1.72 inches (4.4 cm) high, 17.3 inches (43.9 cm) wide, and 19.7 inches (50.5 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray modules are accessible from the front for easy replacement. You can order this switch with forward or reverse airflow. Forward airflow (Port-side exhaust where air enters through fan tray and power supplies and exits through ports) is supported with AC and DC power supplies. Reversed airflow (Port-side intake, where air enters through ports and exits through fan tray and power supplies) is supported with AC power supply only.

The switch weighs 21.5 lb (9.3 kg) and can be easily installed by one or two people.

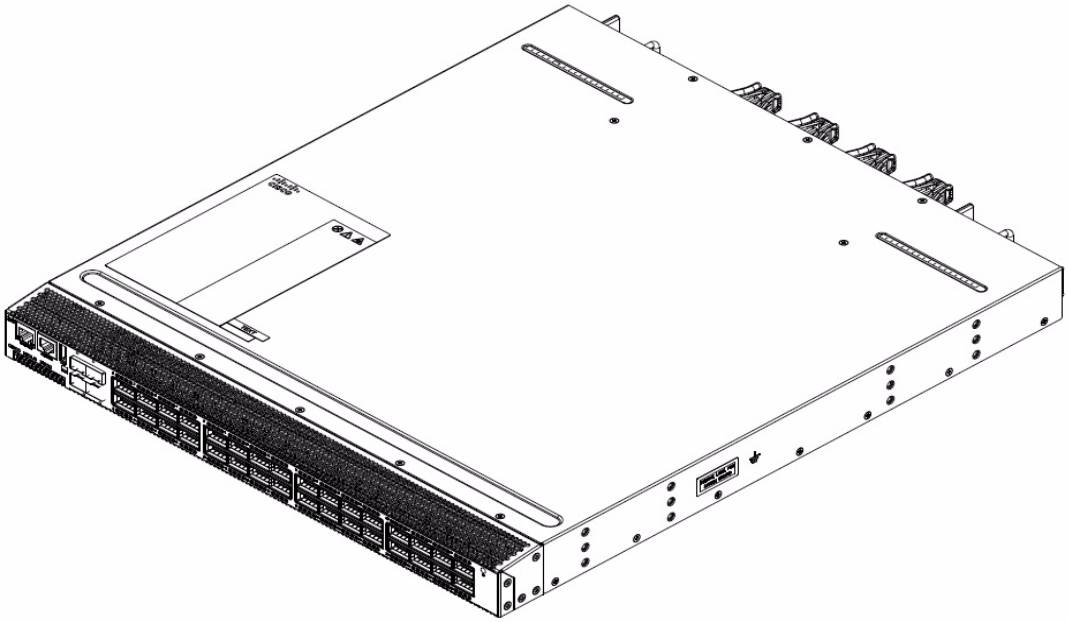
Figure 1-7 shows the front of the chassis and identifies the components that you use to install and connect the chassis. Figure 1-8 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-7 Front View of the Cisco Nexus C3132Q Switch



1	Power Supplies	**2**	Fans

Figure 1-8 Rear View of the Cisco Nexus C3132Q Switch



Ports for the Cisco Nexus 3132Q Switch

The switch chassis includes the following ports:

- 32 QSFP+ ports; each supports native 40 Gigabit Ethernet and 4 x 10 Gigabit Ethernet modes
- 4 SFP+ ports
- Management, console, and USB flash-memory ports

You use Small Form factor Pluggable Plus (SFP+) transceivers with copper or optical cables to connect the switch to the servers. The management port enables you to manage switch operations. The console port enables you to initially configure the switch and to perform troubleshooting operations. TheUSB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3132Q Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-13.

Table 1-13 Cisco Nexus C3132Q Power Supply Part Numbers

Power Supply Part Number	Power Source and Airflow Direction	Description
N2200-PAC-400W	AC Forward	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	AC Reverse	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	DC Forward	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	DC Reverse	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with front-to-back airflow or back-to-front airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running back-to-front airflow and you must order power supplies with back-to-front airflow. If there is no black stripe across the front of these modules, the switch is running front-to-back airflow and you must order replacement modules with front-to-back airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

Fan Tray for the Cisco Nexus 3132Q Switch

The Cisco Nexus C3132Q switch supports four (3+1) redundant fans, which provide either forward or reverse airflow for cooling. You can hot swap the fan tray during operations but must replace it within one minute.

Both forward (port-side exhaust) and reversed (port-side intake) airflow schemes are supported. The port-side exhaust scheme is used when the cold air flows in through the side having the fans (facing the cold aisle) and exhausts out of the side having the ports (facing the hot aisle). Port-side intake scheme is used when the air flows in through the ports (facing the cold aisle) and leaves through the side having the fans (facing the hot aisle).

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow that is used with the switch.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Transceiver and Cabling Options for the Cisco Nexus 3132Q Switch

The Cisco Nexus 3132Q has 32 QSFP+ ports. QSFP+ technology allows a smooth transition from 10 to 40 Gigabit Ethernet infrastructures in data centers. Each of the Cisco Nexus 3132Q switch's QSFP+ ports can operate in either native 40 Gigabit Ethernet mode or 4 x 10 Gigabit Ethernet mode. This switch supports both fiber and copper cabling solutions for these two modes.

For low-cost cabling, copper-based 40-Gbps Twinax cables can be used, and for longer cable reaches, short-reach optical transceivers are excellent. Connectivity can be established from the QSFP+ ports to 10 Gigabit Ethernet switches or hosts using a splitter cable that has a QSFP+ transceiver on one end and four SFP+ transceivers on the other end. Similar capability can be achieved on the fiber solution by using QSFP+ SR4 transceivers on both ends and procuring third-party fiber splitter MPO-to-LC cables. Table 1-14 lists the QSFP transceiver types supported.

Table 1-14 Supported Transceivers for the Cisco Nexus C3132Q Switch

Part Number	Description
QSFP-H40G-AOC1M	QSFP 40G Active Optical Cable 1m
QSFP-H40G-AOC2M	QSFP 40G Active Optical Cable 2m
QSFP-H40G-AOC3M	QSFP 40G Active Optical Cable 3m
QSFP-H40G-AOC5M	QSFP 40G Active Optical Cable 5m
QSFP-H40G-AOC7M	QSFP 40G Active Optical Cable 7m
QSFP-H40G-AOC10M	QSFP 40G Active Optical Cable 10m
QSFP-4x10G-AOC1M	QSFP to 4 x SFP 10Gbps Active Optical Cable 1m
QSFP-4x10G-AOC2M	QSFP to 4 x SFP 10Gbps Active Optical Cable 2m
QSFP-4x10G-AOC3M	QSFP to 4 x SFP 10Gbps Active Optical Cable 3m
QSFP-4x10G-AOC5M	QSFP to 4 x SFP 10Gbps Active Optical Cable 5m
QSFP-4x10G-AOC7M	QSFP to 4 x SFP 10Gbps Active Optical Cable 7m
QSFP-4x10G-AOC10M	QSFP to 4 x SFP 10Gbps Active Optical Cable 10m
QSFP-4SFP10G-CU3M	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 3m
QSFP-4SFP10G-CU1M	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 1m
QSFP-H40G-CU3M	40GBASE-CR4 passive copper cable, 3m
QSFP-H40G-CU1M	40GBASE-CR4 passive copper cable, 1m

Table 1-14 Supported Transceivers for the Cisco Nexus C3132Q Switch (continued)

Part Number	Description
QSFP-40G-SR4	40GBASE-SR4 QSFP transceiver module with MPO connector
QSFP-40G-CSR4	40GBASE-CSR4 QSFP+ transceiver module for MMF, 4-lanes, 850-nm wavelength, 12-fiber MPO/MTP connector, 300 m reach with OM3 fiber
QSFP-40GE-LR4	40GBASE-LR4 QSFP+ transceiver module for SMF, 4 CWDM lanes in 1310 nm window Muxed inside module, duplex LC connector, 10 km reach
CVR-QSFP-SFP10G	Cisco QSA Module

Cisco Nexus 3172PQ Switch

The Cisco Nexus 3172PQ Switch is a high-performance switch that is a member of the Cisco Nexus 3100 switches. The Nexus 3100 switches are second-generation Cisco Nexus 3000 series switches and offer improved port density, scalability, and features compared to the first-generation switches.

The Cisco Nexus 3172PQ is a 1 rack unit (RU), 10-Gbps Enhanced Small Form-Factor Pluggable (SFP+)-based ToR switch with 48 SFP+ ports and 6 Quad SFP+ (QSFP+) ports. Each SFP+ port can operate in 100-Mbps, 1-Gbps, or 10-Gbps mode, and each QSFP+ port can operate in native 40-Gbps or 4 x 10-Gbps mode. This switch is a true phy-less switch that is optimized for low latency and low power consumption. It supports both forward and reverse (port side exhaust and port side intake) airflow schemes. The Cisco Nexus 3172PQ is well suited for data centers that require a cost-effective, power-efficient line-rate Layer 2 and 3 access or leaf switch.

This section includes the following topics:

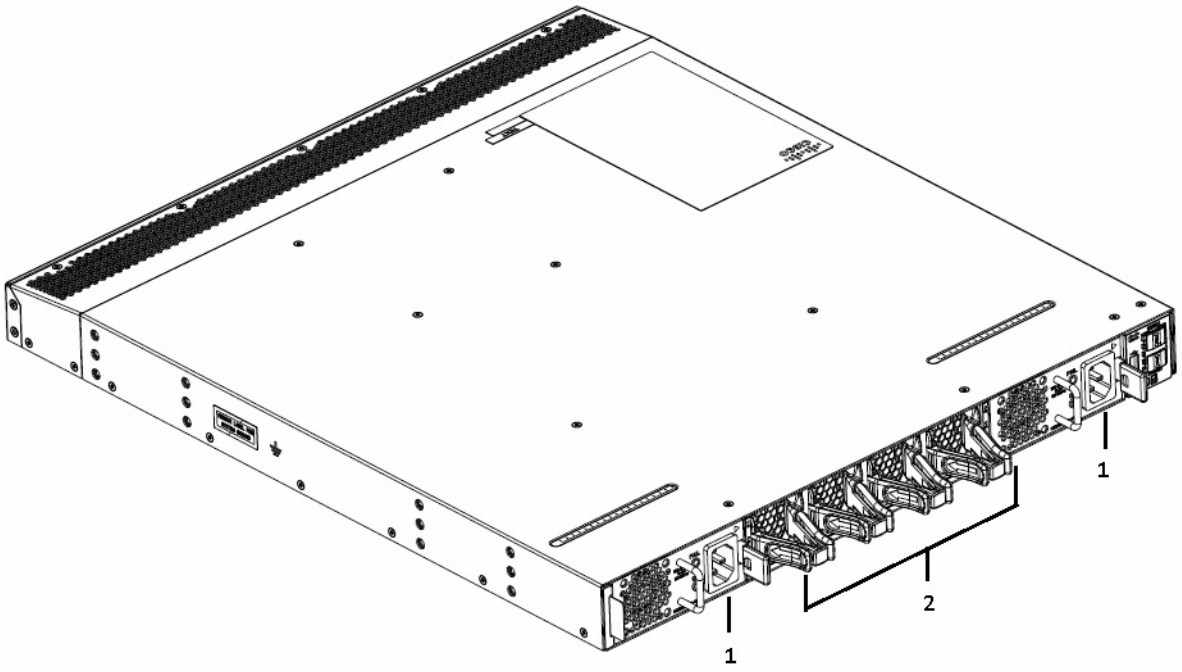
Chassis for the Cisco Nexus 3172PQ Switch

The 1-RU Cisco Nexus 3172PQ chassis (part number N3K-N3172PQ-10GE) is 1.72 inches (4.4 cm) high, 17.3 inches (43.9 cm) wide, and 19.7 inches (50.5 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray modules are accessible from the front for easy replacement. You can order this switch with forward or reverse airflow. Forward airflow (Port-side exhaust where air enters through fan tray and power supplies and exits through ports) is supported with AC and DC power supplies. Reversed airflow (Port-side intake, where air enters through ports and exits through fan tray and power supplies) is supported with AC power supply only.

The switch weighs 20.0 lb (9.3 kg) and can be easily installed by one or two people.

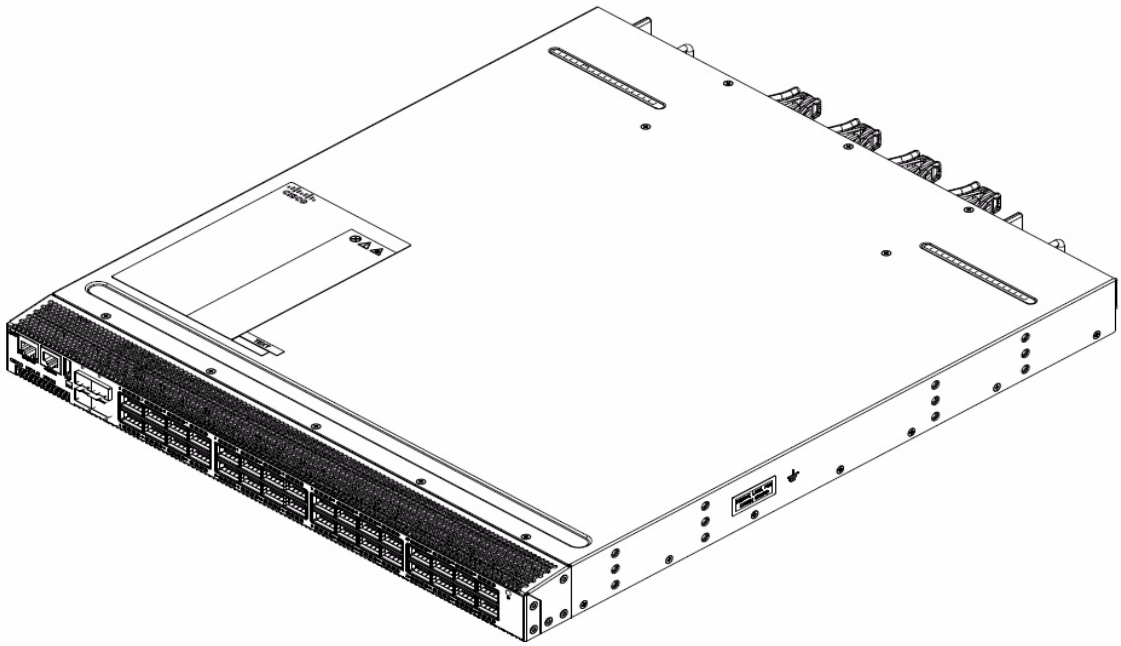
Figure 1-9 shows the front of the chassis and identifies the components that you use to install and connect the chassis. Figure 1-10 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-9 Front View of the Cisco Nexus 3172PQ Switch



1	Power Supplies	2	Fans

Figure 1-10 Rear View of the Cisco Nexus 3172PQ Switch



Ports for the Cisco Nexus 3172PQ Switch

The switch chassis includes the following ports:

- 72 x 10 Gigabit Ethernet ports (48 SFP+ and 6 QSFP+)
  - 48 SFP ports support 1 and 10 Gigabit Ethernet
  - 6 QSFP ports support 4 x 10 Gigabit Ethernet or 40 Gigabit Ethernet each
- Management, console, and USB flash-memory ports

You use Small Form factor Pluggable Plus (SFP+) and QSFP transceivers with copper or optical cables to connect the switch to the servers. The management port enables you to manage switch operations. The console port enables you to initially configure the switch and to perform troubleshooting operations. TheUSB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3172PQ Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-15.

Table 1-15 Cisco Nexus 3172PQ Power Supply Part Numbers

Power Supply Part Number	Power Source and Airflow Direction	Description
N2200-PAC-400W	AC Forward	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	AC Reverse	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	DC Forward	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	DC Reverse	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with front-to-back airflow or back-to-front airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running back-to-front airflow and you must order power supplies with back-to-front airflow. If there is no black stripe across the front of these modules, the switch is running front-to-back airflow and you must order replacement modules with front-to-back airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

Fan Tray for the Cisco Nexus 3172PQ Switch

The Cisco Nexus 3172PQ switch supports four (3+1) redundant fans, which provide either forward or reverse airflow for cooling. You can hot swap the fan tray during operations but must replace it within one minute.

Both forward (port-side exhaust) and reversed (port-side intake) airflow schemes are supported. The port-side exhaust scheme is used when the cold air flows in through the side having the fans (facing the cold aisle) and exhausts out of the side having the ports (facing the hot aisle). Port-side intake scheme is used when the air flows in through the ports (facing the cold aisle) and leaves through the side having the fans (facing the hot aisle).

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow that is used with the switch.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Transceiver and Cabling Options for the Cisco Nexus 3172PQ Switch

The Cisco Nexus 3172PQ supports a wide variety of 1, 10, and 40 Gigabit Ethernet connectivity options. 1 and 10 Gigabit Ethernet connectivity is achieved in the first 48 ports, and 40 Gigabit Ethernet connectivity is achieved using QSFP+ transceivers in the last 6 ports. QSFP+ technology allows a smooth transition from 10 to 40 Gigabit Ethernet infrastructures in the data center. The Cisco Nexus 3172PQ supports connectivity over copper and fiber cables, providing excellent physical-layer flexibility. For low-cost cabling, copper-based 40-Gbps Twinax cables can be used, and for longer cable reaches, short-reach optical transceivers are optimal. Connectivity can be established from the QSFP ports to an upstream 10 Gigabit Ethernet switch using a splitter cable that has a QSFP transceiver on one end and four SFP+ transceivers on the other end. Similar capability can be achieved using optical transceivers by procuring third-party fiber splitters. Table 1-16 lists the QSFP transceiver types supported.

Table 1-16 Supported QSFP Transceivers for the Cisco Nexus 3172PQ Switch

Part Number	Description
QSFP-H40G-AOC1M	QSFP 40G Active Optical Cable 1m
QSFP-H40G-AOC2M	QSFP 40G Active Optical Cable 2m
QSFP-H40G-AOC3M	QSFP 40G Active Optical Cable 3m
QSFP-H40G-AOC5M	QSFP 40G Active Optical Cable 5m
QSFP-H40G-AOC7M	QSFP 40G Active Optical Cable 7m
QSFP-H40G-AOC10M	QSFP 40G Active Optical Cable 10m
QSFP-4x10G-AOC1M	QSFP to 4 x SFP 10Gbps Active Optical Cable 1m
QSFP-4x10G-AOC2M	QSFP to 4 x SFP 10Gbps Active Optical Cable 2m
QSFP-4x10G-AOC3M	QSFP to 4 x SFP 10Gbps Active Optical Cable 3m
QSFP-4x10G-AOC5M	QSFP to 4 x SFP 10Gbps Active Optical Cable 5m
QSFP-4x10G-AOC7M	QSFP to 4 x SFP 10Gbps Active Optical Cable 7m
QSFP-4x10G-AOC10M	QSFP to 4 x SFP 10Gbps Active Optical Cable 10m
QSFP-4SFP10G-CU5M	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 5m
QSFP-4SFP10G-CU3M	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 3m
QSFP-4SFP10G-CU1M	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 1m
QSFP-H40G-CU5M	40GBASE-CR4 passive copper cable, 5m
QSFP-H40G-CU3M	40GBASE-CR4 passive copper cable, 3m
QSFP-H40G-CU1M	40GBASE-CR4 passive copper cable, 1m
QSFP-40G-SR4	40GBASE-SR4 QSFP transceiver module with MPO connector
QSFP-40G-CSR4	40GBASE-CSR4 QSFP+ transceiver module for MMF, 4-lanes, 850-nm wavelength, 12-fiber MPO/MTP connector, 300 m reach with OM3 fiber
QSFP-40GE-LR4	40GBASE-LR4 QSFP+ transceiver module for SMF, 4 CWDM lanes in 1310 nm window Muxed inside module, duplex LC connector, 10 km reach
CVR-QSFP-SFP10G	Cisco QSA Module

For in-rack or adjacent-rack cabling, the Cisco Nexus 3172PQ supports SFP+ direct-attach 10 Gigabit Ethernet copper, an innovative solution that integrates transceivers with Twinax cables into an energy-efficient and low-cost solution. For longer cable runs, multimode and single-mode optical SFP+ transceivers are supported. Table 1-17 lists the supported 10 Gigabit Ethernet transceiver options.

Table 1-17 Supported 10 Gigabit Ethernet Transceivers for the Cisco Nexus 3172PQ Switch

Part Number	Description
SFP-10G-SR	10GBASE-SR SFP+ module (multimode fiber [MMF])
SFP-10G-LR	10GBASE-LR SFP+ module (single-mode fiber [SMF])
SFP-10G-ER	Cisco 10GBASE-ER SFP+ module for SMF

Table 1-17 Supported 10 Gigabit Ethernet Transceivers for the Cisco Nexus 3172PQ Switch

Part Number	Description
SFP-10G-ZR	Cisco 10GBASE-ZR SFP+ module for SMF
DWDM-SFP10G-	10GBASE-DWDM modules (multiple varieties)
SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1m (Twinax cable)
SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3m (Twinax cable)
SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5m (Twinax cable)
SFP-H10GB-ACU7M	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M	Active Twinax cable assembly, 10m

The Cisco Nexus 3172PQ is compatible with existing Gigabit Ethernet infrastructure. The 10 Gigabit Ethernet interfaces can operate in either Gigabit Ethernet or 100-Mbps mode. Table 1-18 lists the Gigabit Ethernet SFP transceivers that are supported. 100-Mbps connectivity can be achieved by using copper-based SFP transceivers (SFP-GE-T and GLC-T).

Table 1-18 Supported Gigabit Ethernet Transceivers for the Cisco Nexus 3172PQ Switch

Part Number	Description
SFP-GE-T	1000BASE-T NEBS 3 ESD
GLC-T	1000BASE-T SFP
GLC-SX-MM	GE SFP, LC connector SX transceiver (MMF)
GLC-LH-SM	GE SFP, LC connector LX/LH transceiver (SMF)

Cisco Nexus 3548 and Cisco Nexus 3524 Switches

The Cisco Nexus 3548 is a 1 rack unit (RU) switch that supports 48 fixed 1- and 10-Gigabit Ethernet Small Form-Factor Pluggable (SFP+) ports, dual redundant, hot-swappable power supplies, four individual, redundant, hot-swappable fans, one 1-PPS timing port, two 10/100/1000 management ports, one console port, and one USB port. The power supply units and fan trays provide forward or reverse airflow for cooling. The Cisco Nexus 3548 provides line-rate, Layer 2 and 3 switching at ultra low latency and consumes low power.

Note The Cisco Nexus 3524 (N3K-C3524P-10G) is a Cisco Nexus 3548 switch but with only 24 ports active and can be upgraded to use all 48 ports.It is the lowest entry point for main-stream top-of-rack (TOR) data center deployments which offers wire-rate Layer 2 and Layer 3 switching with a comprehensive feature set, including Algo Boost technology, and ultra-low latency.

This section includes the following topics:

- Port Connections for the Cisco Nexus 3548 Switch, page 1-30

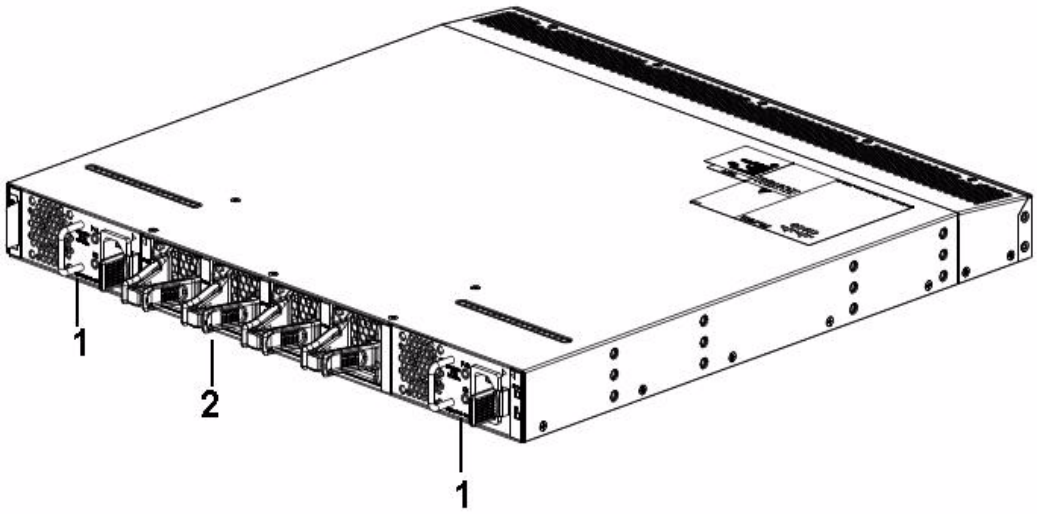
Chassis for the Cisco Nexus 3548 Switch

The 1-RU Cisco Nexus 3548 chassis (part number N3K-C3548P-10G) is 1.72 inches (4.37 cm) high, 17.3 inches (43.9 cm) wide, and 18.38 inches (46.7 cm) deep. This switch is designed for 19-inch (48.3 cm) racks. Its switch ports are at the rear of the chassis in close proximity to server ports, and the power supplies and fan tray modules are accessible from the front for easy replacement. You can order this switch with forward or reverse airflow depending on whether the front of the switch is in a cold aisle (forward airflow) or in a hot aisle (reverse airflow). You can also order the switch with AC or DC power supplies.

Fully populated with two power supplies and four fans, the switch weighs 17.4 lb pounds (7.9 kg) and can be easily installed by one or two people.

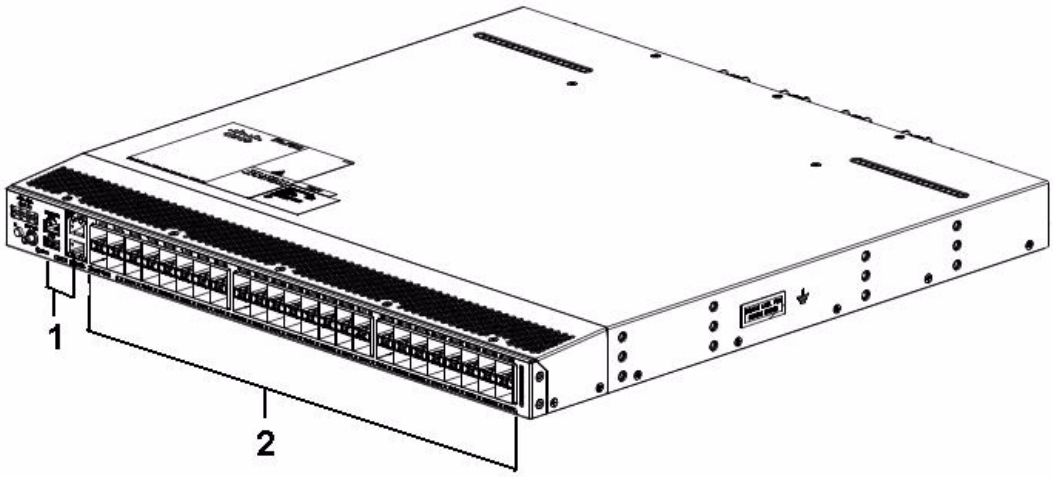
Figure 1-11 shows the front of the chassis and identifies the components that you use to install and connect the chassis. Figure 1-12 shows the rear of the chassis and identifies the components that you use to install and connect the chassis.

Figure 1-11 Front View of the Cisco Nexus 3548 Switch



1	Power Supplies	**2**	Fan tray

Figure 1-12 Rear View of the Cisco Nexus 3548 Switch



1	One pps port, one console port , one USB port, one management port	2	48 fixed Small Form-Factor Pluggable (SFP+) ports

Ports for the Cisco Nexus 3548 Switch

The switch chassis includes the following ports:

- Fixed 1- and 10-Gigabit Ethernet Small Form-Factor Pluggable (SFP+) ports (48 ports)
- 1-PPS timing port (1 port)
- 10/100/1000 management ports (2 ports)
- Console port (1 port)
- USB port (1 port)

The chassis has 48 1- and 10-Gigabit Ethernet ports that you connect to servers, which are often in the same rack or a nearby rack. You use Small Form factor Pluggable Plus (SFP+) transceivers with copper or optical cables to connect the switch to the servers. The ports are numbered from left to right from 1 to 48 with the odd-numbered ports on top and the even-numbered ports on the bottom.

You useone 1-PPS timing port, with the RF1.0/2.3 QuickConnect connector type.

Two 100/1000 Ethernet management ports enable you to manage switch operations. You can connect to the switch through these two ports by using an RJ-45 connector on a copper cable.

One RS-232 serial console port enables you to initially configure the switch and to perform troubleshooting operations.

One USB port enables you to save or load switch configurations.

Power Supply for the Cisco Nexus 3548 Switch

The Cisco Nexus 3000 Series switch has two slots for power supplies that are initially installed with one or two AC or DC power supplies that have forward or reverse airflow for their cooling. The switch requires only one power supply for its operations, but you can include a second one for redundancy.

To determine which part number to use when ordering replacement power supplies, see Table 1-19.

Table 1-19 Cisco Nexus 3548 Power Supply Part Numbers

Power Source	Airflow Direction	Power Supply Part Number
AC	Forward	N2200-PAC-400W
AC	Reverse	N2200-PAC-400W-B
DC	Forward	N2200-PDC-400W
DC	Reverse	N3K-PDC-350W-B

If the chassis has two power supplies, you can hot swap one of the power supplies during operations. If the chassis has only one power supply, you can install the new power supply in the open slot, turn on that power supply, and then remove the original power supply during operations.

Caution You can order replacement power supplies with front-to-back airflow or back-to-front airflow. Be sure to order the same direction of airflow as is used with the switch. If there is a black stripe across the front of the fan trays and power supplies, the switch is running back-to-front airflow and you must order power supplies with back-to-front airflow. If there is no black stripe across the front of these modules, the switch is running front-to-back airflow and you must order replacement modules with front-to-back airflow.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Note Never leave a power supply slot empty. If you remove a power supply, replace it with another one. If you do not have a replacement power supply, leave the non functioning one in place until you can replace it or fill the slot with a filler blank module (part number N2200-P-BLNK).

For power supply specifications, see the "Power Specifications" section on page B-2. For information about the power supply LEDs and what they indicate, see the "Power Supply Status" section on page D-3.

Fan Tray for the Cisco Nexus 3548 Switch

The Cisco Nexus 3548 switch ships with four fans, which provide either forward or reverse airflow for cooling. You can hot swap the fan tray during operations but must replace it within two minutes or the switch can reach an overtemperature condition and shut down.

Both forward (port-side exhaust) and reversed (port-side intake) airflow schemes are supported. The port-side exhaust scheme is used when the cold air flows in through the side having the fans (facing the cold aisle) and exhausts out of the side having the ports (facing the hot aisle). Port-side intake scheme is used when the air flows in through the ports (facing the cold aisle) and leaves through the side having the fans (facing the hot aisle). Figure 1-13 shows the Cisco Nexus 3548 with blue handles indicating forward airflow

Figure 1-13 Cisco Nexus 3548 with blue handles indicating forward airflow

Figure 1-14 shows the Cisco Nexus 3548 with red handles indicating reversed airflow

Figure 1-14 Cisco Nexus 3548 with red handles indicating reversed airflow

Caution You can order a replacement fan tray with forward airflow or reverse airflow. Be sure to order the same direction of airflow that is used with the switch.

Caution The switch must run with all of its power supply and fan tray modules taking in air from a cold aisle and exhausting air to the hot aisle. If they take in air from a hot aisle, an overtemperature condition can occur and the switch will shut down. If the airflow directions are mixed in the same switch, you will see an error.

Port Connections for the Cisco Nexus 3548 Switch

The Cisco Nexus 3548 supports a wide variety of 1 and 10 Gigabit Ethernet connectivity options. For in-rack or adjacent-rack cabling, the Cisco Nexus 3548 supports SFP+ direct-attach 10 Gigabit Ethernet copper, an innovative solution that integrates transceivers with Twinax cables into an energy-efficient and low-cost solution. For longer cable runs, multimode and single-mode optical SFP+ transceivers are supported.

Table 1-20 describes the 10 Gigabit Ethernet transceivers you can use.

Table 1-20 Supported 10-Gigabit Ethernet transceivers for the Cisco Nexus 3548 Switch

Part Number	Transceivers and Cables
SFP-10G-SR	10-Gigabit Ethernet—short range SFP+ module
SFP-10G-LR	10-Gigabit Ethernet—long range SFP+ module
SFP-10G-ER	Cisco 10GBASE-ER SFP+ Module for SMF
SFP-H10GB-CU1M	10-Gigabit Ethernet transceiver connected to a 1-meter copper cable
SFP-H10GB-CU3M	10-Gigabit Ethernet transceiver connected to a 3-meter copper cable
SFP-H10GB-CU5M	10-Gigabit Ethernet transceiver connected to a 5-meter copper cable
SFP-H10GB-ACU7M	10-Gigabit Ethernet transceiver connected to an active 7-meter copper cable
SFP-H10GB-ACU10M	10-Gigabit Ethernet transceiver connected to an active 10-meter copper cable

The Cisco Nexus 3548 is compatible with existing Gigabit Ethernet infrastructures. Both the uplink and downlink 10 Gigabit Ethernet interfaces can also operate in Gigabit Ethernet mode. Table 1-21 lists the Gigabit Ethernet SFP transceivers you can use.

Table 1-21 Supported Gigabit Ethernet Transceivers for the Cisco Nexus 3548 Switch

Part Number	Transceivers and Cables
GLC-T	1000BASE-T
GLC-SX-MM	Gigabit Ethernet multimode fiber (MMF) SFP transceiver with an LC connector of type SX
GLC-SX-MMD	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
GLC-LH-SM	Gigabit Ethernet single-mode fiber (SMF) SFP transceiver with an LC connector of type LX/LH
GLC-LH-SMD	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM

CHAPTER 2

Installing the Cisco Nexus 3000 Series Switches

This chapter describes how to install the Cisco Nexus 3000 Series switches.

This chapter includes the following sections:

Note Before you install, operate, or service the system, see the *Regulatory Compliance and Safety Information for the Cisco Nexus 5000 Series, Cisco Nexus 3000 Series, and Cisco Nexus 2000 Series* for important safety information.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

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

SAVE THESE INSTRUCTIONS

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

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

Note Each new switch requires a license. For information on licensing, see the *Cisco NX-OS Licensing Guide*.

Preparing for Installation

This section describes how to prepare the Cisco Nexus 3000 Series switch for installation. This section includes the following topics:

Installation Options with Racks and Cabinets

The Cisco Nexus 3000 Series switches can be installed in the following types of racks using a rack-mount kit shipped with the switch:

- Open EIA rack
- Perforated EIA cabinet

The rack or cabinet that you use must meet the requirements listed in Appendix A, “Cabinet and Rack Specifications.”

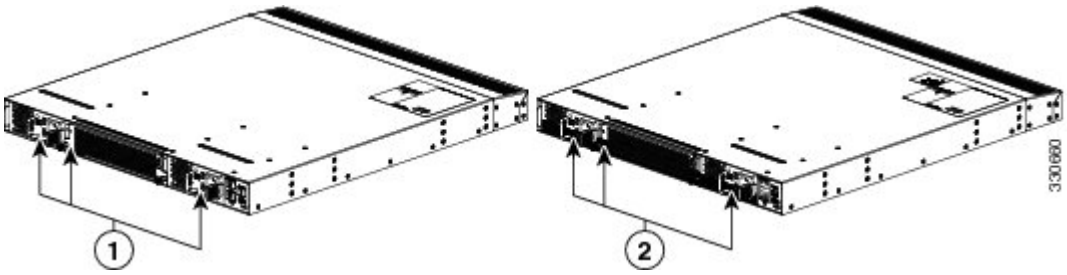
The rack-mount kit enables you to install the switch into racks of varying depths. You can use the rack-mount kit parts to position the switch with easy access to either the port connections end of the chassis or the end of the chassis with the fan tray and power supply modules. For instructions on how to use a rack-mount kit, see the “Installing the Switch” section on page 2-5.

Airflow Direction

You can order the Cisco Nexus 3000 Series chassis with forward or reverse airflow. Forward airflow enters the chassis through the fan tray and power supply modules and exhausts through the port connections end of the chassis. Reverse airflow enters the chassis through the port connections end and exhausts through the fan tray and power supply modules. You must install a forward-airflow chassis with its fan tray and power supply modules located in a cold aisle, and you must install a reverse-airflow chassis with its port connections located in a cold aisle.

As shown in Figure 2-1, the modules in a chassis with forward airflow do not have a black stripe across the front of these modules and the modules with reverse airflow do have a black stripe across the front of these modules. All of the modules in a chassis must have the same direction of airflow, which means that all of the modules either have no stripe on them or all of the modules have a black stripe.

Figure 2-1 Distinguishing Between Chassis with Forward and Reverse Airflow



1	No black stripe indicates forward airflow.	**2**	Black stripe indicates reverse airflow.

Chassis Weight

When lifting the switch chassis, follow these guidelines:

- Disconnect all power and external cables before lifting the switch.
- Ensure that your footing is solid and the weight of the switch is evenly distributed between your feet.
- Lift the switch slowly, keeping your back straight. Lift with your legs, not with your back. Bend at the knees, not at the waist.

Installation Guidelines

When installing the Cisco Nexus 3000 Series switch, follow these guidelines:

- Record the information listed in Appendix E, "Site Planning and Maintenance Records" as you install and configure the switch.
- Ensure that there is adequate space around the switch to allow for servicing the switch and for adequate airflow (Appendix B, "Technical Specifications" lists the service and airflow requirements).
- Ensure that the air-conditioning meets the heat dissipation requirements listed in Appendix B, "Technical Specifications."
- Ensure that the switch is going to be positioned so that it takes in air from a cold aisle and exhausts air to the hot aisle. If there is a black stripe across the front of these modules, they have forward airflow and must be positioned with the fan tray and power supplies in a cold aisle. If there is a black stripe across the front of these modules, they have reverse airflow and must be positioned with the port connections in a cold aisle.
- Ensure that the cabinet or rack meets the requirements listed in Appendix A, "Cabinet and Rack Specifications."

Note Jumper power cords are available for use in a cabinet. See the "Jumper Power Cord" section on page C-8.

- Ensure that the chassis can be adequately grounded. If the switch is not mounted in a grounded rack, we recommend connecting both the system ground on the chassis and the power supply ground directly to an earth ground.

- Ensure that the site power meets the power requirements listed in Appendix B, "Technical Specifications." If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

Caution Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco Nexus 3000 Series switches, which can have substantial current draw fluctuations because of fluctuating data traffic patterns.

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

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

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

Required Equipment

Before beginning the installation, ensure that you have the following items available in addition to the switch and its accessory kit:

- Eight customer-supplied 12-24 or 10-32 screws (required for attaching slider rails and mounting bracket to the mounting rails)
- Number 1 and number 2 Phillips screwdrivers with torque capability
- 3/16-inch flat-blade screwdriver
- Tape measure and level
- ESD wrist strap or other grounding device
- Antistatic surface

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

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

Unpacking and Inspecting the Switch

Caution When handling switch components, wear a grounded ESD strap and handle modules by their handles and carrier edges only. To ground the ESD strap, make sure that it is attached an earth ground or a grounded chassis (grounded through the power cable, the chassis ground, or the metal-to-metal contact with a grounded rack).

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

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

To inspect the shipment, follow these steps:

Step 1 Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all items, including the following:

- Grounding lug kit
- Rack-mount kit
- ESD wrist strap
- Cables with connectors
- Any optional items ordered

Step 2 Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

Step 3 Check to be sure that all of the power supplies and the fan tray have the expected direction of airflow. Forward airflow modules do not have a black stripe, and reverse airflow modules do have a black stripe. The airflow direction must be the same for all modules.

Installing the Switch

This section describes how to use the rack-mount kit to install the Cisco Nexus 3000 Series switch into a cabinet or rack that meets the requirements described in Appendix A, “Cabinet and Rack Specifications.”

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

Table 2-1 lists the items contained in the rack-mount kit that is provided with the switch.

Table 2-1 Cisco Nexus 3016, 3048, and 3064 Switch Rack-Mount Kits

Quantity	Part Description
2	Front rack-mount brackets
2	Rear rack-mount guides
2	Slider rails
12	M4 x 0.7 x 8-mm Phillips countersunk screws

Note You must supply the eight 10-32 or 12-24 screws required to mount the rack brackets and slider rails to the rack. The rack-mount kit does not provide these screws.

To install the switch in a rack or cabinet, follow these steps:

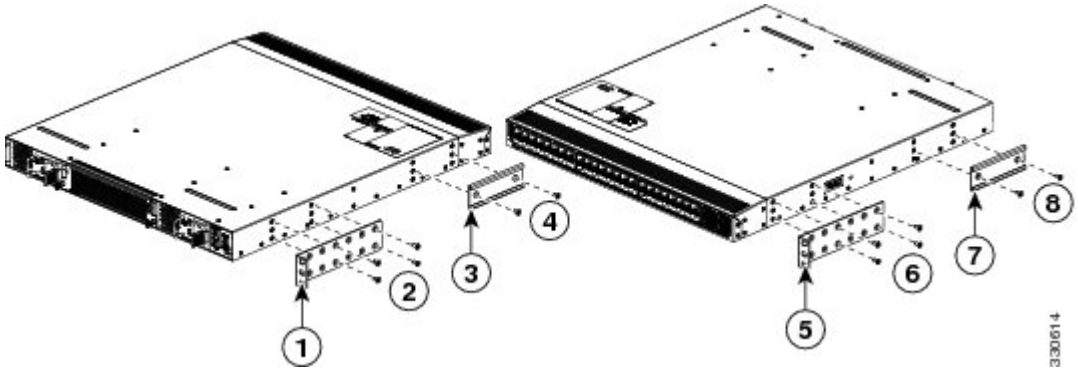
Step 1 Install the front rack-mount brackets on the chassis as follows:

a. Determine whether the chassis port connections or the fan tray and power supply modules should have easier access at the opening of the rack or cabinet. You will install that end of the chassis closest to the opening of the rack or cabinet.

b. On the side of the chassis by the end that is to have the easiest access, align four of the screw holes in a front rack-mount bracket to four screw holes in the side of the chassis. If you want the fan tray and power supplies to have the easiest access, see callouts 1 and 2 in Figure 2-1. If you want the port connections to have the easiest access, see callouts 5 and 6 in Figure 2-2.

Note You can align any four of the holes in the front rack-mount bracket to four of the six screw holes in the chassis. The holes that you use depend on the requirements of your rack and the amount of clearance required for port cables (3 inches [7.6 cm] minimum) and module handles (1 inch [2.5 cm] minimum).

Figure 2-2 Two Ways to Attach Rack-Mount Brackets and Guides on the Cisco Nexus 3000 Series Chassis



1	Front rack-mount bracket aligned to the module end of the chassis	**5**	Front rack-mount bracket aligned to the port connections end of the chassis
2	Four M4 screws used to attach the bracket to the chassis	**6**	Four M4 screws used to attach the bracket to the chassis
3	Rear rack-mount guide aligned to the port connection end of the chassis	**7**	Rear rack-mount guide aligned to the module end of the chassis
4	Two M4 screws used to attach the bracket to the chassis	**8**	Two M4 screws used to attach the bracket to the chassis

c. Attach the front-mount bracket using four M4 screws. Tighten the screws to 12 in-lb (1.36 N·m).

d. Repeat Steps 1a, 1b, and 1c with the other front rack-mount bracket on the other side of the switch.

Step 2 Install the rear rack-mount guides on the chassis as follows:

a. Align the two screw holes on a rear rack-mount bracket to the middle two screw holes in the remaining six holes on the side of the chassis. If you are aligning the guide to holes that are near the port connections end of the chassis, see Callout 3 in Figure 2-1. Otherwise, see Callout 7 in Figure 2-1.

b. Attach the guide to the chassis using two M4 screws. Tighten the screws to 12 in-lb (1.36 N·m). See Callout 4 or 8 in Figure 2-2.

c. Repeat Steps 2a and 2b with the other rear rack-mount bracket on the other side of the switch.

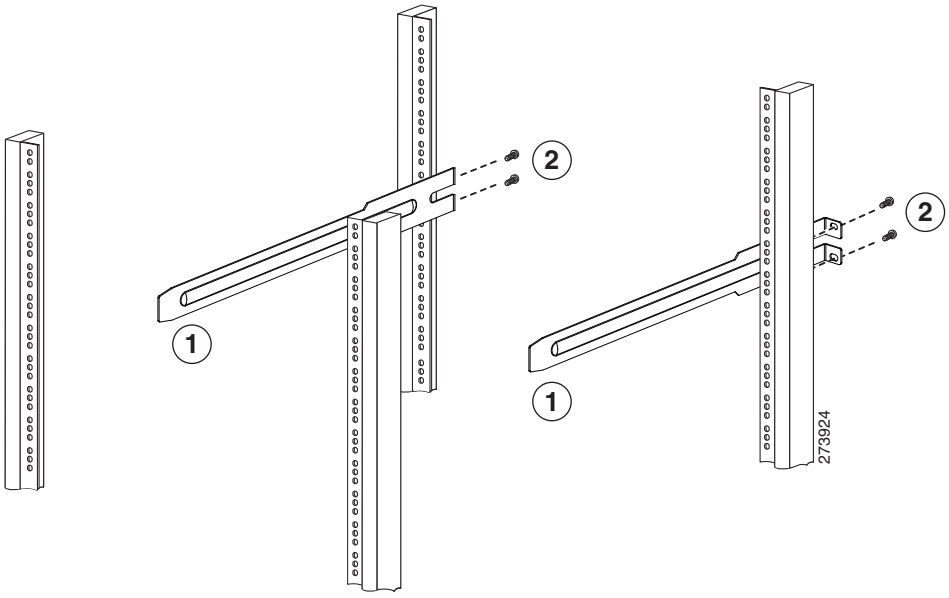
Step 3 Install the slider rails on the rack or cabinet as follows:

a. Determine which two posts of the rack or cabinet you should use for the slider rails. Of the four vertical posts in the rack or cabinet, two will be used for the front mount brackets attached to the easiest accessed end of the chassis, and the other two posts will have the slider rails.

a. Position a slider rail at the desired level on the back side of the rack and use two 12-24 screws or two 10-32 screws, depending on the rack thread type, to attach the rails to the rack. See Figure 2-3.

Note For racks with square holes, you might need to position a 12-24 cage nut behind each mounting hole in a slider rail before using a 12-24 screw.

Figure 2-3 Installing the Slider Rails



1	Slider rail with screw holes aligned to screw holes in rack	2	Two customer-supplied 12-24 or 10-32 screws used to attach each slider rail to the rack

b. Repeat with the other slider rail on the other side of the rack. To make sure that the slider rails are at the same level, you should use a level tool, tape measure, or carefully count the screw holes in the vertical mounting rails.

c. Tighten 10-32 screws to 20 in-lb (2.26 N·m) and tighten 12-24 screws to 30 in-lb (3.39 N·m).

d. Repeat Steps 3a, 3b, and 3c to attach the other slider rail.

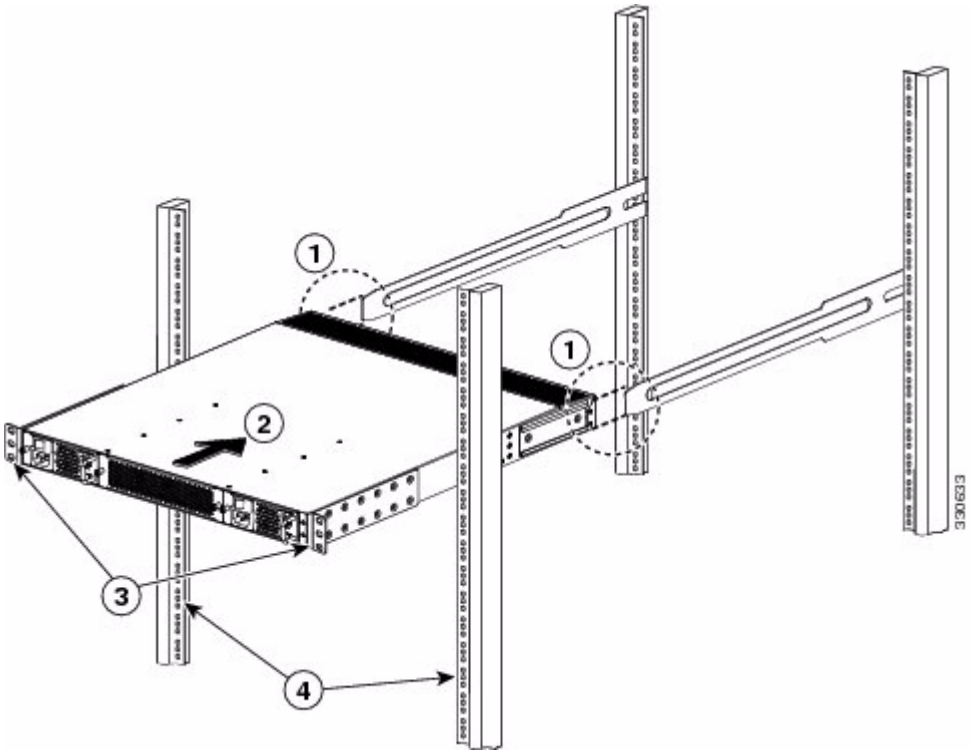
Step 4 Insert the switch into the rack and attach it as follows:

a. Holding the switch with both hands, position the two mount rails on the switch between the rack or cabinet posts that do not have slider rails attached to them.

b. Align the two rear rack-mount guides on either side of the switch with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the switch all the way into the rack until the front-mount brackets come in contact with two rack or cabinet posts. See Figure 2-4.

Note If the switch does not slide easily, try realigning the rack-mount guides on the slider rails.

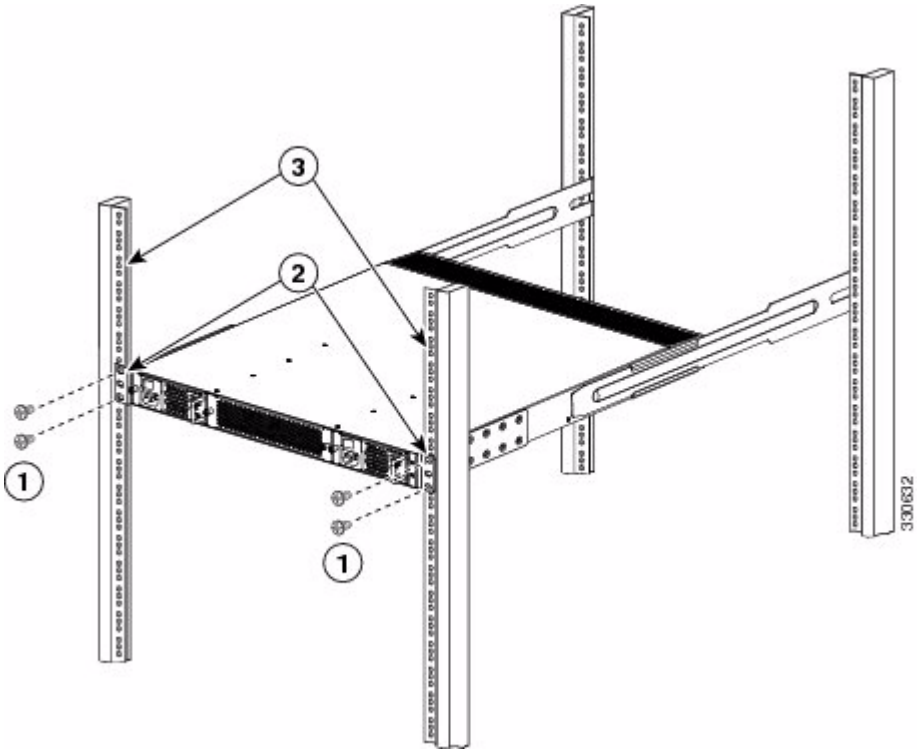
Figure 2-4 Sliding the Chassis Into the Rack



1	Align the two rear rack-mount guides with the slider rails installed in the rack.	**3**	Front-mount brackets.
2	Slide the rack-mount guides onto the slider rails until the front rack-mount brackets come in contact with the front rack-mount rails.	**4**	Mounting rails on rack or cabinet posts.

c. Holding the chassis level, insert two screws (12-24 or 10-32, depending on the rack type) in each of the two front rack-mount brackets (using a total of four screws for the two brackets) and into the cage nuts or threaded holes in the vertical rack-mounting rails (see Figure 2-5).

Figure 2-5 Attaching the Switch to the Rack



1	Fasten the chassis to the front of the rack with two 12-24 or 10-32 screws on each side.	**3**	Mounting rails on rack or cabinet posts.
2	Front-mount bracket.		

d. Tighten the 10-32 screws to 20 in-lb (2.26 N·m) and tighten the 12-24 screws to 30 in-lb (3.39 N·m).

Grounding the Switch

This section describes the need for system grounding for all of the Cisco Nexus 3000 Series switches and explains how to prevent damage from electrostatic discharge.

This section includes the following topics:

Proper Grounding Practices

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

Table 2-2 Proper Grounding Guidelines

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

Table 2-2 Proper Grounding Guidelines (continued)

Environment	Electromagnetic Noise Severity Level	Grounding Recommendations
New commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system in a new building is often the least expensive route and the best way to plan for the future. Best grounding recommendations should be followed as closely as possible.
Existing commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system is always recommended. Best grounding recommendations should be followed as much as possible.

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

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

Establishing the System Ground

This section describes how to connect a system ground to the Cisco Nexus 3000 Series switch.

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

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

- You must install the system ground connection with any other rack or system power ground connections that you make. The system ground connection is required if this equipment is installed in a U.S. or European Central Office.
- You must connect both the system ground connection and the power supply ground connection to an earth ground. The system ground connection is required if this equipment is installed in a U.S. or European Central Office.
- You do not need to power down the chassis because the Cisco Nexus 3000 Series switches are equipped with AC-input power supplies.

Required Tools and Equipment

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

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

Grounding the Cisco Nexus 3000 Series Chassis

The chassis has a grounding pad with two threaded M4 holes for attaching a grounding lug. The system ground is located on the left side of the chassis (left of the front) on the Cisco Nexus 3000 Series switches.

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

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

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

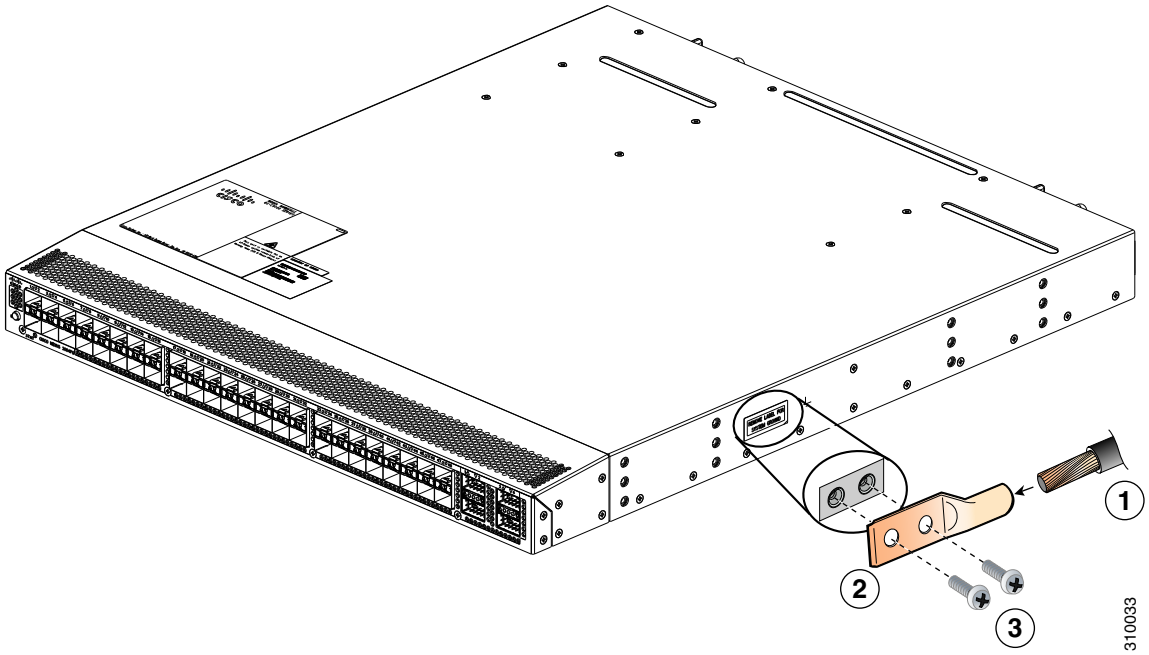
Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.**
Statement 1046

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

Step 1 Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.

Step 2 Insert the stripped end of the grounding cable into the open end of the grounding lug (see Callout 1 in Figure 2-6).

Figure 2-6 Grounding a Cisco Nexus 3000 Series Chassis



1	Insert stripped end of grounding cable in grounding lug.	**3**	Fasten the lug to the chassis with two M4 screws.
2	Align grounding lug screw holes to the grounding holes in the chassis.		

Step 3 Use the crimping tool to secure the grounding cable in the grounding lug.

Step 4 Remove the adhesive label from the grounding pad on the chassis.

Step 5 Place the grounding lug against the grounding pad so that there is solid metal-to-metal contact, and insert the two M4 screws with washers through the holes in the grounding lug and into the grounding pad (see Callouts 2 and 3 in Figure 2-6).

Step 6 Ensure that the lug and cable do not interfere with other equipment.

Step 7 Prepare the other end of the grounding cable and connect it to an appropriate grounding point in your site to ensure adequate earth ground.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (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. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps to protect the board from ESD, always use an ESD grounding strap when handling modules.

For preventing ESD damage, follow these guidelines:

- Always use an ESD wrist strap and ensure that it makes maximum contact with bare skin.
- ESD grounding straps are available with banana plugs, metal spring clips, or alligator clips. All chassis from the Cisco Nexus 3000 Series switches are equipped with a banana plug connector (identified by the ground symbol next to the connector) somewhere on the front panel. We recommend that you use a personal ESD grounding strap equipped with a banana plug.
- If you choose to use the disposable ESD wrist strap supplied with most FRUs or an ESD wrist strap equipped with an alligator clip, you must attach the system ground lug to the chassis in order to provide a proper grounding point for the ESD wrist strap.

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

- If your chassis is not grounded by its connection to a grounded rack, you must connect the switch to an Earth ground. See the "Establishing the System Ground" section on page 2-12 for installation instructions and the location of the chassis system ground pads.

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

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

Step 1 Attach the ESD wrist strap to bare skin as follows:

a. If you are using the ESD wrist strap supplied with the field-replaceable units (FRUs), open the wrist strap package and unwrap the ESD wrist strap. Place the black conductive loop over your wrist and tighten the strap so that it makes good contact with your bare skin.

b. If you are using an ESD wrist strap equipped with an alligator clip, open the package and remove the ESD wrist strap. Locate the end of the wrist strap that attaches to your body and secure it to your bare skin.

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

Step 3 Attach either the spring clip or the alligator clip to an earth ground (grounded rack or the screw holding a grounding lug to the chassis):

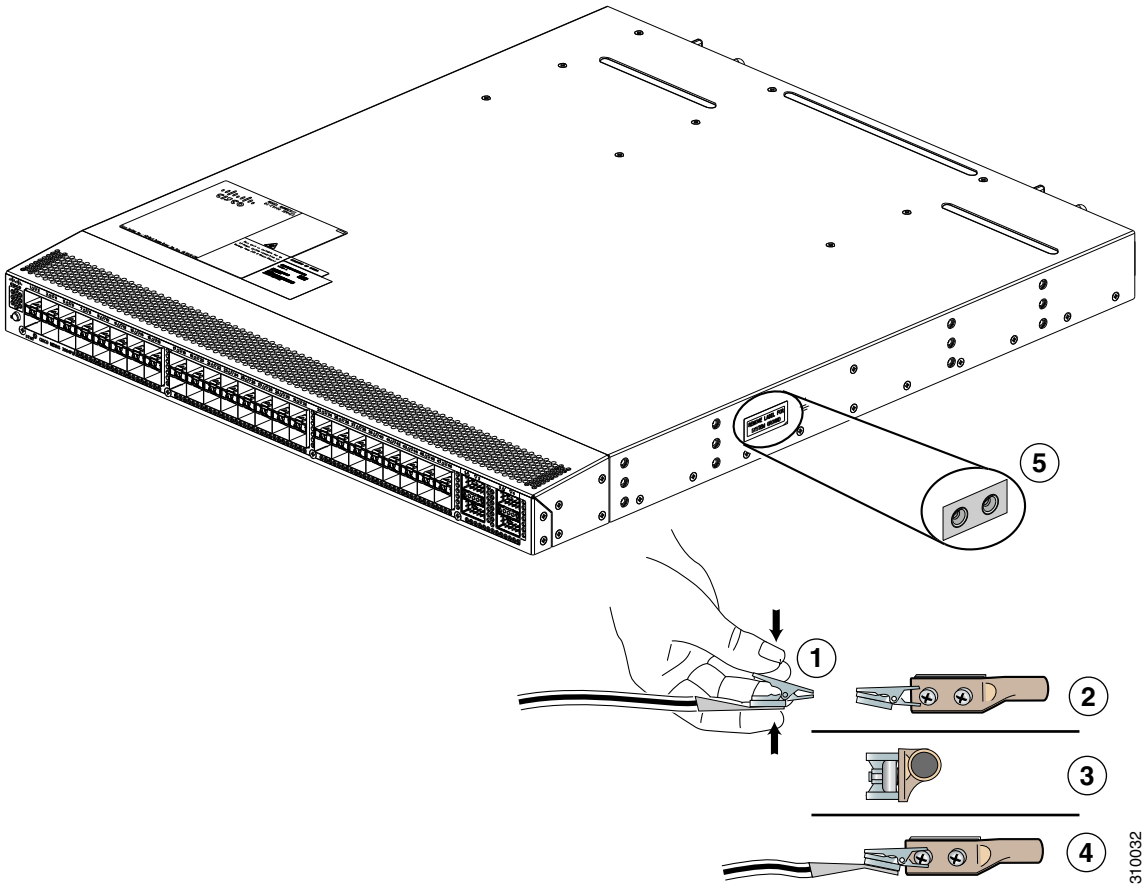
a. If you are using the ESD wrist strap that is supplied with the FRUs, squeeze the spring clip jaws open, position the spring clip to one side of the system ground lug screw head, and slide the spring clip over the lug screw head so that the spring clip jaws close behind the lug screw head.

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

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

To attach the ESD wrist strap to the system ground lug screw for any of the Cisco Nexus 3000 Series switches, clip the grounding wire to the screw that attaches the grounding lug to the switch chassis (see Figure 2-7).

Figure 2-7 Attaching the ESD Wrist Strap to the System Ground Lug Screw



1	ESD ground strap	**4**	Clip installed (behind screw)
2	Clip attached to grounding lug	**5**	System ground connector
3	Side view of grounding lug (clip slid behind screw)		

In addition, follow these guidelines when handling modules:

- Handle carriers by available handles or edges only; avoid touching the printed circuit boards or connectors.
- Place a removed component board-side-up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Never attempt to remove the printed circuit board from the metal carrier.

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

Starting the Switch

This section provides instructions for powering up the Cisco Nexus 3000 Series switch and verifying the component installation.

Note Do not connect the Ethernet port to the LAN until the initial switch configuration has been performed. For instructions on configuring the switch, see the Cisco Nexus 3000 Series CLI configuration guides. For instructions on connecting to the console port, see the "Connecting to the Console Port" section on page 3-2.

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

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

Step 1 Verify that empty power supply slots have filler panels installed, the faceplates of all modules are flush with the front of the chassis, and the captive screws of the power supplies, fan module, and all expansion modules are tight.

Step 2 Verify that the power supply and the fan modules are installed.

Note Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the switch to your outlet receptacle. See the "Jumper Power Cord" section on page C-8.

Step 3 Ensure that the switch is adequately grounded as described in the "Grounding the Switch" section on page 2-10).

Step 4 If you are installing a switch with an AC power supply, connect the power supply to an AC power source as follows:

a. Verify that the AC power source is turned off at the circuit breaker.

b. Plug the power cable into the power receptacle on the power supply.

c. Attach the other end of the power cable to the AC power source.

d. Turn on the power at the circuit breaker.

e. Verify that the power supply is functioning by making sure that the OK LED turns green and the FAULT LED is off.

Step 5 If you are installing a switch with a DC power supply, connect the power supply to a DC power source as follows:

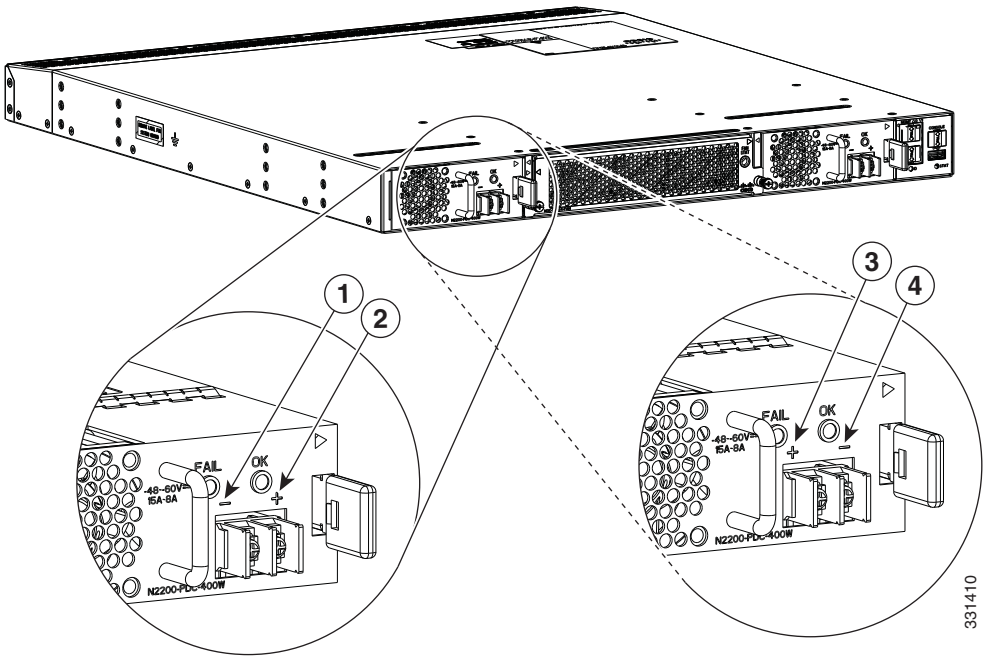
a. Verify that the DC power source is turned off at the circuit breaker.

b. Remove the clear plastic safety cover that prevents you from touching the negative (-) and positive (+) terminals on the power supply.

c. Determine whether the terminals are correctly labeled. As shown in Figure 2-8, the correct labeling of the terminals is with – (negative polarity) on the left and + (positive polarity) on the right (see Callouts 1 and 2), and the incorrect labeling is with + on the left and – on the right (see Callouts 3 and 4).

Note All DC power supplies have negative polarity on the left terminal and positive polarity on the right terminal but early manufactured versions of these power supplies were labeled with + on the left and – on the right.

Figure 2-8 Polarity Labeling of DC Power Supply Terminals (Current and Early Labeling)



1	On newer power supplies, the left terminal is labeled for negative polarity. Connect the negative cable to this left-side terminal.	**3**	On the originally released power supplies, the left terminal has negative polarity but is labeled as +. Connect the negative cable to this left-side terminal.
2	On newer power supplies, the right terminal is labeled for positive polarity. Connect the positive cable to this right-side terminal.	**4**	On the originally released power supplies, the right terminal has positive polarity but is labeled as –. Connect the positive cable to this right-side terminal.

d. Connect a negative cable from the power source to the left terminal (is labeled - on newer power supplies [see Callout 1 in Figure 2-8] and + on the first power supplies sold [see Callout 3 in Figure 2-8]) on the power supply and fasten with the screw for that terminal.

e. Connect a positive cable from the power source to the right terminal (is labeled + on newer power supplies [see Callout 2 in Figure 2-8] and - on the first power supplies sold[see Callout 4 in Figure 2-8]) on the power supply and fasten with the screw for that terminal.

f. Clip on the clear plastic safety cover over the terminals to prevent accidental touching of these terminals.

g. Turn on the power at the circuit breaker.

h. Verify that the power supply is functioning by making sure that the OK LED turns green and the FAULT LED is off.

Step 6 Connect each power cable to the AC or DC power source. Press the power cable into the power clip to ensure that the power cable stays connected to the chassis when bumped. The switch should power on as soon as you connect the power cable.

Step 7 Listen for the fans; they should begin operating when the power cable is plugged in.

Step 8 After the switch boots, verify that the LED operation is as follows:

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

Step 9 If a fan tray or power supply is not operating correctly, try removing it and reinstalling it (see Chapter 4, "Replacing Components"). If it still does not operate correctly, contact your customer service representative for a replacement.

Note If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

Step 10 Verify that the system software has booted and the switch has initialized without error messages.

Step 11 Complete the worksheets provided in Appendix E, "Site Planning and Maintenance Records," for future reference.

Note A setup utility automatically launches the first time you access the switch and guides you through the basic configuration. For instructions on how to configure the switch and check module connectivity, see the appropriate Cisco Nexus 3000 Series CLI configuration guide.

CHAPTER 3

Connecting to the Network

This chapter describes how to connect the following ports on a Cisco Nexus 3000 Series switch:

- Console port —A direct local management connection used to initially configure the switch
- Management ports—An online management connection
- Uplink and downlink ports—Connections to hosts and servers

Caution When running power and data cables in overhead or subfloor cable trays, we strongly recommend that you locate power cables and other potential noise sources as far away as practical from network cabling that terminates on Cisco equipment. In situations where long parallel cable runs cannot be separated by at least 3.3 feet (1 meter), we recommend that you shield any potential noise sources by housing them in a grounded metallic conduit.

This chapter includes the following sections:

Preparing for Network Connections

When preparing your site for network connections to the Cisco Nexus 3000 Series switch, consider the following for each type of interface, and gather all the required equipment before connecting the ports:

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

Connecting to the Console Port

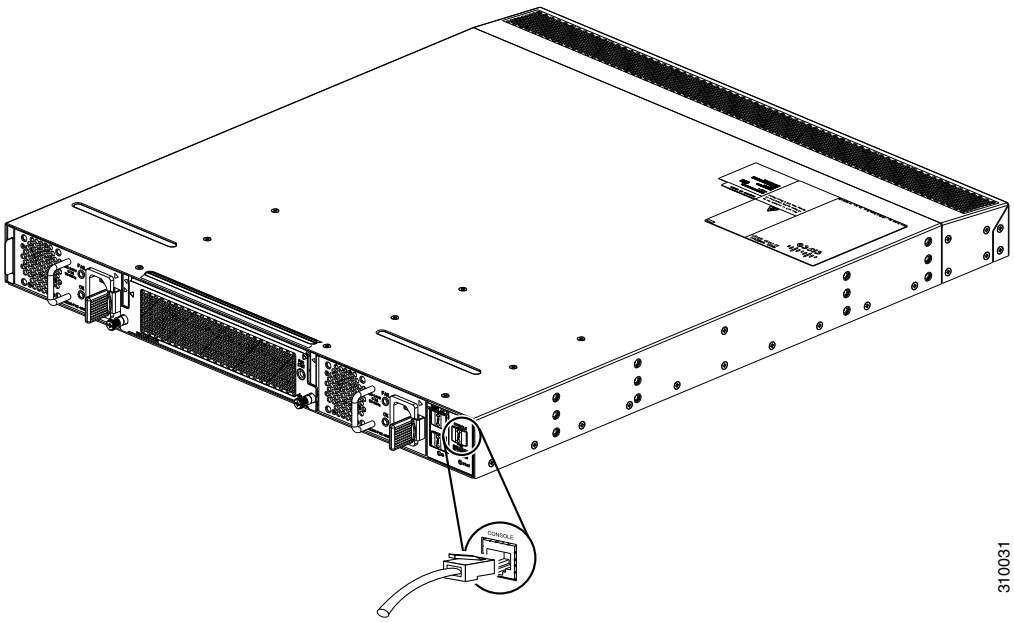
The console port is an RS-232 port with an RJ-45 interface. (See Figure 3-1.) The console port is an asynchronous (async) serial port; any device connected to this port must be capable of asynchronous transmission.

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

Caution The console port can be used to connect to a modem. If you do not connect it to a modem, connect it either before powering the switch on or after the switch has completed the boot process.

Figure 3-1 shows how to connect to the console port on the Cisco Nexus 3000 Series switch.

Figure 3-1 Connecting to the Console Port on a Cisco Nexus 3000 Series Switch



You can use the console port to perform the following:

- Configure the Cisco Nexus 3000 Series switch from the CLI.
- Monitor network statistics and errors.

- Configure SNMP agent parameters.
- Download software updates.

Note To connect the console port to a computer terminal, the computer must support VT100 terminal emulation. The terminal emulation software (such as HyperTerminal or Procomm Plus) makes communication between the Cisco Nexus 3000 Series switch and a computer possible during setup and configuration.

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

Step 1 Configure the terminal emulator program to match the following default port characteristics: 9600 baud, 8 data bits, 1 stop bit, no parity.

Step 2 Connect the RJ-45 connector of the console cable to the console port (see Figure 3-1 on page 3-2) and the DB-9 connector to the computer serial port.

Note For configuration instructions, see the appropriate Cisco Nexus 3000 Series CLI configuration guide.

Connecting to the Management Port

Caution To prevent an IP address conflict, do not connect the management port to the network until the initial configuration is complete (see the "Connecting to the Console Port" section on page 3-2). For configuration instructions, see the Cisco Nexus 3000 Series CLI configuration guides.

This section describes how to connect the management ports to an external hub, switch, or router. The Ethernet connector port has an RJ-45 interface. To connect the management port to an external hub, switch, or router, follow these steps:

Step 1 Connect the appropriate modular cable to the Ethernet connector port:

- Use modular, RJ-45, straight-through UTP cables to connect the management port to an Ethernet switch port or hub.
- Use a crossover cable to connect to a router interface.

Step 2 Connect the other end of the cable to the device.

Connecting to a Server

For the Cisco Nexus 3016 switch, you must use QSFP+ transceivers connected to optical or copper cables to connect the 40-Gigabit ports to the hosts or servers in the network. If the servers or switches you are connecting to are in the same rack or an adjacent rack, it is typically cost effective to use the

shorter copper cables, which can connect to another 40-Gigabit QSFP+ port or four 10-Gigabit SFP+ ports. If the servers or switches are further than 16.4 feet (5 meters), it is best to use the optical cable that has 40-Gigabit transceivers on both ends.

For the Cisco Nexus 3048 switch, you must use RJ-45 connectors on copper cables to make the 10/100/1000 Ethernet downlink connections, and you must use SFP transceivers on copper or optical cables or SFP+ transceivers on optical cables to make the 1- or 10-Gigabit Ethernet uplink connections.

For the Cisco Nexus 3064 switch, you must use RJ-45 connectors on copper cables to make the downlink connections and SFP transceivers on copper or optical cables or SFP+ transceivers on optical cables to make the 1- or 10-Gigabit Ethernet uplink connections.

This section includes the following topics:

Installing and Replacing SFP or SFP+ Transceivers

Caution Excessively removing and installing an SFP or SFP+ transceiver can shorten its life. Unless it is absolutely necessary, do not remove and insert SFP or SFP+ transceivers. To prevent damage to an optical cable and transceiver, we recommend that you disconnect cables before installing or removing transceivers.

This section includes the following topics:

Installing an SFP or SFP+ Transceiver

To install an SFP or SFP+ transceiver, follow these steps:

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

Step 2 Remove the dust cover from the port cage.

Step 3 Remove the dust cover from the port end of the transceiver.

Step 4 Insert the transceiver into the port as follows:

- If the transceiver has a Mylar tab latch, position the transceiver with the tab on the bottom, and then gently insert the transceiver into the port until it clicks into place.
- If the transceiver has a bale clasp latch, position the transceiver with the clasp on the bottom, close the clasp by pushing it up over the transceiver, and then gently insert the transceiver into the port until it clicks into place.

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

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

Replacing an SFP or SFP+ Transceiver

To replace an SFP or SFP+ transceiver, follow these steps:

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

Step 2 If a cable is installed in the transceiver, do the following:

a. Record the cable and port connections for later reference.

b. Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.

c. Insert a dust plug into the cable end of the transceiver.

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

Step 3 Remove the transceiver from the port as follows:

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

Note If you have difficulty removing a bale clasp SFP or SFP+ transceiver, you should reseat it by returning the bale clasp latch to the up position. Press the SFP or SFP+ transceiver inward and upward into the cage. Next, lower the bale clasp latch and pull the SFP or SFP+ transceiver straight out with a slight upward lifting force. Be careful not to damage the port cage during this process.

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

Step 5 Install a replacement transceiver (see the "Installing an SFP or SFP+ Transceiver" section on page 3-4). If another transceiver is not being installed, protect the optical cage by inserting a clean cover.

Installing Optical Cables into SFP or SFP+ Transceivers

This section includes the following topics:

Installing an Optical Cable into an SFP or SFP+ Transceiver

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

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

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

Step 2 Remove the dust cover from the connector on the cable.

Step 3 Remove the dust cover from the cable end of the transceiver.

Step 4 Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place.

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

For instructions on verifying connectivity, see the appropriate Cisco Nexus 3000 Series CLI configuration guide.

Replacing an Optical Cable for an SFP or SFP+ Transceiver

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

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

To remove the cable, follow these steps:

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

Step 2 Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.

Step 3 Either install a replacement cable in the SFP or SFP+ transceiver (see the "Installing an Optical Cable into an SFP or SFP+ Transceiver" section on page 3-6) or insert dust plugs into the cable end of the transceiver and the end of the removed cable.

Maintaining SFP and SFP+ Transceivers and Fiber-Optic Cables

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

Consider the following maintenance guidelines:

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

CHAPTER 4

Replacing Components

This chapter describes how to replace the field replaceable units (FRUs) on the Cisco Nexus 3000 Series switch.

This chapter includes the following sections:

Replacing a Power Supply

The Cisco Nexus 3000 Series switches support a front-end power supply that you can replace. The switch requires only one power supply for operations, so you can hot swap the redundant power supply during operations.

Caution Be sure that the replacement power supply has the correct direction of airflow, which means that it takes in air from the cold aisle and exhausts air to the hot aisle. It must also have the same direction of airflow as the other power supply (if installed) and fan tray. Otherwise, an overtemperature condition can occur.

This section includes the following topics:

Removing an AC Power Supply

Caution If you are using the Cisco Nexus 3000 Series switch with one power supply, removing the power supply causes the switch to shut down. If the power supply is functioning, you can install a new power supply in the second power supply slot (see the "Installing an AC Power Supply" section on page 4-2) and then switch to using that power supply.

To remove an AC power supply, follow these steps:

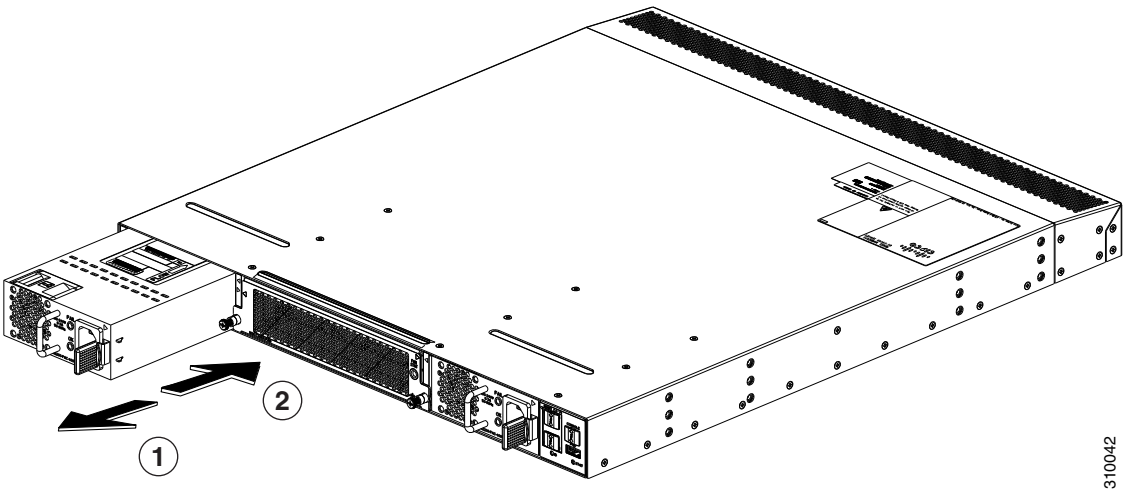
Step 1 Pull the power cord out from the power receptacle on the power supply.

Step 2 Release the power supply from the chassis by pushing and holding the thumb latch to the left and pull the power supply part way out of the chassis (see Figure 4-1).

Step 3 Place your other hand under the power supply to support it while you slide it out of the chassis.

Step 4 If the power supply bay is to remain empty, install a blank power supply filler panel (part number N2200-P-BLNK).

Figure 4-1 Removing the Power Supply from the Cisco Nexus 3000 Series Switch



1	Push thumb latch to the left and slide out to remove.	**2**	Slide in until the latch clicks to install.

Installing an AC Power Supply

To install a power supply, follow these steps:

Step 1 Ensure that the system (earth) ground connection has been made for the chassis. For ground connection instructions, see the "Grounding the Switch" section on page 2-10.

Step 2 If the power supply bay has a filler panel, remove it from the slot by pushing its thumb latch to the left and pull the panel out of the chassis.

Step 3 Hold the replacement power supply by its handle and position it so that the captive screw is on the left, and then slide it into the power supply bay, ensuring that the power supply is fully seated in the bay.

Step 4 Secure the power supply to the chassis by making sure that the thumb latch engages with the chassis so that the power supply is held in the slot.

Note Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco Nexus 3000 Series switch to your outlet receptacle. See the "Jumper Power Cord" section on page C-8.

Step 5 Connect the other end of the power cable to an AC power source.

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

Step 6 Verify that the power supply is operational by checking that the power supply LED is green. For information about what the power supply LEDs indicate, see the Appendix D, "LED Descriptions."

Removing a DC Power Supply

Caution If the switch has only one DC power supply, removing the power supply causes the device to shut down. If you are using two power supplies and you remove one of them, the switch continues to operate.

To remove a DC power supply, follow these steps:

Step 1 Shut off the DC power to the power supply at the circuit breaker. Verify that both LEDs are off.

Step 2 Unclip and remove the clear plastic cover that prevents access to the positive and negative terminals on the DC power supply.

Step 3 Unfasten the positive power cable from the right terminal.

Note On early manufactured power supplies, the right terminal is labeled as -. On currently manufactured power supplies, the right terminal is labeled as +.

Step 4 Unfasten the negative power cable from the left terminal.

Note On early manufactured power supplies, the left terminal is labeled as +. On currently manufactured power supplies, the left terminal is labeled as -.

Step 5 Replace the clear plastic cover that prevents access to the terminals.

Step 6 Press the thumb latch to disengage the power supply from the chassis and use the handle to pull it part way out of the chassis.

Step 7 Place your other hand under the power supply to support it while you slide it out of the chassis. Place the power supply on an antistatic surface.

Step 8 If the power supply bay is to remain empty, install a blank power supply filler panel.

Installing a DC Power Supply

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

Caution Be sure that the power supply that you are installing has the same airflow direction as the fan tray module and the other power supply. Either all of the modules must have front-to-back airflow (no black stripe on the front of the module) or all of the modules must have back-to-front airflow (black stripe on the front of the module). If the modules have different airflow directions in the same chassis, you will see an error message.

To install a DC power supply, follow these steps:

Step 1 Verify that the DC power is off at the circuit breaker.

Step 2 Ensure that the system (earth) ground connection has been made for the chassis. For ground connection instructions, see the "Grounding the Switch" section on page 2-10.

Step 3 If the power supply bay has a filler panel, push and hold the thumb latch to the left, and then slide the filler panel out of the power supply bay.

Step 4 Hold the replacement power supply by the handle and position it so that the thumb latch is on the right, and then slide it into the power supply bay, ensuring that the power supply is fully seated in the bay.

Step 5 Engage the thumb latch so that the power supply is firmly held in place in its slot.

Step 6 If there is a clear plastic cover that prevents your access to the terminals, unclip it and remove it from the chassis.

Step 7 Fasten the negative cable to the left terminal.

Note On early manufactured power supplies, the left terminal is labeled as +. On currently manufactured power supplies, the left terminal is labeled as -.

Step 8 Fasten the positive cable to the right terminal.

Note On early manufactured power supplies, the right terminal is labeled as -. On currently manufactured power supplies, the right terminal is labeled as +.

Step 9 Clip the clear plastic cover over the terminals to prevent accidental touching of the terminals.

Step 10 Turn on the power at the circuit breaker.

Step 11 Verify the power supply operation by checking that the power supply LED is green. For information about what the power supply LEDs indicate, see the "Power Supply Status" section on page D-3.

Replacing a Fan Tray

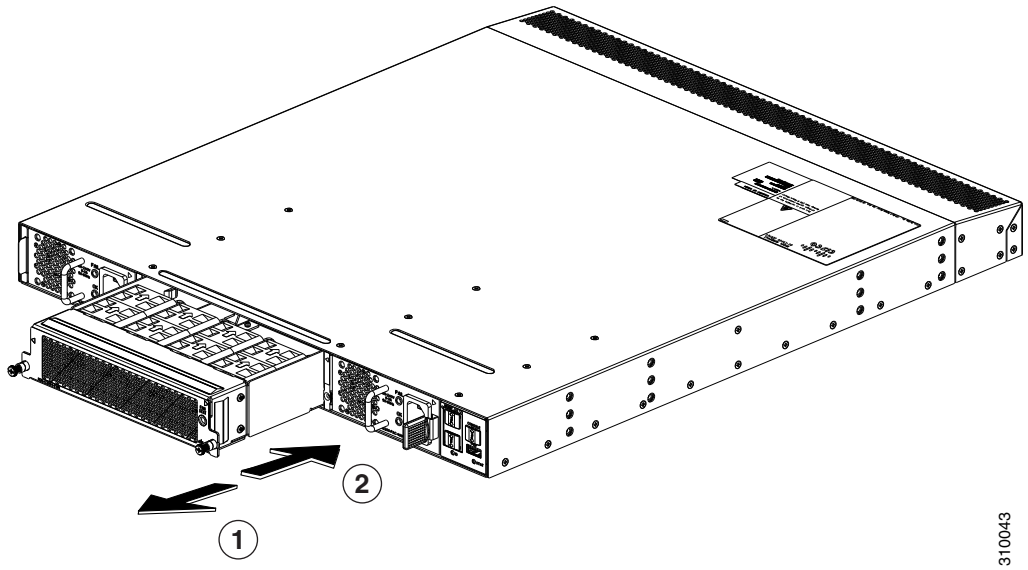
The fan tray is designed to be removed and replaced while the system is operating without causing an electrical hazard or damage to the system if the replacement is performed within 1 minute.

Caution Be sure that the replacement fan tray has the correct direction of airflow, which means that it takes in air from the cold aisle and exhausts air to the hot aisle. It must also have the same direction of airflow as the power supplies. Otherwise, an overtemperature condition can occur.

This section includes the following topics:

Figure 4-2 shows how to remove and install a fan tray for the Cisco Nexus 3000 Series switch.

Figure 4-2 Fan Tray for the Cisco Nexus 3000 Series Switch



1	Loosen captive screws and slide out to remove.	2	Slide in and tighten captive screws to install.

Removing a Fan Tray

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

To remove a fan tray, follow these steps:

Step 1 Loosen the captive screws on the fan tray by turning them counterclockwise, using a flat-blade or number 2 Phillips screwdriver if required.

Step 2 Grasp the captive screws of the fan tray and pull it outward.

Step 3 Pull the fan tray clear of the chassis and set it on an antistatic surface or repack it in packing materials.

Caution If you are replacing a fan tray during operations, you must insert the new fan tray within 2 minutes of removing the original fan tray.

Installing a Fan Tray

Caution If you are replacing a fan tray during operations, you must insert the new fan tray within 2 minutes of removing the original fan tray.

To install a fan tray, follow these steps:

Step 1 Hold the fan tray with the sheet metal flange holding the connector on the bottom.

Step 2 Place the fan tray into the front chassis cavity so it rests on the chassis, and then push the fan tray into the chassis as far as it can go until the captive screw makes contact with the chassis.

Step 3 Tighten the captive screw.

Step 4 Listen for the fans if the device is powered on. You should immediately hear them operating. If you do not hear them, ensure that the fan tray is inserted completely in the chassis and the faceplate is flush with the outside surface of the chassis.

Step 5 Verify that the LED is green. If the LED is not green, one or more fans are faulty. If this problem occurs, contact your customer service representative for a replacement part.

Note If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

APPENDIX A

Cabinet and Rack Specifications

This appendix provides the requirements for cabinet and rack installation and includes the following sections:

Cabinet and Rack Requirements

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

- Standard perforated cabinets
- Solid-walled cabinets with a roof fan tray (bottom to top cooling)
- Standard open racks

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

Note Do not use racks that have obstructions (such as power strips), because the obstructions could impair access to field-replaceable units (FRUs).

This section includes the following topics:

General Requirements for Cabinets and Racks

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

- Standard 19-inch (48.3 cm) (four-post EIA cabinet or rack, with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992). See the "Requirements Specific to Perforated Cabinets" section on page A-2.

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per Cisco Nexus 3000 Series switch chassis must be one RU (rack units), equal to 1.75 inches (4.4 cm).
- The minimum vertical rack space per chassis must be one RU (rack unit), equal to 1.75 inches (4.4 cm).
- The width between the rack-mounting rails must be at least 17.75 inches (45.0 cm) if the rear of the device is not attached to the rack. For four-post EIA racks, this measurement is the distance between the two front rails.

Four-post EIA cabinets (perforated or solid-walled) must meet the following requirements:

- The minimum spacing for the bend radius for fiber-optic cables should have the front-mounting rails of the cabinet offset from the front door by a minimum of 3 inches (7.6 cm).
- The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.0 to 30.0 inches (58.4 to 76.2 cm) to allow for rear-bracket installation.
- A minimum of 2.5 inches (6.4 cm) of clear space should exist between the side edge of the chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of chassis air intake or exhaust vents.

Note Optional jumper power cords are available for use in a cabinet. See the "Jumper Power Cord" section on page C-8.

Requirements Specific to Perforated Cabinets

A perforated cabinet has perforations in its front and rear doors and side walls. In addition to the requirements listed in the "General Requirements for Cabinets and Racks" section on page A-1, perforated cabinets must meet the following requirements:

- The front and rear doors must have at least a 60 percent open area perforation pattern, with at least 15 square inches (96.8 square cm) of open area per rack unit of door height.
- The roof should be perforated with at least a 20 percent open area.
- The cabinet floor should be open or perforated to enhance cooling.

The Cisco R Series rack conforms to these requirements.

Requirements Specific to Standard Open Racks

In addition to the requirements listed in the "General Requirements for Cabinets and Racks" section on page A-1, if you are mounting the chassis in an open rack (no side panels or doors), ensure that the rack meets the following requirements:

- The minimum vertical rack space per chassis must be two rack units (RU), equal to 3.47 inches (8.8 cm).
- The horizontal distance between the chassis and any adjacent chassis should be 6 inches (15.2 cm), and the distance between the chassis air vents and any walls should be 2.5 inches (6.4 cm).

Cable Management Guidelines

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

APPENDIX B

Technical Specifications

This appendix describes the technical specifications for the Cisco Nexus 3000 Series switches.

This appendix includes the following sections:

Note Specifications for cables and connectors are provided in Appendix C, "Cable and Connector Specifications."

Switch Specifications

Table B-1 lists the physical specifications for the Cisco Nexus 3000 Series switches.

Table B-1 Physical Specifications for the Cisco Nexus 3000 Series Switches

Switch	Height	Width	Depth	Weight[1]
Cisco Nexus 3016	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	19.7 in. (45.0 cm)	20.5 lb (9.3 kg)
Cisco Nexus 3048	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	19.7 in. (45.0 cm)	20.5 lb (9.3 kg)
Cisco Nexus 3064	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	19.7 in. (45.0 cm)	20.5 lb (9.3 kg)
Cisco Nexus 3132Q	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	19.7 in. (50.5 cm)	21.5 lb (9.3 kg)
Cisco Nexus 3172PQ	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	19.7 in. (50.5 cm)	20.0 lb (9.3 kg)
Cisco Nexus 3548	1.72 in. (4.36 cm)	17.3 in. (43.9 cm)	18.38 in (46.7 cm)	17.4 lb (7.9 kg)

1. Fully configured weight—For the Cisco Nexus 3064, that includes two power supplies and one fan try.

Environmental Specifications

Table B-2 lists the environmental specifications for the Cisco Nexus 3000 Series switches.

Table B-2 Environmental Specification for the Cisco Nexus 3000 Series Switches

Property	Cisco Nexus 3000 Series Switch
Temperature	
Operating	32 to 104°F (0 to 40°C)
Nonoperating (storage)	–40 to 158°F (–40 to 70°C)
Humidity	
Operating	10 to 85 percent (noncondensing)
Nonoperating (storage)	5 to 95 percent (noncondensing)
Altitude	
Operating	0 to 10,000 feet (0 to 3050 m)
Nonoperating (storage)	–1000 to 30,000 feet (–304 to 15,150 m)

Power Specifications

This section describes the AC power specifications for the Cisco Nexus 3000 Series switches. Table B-3 lists the specifications for the AC power supply.

Table B-3 Specifications for the Cisco Nexus 3000 Series AC Power Supplies

Property	AC Power Supply (N2200-PAC-400 W)
Maximum output power	267 W
Input voltage	100 to 240 VAC
Frequency	50 to 60 Hz
Efficiency	90/92 percent (110/240 Vin) at typical power draw 88/91 percent (110/240 Vin) at max power draw
RoHS compliance	RoHS-6 compliant
Hot swappable	Yes
Cubic inches	39 in^3 (639 cm^3)
Power density	10.2 W/in^3
Operating temperature	32 to 104°F (0 to 40°C)
Cooling	Internal fans to cool the power supply
Input connector	AC connector in the power supply face

Table B-3 Specifications for the Cisco Nexus 3000 Series AC Power Supplies (continued)

Property	AC Power Supply (N2200-PAC-400 W)
Output connector	DC output connector in the back
Supply indicators	Supply health: Green LED indicates the power supply is operational and amber LED indicates an error. AC good indicator: Solid green indicates that AC is present and is within the supply specifications.

APPENDIX C

Cable and Connector Specifications

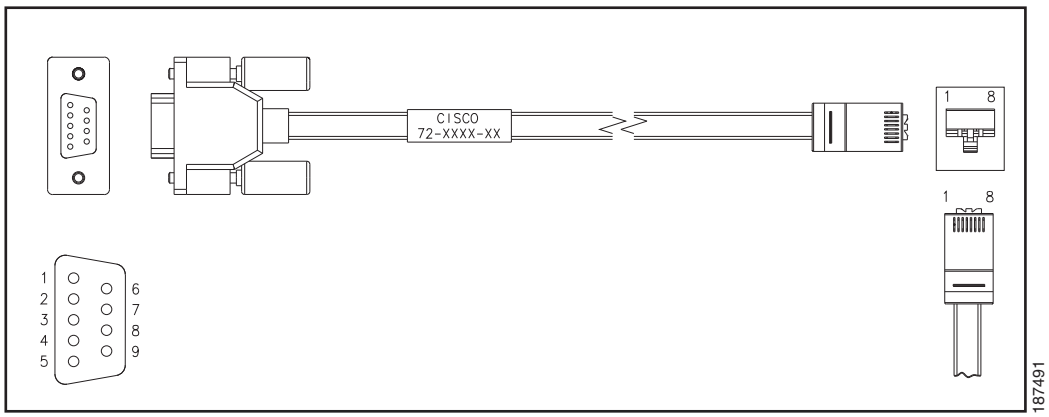
This appendix provides cable and port specifications for all of the Cisco Nexus 3000 Series switches.

This appendix includes the following sections:

Console Cable

The console cable has a RJ-45, RS-232 connector on one end and a DB9 connector on the other end. See Figure C-1.

Figure C-1 Console Cable



Console Port

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

Supported Power Cords and Plugs

Each power supply has a separate power cord. Standard power cords or jumper power cords are available for connection to a power distribution unit that has IEC 60320 C19 outlet receptacles. The standard power cords have an IEC C13 connector on the end that plugs into the switch. The optional jumper power cords, for use in cabinets, have an IEC C13 connector on the end that plugs into the switch and an IEC C14 connector on the end that plugs into an IEC C13 outlet receptacle.

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

Table C-1 lists the power cords for the Cisco Nexus 3000 Series switches and provides their lengths in feet and meters.

Table C-1 Power Cords for the Cisco Nexus 3000 Series Switches

Description	Length		Power Cord Reference Illustration
	Feet	Meters	
SFS-250V-10A-AR Power cord 250 VAC 10 A, IRAM 2073 plug Argentina	8.2	2.5	Figure C-2
CAB-9K10A-AU Power cord 250 VAC 10 A, 3112 plug, Australia	8.2	2.5	Figure C-3
SFS-250V-10A-CN Power cord 250 VAC 10 A, GB 2009 plug China	8.2	2.5	Figure C-4
CAB-9K10A-EU Power cord, 250 VAC 10 A, M 2511 plug Europe	8.2	2.5	Figure C-5
SFS-250V-10A-ID Power cord 250 VAC 16A, EL-208 plug South Africa, United Arab Emerits, India	8.2	2.5	Figure C-6
SFS-250V-10A-IS Power cord 250 VAC 10 A, SI-32 plug Israel	8.2	2.5	Figure C-7
CAB-9K10A-IT Power cord 250 VAC 10 A, CEI 23-16 plug Italy	8.2	2.5	Figure C-8
CAB-9K10A-SW Power cord 250 VAC 10 A, MP232 plug Switzerland	8.2	2.5	Figure C-9

Table C-1 Power Cords for the Cisco Nexus 3000 Series Switches (continued)

Description	Length		Power Cord Reference Illustration
	Feet	Meters	
CAB-9K10A-UK Power cord 250 VAC 10 A, BS1363 plug (13 A fuse) United Kingdom	8.2	2.5	Figure C-10
CAB-AC-250V/13A Power cord 250 VAC 13 A, NEMA L6-20 plug North America	6.6	2.0	Figure C-11
CAB-N5K6A-NA Power cord 250 VAC 10 A, NEMA 6-15 plug North America	8.2	2.5	Figure C-12
CAB-9K2A-NA Power cord 125 VAC 13 A, NEMA 5-15 plug North America	8.2	2.5	Figure C-13
CAB-C13-CBN Power cord 250 VAC 10 A, SS 10A plug	8.2	2.5	Figure C-14
CAB-IND-10A Power cord 250 VAC 10 A, EL 208B plug	8.2	2.5	Figure C-15
CAB-C13-C14-JMPR Cabinet Jumper Power Cord 250 VAC 13 A, C13-C14 Connectors	2.2	0.7	Figure C-16

Figure C-2 SFS-250V-10A-AR

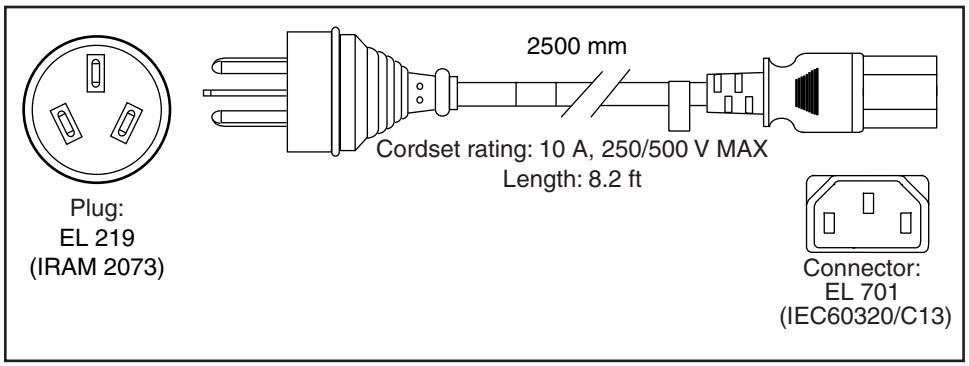


Figure C-3 CAB-9K10A-AU

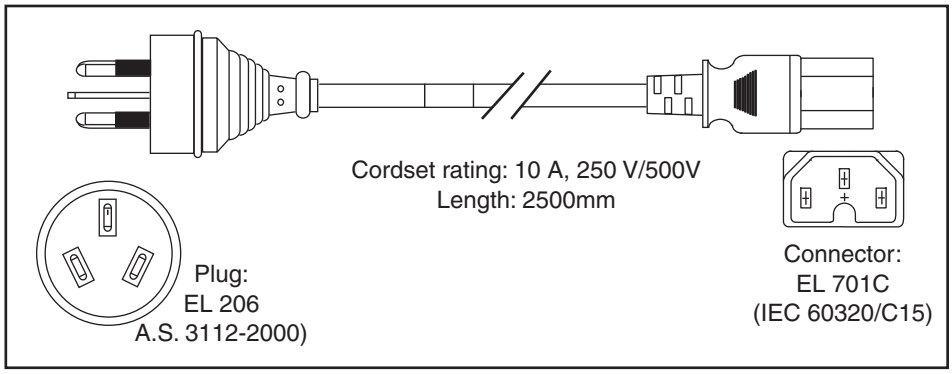


Figure C-4 SFS-250V-10A-CN

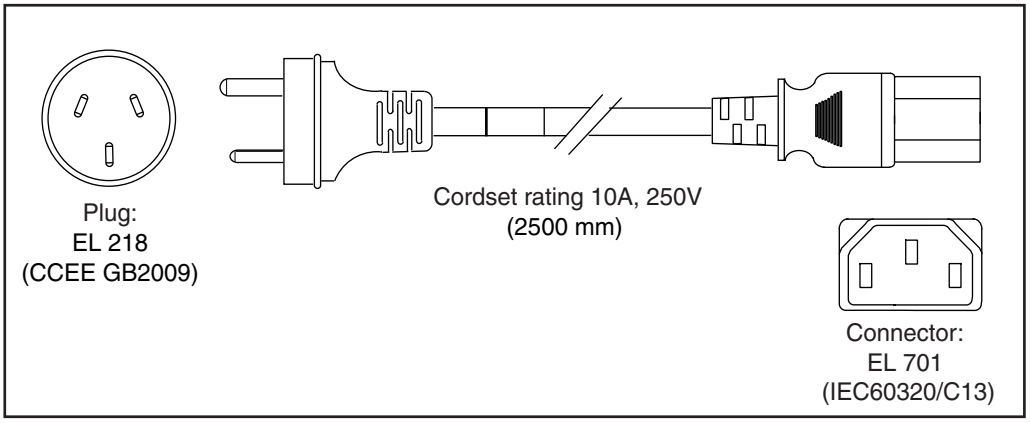


Figure C-5 CAB-9K10A-EU

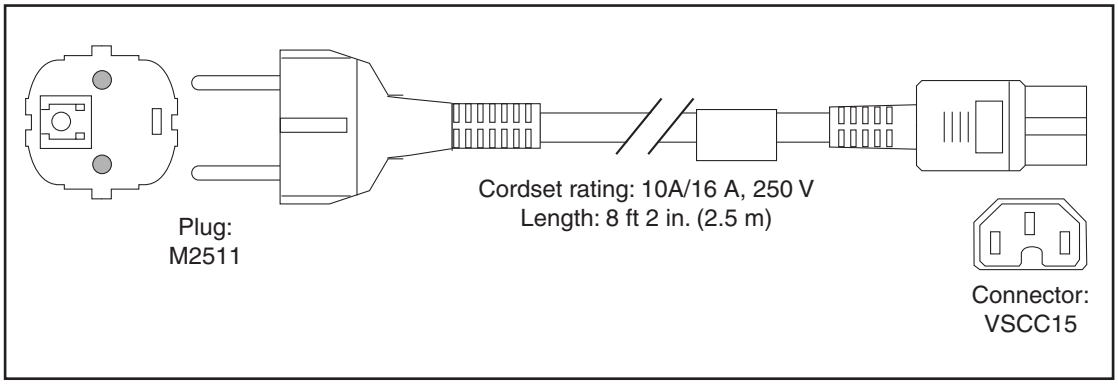


Figure C-6 SFS-250V-10A-ID

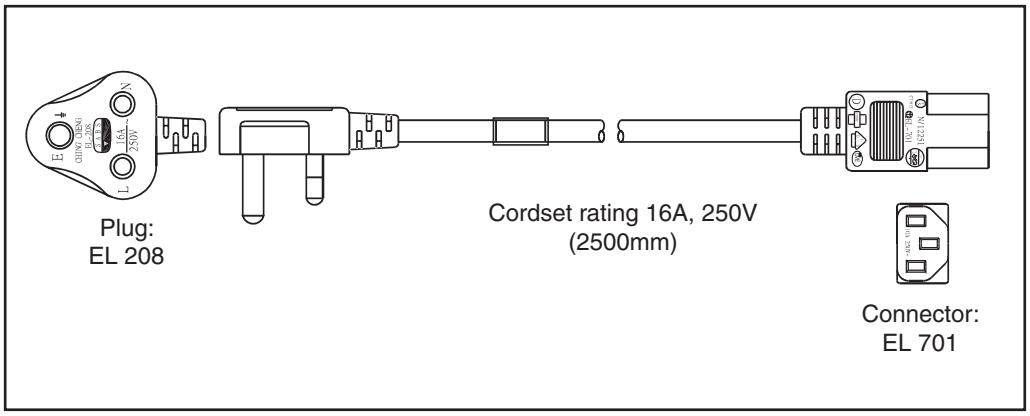


Figure C-7 SFS-250V-10A-IS

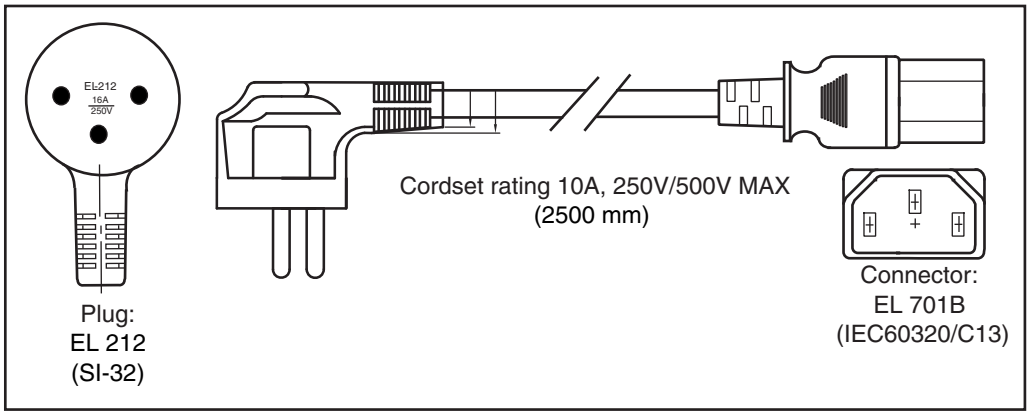


Figure C-8 CAB-9K10A-IT

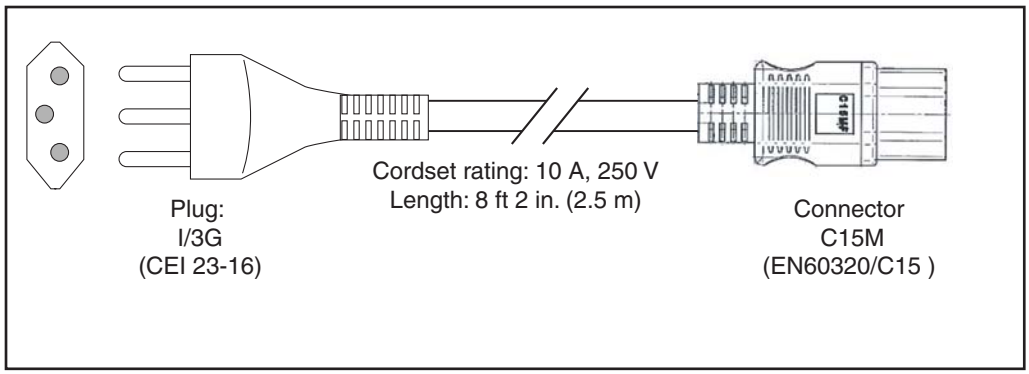


Figure C-9 CAB-9K10A-SW

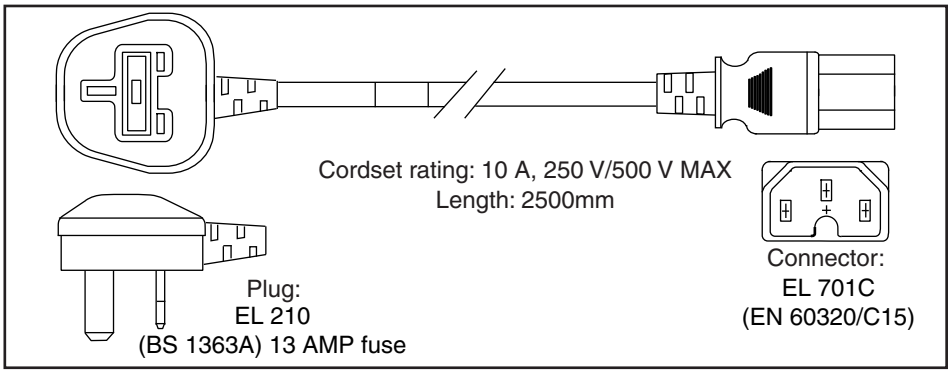


Figure C-10 CAB-9K10A-UK

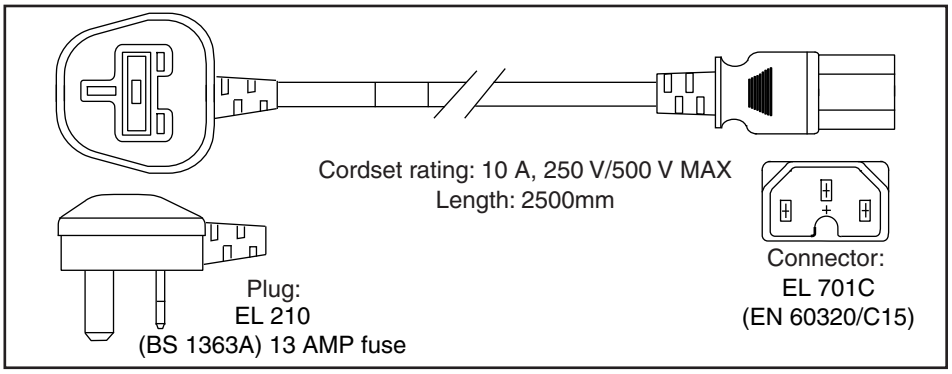


Figure C-11 CAB-AC-250V/13A

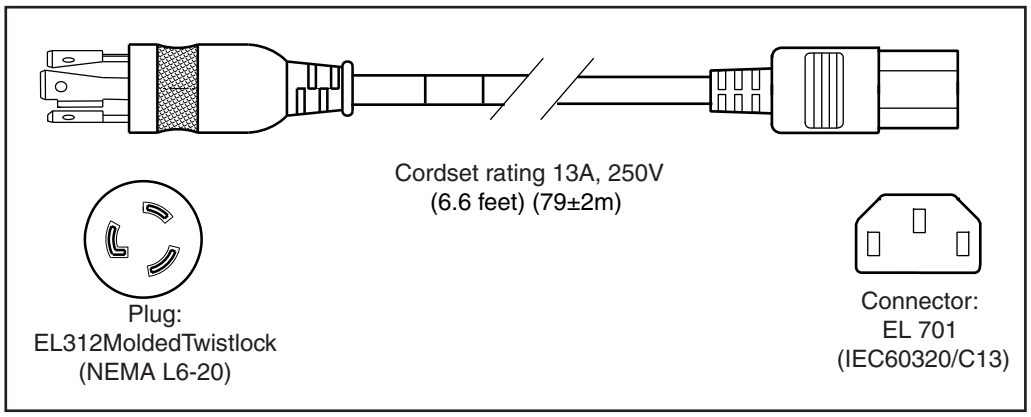


Figure C-12 CAB-N5K6A-NA

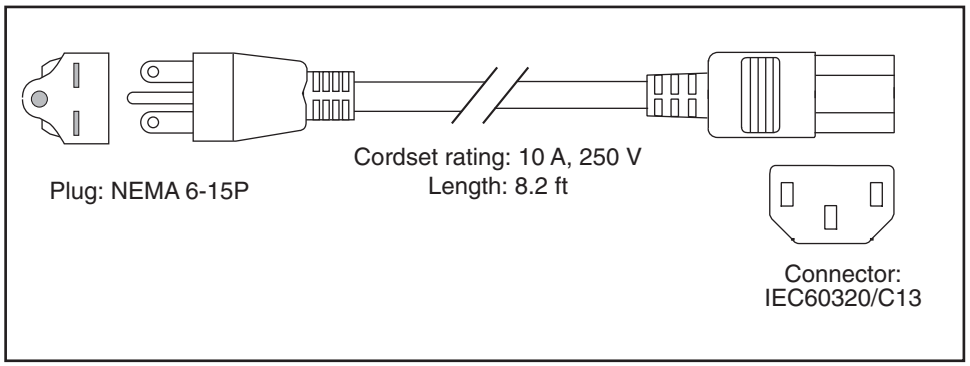


Figure C-13 CAB-9K12A-NA

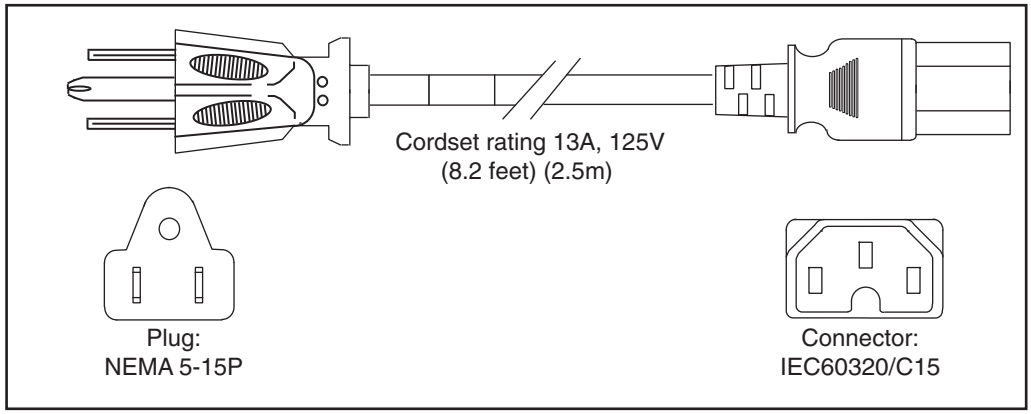


Figure C-14 CAB-C13-CBN

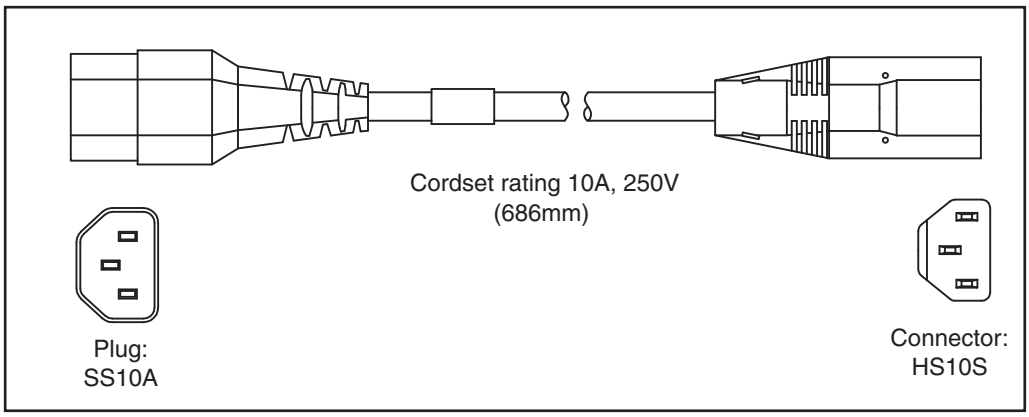
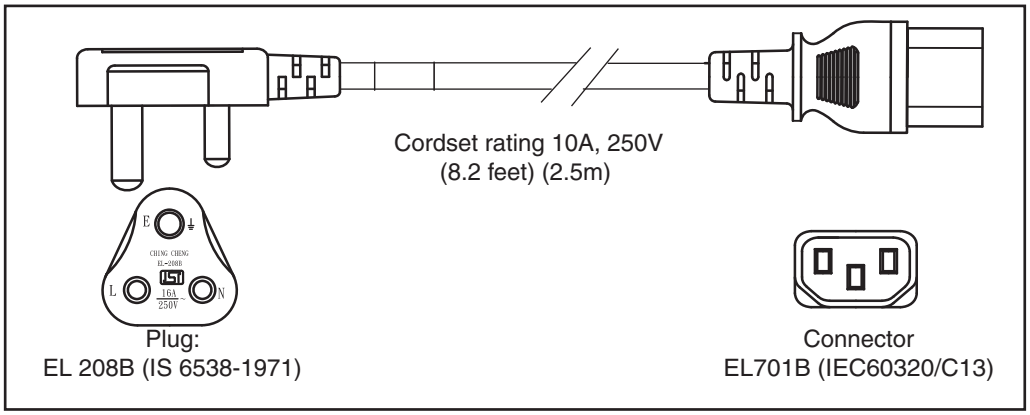


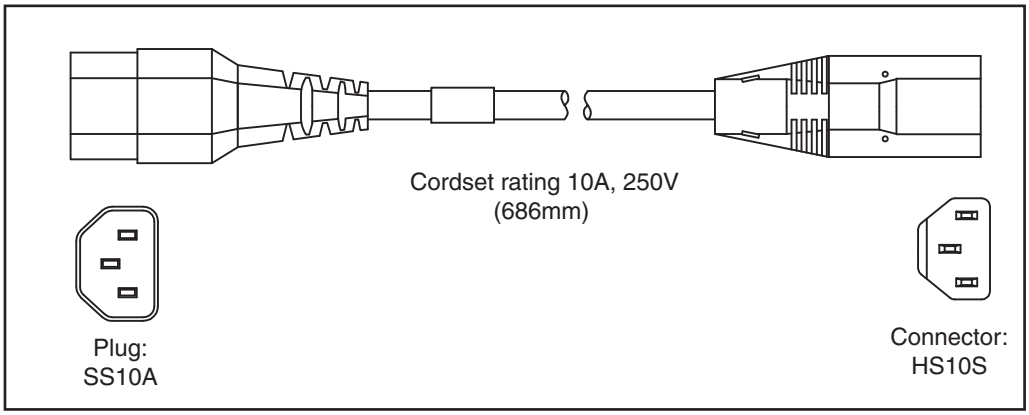
Figure C-15 CAB-IND-10A



Jumper Power Cord

Figure C-16 shows the plug connector on the optional jumper power cord for the Cisco Nexus 3000 Series switches. This cable plugs into the power supply and the receptacle of a power distribution unit for a cabinet. This cable comes in 6- and 9-foot (2- and 3-meter) lengths.

Figure C-16 CAB-C13-C14-JMPR, Jumper Power Cord



APPENDIX D

LED Descriptions

This appendix describes the conditions indicated by the chassis and module LEDs on the Cisco Nexus 3000 Series switches.

This appendix includes the following sections:

Chassis and Module LEDs for the Cisco Nexus 3000 Series Switches

This section includes the following topics:

Chassis and Module LED Descriptions

Table D-1 describes the chassis LEDs for the Cisco Nexus 3000 Series switches.

Table D-1 LEDs for the Cisco Nexus 3000 Series Fabric Extenders

Component	LED	Status	Description
Chassis (front and back)	ID	On (blue)	Identifies the chassis receiving the beacon signal.
	Status	Solid on (green)	All diagnostics pass. The module is operational.
		Off	The module is not receiving power.
		On (amber)	The module is booting or running diagnostics. An overtemperature condition has occurred. The temperature threshold has been exceeded by a small value during environmental monitoring.
		Blinking (amber)	An overtemperature condition has occurred. The temperature threshold has been exceeded by a large value during environmental monitoring. If the module fails during initial reset, the LED continues to blink and the module does not come online. The module has a runtime failure and is brought offline.
Fan tray (front of chassis)	Status	Solid on (green)	All diagnostics pass. The module is operational.
		Off	The module is not receiving power.
		Solid on (amber)	The module is booting or running diagnostics.
		Blinking (amber)	If the module fails during an initial reset, the LED continues to blink and the module does not come online. The module has a runtime failure and is brought offline.
Power supply (front of chassis)	OK (green)	Solid on	Power supply is on and okay.
		Blinking	3.3 voltage standby (VSB) is on but the power supply unit is not powering the other modules.
		Off	No AC power to the power supply.
	FAULT (amber)	Solid on	Power supply failure, overvoltage, overcurrent, or overtemperature.
		Blinking	AC is present, 3.3 VSB on, and the power supply is off.
		Off	Operating normally.

Table D-1 LEDs for the Cisco Nexus 3000 Series Fabric Extenders (continued)

Component	LED	Status	Description
Port LED	Indicates LED status	Off	The port is not active or the link is not connected.
		Solid on (green)	The port is active. The link is connected and operational.
		Solid on (amber)	The module or port is disabled through the CLI command or the module is initializing.
		Blinking (amber)	The port is faulty and has been disabled.

For a description of the status indicated by the two power supply LEDs, see the "Power Supply Status" section on page D-3.

Power Supply Status

This section describes the power supply LED indicators for the Cisco Nexus 3000 Series switches. Table D-2 describes the status indicated by the two LEDs on each power supply.

Table D-2 Power Supply Status Indicated by the OK and FAIL LEDs

Condition	OK LED Status (Green)	FAIL LED Status (Amber)
No AC power to the power supplies	Off	Off
Power supply failure (includes overvoltage, overcurrent, overtemperature, and fan failure)	Off	On
Power supply warning events where the power supply continues to operate (high temperature, high power, and slow fan)	Off	1 blinking
AC present/voltage standby (VSB) on, and power supply unit off	blinking	Off
Power supply On and OK	On	Off

Port LEDs

Table D-3 lists the LED descriptions for the RJ-45 Ethernet port LEDs.

Table D-3 Ethernet Port LED Descriptions

LED	Status	Description
Left	Off	No link
	Solid green	Physical link

Table D-3 Ethernet Port LED Descriptions

LED	Status	Description
Right	Off	No activity
	Blinking green	Activity

Note The Cisco Nexus 3548 switch uses the activity LED to indicate both status and activity. The LED is Off, if there is no cable attached or if the connection is off. The LED has a slow blink rate, if there is a link, but no activity. The LED has a fast blink rate if there is activity.

APPENDIX E

Site Planning and Maintenance Records

This appendix provides log sheets that you can use to record information when installing a Cisco Nexus 3000 Series switch.

This appendix includes the following sections:

Note For information about how to query the switch for configuration information, see the appropriate Cisco Nexus 3000 Series CLI configuration guides.

Site Preparation Checklist

Planning the location and layout of your equipment rack or wiring closet is essential for successful switch operation, ventilation, and accessibility. Table E-1 lists the site planning tasks that we recommend completing before installing a Cisco Nexus 3000 Series switch.

Consider heat dissipation when sizing the air-conditioning requirements for an installation. See Table B-1 on page B-1 for the environmental requirements, and the "Power Specifications" section on page B-2 for power and heat ratings.

Table E-1 Site Planning Checklist

Task No.	Planning Activity	Verified By	Time	Date
1	Space evaluation: • Space and layout • Floor covering • Impact and vibration • Lighting • Maintenance access			
2	Environmental evaluation: • Ambient temperature • Humidity • Altitude • Atmospheric contamination • airflow			
3	Power evaluation: • Input power type • Power receptacles[1] • Receptacle proximity to the equipment • Dedicated circuit for power supply • Dedicated (separate) circuits for redundant power supplies • UPS[2] for power failures			
4	Grounding evaluation: • Circuit breaker size • CO ground (AC- powered systems)			
5	Cable and interface equipment evaluation: • Cable type • Connector type • Cable distance limitations • Interface equipment (transceivers)			
6	EMI[3] evaluation: • Distance limitations for signaling • Site wiring • RFI[4] levels			

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

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

Contact and Site Information

Use the following worksheet (Table E-2) to record contact and site information.

Table E-2 Contact and Site Information

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

Chassis and Module Information

Use the following worksheet (Table E-3) to record information about the chassis and modules.

Contract Number_____

Chassis Serial Number_____

Product Number_____

Table E-3 Network-Related Information

Switch IP address	
Switch IP netmask	
Hostname	
Domain name	
IP broadcast address	
Gateway/router address	
DNS address	
Modem telephone number	

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