CISCO SYSTEMS

Catalyst 3560 Switch
Hardware Installation Guide

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Catalyst 3560 Switch Hardware Installation Guide

CONTENTS

Preface

Audience

This guide is for the networking or computer technician responsible for installing the Catalyst 3560 switch, hereafter known as *the switch*. We assume that you are familiar with the concepts and terminology of Ethernet and local area networking.

Purpose

This guide describes the hardware features of the Catalyst 3560 switch. It describes the physical and performance characteristics of the switch, explains how to install it, and provides troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch. For more information, see the switch software configuration guide, the switch command reference, and the switch system message guide on the Cisco.com Product Documentation home page. For information about the standard Cisco IOS Release 12.1 or 12.2 commands, see the Cisco IOS documentation set from the Cisco.com home page at **Service and Support > Technical Documents**. On the Cisco Product Documentation home page, select Release **12.1** or **12.2** from the Cisco IOS Software drop-down list.

Organization

This guide is organized into these chapters:

Chapter 1, "Product Overview," is a physical and functional overview of the Catalyst 3560 switch. It describes the switch ports, the standards that they support, and the switch LEDs.

Chapter 2, "Switch Installation," has the procedures on how to power the switch, how to install the switch in a rack, on a wall, on a table, or on a shelf, and how to make port connections.

Chapter 3, "Troubleshooting," describes how to identify and resolve some of the problems that might arise when installing the switch.

Appendix A, "Technical Specifications," lists the physical and environmental specifications for the switches and the regulatory agency approvals.

Appendix B, "Connector and Cable Specifications," describes the connectors, cables, and adapters that can be used to connect to the switch.

Appendix C, "Configuring the Switch with the CLI-Based Setup Program," has an installation and setup procedure for a standalone switch.

Conventions

This document uses these conventions and symbols for notes, cautions, and warnings:

Note Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

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

Warning IMPORTANT SAFETY INSTRUCTIONS

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

Opomena   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

Related Publications

You can order printed copies of documents with a DOC-xxxxxx= number. For more information, see the "Obtaining Documentation" section on page xiv.

These documents provide complete information about the switch and are available from this Cisco.com site:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat3560/index.htm

- *Catalyst 3560 Switch Getting Started Guide* (order number DOC-7816660=)
- *Regulatory Compliance and Safety Information for the Catalyst 3560 Switch* (order number DOC-7816665=)
- *Release Notes for the Catalyst 3560 Switch* (not orderable but available on Cisco.com)

Note   Before installing, configuring, or upgrading the switch, see the release notes on Cisco.com for the latest information.

- *Catalyst 3560 Switch Software Configuration Guide* (order number DOC-7816156=)
- *Catalyst 3560 Switch Command Reference* (order number DOC-7816155=)
- *Catalyst 3560 Switch System Message Guide* (order number DOC-7816154=)
- Cluster Management Suite (CMS) online help (available only from the switch CMS software)
- Cisco Network Assistant online help (available from http://www.cisco.com/go/NetworkAssistant)
- *Catalyst 3560 Switch Hardware Installation Guide* (not orderable but available on Cisco.com)

- *Cisco Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=)

- *Cisco CWDM GBIC and CWDM SFP Installation Notes* (not orderable but available on Cisco.com)

- *Cisco Small Form-Factor Pluggable Modules Compatibility Matrix* (not orderable but available on Cisco.com)

- *Compatibility Matrix for 1000BASE-T Small Form-Factor Pluggable Modules* (not orderable but available on Cisco.com)

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

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

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

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

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

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year at this URL:

http://www.cisco.com/techsupport

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

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

Submitting a Service Request

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

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

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

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

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553 2447

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

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

Definitions of Service Request Severity

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

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

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

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

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

Obtaining Additional Publications and Information

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

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://cisco.com/univercd/cc/td/doc/pcat/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

Product Overview

The Catalyst 3560 switch—also referred to as *the switch*—is an Ethernet switch to which you can connect devices like Cisco Wireless Access Point workstations, Cisco IP Phones, and other network devices such as servers, routers, and other switches. This chapter provides a functional overview of the Catalyst 3560 switch. These topics are included:

Setting up the Switch

See the *Catalyst 3560 Switch Getting Started Guide* that shipped with the switch for instructions on how to use Express Setup to initially configure your Catalyst switch. The Getting Started Guide also covers switch management options, basic rack-mounting procedures, port and module connections, power connection procedures, and troubleshooting help.

For instructions on setting up your switch using the command-line interface (CLI), see Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

Features

The Catalyst 3560 switch can be deployed as a backbone switch, aggregating 10BASE-T and 100BASE-TX Ethernet traffic from other network devices. See the switch software configuration guide for examples showing how you might deploy the switch in your network.

These are the switch features:

- Fast Ethernet
  - Catalyst 3560-24PS switch—24 10/100 Power over Ethernet (PoE) ports and 2 small form-factor pluggable (SFP) module slots
  - Catalyst 3560-24TS-S—24 10/100 ports and 2 SFP module slots
  - Catalyst 3560-48PS switch—48 10/100 PoE ports and 4 SFP module slots
  - Catalyst 3560-48TS-S—48 10/100 ports and 4 SFP module slots

- Gigabit Ethernet
  - Catalyst 3560G-24PS switch—24 10/100/1000 PoE ports and 4 SFP module slots
  - Catalyst 3560G-24TS switch—24 10/100/1000 ports and 4 SFP module slots
  - Catalyst 3560G-48PS switch—48 10/100/1000 PoE ports and 4 SFP module slots
  - Catalyst 3560G-48TS switch—48 10/100/1000 ports and 4 SFP module slots
- The switches support these SFP modules:
  - 1000BASE-SX
  - 1000BASE-LX
  - 1000BASE-ZX
  - 1000BASE-T
  - 100BASE-FX
  - Coarse Wavelength-Division Multiplexing (CWDM)

Note   When installed in Catalyst 3560 switches, 1000BASE-T SFP modules can operate at 10, 100, or 1000 Mbps in full-duplex mode or at 10 or 100 Mbps in half-duplex mode.

- These switches support the SFP module patch cable. (Order the SFP module patch cable separately, part number CAB-SFP-50CM=.)
- Configuration
  - For 10/100 and 10/100/1000 ports, the speed and duplex settings are autonegotiated.
  - For 10/100 and 10/100/1000 ports, PoE settings are autonegotiated.
  - For 1000BASE-T SFP module ports, the speed and duplex settings are autonegotiated.
- Switches are hot-swappable.
- Power redundancy
  - Connection for optional Cisco RPS 675 that operates on AC input and supplies backup DC power output to the switches.

Front Panel Description

The Catalyst 3560 switch front panel descriptions include these sections:

FastEthernet Switch Front Panel Descriptions

The 10/100 PoE ports on the Catalyst 3560-24PS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-1. Port 3 is above port 4, and so on. The SFP module slots are numbered 1 and 2.

Figure 1-1   Catalyst 3560-24PS Switch Front Panel
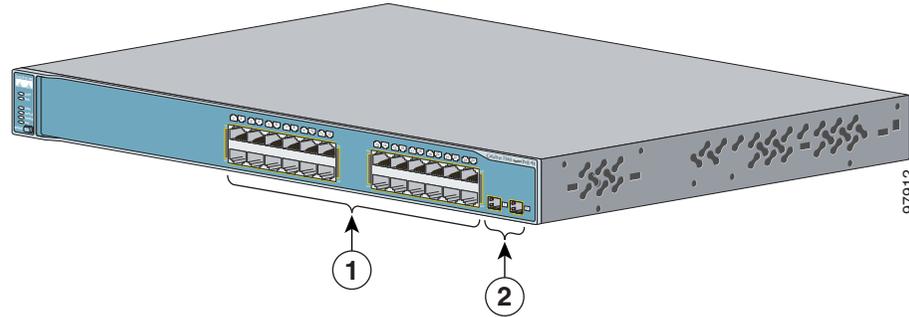
1	10/100 ports	**2**	SFP module slots

The 10/100 PoE ports on the Catalyst 3560-24TS-S switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-2. Port 3 is above port 4, and so on. The SFP module slots are numbered 1 and 2.

Figure 1-2   Catalyst 3560-24TS-S Switch Front Panel
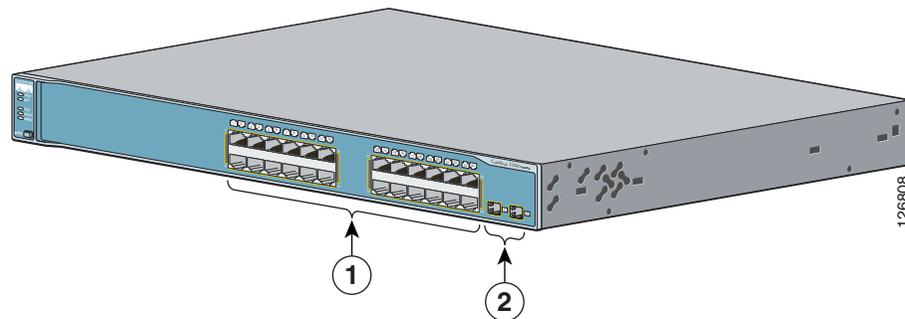
1	10/100 ports	**2**	SFP module slots

The 10/100 PoE ports on the Catalyst 3560-48PS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-3. Port 3 is above port 4, and so on. The SFP module slots are numbered 1 to 4.

Figure 1-3   Catalyst 3560-48PS Switch Front Panel
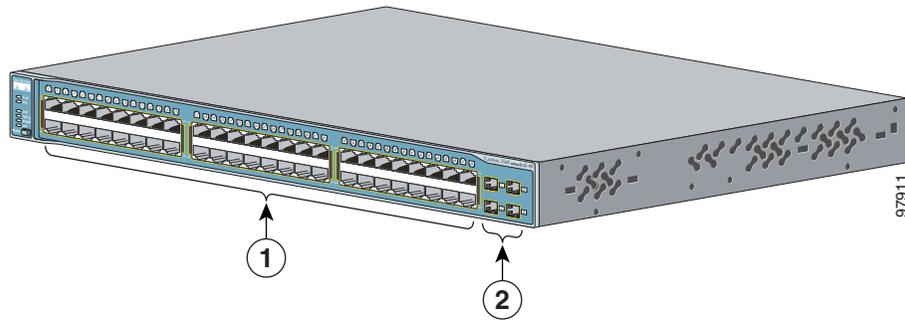
1	10/100 ports	**2**	SFP module slots

The 10/100 ports on the Catalyst 3560-48TS-S switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-8. Port 3 is above port 4, and so on. The SFP module slots are numbered 1 to 4.

Figure 1-4   Catalyst 3560G-48TS-S Switch Front Panel
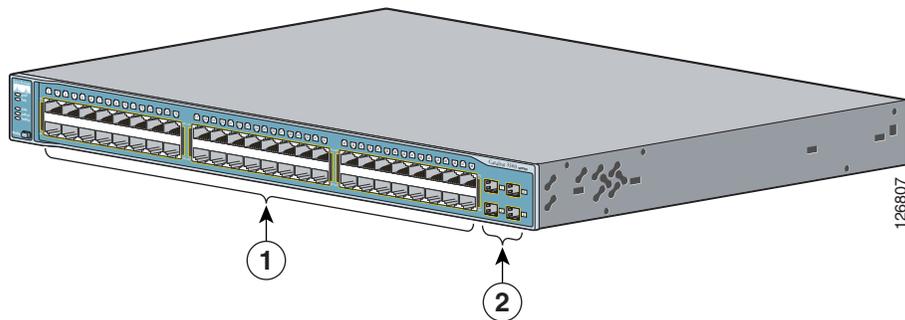
1	10/100 ports	**2**	SFP module slots

Gigabit Ethernet Switch Front Panel Descriptions

The 10/100/1000 PoE ports on the Catalyst 3560G-24PS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-5. Port 3 is above port 4, and so on. The SFP module slots are numbered 25 to 28.

Figure 1-5   Catalyst 3560G-24PS Switch Front Panel
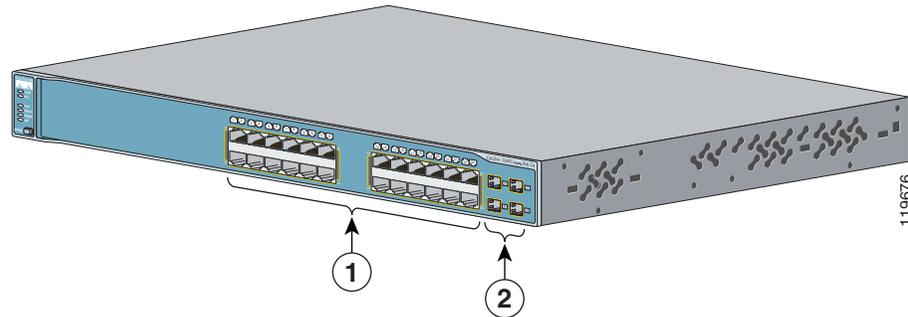
1	10/100/1000 ports	2	SFP module slots

The 10/100/1000 ports on the Catalyst 3560-24TS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-6. Port 3 is above port 4, and so on. The SFP module slots are numbered 25 to 28.

Figure 1-6   Catalyst 3560G-24TS Switch Front Panel
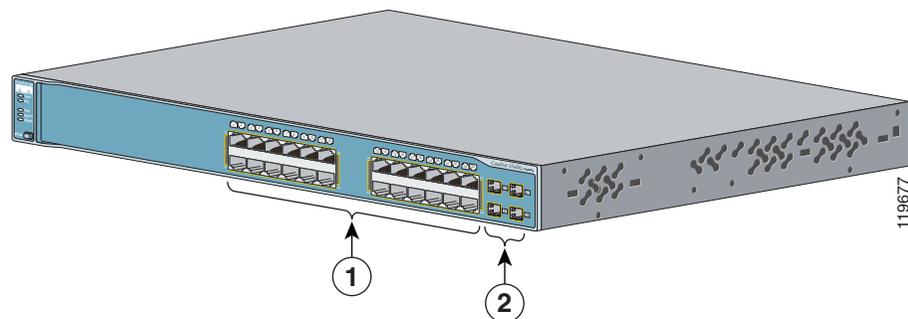
1	10/100/1000 ports	2	SFP module slots

The 10/100/1000 PoE ports on the Catalyst 3560G-48PS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-7. Port 3 is above port 4, and so on. The SFP module slots are numbered 49 to 52.

Figure 1-7   Catalyst 3560G-48PS Switch Front Panel
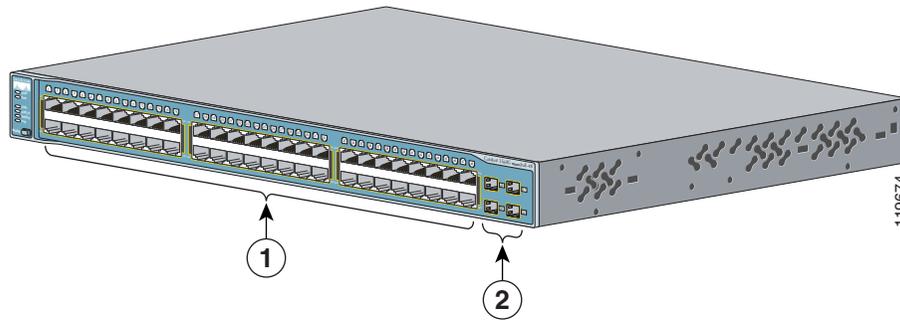
1	10/100/1000 ports	**2**	SFP module slots

The 10/100/1000 ports on the Catalyst 3560G-48TS switch are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left, as shown in Figure 1-8. Port 3 is above port 4, and so on. The SFP module slots are numbered 49 to 52.

Figure 1-8   Catalyst 3560G-48TS Switch Front Panel
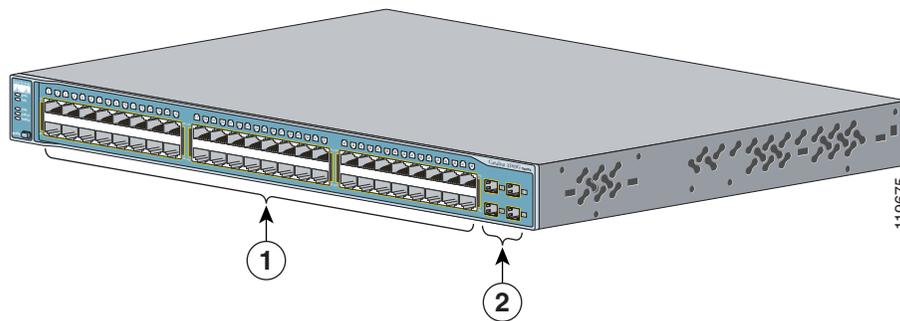
1	10/100/1000 ports	**2**	SFP module slots

10/100 and 10/100/1000 Ports

You can set the 10/100 ports on the Catalyst 3560 switches to operate in any combination of half duplex, full duplex, 10 Mbps, or 100 Mbps. You can set the 10/100/1000 ports to operate in 10 or 100 Mbps in half or full duplex or in 1000 Mbps in full duplex.

You can set both the 10/100 and the 10/100/1000 ports for speed and duplex autonegotiation, in compliance with IEEE 802.3ab. (The default setting is autonegotiate.)

Note You can configure duplex mode to half, full, or autonegotiate on Gigabit Ethernet interfaces if the speed is set to 10 or 100 Mbps. You cannot configure half-duplex mode on Gigabit Ethernet interfaces if the interface speed is 1000 Mbps.

When set for autonegotiation, the port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch port negotiates the best connection (the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly. In all cases, the attached device must be within 328 feet (100 meters).

Warning　**Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security.** Statement 1072

The10/100 ports on the Catalyst 3560-24PS and 3560-48PS switches and the 10/100/1000 ports on the Catalyst 3560G-24PS and 3560G-48PS switches provide PoE support for devices compliant with IEEE 802.3af and also provide Cisco pre-standard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

Each of the Catalyst 3560-24PS switch 10/100 ports or the Catalyst 3560G-24PS switch 10/100/1000 ports can deliver up to 15.4 W of PoE. On the Catalyst 3560-48PS or 3560G-48PS switches, any 24 of the 48 10/100 or 10/100/1000 ports can deliver 15.4 W of PoE, or any combination of the ports can deliver an average of 7.7 W of PoE at the same time, up to a maximum switch power output of 370 W.

On a per-port basis, you can control whether or not a Catalyst 3560 PoE port automatically provides power when an IP phone or an access point is connected. The Cluster Management Suite (CMS), Network Assistant, and the CLI provide two PoE settings for each 10/100 or 10/100/1000 PoE port: Auto and Never.

When you select the Auto setting, the port provides power only if a valid powered device, such as an IEEE 802.3af-compliant powered device, a Cisco pre-standard IP phone, or a Cisco pre-standard Cisco access point, is connected to it. The Auto setting is the default. However, when you select the Never setting, the port does not provide power even if a Cisco IP phone or an access point is connected to it.

Cisco enhanced power negotiation allows some powered devices, such as the Cisco 7970G IP Phone, to operate in high-power mode on Catalyst 3560 PoE switches. The powered device and the switch negotiate through power-negotiation Cisco Discovery Protocol (CDP) messages for an agreed-upon power-consumption level. The negotiation allows a high-power Cisco powered device that consumes more than 7 W to operate at its highest power mode. The powered device first boots up in low-power mode, consumes less than 7 W, and negotiates to obtain enough power to operate in high-power mode. The device changes to high-power mode only when it receives confirmation from the switch. High-power devices can operate in low-power mode on switches that do not support power-negotiation CDP.

For information about configuring and monitoring PoE ports, see the switch software configuration guide.

Note　You also can connect a Cisco IP Phone or Cisco Aironet Access Point to a Catalyst 3560 PoE switch 10/100 or 10/100/1000 port and to an AC power source for redundant power. The powered device might switch to the AC power source as its primary power source upon being connected to it. In that case, the PoE port becomes the backup power source for the powered device.

If the primary source fails, the second power source becomes the primary power source to the powered device. During the power transfer, an IP phone might reboot or reestablish link with the switch.

For information about Cisco IP Phones and Cisco Aironet Access Points, see the documentation that came with your IP phone or access point.

Note   100BASE-TX and 1000BASE-T traffic requires Category 5 cable. 10BASE-T traffic can use Category 3 or Category 4 cables.

When connecting the switch to workstations, servers, routers, and Cisco IP Phones, be sure that the cable is a straight-through cable. When connecting the switch to switches or hubs, use a crossover cable. When using a straight-through or crossover cable for 1000BASE-T connections, be sure to use a twisted four-pair, Category 5 cable for proper operation. Pinouts for the cables are described in Appendix B, "Connector and Cable Specifications."

Note   You can use the **mdix auto** interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

The Auto-MDIX feature is enabled by default on switches running Cisco IOS Release 12.2(18)SE or later. For releases between Cisco IOS Release 12.1(14)EA1 and 12.2(18)SE, the Auto-MDIX feature is disabled by default. For configuration information for this feature, see the switch software configuration guide or the switch command reference.

Note   Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

SFP Module Slots

The SFP module slots support the SFP modules that are listed in the Catalyst 3560 release notes.

SFP Modules

The Catalyst 3560 switch uses Gigabit Ethernet SFP modules to establish fiber-optic and 1000BASE-T connections. These transceiver modules are field-replaceable, providing the uplink interfaces when inserted in an SFP module slot. You can use the SFP modules for Gigabit uplink connections to other switches. You use fiber-optic cables with LC or MT-RJ connectors to connect to a fiber-optic SFP module. You use Category 5 cable with RJ-45 connectors to connect to a copper SFP module.

The Catalyst 3560 models support these Cisco SFP modules:

- 1000BASE-LX
- 1000BASE-SX
- 1000BASE-ZX
- 1000BASE-T

- 100BASE-FX

- CWDM

For more information about these SFP modules, see your SFP module documentation.

SFP Module Patch Cable

The Catalyst 3560 switch supports the SFP module patch cable, a 1/2 meter, copper, passive cable with SFP module connectors at each end (see Figure 1-9). The patch cable can connect two Catalyst 3560 switches in a cascaded configuration.

Figure 1-9   ***SFP Module Patch Cable***
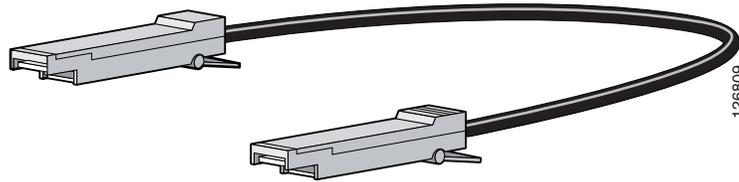
See "Inserting and Removing the SFP Module Patch Cable" section on page 2-18 for more information about using the SFP module patch cable.

LEDs

You can use the switch LEDs to monitor switch activity and its performance. Figure 1-10 shows the switch LEDs and the Mode button that you use to select one of the port modes.

All of the LEDs described in this section are visible in the CMS and Network Assistant GUIs. The switch online help describes how to use CMS or Network Assistant to configure and monitor individual switches and switch clusters.

Figure 1-10   Catalyst 3560 Switch LEDs
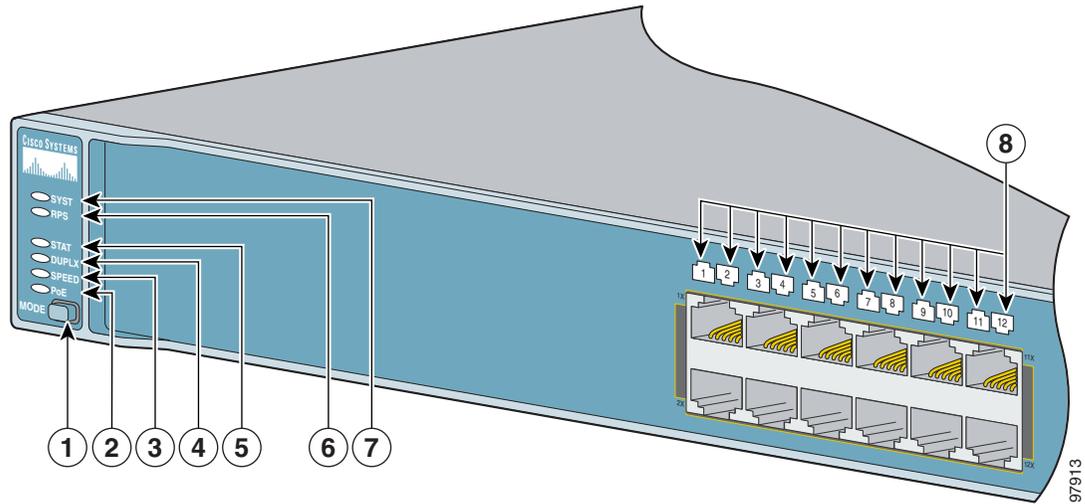
1	Mode button	5	Status LED
2	PoE LED	6	RPS LED
3	Speed LED	7	System LED
4	Duplex LED	8	Port LEDs

✎ **Note**   The PoE LED is only visible on Catalyst 3560 switches that support PoE.

System LED

The System LED shows whether the system is receiving power and is functioning properly. Table 1-1 lists the LED colors and their meanings.

Table 1-1   System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

For information on the System LED colors during the power-on self-test (POST), see the "Verifying Switch Operation" section on page 2-6.

RPS LED

The RPS LED shows the RPS status. Table 1-2 lists the LED colors and their meanings.

Table 1-2   RPS LED

Color	RPS Status
Off	RPS is off or not properly connected.
Green	RPS is connected and ready to provide back-up power, if required.
Blinking green	RPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device).
Amber	The RPS is in standby mode or in a fault condition. Press the Standby/Active button on the RPS, and the LED should turn green. If it does not, the RPS fan could have failed. Contact Cisco Systems.
Blinking amber	The internal power supply in a switch has failed, and the RPS is providing power to the switch (redundancy has been allocated to this device).

For more information about the Cisco RPS 675, see the *Cisco RPS 675 Redundant Power System Hardware Installation Guide*.

Port LEDs and Modes

Each RJ-45 port and SFP module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port modes determine the type of information displayed through the port LEDs. Table 1-3 lists the mode LEDs and their associated port mode and meaning.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. Table 1-5 explains how to interpret the port LED colors in different port modes.

Table 1-3   Modes for Port LEDs

Selected Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
SPEED	Port speed	The port operating speed: 10, 100, or 1000[1] Mbps.
PoE	PoE port power	The PoE status.

1. When installed in Catalyst 3560 switches, 1000BASE-T SFP modules can operate at 10, 100, or 1000 Mbps in full-duplex mode or at 10 or 100 Mbps in half-duplex mode.

Even if PoE mode is not selected, the PoE LED still shows PoE problems when they are detected.

Table 1-4 lists the PoE mode LED colors and their meanings. The PoE LED applies only to Catalyst 3560 switches that support PoE.

Table 1-4   PoE Mode LED

Color	PoE Status
Off	PoE mode is not selected. None of the 10/100 or 10/100/1000 PoE ports have been denied power or are in a fault condition.
Green	PoE mode is selected, and the PoE status is shown on the port LEDs.
Blinking amber	PoE mode is not selected. At least one of the 10/100 or 10/100/1000 PoE ports has been denied power, or at least one of the ports has a PoE fault.

Table 1-5   Meaning of Port LED Colors in Different Modes on the Switch

Port Mode	LED Color	Meaning
PoE	Off	PoE is off. If the powered device is receiving power from an AC power source, the PoE port LED is off even if the powered device is connected to the switch port.
	Green	PoE is on. The port LED is green only when the switch port is providing power.
	Alternating green and amber	PoE is denied because providing power to the powered device will exceed the 370 W switch power capacity.
	Blinking amber	PoE is off due to a fault. ⚠ **Caution** PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Only standard-compliant cabling can be used to connect Cisco pre-standard IP Phones or wireless access points or IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.
	Amber	PoE for the port has been disabled. **Note** PoE is enabled by default.

Table 1-5   *Meaning of Port LED Colors in Different Modes on the Switch (continued)*

Port Mode	LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present.
	Blinking green	Activity. Port is transmitting or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the network topology for possible loops.
	Blinking amber	Port is blocked by STP and is not transmitting or receiving packets.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
SPEED	**10/100 and 10/100/1000 ports**	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	Flashing green	Port is operating at 1000 Mbps.
	SFP ports	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	Blinking green	Port is operating at 1000 Mbps. **Note** When installed in Catalyst 3560 switches, 1000BASE-T SFP modules can operate at 10, 100, or 1000 Mbps in full-duplex mode or at 10 or 100 Mbps in half-duplex mode.

Rear Panel Description

The Catalyst 3560 switch rear panel has an AC power connector, an RPS connector, and an RJ-45 console port. (See Figure 1-11 and Figure 1-12 for examples of the Catalyst 3560 rear panels.)

Figure 1-11   Catalyst 3560-24PS and 3560-48PS Switch Rear Panel
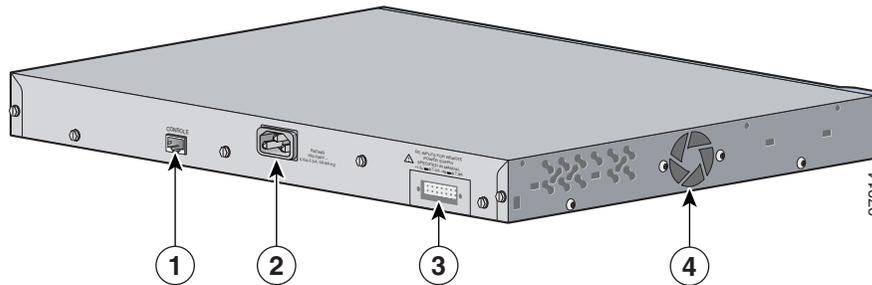
1	RJ-45 console port	3	RPS connector
2	AC power connector	4	Fan exhaust

Figure 1-12   Catalyst 3560G-24PS, 3560G-48PS, 3560G-24TS, and 3560G-48TS Switch Rear Panel
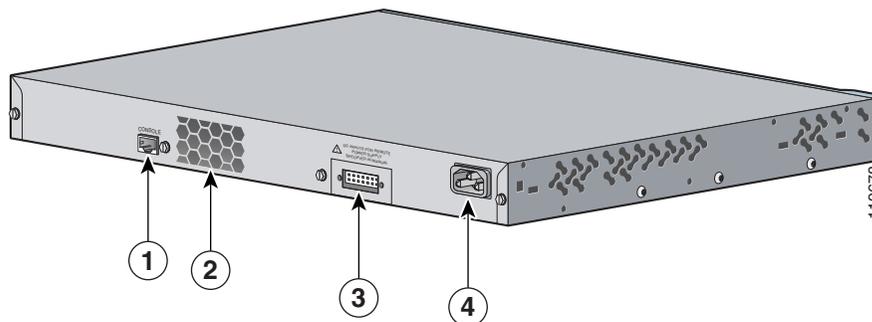
1	RJ-45 console port	3	RPS connector
2	Fan exhaust	4	AC power connector

Power Connectors

The switch is powered through the internal power supply. You can also connect the Cisco RPS 675 to provide backup power if the switch internal power supply should fail.

✎ **Note**   The Catalyst 3560 switch and the Cisco RPS 675 should be connected to the same AC power source.

Internal Power Supply Connector

The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet.

Cisco RPS Connector

The switch is powered through the internal power supply. You can also connect the Cisco RPS 675 redundant power supply (model PWR675-AC-RPS-N1=) to provide backup power if the switch internal power supply should fail.

> **Note**   The Catalyst 3560 switch and the Cisco RPS 675 should be connected to the same AC power source.

Cisco RPS 675

The Cisco RPS 675 as two output levels: –48 V and 12 V, with a total maximum output power of 675 W. Use the supplied RPS connector cable to connect the RPS to the switch.

> **Warning**   **Attach only the Cisco RPS (model PWR675-AC-RPS-N1) to the RPS receptacle.** Statement 100C

The RPS is a redundant power system that can support six external network devices and provides power to one failed device at a time. It automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic. For more information on the Cisco RPS 675, see the *Cisco RPS 675 Redundant Power System Hardware Installation Guide*.

Console Port

You can connect the switch to a PC by means of the console port and the supplied RJ-45-to-DB-9 female cable. If you want to connect the switch console port to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see the "Connector and Cable Specifications" section on page B-1.

Management Options

The Catalyst 3560 switches offer several management options:

- CMS

  CMS is a GUI that can be launched from anywhere in your network through a web browser. CMS is already bundled in the switch. The CMS plug-in is required to run CMS through your web browser. The plug-in is supported both in Windows environments and on Solaris platforms.

  You can download the latest CMS plug-in from these URLs:

  – Windows

    http://www.cisco.com/pcgi-bin/Support/ClusterMgmtSuite/cms_plugin_redirect.cgi?platform=windows&version=1.2

- Solaris

  http://www.cisco.com/pcgi-bin/Support/ClusterMgmtSuite/cms_plugin_redirect.cgi?platform=solaris&version=1.2

From CMS, you can fully configure and monitor a switch or switch clusters, display network topologies to gather link information, and display switch images to modify switch- and port-level settings. For more information, see the "Getting Started with CMS" chapter of the switch software configuration guide on Cisco.com and the online help for this application.

- Cisco Network Assistant

Cisco Network Assistant is a free software program that you download from Cisco.com and run on your PC. It offers advanced options for configuring and monitoring multiple devices, including switches, switch clusters, switch stacks, routers, and access points. Network Assistant is free—there is no charge to download, install, or use it.

Follow these steps:

a. Go to this Web address: http://www.cisco.com/go/NetworkAssistant

   You must be a registered Cisco.com user, but you need no other access privileges.

b. Find the Network Assistant installer.

c. Download the Network Assistant installer, and run it. (You can run it directly from the web if your browser offers this choice.)

d. When you run the installer, follow the displayed instructions. In the final panel, click **Finish** to complete the Network Assistant installation.

   See the Network Assistant online help and the getting started guide for more information.

- Cisco IOS CLI

The switch CLI is based on Cisco IOS software and is enhanced to support desktop-switching features. You can fully configure and monitor the switch and switch cluster members from the CLI. You can access the CLI either by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the *Catalyst 3560 Switch Command Reference* on Cisco.com for more information.

For setup instructions that use the CLI, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

- CiscoView application

The CiscoView device-management application displays the switch image that you can use to set configuration parameters and to view switch status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of a Simple Network Management Protocol (SNMP) platform. See the CiscoView documentation for more information.

- SNMP network management

You can manage switches from a SNMP-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

Network Configurations

See the switch software configuration guide on Cisco.com for an explanation of network configuration concepts. The software configuration guide also provides examples of network configurations that use the switch to create dedicated network segments that are interconnected through Ethernet connections.

Switch Installation

This chapter describes how to start your switch and how to interpret the power-on self-test (POST) that ensures proper operation. It also describes how to install the switch and how to make connections to the switch. Read the topics and perform the procedures in this order:

Preparing for Installation

This section covers these topics:

Warnings

These warnings are translated into several languages in the *Regulatory Compliance and Safety Information for the Catalyst 3560 Switch* document that shipped with the switch.

Warning **Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security.** Statement 1072

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 **Attach only the Cisco RPS (model PWR675-AC-RPS-N1) to the RPS receptacle.** Statement 100C

Warning **Class 1 laser product.** Statement 1008

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

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

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

Warning **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.** Statement 48

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

Warning   **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

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

Warning   **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.** Statement 17B

Warning   **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning   **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning   **If a redundant power system (RPS) is not connected to the switch, install an RPS connector cover on the back of the switch.** Statement 265

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

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

Warning   **To comply with safety regulations, mount switches on a wall with the front panel facing up.** Statement 266

Warning   **This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.** Statement 37

Warning **Ethernet cables must be shielded when used in a central office environment.** Statement 171

Warning **Avoid direct exposure to the laser beam.** Statement 1012

Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

Installation Guidelines

When determining where to place the switch, be sure to observe these requirements:

- For copper Ethernet ports, including 10/100 ports, 10/100/1000 ports, and 1000BASE-T SFP module ports, cable lengths from the switch to connected devices can be up to 328 feet (100 meters).

- Table 2-1 lists the cable specifications for 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX, and 100BASE-FX fiber-optic SFP module connections. Each port must match the wave-length specifications on the other end of the cable, and for reliable communications, the cable must not exceed the required cable length.

Table 2-1   Fiber-Optic SFP Module Port Cabling Specifications

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
1000BASE-SX	850	MMF	62.5 62.5 50 50	160 200 400 500	722 feet (220 m) 902 feet (275 m) 1640 feet (500 m) 1804 feet (550 m)
1000BASE-LX/LH	1300	MMF[1] SMF	62.5 50 50 9/10	500 400 500 —	1804 feet (550 m) 1804 feet (550 m) 1804 feet (550 m) 32,810 feet (10 km)
1000BASE-ZX	1550	SMF	9/10	—	43.4 to 62 miles (70 to 100 km)[2]
100BASE-FX	Min.: 1270 Typical: 1300 Max.: 1380	MMF	50/125 62.5/125	500	6,562 feet (2 km)

Table 2-1   Fiber-Optic SFP Module Port Cabling Specifications (continued)

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	9/125	—	62 miles (100 km)

1. A mode-conditioning patch cord is required. Using an ordinary patch cord with MMF, 1000BASE-LX/LH SFP modules, and a short link distance can cause transceiver saturation, resulting in an elevated bit error rate (BER). When using the LX/LH SFP module with 62.5-micron diameter MMF, you must also install a mode-conditioning patch cord between the SFP module and the MMF cable on both the sending and receiving ends of the link. The mode-conditioning patch cord is required for link distances greater than 984 feet (300 m).

2. 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) by using dispersion-shifted SMF or low-attenuation SMF; the distance depends on the fiber quality, the number of splices, and the connectors.

Note   When using shorter distances of single-mode fiber cable, you might need to insert an inline optical attenuator in the link to avoid overloading the receiver.

When the fiber-optic cable span is less than15.43 miles (25 km), you should insert a 5-decibel (dB) or 10-dB inline optical attenuator between the fiber-optic cable plant and the receiving port on the 1000BASE-ZX SFP module at each end of the link.

- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."
- Clearance to front and rear panels is such that
    - Front-panel indicators can be easily read.
    - Access to ports is sufficient for unrestricted cabling.
    - Rear-panel power connector is within reach of an AC power receptacle.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure the cabling is safely away from other devices that might damage the cables.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113°F (45°C).

Note   If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

Verifying Package Contents

✎
Note   Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing material to the shipping container, and save it.

The switch is shipped with these items:

- *Catalyst 3560 Switch Getting Started Guide*
- *Regulatory Compliance and Safety Information for the Catalyst 3560 Switch*
- Product registration card
- AC power cord (AC-powered switches)
- One RJ-45-to-DB-9 adapter cable
- Mounting kit containing:
    - Four rubber feet for mounting the switch on a table
    - Two 19-inch rack-mounting brackets (also used for wall mounting)
    - Six Phillips flat-head screws for attaching the brackets to the switch
    - Four Phillips machine screws for attaching the brackets to a rack
    - One cable guide and one black Phillips machine screw for attaching the cable guide to one of the mounting brackets
    - One redundant power system (RPS) connector cover (for wall mounting)
    - Two Phillips pan-head screws (for attaching the RPS cover)
    - Four Phillips truss-head screws (for wall-mounting brackets)

Verifying Switch Operation

Before installing the switch in a rack, on a wall, or on a table or shelf, you should power the switch and verify that the switch passes POST. See Section 3, "Running Express Setup," in the getting started guide for the steps required to connect a PC to the switch and to run Express Setup.

If your configuration has an RPS, connect the switch and the RPS to the same AC power source. See the "Power Connectors" section on page 1-14, and see the Cisco RPS documentation for more information.

✎
Note   Always put the RPS in standby mode when you are connecting devices to it and in active mode during normal operation.

To power on the switch, connect one end of the AC power cord to the AC power connector on the switch, and connect the other end of the power cord to an AC power outlet.

⚠
Warning   **Attach only the Cisco RPS (model PWR675-AC-RPS-N1) to the RPS receptacle.** Statement 100C

When the switch powers on, it automatically begins the POST, a series of tests that verifies that the switch functions properly. When the switch begins POST, the system LED slowly blinks green. When POST completes, the system LED blinks amber. If POST fails, the system LED remains amber. If POST completes successfully, the system LED rapidly blinks green.

Note   POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

Powering Off the Switch

After a successful POST, disconnect the power cord from the switch. Install the switch in a rack, on a wall, on a table, or on a shelf as described in the "Installing the Switch" section on page 2-7.

Installing the Switch

This section describes these installation procedures:

Rack-Mounting

To install the switch in a 19-inch or 24-inch rack (24-inch racks require optional mounting hardware), follow the instructions described in these procedures:

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

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

Note   Installing the switch in a 24-inch rack requires an optional bracket kit that is not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware from Cisco. The kit part number is RCKMNT-1RU=.

Removing Screws from the Switch

If you plan to install the switch in a rack, you must first remove screws in the switch chassis so that mounting brackets can be attached. Figure 2-1 shows how to remove the chassis screws in a Catalyst 3560 switch.

Figure 2-1   Removing Screws from the Catalyst 3560 Switch
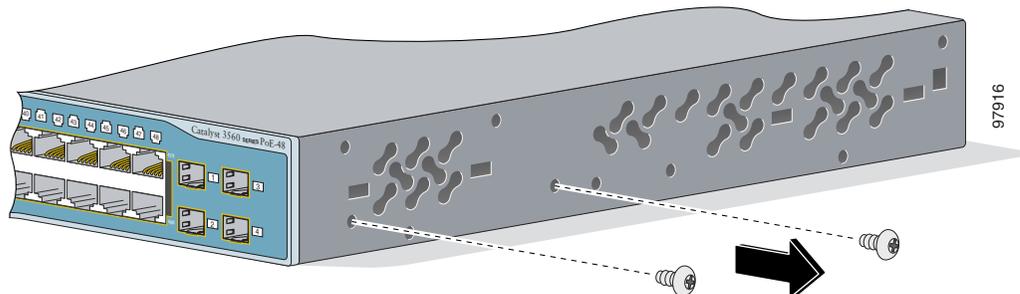
Attaching Brackets to the Catalyst 3560 Switch

The bracket orientation and the brackets that you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-8209-01; for 24-inch racks, use bracket part number 700-13248-01. Figure 2-2 through Figure 2-7 show how to attach each type bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-2   Attaching Brackets for 19-Inch Racks to a Catalyst 3560 Switch, Front Panel Forward
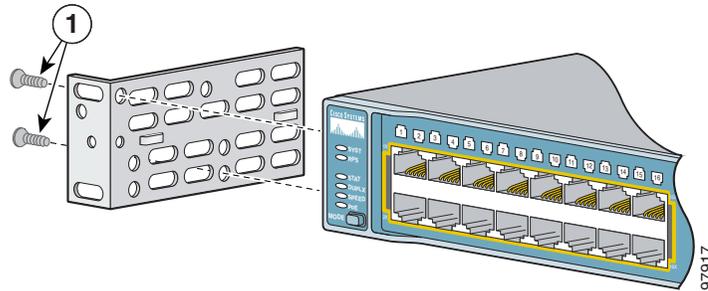
1	Phillips flat-head screws

Figure 2-3   Attaching Brackets for 24-Inch Racks to a Catalyst 3560 Switch, Front Panel Forward
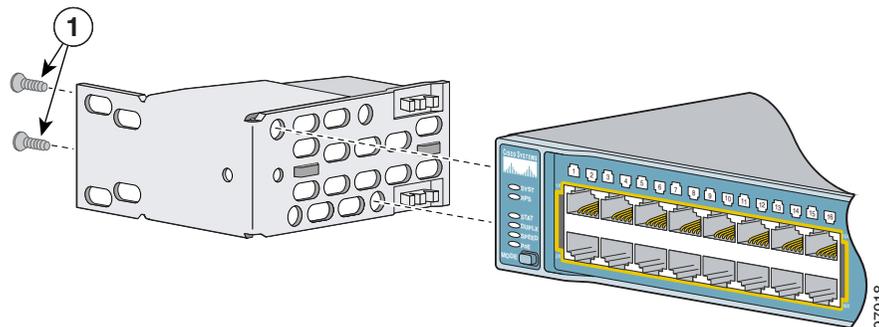
1	Phillips flat-head screws

Figure 2-4   *Attaching Brackets for 19-Inch Racks to a Catalyst 3560 Switch, Rear Panel Forward*
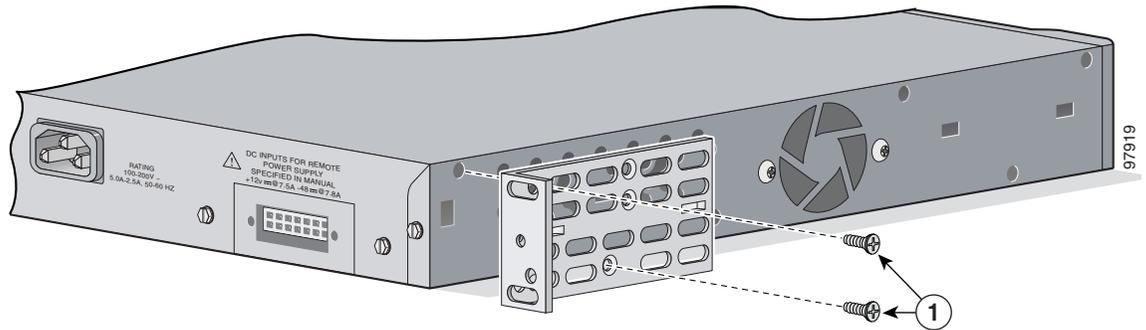
1	Phillips flat-head screws

Figure 2-5   *Attaching Brackets for 24-Inch Racks to a Catalyst 3560 Switch, Rear Panel Forward*
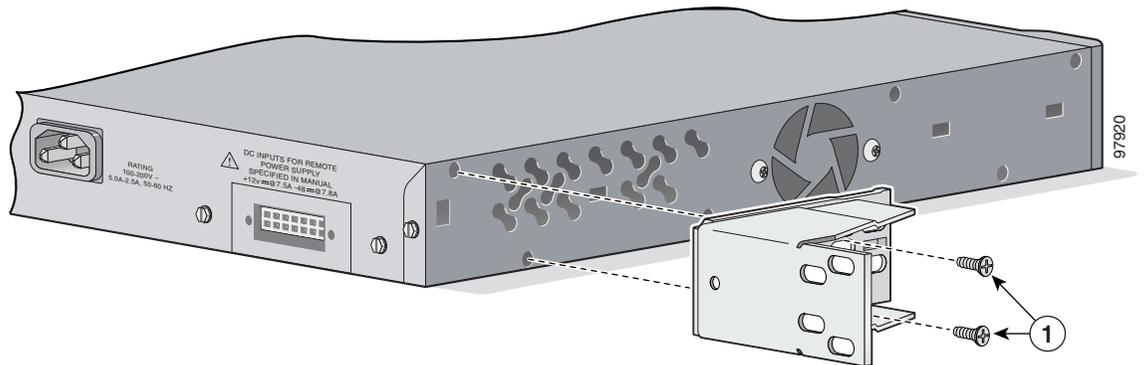
1	Phillips flat-head screws

Figure 2-6   *Attaching Brackets for 19-Inch Telco Racks to a Catalyst 3560 Switch*
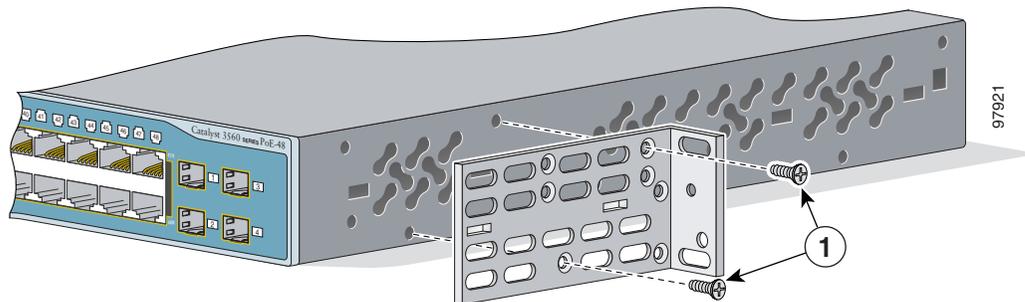
1	Phillips flat-head screws

Figure 2-7   Attaching Brackets for 24-Inch Telco Racks to a Catalyst 3560 Switch
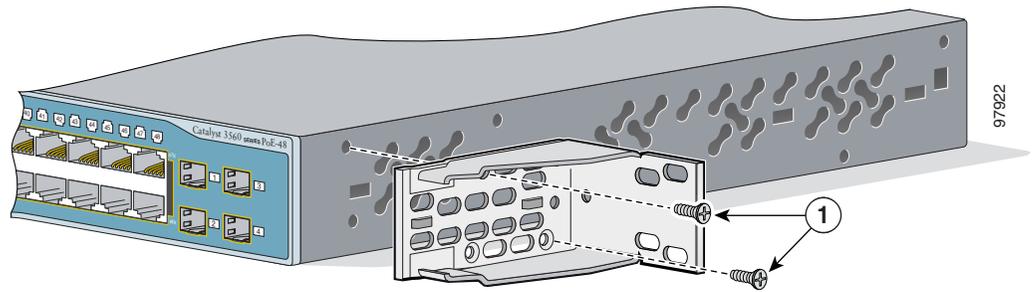
1	Phillips flat-head screws

Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in Figure 2-8.

Figure 2-8   Mounting the Catalyst 3560 Switch in a Rack
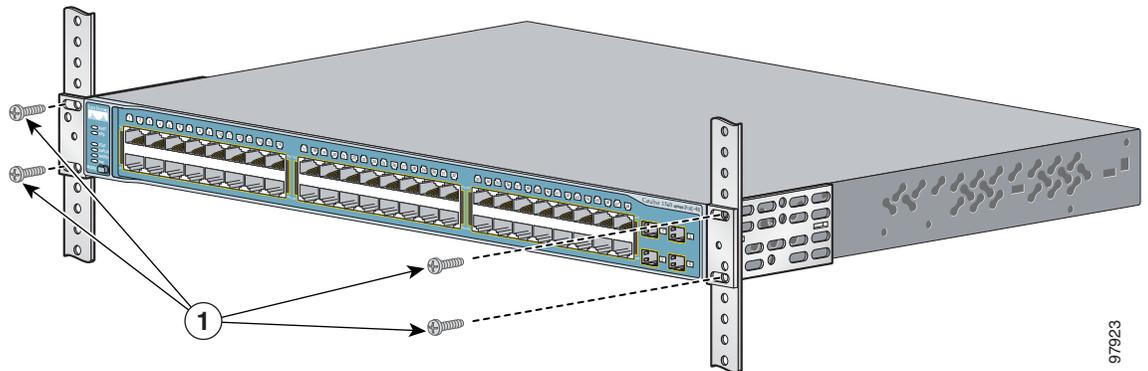
1	Phillips machine screws

After the switch is mounted in the rack, you need to do these tasks to complete the installation:

- Power on the switch. See the "Verifying Switch Operation" section on page 2-6.

- Connect to a 10/100 or 10/100/1000 port and run Express Setup. See the *Catalyst 3560 Switch Getting Started Guide* for instructions.

- Connect to the front-panel ports. See the "Connecting to the 10/100 or 10/100/1000 Ports" section on page 2-19 and the "Connecting to SFP Modules" section on page 2-21 to complete the installation.

For configuration instructions about using the CLI setup program, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

Attaching the Cable Guide

We recommend attaching the cable guide to prevent the cables from obscuring the front panel of the switch and the other devices installed in the rack. Use the supplied black screw shown in Figure 2-9 to attach the cable guide to the left or right bracket.

Figure 2-9   Attaching the Cable Guide on the Catalyst 3560 Switch
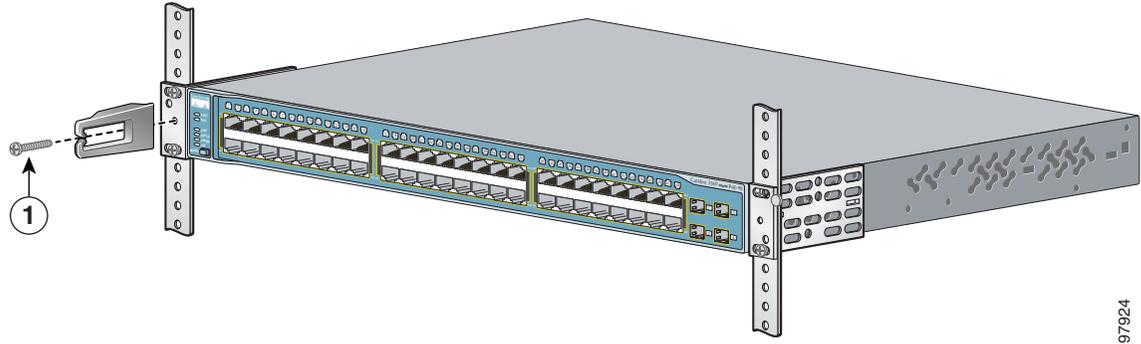
1	Cable guide screw

Wall-Mounting

To install the switch on a wall, follow the instructions in these procedures:

- Attaching the Brackets to the Switch for Wall Mounting, page 2-13
- Attaching the RPS Connector Cover, page 2-13
- Mounting the Switch on a Wall, page 2-14

Attaching the Brackets to the Switch for Wall Mounting

Figure 2-10 shows how to attach a 19-inch bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

Figure 2-10   Attaching the 19-inch Brackets for Wall Mounting
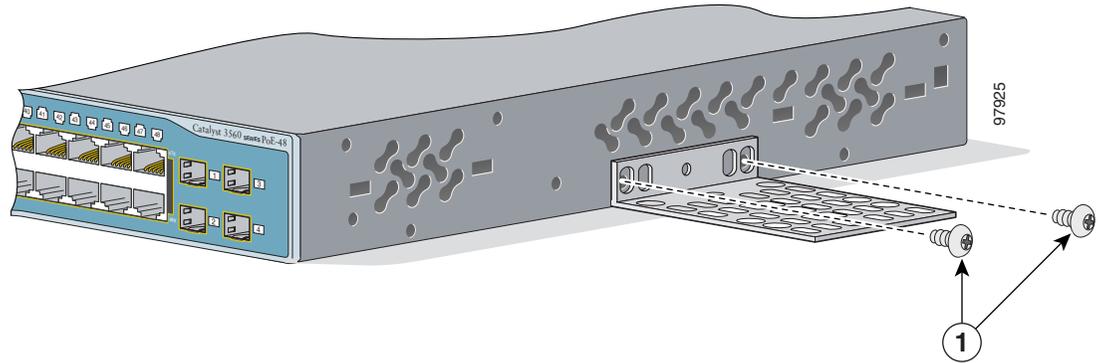
1	Cable guide screw

Attaching the RPS Connector Cover

If you are not using an RPS with your switch, use the two Phillips pan-head screws to attach the RPS connector cover to the back of the switch, as shown in Figure 2-11.

Warning   **If a redundant power system (RPS) is not connected to the switch, install an RPS connector cover on the back of the switch.** Statement 265

Figure 2-11   Attaching the RPS Connector Cover on the Catalyst 3560 Switch
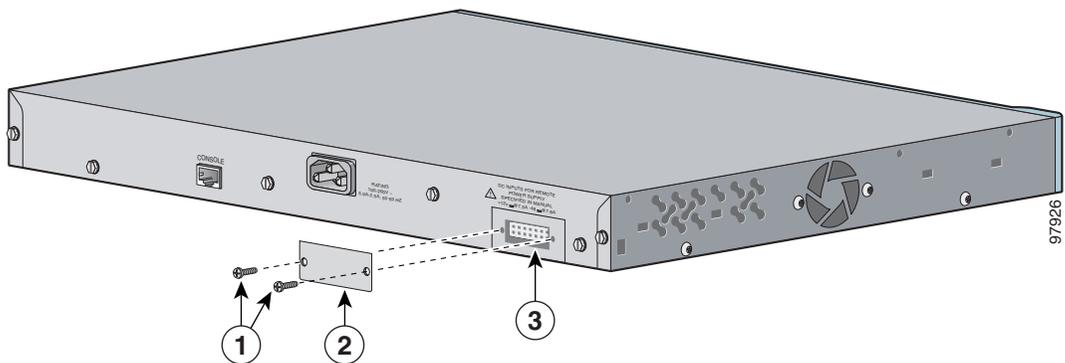
1	Phillips pan-head screws	3	RPS connector
2	RPS connector cover		

Mounting the Switch on a Wall

For the best support of the switch and cables, make sure the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard. Mount the switch with the front panel facing up, as shown in Figure 2-12.

⚠ **Warning**   **To comply with safety regulations, mount switches on a wall with the front panel facing up.** Statement 266

Figure 2-12   *Mounting the Switch on a Wall*
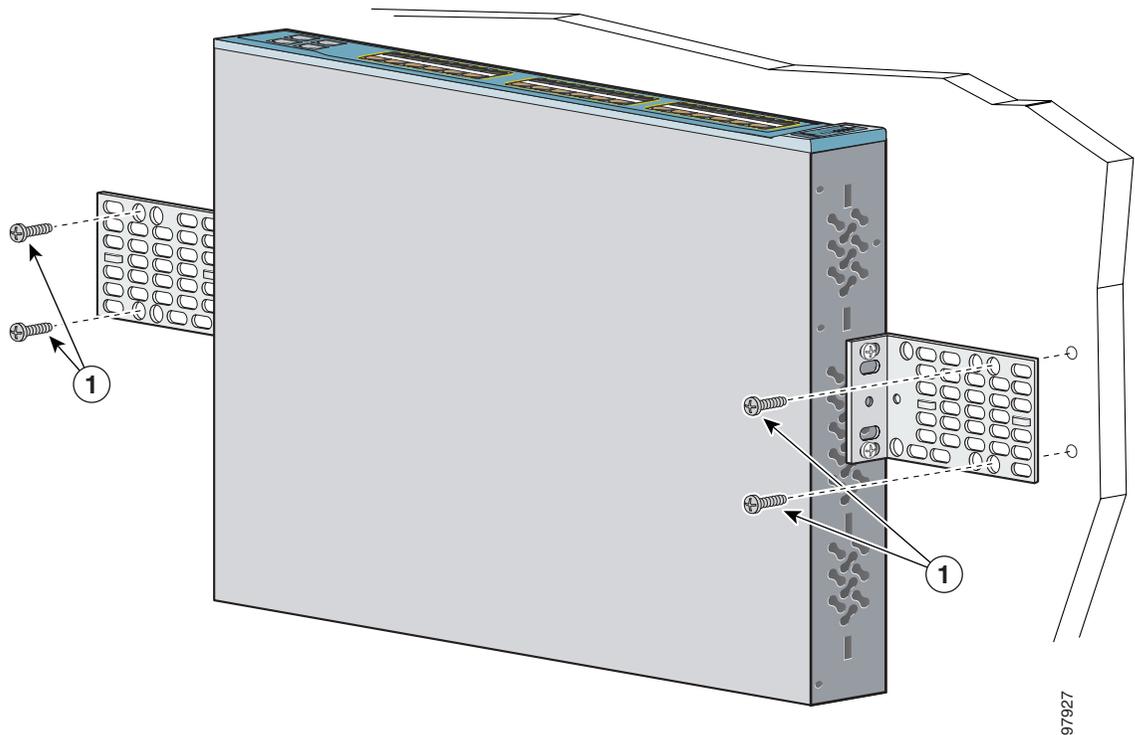
1	User-supplied screws

After the switch is mounted in the rack, you need to do these tasks to complete the installation:

- Power on the switch. See the "Verifying Switch Operation" section on page 2-6.
- Connect to a 10/100 or 10/100/1000 port and run Express Setup. See the *Catalyst 3560 Switch Getting Started Guide* for instructions.
- Connect to the front-panel ports. See the "Connecting to the 10/100 or 10/100/1000 Ports" section on page 2-19 and the "Connecting to SFP Modules" section on page 2-21 to complete the installation.

For configuration instructions about using the CLI setup program, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

Table- or Shelf- Mounting

Follow these steps to install the switch on a table or shelf:

Step 1 Locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet on the bottom of the switch near the four corners.

> **Note** Do not attach the rubber feet over the recessed screw holes on the bottom of the switch.

Step 2 Place the switch on the table or shelf near an AC power source.

After the switch is mounted in the rack, you need to do these tasks to complete the installation:

- Power on the switch. See the "Verifying Switch Operation" section on page 2-6.
- Connect to a 10/100 or 10/100/1000 port and run Express Setup. See the *Catalyst 3560 Switch Getting Started Guide* for instructions.
- Connect to the front-panel ports. See the "Connecting to the 10/100 or 10/100/1000 Ports" section on page 2-19 and the "Connecting to SFP Modules" section on page 2-21 to complete the installation.

For configuration instructions about using the CLI setup program, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

> **Note** When the connectors are not being used, replace the dust covers on them for protection.

Installing and Removing SFP Modules

These sections describe how to install and remove SFP modules. The modules are inserted into the SFP module slots on the front of the Catalyst 3560 switches. These field-replaceable modules provide uplink interfaces.

You can use any combination of SFP modules. See the Catalyst 3560 release notes for the list of SFP modules that the Catalyst 3560 switches support. Each port must match the wave-length specifications on the other end of the cable, and for reliable communications, the cable must not exceed the stipulated cable length. See the "Installation Guidelines" section on page 2-4 for cable stipulations for SFP connections.

Use only Cisco SFP modules on the Catalyst 3560 switch. Each SFP module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the SFP module meets the requirements for the switch.

For detailed instructions on installing, removing, and cabling the SFP module, see the SFP module documentation.

Installing SFP Modules into SFP Module Slots

Figure 2-13 shows an SFP module that has a bale-clasp latch.

⚠️

Caution   We strongly recommend that you do not install or remove fiber-optic SFP modules with cables attached because of the potential damage to the cables, the cable connector, or the optical interfaces in the SFP module. Disconnect all cables before removing or installing an SFP module.

Removing and installing an SFP module can shorten its useful life. Do not remove and insert SFP modules more often than is absolutely necessary.

Figure 2-13   SFP Module with a Bale-Clasp Latch
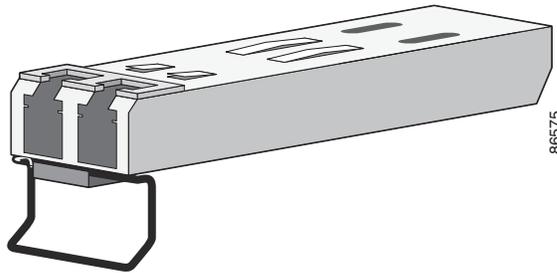
To insert an SFP module into the module slot, follow these steps:

Step 1   Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.

Step 2   Find the send (TX) and receive (RX) markings that identify the top side of the SFP module.

✎

Note   On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection, either send or receive (TX or RX).

Step 3   Align the SFP module in front of the slot opening.

Step 4   Insert the SFP module into the slot until you feel the connector on the module snap into place in the rear of the slot.

Figure 2-14   Installing an SFP Module into an SFP Module Slot
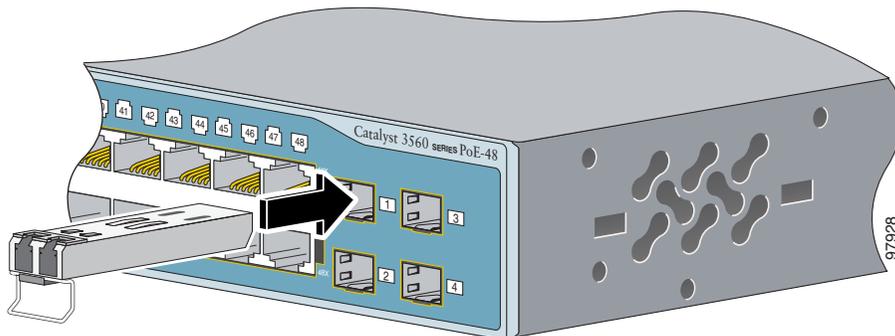
Step 5   For fiber-optic SFP modules, remove the dust plugs from the optical ports, and store them for later use.

⚠️
Caution Do not remove the dust plugs from the fiber-optic SFP module port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Step 6 Insert the cable connector into the SFP module:

- For fiber-optic SFP modules, insert the LC or MT-RJ cable connector into the SFP module.
- For copper SFP modules, insert the RJ-45 cable connector into the SFP module.

✎
Note When connecting to 1000BASE-T SFP modules, be sure to use a twisted four-pair, Category 5 cable.

Removing SFP Modules from SFP Module Slots

To remove an SFP module from a module receptacle, follow these steps:

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.

Step 2 Disconnect the cable from the SFP module, and insert a dust plug into the cable end.

🔍
Tip For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3 Unlock and remove the SFP module, as shown in Figure 2-15.

If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small, flat-blade screwdriver or other long, narrow instrument to open the bale-clasp latch.

Figure 2-15   Removing a Bale-Clasp Latch SFP Module by Using a Flat-Blade Screwdriver
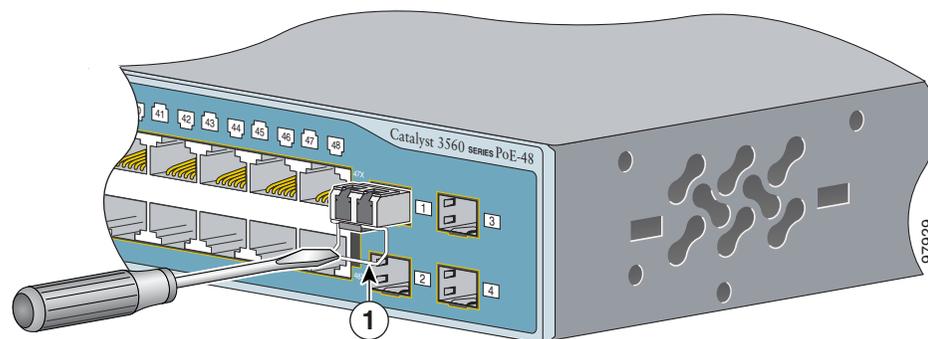
| 1 | Bale clasp |

Step 4 Grasp the SFP module between your thumb and index finger, and carefully remove it from the module slot.

Step 5 For fiber-optic SFP modules, insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.

Step 6 Place the removed SFP module in an antistatic bag or other protective environment.

Inserting and Removing the SFP Module Patch Cable

To insert an SFP module patch cable into the SFP module slot, follow these steps:

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface on the chassis.

Step 2 Insert the SFP module patch cable into the slot until you feel the connector on the cable snap into place in the rear of the slot (see Figure 2-16).

Figure 2-16   Inserting an SFP Module Patch Cable into an SFP Module Slot
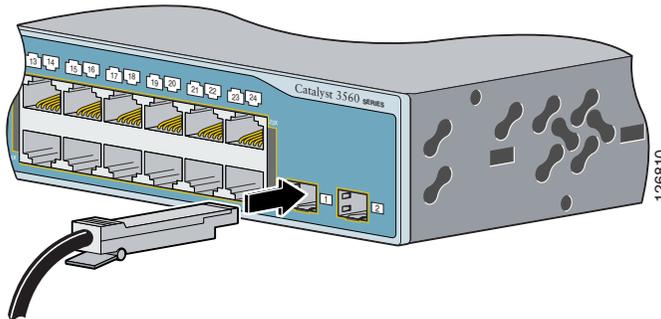
Step 3 Repeat these steps for the second Catalyst 3560 switch to which you want to cascade the first switch. See Figure 2-17.

Figure 2-17   Connecting Two Catalyst 3560 Switches with an SFP Module Patch Cable
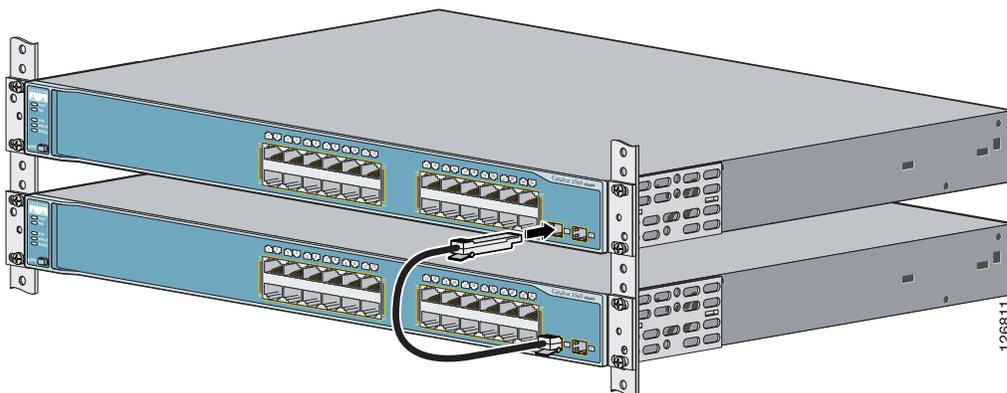
To remove an SFP module patch cable from the SFP module slot, release the connector, and pull it from the SFP module slot.

Connecting to the 10/100 or 10/100/1000 Ports

The switch 10/100 and 10/100/1000 ports configure themselves to operate at the speed of attached devices. If the attached ports do not support autonegotiation, you can explicitly set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have their speed and duplex parameters manually set can reduce performance or result in no linkage.

Note You can configure duplex mode to half, full, or autonegotiate on Gigabit Ethernet interfaces if the speed is set to 10 or 100 Mbps. You cannot configure half-duplex mode on Gigabit Ethernet interfaces if the interface speed is 1000 Mbps.

Warning **Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security.** Statement 1072

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.
- Set the port speed and duplex parameters on both ends of the connection.

You can configure the 10/100 or 10/100/1000 ports on the Catalyst 3560 PoE switches either to automatically provide PoE when a Cisco IP Phone, Cisco Aironet Access Point, or end device compliant with IEEE 802.3af is connected or to never to provide PoE, even if an IP phone or an access point is connected. The default setting is Auto. To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.

Follow these steps to connect to 10BASE-T or 100BASE-TX devices:

Step 1 When connecting to workstations, servers, routers, and Cisco IP Phones, connect a straight-through cable to an RJ-45 connector on the front panel. (See Figure 2-18.) When connecting to switches or repeaters, use a crossover cable. (See the "Cable and Adapter Specifications" section on page B-4 for cable-pinout descriptions.)

Caution PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Only standard-compliant cabling can be used to connect Cisco pre-standard IP Phones or wireless access points or IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.

Note You can use the **mdix auto** interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

The Auto-MDIX feature is enabled by default on switches running Cisco IOS Release 12.2(18)SE or later. For releases between Cisco IOS Release 12.1(14)EA1 and 12.2(18)SE, the Auto-MDIX feature is disabled by default. For configuration information for this feature, see the switch software configuration guide or the switch command reference.

Note The Catalyst 3560 switch can connect to a Cisco IP Phone through a straight-through, twisted four-pair Category 5 cable. The rear panel of the
Cisco IP Phone might have more than one RJ-45 connector. Use the LAN-to-phone connector to connect the IP phone to the switch. See the Cisco IP Phone documentation for more information about connecting devices to it.

Note Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

Step 2 Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both the switch and the connected device have established link.

The port LED is amber while Spanning Tree Protocol (STP) discovers the topology and searches for loops. This takes about 30 seconds, and then the port LED turns green. If the port LED does not turn on, the device at the other end might not be turned on, or there might be a cable problem or a problem with the adapter installed in the attached device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 3 Reconfigure and reboot the connected device, if necessary.

Step 4 Repeat Steps 1 through 3 to connect each device.

Figure 2-18   Connecting to an Ethernet Port
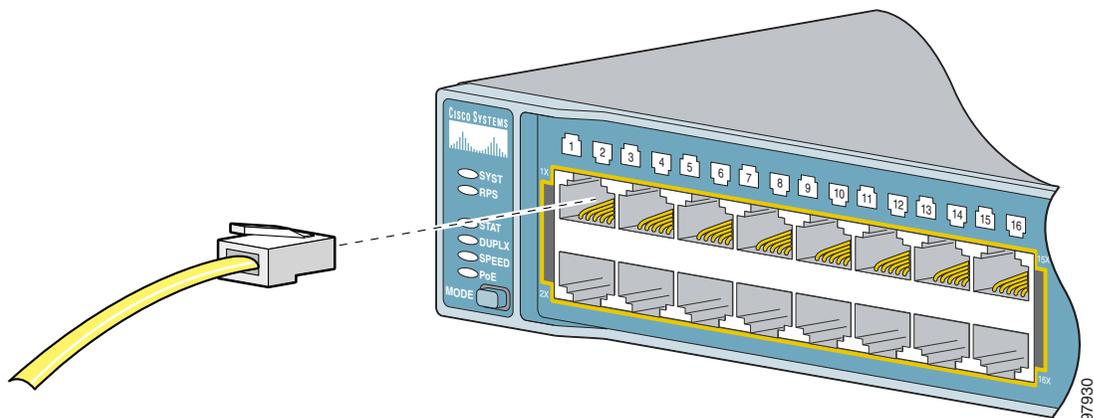
Connecting to SFP Modules

This section describes how to connect to SFP modules. For instructions on how to connect to fiber-optic SFP modules, see the "Connecting to Fiber-Optic SFP Modules" section. For instructions on how to connect to copper 1000BASE-T SFP modules, see the "Connecting to 1000BASE-T SFP Modules" section.

For instructions about how to install or remove an SFP module, see the "Installing and Removing SFP Modules" section on page 2-15.

Connecting to Fiber-Optic SFP Modules

Follow these steps to connect a fiber-optic cable to an SFP module:

Warning   **Class 1 laser product.** Statement 1008

Caution   Do not remove the rubber plugs from the SFP module port or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Before connecting to the SFP module, be sure that you understand the port and cabling stipulations in the "Installation Guidelines" section on page 2-4 and in the "SFP Module Slots" section on page 1-8. See Appendix B, "Connector and Cable Specifications," for information about the LC on the SFP module.

Step 1   Remove the rubber plugs from the module port and fiber-optic cable, and store them for future use.

Step 2   Insert one end of the fiber-optic cable into the SFP module port (see Figure 2-19).

Step 3   Insert the other cable end into a fiber-optic connector on a target device.

Step 4   Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Figure 2-19   Connecting to a Fiber-Optic SFP Module Port
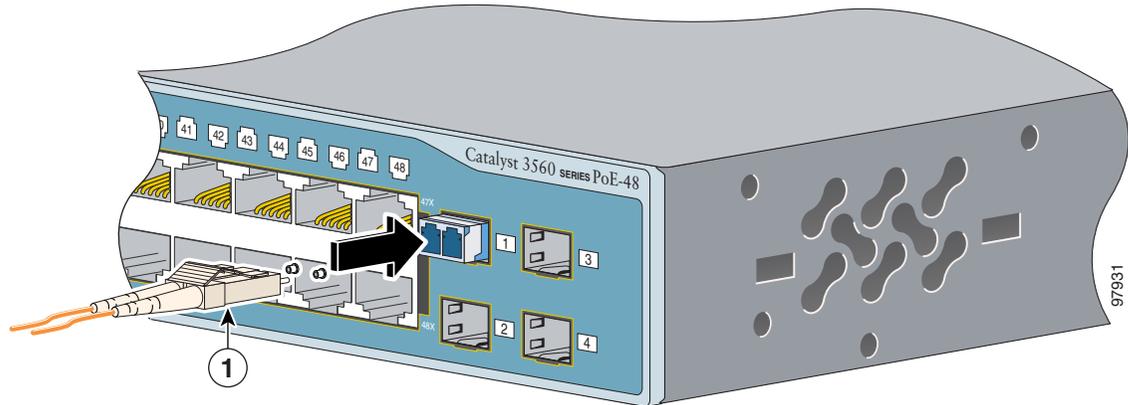
| 1 | LC connector |

Step 5   If necessary, reconfigure and restart the switch or target device.

Connecting to 1000BASE-T SFP Modules

Follow these steps to connect a Category 5 cable to a 1000BASE-T SFP module:

⚠
Caution   To prevent ESD damage, follow your normal board and component handling procedures.

Step 1   When connecting to servers, workstations, and routers, insert a four twisted-pair, straight-through cable in the RJ-45 connector. When connecting to switches or repeaters, insert a four twisted-pair, crossover cable.

✎
Note   When connecting to a 1000BASE-T device, be sure to use a four twisted-pair, Category 5 cable.

✎
Note   You can use the **mdix auto** interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

The Auto-MDIX feature is enabled by default on switches running Cisco IOS Release 12.2(18)SE or later. For releases between Cisco IOS Release 12.1(14)EA1 and 12.2(18)SE, the Auto-MDIX feature is disabled by default. For configuration information for this feature, see the switch software configuration guide or the switch command reference.

Figure 2-20   Connecting to a 1000BASE-T SFP Module
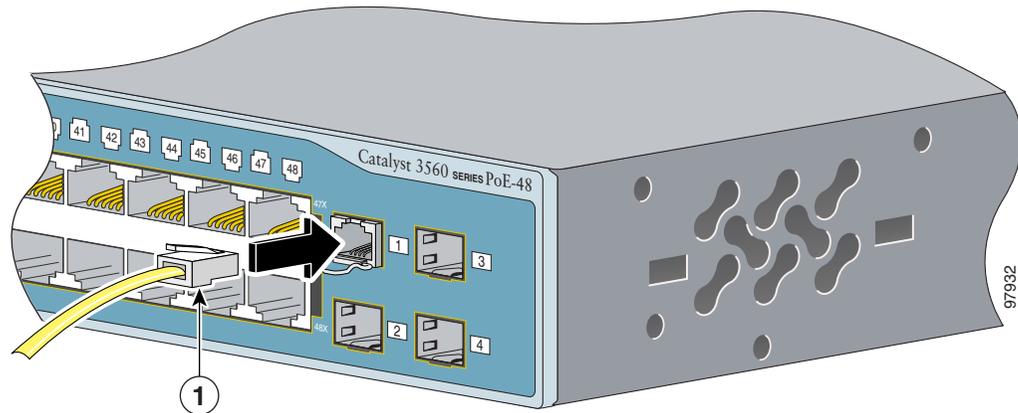
1	RJ-45 connector

Step 2   Insert the other cable end in an RJ-45 connector on a target device.

Step 3   Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 4   If necessary, reconfigure and restart the switch or target device.

Where to Go Next

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start CMS, as described in the switch software configuration guide, and configure the switch as a member of a cluster or as an individual switch. See the *Release Notes for the Catalyst 3560 Switch* on Cisco.com for the most current browser requirements.

- Start Network Assistant (which is free) by following these steps:

  a. Go to this web address: http://www.cisco.com/go/NetworkAssistant

  You must be a registered Cisco.com user, but you need no other access privileges.

  b. Find the Network Assistant installer.

      c. Download the Network Assistant installer, and run it. (You can run it directly from the web if your browser offers this choice.)

      d. When you run the installer, follow the displayed instructions. In the final panel, click **Finish** to complete Network Assistant installation.

    See the Network Assistant online help and the getting started guide for more information.

- Use the CLI from the console to configure the switch as a member of a cluster or as an individual switch. See the *Catalyst 3560 Switch Software Configuration Guide* and the *Catalyst 3560 Switch Command Reference* on Cisco.com for information on using the CLI with a Catalyst 3560 switch.

  For setup instructions that use the CLI setup program, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

- Start an SNMP application such as the CiscoView application.

Troubleshooting

The LEDs on the front panel provide troubleshooting information about the switch. They show failures in the power-on self-test (POST), port-connectivity problems, and overall switch performance. For a full description of the switch LEDs, see the "LEDs" section on page 1-9.

You can also get statistics from the browser interface, from the command-line interface (CLI), or from a Simple Network Management Protocol (SNMP) workstation. See the switch software configuration guide, the switch command reference, or the documentation that came with your IE2100 or SNMP application for details.

This chapter describes these topics for troubleshooting problems:

- Understanding POST Results, page 3-1
- Diagnosing Problems, page 3-1

Understanding POST Results

When the switch powers on, it automatically begins the power-on self test (POST), a series of tests that verifies that the switch functions properly. When the switch begins POST, the system LED slowly blinks green. When POST completes, the system LED blinks amber. If POST fails, the system LED remains amber. If POST completes successfully, the system LED rapidly blinks green.

Note POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

Diagnosing Problems

Common switch problems fall into these categories:

- Poor performance
- No connectivity
- Corrupted software

Table 3-1 describes how to detect and resolve these problems.

Table 3-1   Common Problems and Their Solutions

Symptom	Possible Cause	Resolution
Poor performance or excessive errors	Duplex autonegotiation mismatch.	See the switch software configuration guide for information on identifying autonegotiation mismatches.
	Cabling distance exceeded • Port statistics show excessive frame check sequence (FCS), late-collision, or alignment errors. • For 10/100BASE-TX connections: – The distance between the port and the attached device exceeds 328 feet (100 meters). – If the switch is attached to a repeater, the total distance between the two end stations exceeds the cabling guidelines. • For SFP module port connections: – The distance between the SFP module port and the attached device exceeds the SFP module cabling guidelines.	• See the switch software configuration guide for information on displaying port statistics. • Reduce the cable length to within the recommended distances. • See your repeater documentation for cabling guidelines. • See your SFP module documentation for cabling guidelines.
	Bad adapter in attached device • Excessive errors found in port statistics. • STP checking for possible loops.	• Run adapter card diagnostic utility. • Wait 30 seconds for the port LED to turn green.

Table 3-1   *Common Problems and Their Solutions (continued)*

Symptom	Possible Cause	Resolution
No connectivity	**Incorrect or bad cable** These are results of no link at both ends: • A crossover cable was used when a straight-through was required, or the reverse.	• For the correct pinouts and the proper application of crossover instead of straight-through cables, see the "Two Twisted-Pair Cable Pinouts" section on page B-4. • Enable the automatic medium-dependent-interface crossover (Auto-MDIX) feature. **Note** Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.
	• The cable is wired incorrectly.	• Replace with a tested good cable.
	• A crossover or straight-through cable is wired incorrectly.	• For 1000BASE-T connections, be sure to use a twisted four-pair, Category 5 cable.
	• STP checking for possible loops.	• Wait 30 seconds for the port LED to turn green.
Unreadable characters on the management console	Incorrect baud rate.	Reset the emulation software to 9600 baud.
Amber system LED	Fatal POST error detected.	Contact Cisco Systems.

Table 3-1   Common Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
The switch port is placed in error-disabled state after SFP module is inserted	Bad or non-Cisco-approved SFP.	Remove the SFP module from the switch, and replace it with a Cisco-approved module. Use the **errdisable recovery cause gbic-invalid** global configuration command to verify the port status, and enter a time interval to recover from the error-disable state. See the switch command reference guide for information on the **errdisable recovery** command.
Switch does not recognize the SFP module	The SFP module might be installed upside down. The SFP module does not snap into the slot.	Verify that the SFP module is not installed upside down. Remove the SFP module. Inspect for physical damage to the connector, the module, and the module slot. Replace the SFP module with a known good SFP module.
Powered device connected to PoE port, but no power given	Switch might not have enough power capacity to deliver PoE to a new powered device.	Use the Mode button to show the PoE status for all ports. If the port status LED is alternating green and amber, connect the powered device to an external AC power source.

Table 3-1   Common Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
Powered device connected to PoE port, but no power given	PoE might be disabled on switch port.	Use the Mode button to show the PoE status for all ports. If the port status LED is amber, configure the switch port PoE setting to Auto. **Note** PoE is enabled by default.
PoE mode LED blinks amber **Note** When PoE mode is selected, the port status LED shows the PoE status. The PoE mode LED is green to show that the port status LEDs display the PoE mode status.	At least one PoE port is in fault condition, or power has been denied to at least one of the PoE ports. ⚠ **Caution** PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Only standard-compliant cabling can be used to connect Cisco pre-standard IP Phones or wireless access points or IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.	Use the Mode button to show the PoE status for all ports. The affected port LEDs will blink amber or alternate green and amber. If a port LED blinks amber, the port is in PoE fault. A cable or device that causes a PoE fault must be removed from the network. If a port status LED is alternating green and amber, connect the powered device to an external AC power source. **Note** You can also use the CMS. Network Assistant. or CLI to search for PoE faults.

Table 3-1   Common Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
The switch port is placed in error-disabled state after SFP is inserted	Bad or non-Cisco-approved SFP.	Remove the SFP module from the switch, and replace it with a Cisco-approved module. Use the **errdisable recovery cause gbic-invalid** global configuration command to verify the port status, and enter a time interval to recover from the error-disable state. Refer to the switch command reference guide for information on the **errdisable recovery** command.
Switch does not recognize the SFP module	The SFP module might be installed upside down. The SFP module does not snap into the slot.	Verify that the SFP module is not installed upside down. Remove the SFP module. Inspect for physical damage to the connector, the module, and the module slot. Replace the SFP module with a known good SFP module.

A P P E N D I X **A**

Technical Specifications

This appendix lists the switch technical specifications in Table A-1 to Table A-8.

Table A-1   Technical Specifications for the Catalyst 3560-24PS Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 5.5 A to 2.8 A, 50 to 60 Hz
DC input voltage for RPS 675	+12 V ⎓ @7.5 A and – 48 V ⎓ @7.8 A
Power consumption	485 W
Power dissipation	115 W, 393 BTUs per hour
Power rating	0.485 kVA
Power over Ethernet	
15.4 W per port maximum, 370 W switch maximum	
Physical Dimensions	
Weight	11.3 lb (5.14 kg)
Dimensions (H x D x W)	1.73 x 11.81 x 17.5 in. (4.39 x 30 x 44.45 cm)

Table A-2   Specifications for the Catalyst 3560-48PS Switch

Environmental Ranges

Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	−13 to 158°F (−25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)

Power Requirements

AC input voltage	100 to 240 VAC (autoranging) 5.5 to 2.8 A, 50 to 60 Hz
DC input voltages for RPS 675	+12 V⎓@7.5 A and − 48 V⎓@7.8 A
Power consumption	530 W
Power dissipation	160 W, 546 BTUs per hour
Power rating	0.53 kVA

Power over Ethernet

Range from 4 to 15.4 W per port, up to 370 W switch maximum

Physical Dimensions

Weight	13.2 lb (6 kg)
Dimensions (H x D x W)	1.73 x 14.85 x 17.5 in. (4.39 x 37.72 x 44.45 cm)

Table A-3   Specifications for the Catalyst 3560-24TS-S Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	−13 to 158°F (−25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 450 to 190 mA, 50 to 60 Hz
DC input voltages for RPS 675	+12 V⎓ @ 5 A
Power consumption	45 W
Power dissipation	45 W, 154 BTUs per hour
Power rating	0.075 kV
Physical Dimensions	
Weight	8.5 lb (3.9 kg)
Dimensions (H x D x W)	1.73 x 11.81 x 17.5 in. (4.39 x 30 x 44.45 cm)

Table A-4   Specifications for the Catalyst 3560-48TS-S Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	−13 to 158°F (−25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 650 to 270 mA, 50 to 60 Hz
DC input voltages for RPS 675	+12 V⎓ @ 5 A
Power consumption	65 W
Power dissipation	65 W, 222 BTUs per hour
Power rating	0.110 kVA
Physical Dimensions	
Weight	9.1 lb (4.1 kg)
Dimensions (H x D x W)	1.73 x 11.81 x 17.5 in. (4.39 x 30 x 44.45 cm)

Table A-5   Specifications for the Catalyst 3560G-24TS Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 1.5 to 3 A, 50 to 60 Hz
DC input voltages for RPS 675	+12 V === @10.5 A
Power consumption	100 W
Power dissipation	100 W, 314 BTUs per hour
Power rating	0.10 kVA
Physical Dimensions	
Weight	12 lb (5.44 kg)
Dimensions (H x D x W)	1.73 x 14.9 x 17.5 in. (4.39 x 37.8 x 44.45 cm)

Table A-6   Specifications for the Catalyst 3560G-24PS Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 4 to 8 A, 50 to 60 Hz
DC input voltages for RPS 675	+12 V⎓@14 A and – 48 V⎓@7.8 A
Power consumption	520 W
Power dissipation	170 W, 534 BTUs per hour
Power rating	0.52 kVA
Power over Ethernet	
Range from 4 to 15.4 W per port, up to 370 W switch maximum	
Physical Dimensions	
Weight	13.5 lb (6.1 kg)
Dimensions (H x D x W)	1.73 x 14.9 x 17.5 in. (4.39 x 37.8 x 44.45 cm)

Table A-7   *Specifications for the Catalyst 3560G-48TS Switch*

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 3 to 1.5 A, 50 to 60 Hz
DC input voltages for RPS 675	+12 V ⎓ @17.5 A
Power consumption	160 W
Power dissipation	160 W, 500 BTUs per hour
Power rating	0.16 kVA
Physical Dimensions	
Weight	14 lb (6.4 kg)
Dimensions (H x D x W)	1.73 x 16.1 x 17.5 in. (4.39 x 40.9 x 44.45 cm)

Table A-8   Specifications for the Catalyst 3560G-48PS Switch

Environmental Ranges	
Operating temperature	32 to 113°F (0 to 45°C)
Storage temperature	–13 to 158°F (–25 to 70°C)
Relative humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3049 m)
Storage altitude	Up to 15,000 ft (4573 m)
Power Requirements	
AC input voltage	100 to 240 VAC (autoranging) 4 to 8 A, 50 to 60 Hz
DC input voltages for RPS 675	+12 V⎓@14 A and – 48 V⎓@7.8 A
Power consumption	560 W
Power dissipation	220 W, 690 BTUs per hour
Power rating	0.56 kVA
Power over Ethernet	
Range from 4 to 15.4 W per port, up to 370 W switch maximum	
Physical Dimensions	
Weight	15.5 lb (7.03 kg)
Dimensions (H x D x W)	1.73 x 16.1 x 17.5 in. (4.39 x 40.9 x 44.45 cm)

Connector and Cable Specifications

This appendix describes the Catalyst 3560 switch ports and the cables and adapters that you use to connect the switch to other devices.

Connector Specifications

These sections describe the connectors used with the Catalyst 3560 switch.

10/100 and 10/100/1000 Ports

The 10/100 and 10/100/1000 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers. These ports have the transmit (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached to the port. Figure B-1 shows the pinout for a 10/100 port.

Figure B-1   *10/100 Port Pinouts*

Pin	Label	1 2 3 4 5 6 7 8
1	RD+	
2	RD-	
3	TD+	
4	NC	
5	NC	
6	TD-	
7	NC	
8	NC	
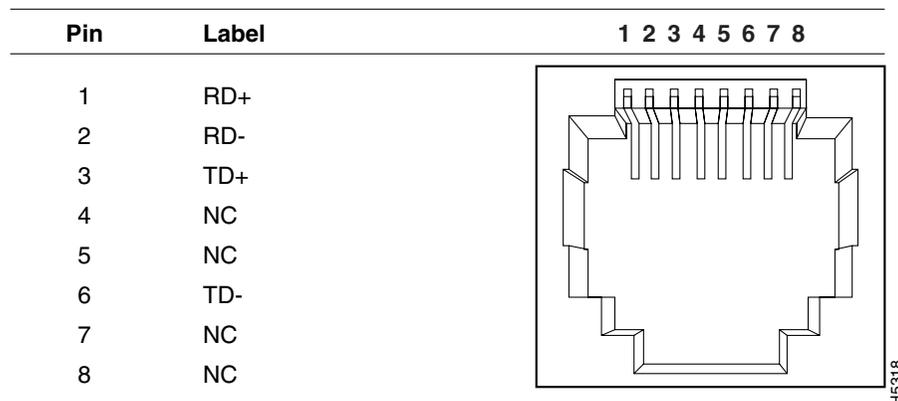
H5318

Figure B-2 shows the pinout for a 10/100/1000 port.

Figure B-2   ***10/100/1000 Port Pinouts***

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

⚠ **Caution**   PoE faults are caused when noncompliant cabling or powered devices are connected to a PoE port. Only standard-compliant cabling can be used to connect Cisco pre-standard IP Phones or wireless access points or IEEE 802.3af-compliant devices to PoE ports. A cable or device that causes a PoE fault must be removed from the network.

When connecting 10/100 and 10/100/1000 ports to compatible devices such as servers, workstations, and routers, you can use a two or four twisted-pair straight-through cable wired for 10BASE-T and 100BASE-TX. Figure B-5 shows the two twisted-pair straight-through cable schematics. Figure B-7 shows the four twisted-pair straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you can use a two or four twisted-pair crossover cable. Figure B-6 shows the two twisted-pair crossover cable schematics. Figure B-8 shows the four twisted-pair crossover cable schematics.

✎ **Note**   You can use the **mdix auto** interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

The Auto-MDIX feature is enabled by default on switches running Cisco IOS Release 12.2(18)SE or later. For releases between Cisco IOS Release 12.1(14)EA1 and 12.2(18)SE, the Auto-MDIX feature is disabled by default. For configuration information for this feature, see the switch software configuration guide or the switch command reference.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T-compatible devices. You must use Category 5 cabling when connecting to 100BASE-TX-compatible devices.

> **Note** Use a straight-through cable to connect two ports only when one port is designated with an X. Use a crossover cable to connect two ports when both ports are designated with an X or when both ports do not have an **X**.
>
> This applies only to switches on which Auto-MDIX is disabled.

SFP Module Ports

The Catalyst 3560 switch uses SFP modules for fiber-optic and copper uplinks. See the Catalyst 3560 release notes for a list of supported SFP modules.

Figure B-3   Fiber-Optic SFP Module LC Connector
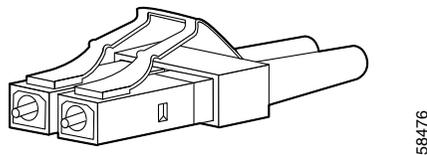
> **Warning** **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

Figure B-4   Copper SFP Module RJ-45 Connector

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

Console Port

The console port uses an 8-pin RJ-45 connector, which is described in Table B-1 and Table B-2. The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco. For console port and adapter pinout information, see Table B-1 and Table B-2.

Cable and Adapter Specifications

These sections describe the cables and adapters used with Catalyst 3560 switches.

Two Twisted-Pair Cable Pinouts

Figure B-5 and Figure B-6 show the schematics of two twisted-pair cables for connecting to 10BASE-T- and 100BASE-TX-compatible devices.

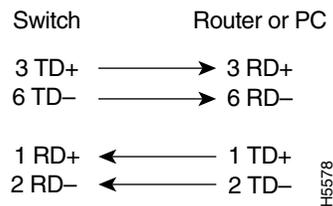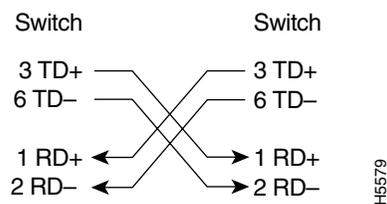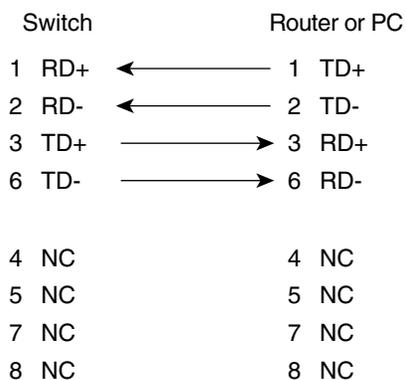*Figure B-5   Two Twisted-Pair Straight-Through Cable Schematic*

Figure B-6   Two Twisted-Pair Crossover Cable Schematic

Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

Figure B-7 and Figure B-8 show the schematics of four twisted-pair cables for 1000BASE-T SFP module ports on Catalyst 3560 switches.

Figure B-7   Four Twisted-Pair Straight-Through Cable Schematic for 1000BASE-T Ports

Figure B-8   *Four Twisted-Pair Crossover Cable Schematics for 1000BASE-T Ports*

Switch   Switch

1 TPO+ ← → 1 TP0+
2 TPO- ← → 2 TP0-
3 TP1+ ← → 3 TP1+
6 TP1- ← → 6 TP1-

4 TP2+ ← → 4 TP2+
5 TP2- ← → 5 TP2-
7 TP3+ ← → 7 TP3+
8 TP3- ← → 8 TP3-

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Crossover Cable and Adapter Pinouts

This section describes how to identify a crossover cable and also describes the adapter pinouts.

Identifying a Crossover Cable

To identify a crossover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See Figure B-9.)

Figure B-9   *Identifying a Crossover Cable*

Pin 1 on one connector and
pin 8 on the other connector
should be the same color.

Pin 1 ───→   ←─── Pin 8

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Adapter Pinouts

Table B-1 lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

Table B-1   Console Port Signaling Using a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table B-2 lists the pinouts for the console port, RJ-45-to-DB-25 female DTE adapter, and the console device.

Note   The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) containing this adapter from Cisco.

Table B-2   Console Port Signaling Using a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	DB-25 Pin	Signal
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS

A P P E N D I X **C**

Configuring the Switch with the CLI-Based Setup Program

This appendix provides a command-line interface (CLI)-based setup procedure for a standalone switch. For product overview information, see Chapter 1, "Product Overview." Before connecting the switch to a power source, review the safety warnings in Chapter 2, "Switch Installation." For installation procedures on rack mounting your switch, connecting to the switch ports, or connecting to the small form-factor pluggable (SFP) modules, see Chapter 2, "Switch Installation."

These steps describe how to do a simple installation:

1. Accessing the CLI, page C-1

2. Taking Out What You Need, page C-2

3. Connecting to the Console Port, page C-3

4. Starting the Terminal-Emulation Software, page C-4

5. Connecting to a Power Source, page C-5

6. Entering the Initial Configuration Information, page C-6

Accessing the CLI

For an unconfigured switch, you can access the CLI through Express Setup or through the console port.

Accessing the CLI Through Express Setup

You can access the CLI on an unconfigured switch by placing the switch in Express Setup mode and then by connecting a switch Ethernet port to the Ethernet port of your PC or workstation. To put the switch into Express Setup mode, follow the steps described in the *Catalyst 3560 Switch Getting Started Guide* for powering on the switch and using Express Setup.

After the switch is in Express Setup mode, open a Telnet session to the switch by entering the IP address *10.0.0.1*. Enter the **setup** user EXEC command. See these sections in this chapter to then configure the switch by using the CLI:

- Entering the Initial Configuration Information, page C-6

- Completing the Setup Program, page C-6

After you have entered the configuration information for the switch, save it to flash memory by using the **write memory** privileged EXEC command.

> **Note** While in Express Setup mode, the IP address 10.0.0.1 is active until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

For more information about using the CLI, see the switch command reference for this release.

Accessing the CLI Through the Console Port

You can access the CLI on a configured or unconfigured switch by connecting the console port of the switch to the serial port on your PC or workstation and accessing the switch through a Telnet session.

To access the switch through the console port, follow these steps:

Taking Out What You Need

Remove the items shown in Figure C-1 from the shipping container:

Figure C-1   The Catalyst 3560 Switch, Adapter Cable, and AC Power Cord
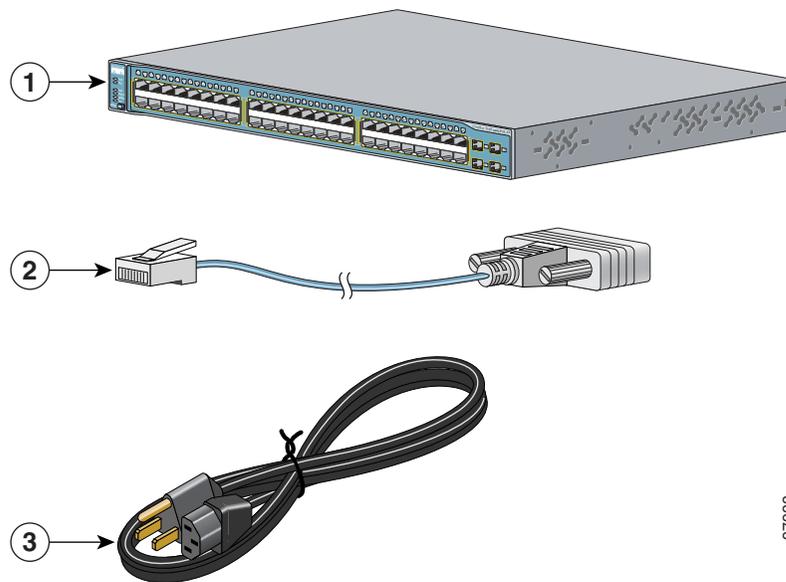
1	Catalyst 3560 switch	**3**	AC power cord
2	RJ-45-to-DB-9 adapter cable		

✎ **Note**   You need to provide the Category 5 straight-through cables to connect the switch ports to other Ethernet devices.

✎ **Note**   You can use the **mdix auto** interface configuration command in the CLI to enable the automatic medium-dependent interface crossover (Auto-MDIX) feature. When the Auto-MDIX feature is enabled, the switch detects the required cable type for copper Ethernet connections and configures the interfaces accordingly. Therefore, you can use either a crossover or a straight-through cable for connections to a copper 10/100, 10/100/1000, or 1000BASE-T SFP module port on the switch, regardless of the type of device on the other end of the connection.

The Auto-MDIX feature is enabled by default on switches running Cisco IOS Release 12.2(18)SE or later. For releases between Cisco IOS Release 12.1(14)EA1 and 12.2(18)SE, the Auto-MDIX feature is disabled by default. For configuration information for this feature, see the switch software configuration guide or the switch command reference.

Connecting to the Console Port

You can use the console port to perform the initial configuration as an alternative to using Express Setup. To connect the switch console port to a PC, use the supplied RJ-45-to-DB-9 adapter cable.

Follow these steps to connect the PC or terminal to the switch:

Step 1   Using the supplied RJ-45-to-DB-9 adapter cable, insert the RJ-45 connector into the console port on the rear of a switch, as shown in Figure C-2.

Step 2   Attach the DB-9 female DTE of the adapter cable to a PC serial port, or attach an appropriate adapter to the terminal.

Figure C-2   Connecting a Switch to a PC
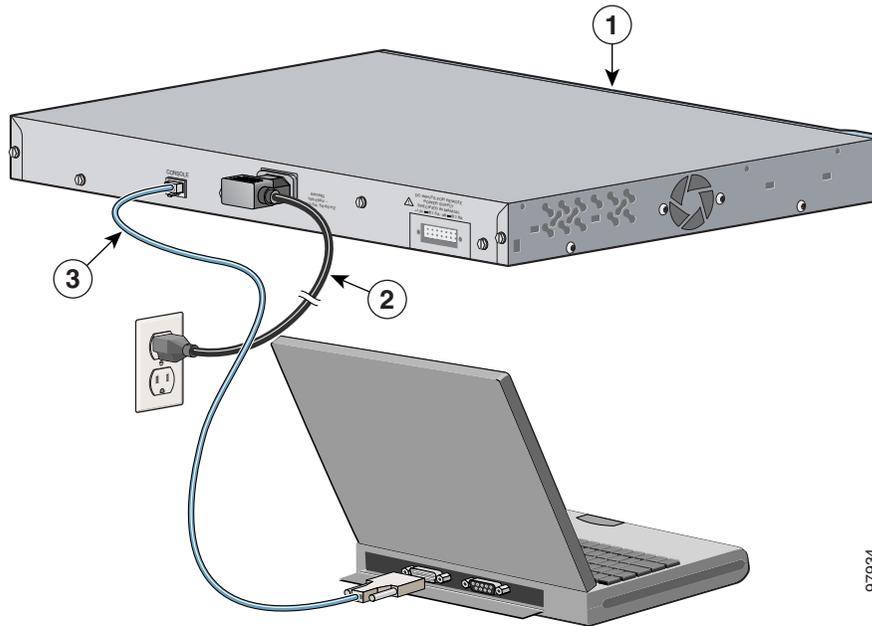
1	Catalyst 3560 switch	**3**	RJ-45-to-DB-9 adapter cable
2	Power cord		

Starting the Terminal-Emulation Software

Before you power on the switch, start the terminal emulation session so that you can see the output display from the power-on self-test (POST).

The terminal-emulation software—frequently a PC application such as Hyperterminal or ProcommPlus—makes communication between the switch and your PC or terminal possible.

Follow these steps to start a terminal-emulation session:

Step 1   Start the terminal-emulation program if you are using a PC or terminal.

Step 2   Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Connecting to a Power Source

Follow these steps to connect to a power source:

Step 1   Connect one end of the supplied AC power cord to the power connector on a switch rear panel. See Figure C-2.

Step 2   Connect the other end of the power cable to a grounded AC outlet.

Note   If you are connecting the switch to a Cisco redundant power system (RPS), see the documentation that shipped with your RPS.

When the switch powers on, it automatically begins the power-on self test (POST), a series of tests that verifies that the switch functions properly. When the switch begins POST, the system LED slowly blinks green. When POST completes, the system LED blinks amber. If POST fails, the system LED remains amber. If POST completes successfully, the system LED rapidly blinks green.

Note   POST failures are usually fatal. Call Cisco Systems if your switch does not pass POST.

If you started the terminal emulation program before you powered on your switch, the PC or terminal displays the bootloader sequence. You need to press **Enter** to display the setup program prompt.

Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch is powered up. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also required if you plan to use the Cluster Management Suite (CMS) or the Cisco Network Assistant GUI to configure and manage the switch.

IP Settings

You will need this information from your network administrator before you complete the setup program:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Completing the Setup Program

Follow these steps to complete the setup program and to create an initial configuration for the switch:

Step 1   Enter **Yes** at these two prompts.

```
Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
```

Step 2   Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use *-n*, where n is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

Step 3   Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted and the enable password is in plain text.

```
Enter enable secret: secret_password
```

Step 4   Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

Step 5   Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

Step 6   (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, CMS, or Network Assistant interface. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

Step 7   Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use vlan1 as that interface.

```
Enter interface name used to connect to the
management network from the above interface summary: vlan1
```

Step 8   Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown below are examples.

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

Step 9   Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the CMS or Network Assistant. You can configure the switch as a command switch later through the CLI, CMS, or Network Assistant interface. To configure it later, enter **no**.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have now completed the initial configuration of the switch, and the switch displays its initial configuration. This is an example of output that appears:

```
The following configuration command script was created:
hostname switch1
enable secret 5 $1$Ulq8$DlA/OiaEbl90WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface FastEthernet1/0/1
!
interface FastEthernet1/0/2

interface FastEthernet1/0/3
!
...<output abbreviated>
```

```
!

interface GigabitEthernet2/0/28
!
end
```

Step 10   These choices are displayed:

```
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.
```

If you want to save the configuration and use it the next time the switch reboots, save it in NVRAM by selecting option 2.

```
Enter your selection [2]:2
```

Make your selection, and press **Return**.

After you complete the setup program, the switch can run the default configuration that you created. If you want to change this configuration or want to perform other management tasks, use one of these tools:

- Command-line interface (CLI)
- CMS from your browser
- Network Assistant from your browser

To use the CLI, enter commands at the *Switch>* prompt through the console port by using a terminal program or through the network by using Telnet. For configuration information, see the switch software configuration guide or the switch command reference.

To use CMS, see the CMS online help. To use Network Assistant, see the *Getting Started with Cisco Network Assistant* guide.

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