Catalyst Switch Cable, Connector, and AC Power Cord Guide

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Introduction

This document is a guide to cables and connectors for Catalyst 6500/6000, 5500/5000, and 4500/4000 series switching modules and Catalyst 2900/3500 XL, 2940, 2970, 2950/2955, 3550, and 3750 series fixed-configuration switches. AC power supplies, connectors, and cords for these switches are also covered.

Prerequisites

Requirements

You should identify the part or model number of your switch/supervisor, switching module, or power supply in order to use this document effectively. Do this by visual inspection, or issue the **show module** command where possible.

Components Used

This document is not restricted to specific software and hardware versions.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Console and Aux Port Cables

Different Catalyst Supervisor Engines use either a rolled or a straight-through cable in order to connect a terminal or modem to the console port. Refer to these documents for information on how to connect a terminal or modem to the console port of Catalyst series switches:

- Connecting a Terminal to the Console Port on Catalyst Switches
- Connecting a Modem to the Console Port on Catalyst Switches

Auxiliary (AUX) ports on Layer 3 (L3) switches or modules behave much the same way as AUX ports on routers and are used to connect modems. Refer to Modem-Router Connection Guide for information on how to connect a modem to an AUX port.

Which RJ-45 Ethernet Cable Do I Use?

A common question that concerns RJ-45 unshielded twisted pair (UTP) Ethernet cable concerns how to distinguish between rolled, straight-through, and crossover cables, and when to use them. Use the comparison guide found in the *Types of RJ-45 Cabling* section of Cabling Guide for Console and AUX Ports in order to see the difference between these cables.

Cables to Hubs, Switches, Routers, and Workstations

Crossover and straight-through cables are used in order to connect switch ports or interfaces to network devices. Consult this table in order to see when to use each of these cable types. Find the device in the left-hand column and match it up with another device in the top row. The intersection of these two devices gives you the cable type used to connect them together.

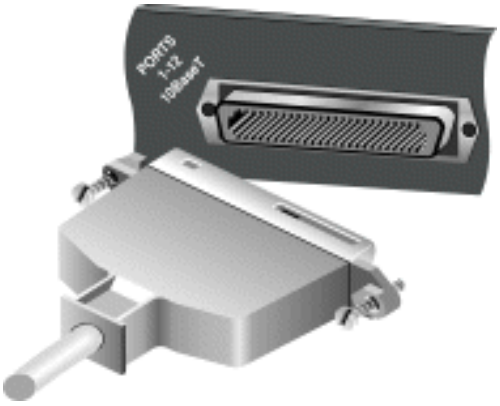
	Hub	Switch	Router	Workstation
Hub	Crossover	Crossover	Straight	Straight
Switch	Crossover	Crossover	Straight	Straight
Router	Straight	Straight	Crossover	Crossover
Workstation	Straight	Straight	Crossover	Crossover

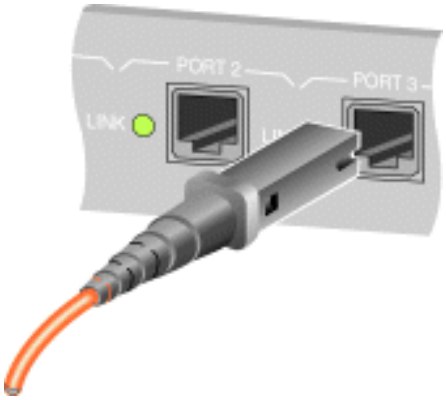
Note: The ports on Catalyst switches that run Cisco IOS® Software (Native) can be configured to act as Layer 2 (L2) or Layer 3 (L3) ports. When you connect the RJ-45 cable from a Layer 3 port, which acts as a router port, to other devices, use the previous table. In summary, the cables used do not change, regardless of whether the port is configured to be in Layer 2 (switch port) or Layer 3 (router port) mode.

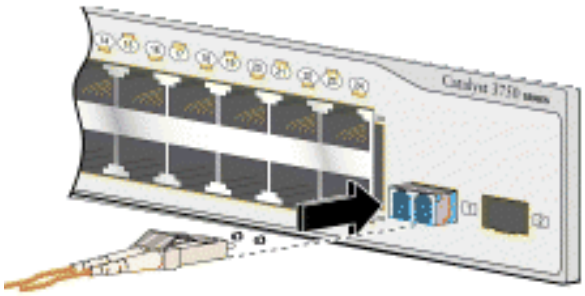
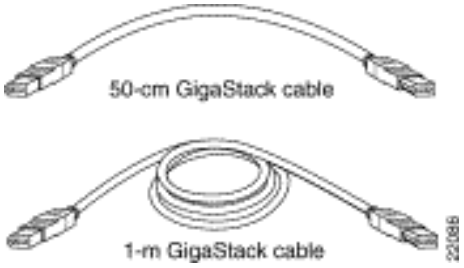
Most Common Cable Connectors

These diagrams show some of the most common cable types and connectors used on Catalyst switches.

RJ-45	RJ-21 Telco

	
This is used in order to connect to 10/100 or 10/100/1000 Ethernet ports and 1000Base-T Gigabit Interface Converter (GBIC) or small form factor pluggable (SFP) GBIC ports. 10/100/1000 Ethernet ports must use four twisted-pair Category 5, 5e or 6 cables.	This is used in order to connect to 10/100BASE-TX RJ-21 telco interfaces. Use Category 5 UTP cables with male RJ-21.

MT-RJ Fiber-Optic	SC Fiber-Optic
	
This is used in order to connect to 100Base-FX fiber-optic ports. Use multimode fiber (MMF) cables with MT-RJ connectors.	This is used in order to connect to 100Base-FX, 1000Base-SX, Long Wavelength/Long Haul (LX/LH) and ZX fiber-optic ports or GBICs. Use MMF or single-mode fiber (SMF) fiber-optic cable.

LC Fiber-Optic	GigaStack
	 
This is used in order to connect to SFP fiber-optic module ports.	This is used in order to connect to GigaStack GBIC ports. Cisco GigaStack technology uses proprietary GBICs and cables.

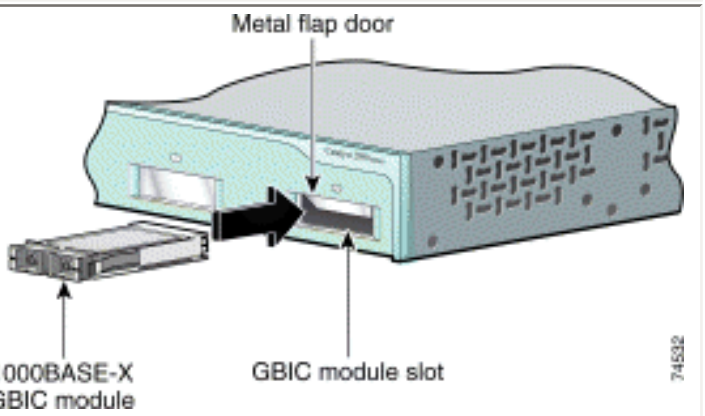
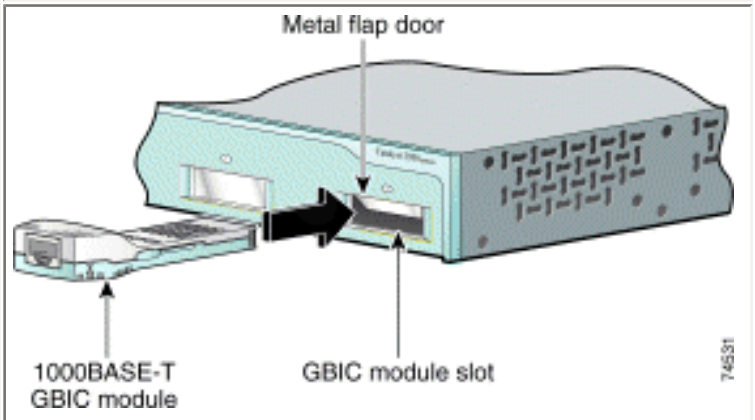
StackWise


This is used in order to connect to StackWise ports on the rear panel of Catalyst 3750 switches. Cisco StackWise technology uses proprietary connectors and cables.

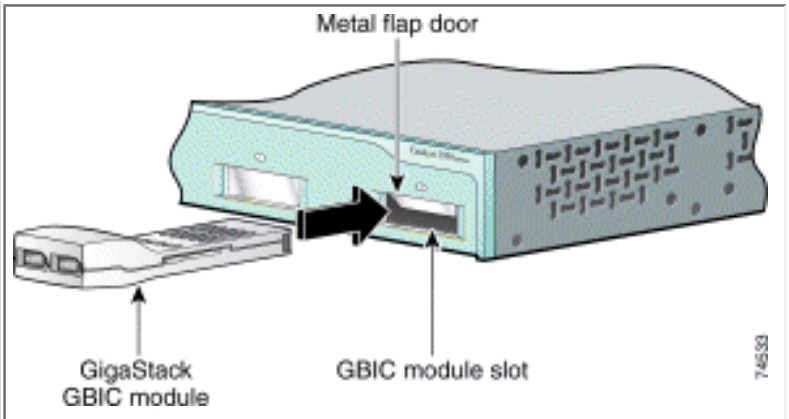
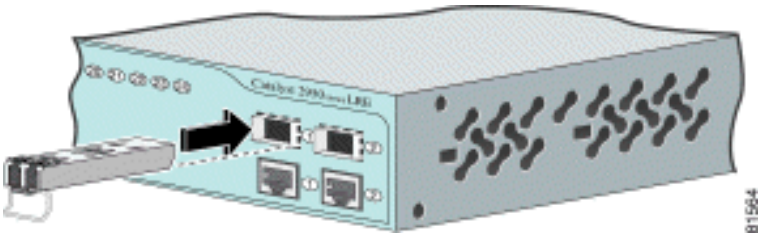
GBIC and SFP Connectors

Many Catalyst switches, Supervisor Engines and switching modules have removable Gigabit Interface Converters (GBICs) or small form factor pluggable (SFP)-type connectors. These diagrams show some of the most common GBIC and SFP connectors used on Catalyst switches.

Note: A Catalyst 2950 switch is used for demonstration purposes.

1000Base-X	1000Base-T
	
This uses SC fiber-optic connector and MMF or SMF cable. Part numbers: WS-G5484 (1000Base-SX GBIC) WS-G5486 (1000Base-LX/LH GBIC) WS-G5487 (1000Base-ZX GBIC)	This uses RJ-45 connector and cable. Part number: WS-G5483 (1000Base-T GBIC)

WS-X3500-XL GigaStack GBIC	SFP Module

	
This uses Cisco Gigastack connector and cable. Part Number: WS-X3500-XL (GigaStack GBIC)	This uses LC fiber-optic connector or RJ-45 for 1000Base-T SFP. Part numbers: GLC-T (1000Base-T SFP) GLC-SX-MM (1000Base-SX SFP) GLC-LH-SM (1000Base-LX/LH SFP) GLC-ZX-SM (1000Base-ZX)

GBIC and SFP support depends on the platform and software version. Refer to these documents for GigabitEthernet system requirements, as well as GBIC system requirements, Coarse Wave Division Multiplexer (CWDM) GBIC, Gigastack GBIC, and SFP system requirements:

- System Requirements to Implement Gigabit Ethernet on Catalyst Switches
- Catalyst GigaStack Gigabit Interface Converter Switch Compatibility Matrix
- 1000BASE-T GBIC Installation Notes
- Gigabit Interface Converter (GBIC) Module and Small Form-Factor Pluggable (SFP) GBIC Module Installation Information and Specifications
- GBIC, SFP, and Passive Devices Documentation

Catalyst 6500/6000 Switch Connectors and Cables

Identify the switch chassis and switching module part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: This guide does not cover cables for the Catalyst 6000 Optical Services Module (OSM) or port adapter cables for the FlexWAN card.

Refer to Optical Services Module Installation and Verification Note for OSM cabling and specifications.

Refer to FlexWAN Module Port Adapter Install/Config Notes for FlexWAN port adapter cabling and specifications.

Switching Module Part Number	Connector Type	Cable Description	Cable/ Connector Specifications
WS-X6148-RJ45V WS-X6248-RJ45 WS-X6348-RJ45 WS-X6348-RJ45V WS-X6548-RJ45 48 10/100 or 10/100 inline power Ethernet ports **WS-X6148-GE-TX WS-X6148V-GE-TX WS-X6548-GE-TX WS-X6548V-GE-TX** 48 10/100/1000 or 10/100/1000 inline power Ethernet ports (1000Base-T) **WS-X6748-GE-TX** 48 10/100/1000	RJ-45 (for 10/100 and 1000Base-T ports)	Category 5, 5e, or 6 UTP	

Ethernet ports (used with Supervisor 720 only)			
WS-X6516-GE-TX 16 10/100/1000 Base-T Gigabit Ethernet ports	RJ-45 (for 1000Base-T GBIC)	Category 5, 5e, or 6 UTP	
WS-X6148-RJ21V WS-X6248-TEL WS-X6248A-TEL WS-X6348-RJ21V WS-X6548-RJ21 48 Port 10/100 Ethernet ports	RJ-21 telco (4 connectors)	Category 5 UTP cable	
WS-X6024-10FL-MT 24 10Base-FL ports **WS-X6224-100FX-MT WS-X6324-100FX-MM WS-X6324-100FX-SM WS-X6524-100FX-MM** 24 100Base-FX ports	MT-RJ fiber-optic	SMF/MMF fiber-optic	Catalyst 6500/6000 Hardware Guide

WS-X6416-GE-MT 16 100Base-FX Gigabit Ethernet ports (1000Mbps)	MT-RJ fiber-optic	MMF fiber-optic
WS-X6408-GBIC WS-X6408A-GBIC WS-X6416-GBIC WS-X6516-GBIC WS-X6516A-GBIC WS-X6816-GBIC 8 or 16 GBIC module slots	RJ-45 (for 1000Base-T GBIC)	Category 5, 5e, 6 UTP
	SC fiber-optic [1] (1000BaseSX/ LX/ZX and CWDM GBICs)	MMF fiber-optic
WS-X6501-10GEX4 1 port 10-Gigabit Ethernet **WS-X6502-10GE** with Optical Interface Module (OIM) 1-port 10-Gigabit Ethernet **WS-X6704-10GE** 4 port 10-Gigabit Ethernet (used with Supervisor 720 only)	SC fiber-optic	SMF or dispersion-shifted SMF fiber-optic

WS-X6724-SFP 24 SFP module slots (used with Supervisor 720 only)	RJ-45 (for 1000Base-T SFP)	Category 5, 5e, 6 UTP	
	LC fiber-optic (for 1000Base-SX/LX/ZX SFPs)	SMF/MMF fiber-optic	

[1] LX/LH GBICs require a mode-conditioning patch cord between the GBIC and MMF. Refer to the *Mode-Conditioning Patch Cord* section of the document Connector and Cable Specifications for more information.

Catalyst 5500/5000 Connectors and Cables

Identify the switching module part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: This guide does not cover Catalyst 5000 Fiber Distributed Data Interface (FDDI) and Copper Distributed Data Interface (CDDI) cables, Catalyst 5000 ATM cables, or Catalyst 5000 Token Ring cables. Refer to Installation Preparation for cabling and specifications for these modules.

Switching Module Part Number	Connector Type	Cable Description	Cable/ Connector Specifications
WS-X5013 **WS-X5014** 24 or 48 10-Base-T Ethernet ports **WS-X5113** **WS-X5223** 12 or 24 100Base-TX Ethernet ports		Category 3	

WS-X5203 WS-X5213A 12 10/100 Ethernet ports **WS-X5224 WS-X5225R WS-X5234-RJ45J45** 24 10/100 Ethernet ports	RJ-45	or 5 UTP cable [1]	
WS-X5012 WS-X5012A WS-X5020 48 Port 10Base-T Ethernet ports **WS-X5239-RJ21** 48 10/100 Ethernet ports	RJ-21 telco	Category 3 or 5 UTP cable [1]	Catalyst 5000 Hardware Guide
WS-X5015-MT 24 10Base-FL ports **WS-X5236-FX-MT** WS-X5237-FX-MT 24 100Base-FX	MT-RJ fiber-optic	SMF/MMF fiber-optic	

WS-X5114 **WS-X5201** **WS-X5201R** 12 100Base-FX ports	SC fiber-optic (for 100Base-FX)	SMF/MMF fiber-optic	
WS-X5403 3 port GBIC modules slots **WS-X5410** 9 GBIC module slots	SC fiber-optic (for 1000BaseSX/LX/ZX GBICs)	SMF/MMF [2] fiber-optic	

[1] Category 3 UTP cable can transmit data at speeds of up to 10 Mbps and therefore is only used for 10 Mbps network devices. Catalyst 5000 10Base-T telco switching modules can use Category 3 cable, but Category 5 cable is required for all other 10/100 Base-TX switching modules.

[2] LX/LH GBICs require a mode-conditioning patch cord between the GBIC and MMF. Refer to the *Mode-Conditioning Patch Cord* section of the document Connector and Cable Specifications for more information.

Catalyst 4500/4000 Switch Connectors and Cables

Refer to Catalyst 4500 Series Module Installation Guide - Module Overview and Specifications for the detailed specification for the Catalyst 4500 switching modules.

Refer to Catalyst 4000 Switching Modules for the detailed specification for the Catalyst 4000 switching modules.

Catalyst 3750 Connectors and Cables

Identify the switch chassis part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: The Catalyst 3750 switch ships with a 0.5-meter StackWise cable that you can use in order to connect the StackWise ports on the rear panel. You can also order these StackWise cables from your Cisco

sales representative:

- CAB-STACK-50CM= (0.5-meter cable)
- CAB-STACK-1M= (1-meter cable)
- CAB-STACK-3M= (3-meter cable)

Part Number	Connector Type	Cable Type	Cable/ Connector Specifications
WS-C3750-24TS WS-C3750-48TS 24 or 48 10/100 Ethernet ports and 2 or 4 SFP module slots	RJ-45 (for 10/100 ports)	Category 5, 5e, or 6 UTP cable	Catalyst 3750 Hardware Guide
	SFP: LC fiber-optic (for 1000Base-SX/LX) *or* RJ-45 (for 1000Base-T)	SFP: SMF/ MMF fiber-optic, *or* Cat5, 5e, or 6	
WS-C3750G-24TS 24 10/100/1000 and 4 SFP module slots	RJ-45 (for 10/100/1000 ports)	Category 5, 5e, or 6 UTP cable	
	SFP: LC fiber-optic (for 1000Base-SX/LX) *or* RJ-45 (for 1000Base-T)	SFP: SMF/ MMF fiber-optic, *or* Cat5, 5e, or 6	
WS-C3750G-24T 24 10/100/1000 Ethernet ports	RJ-45	Category 5, 5e, or 6 UTP cable	

WS-C3750G-12S 12 SFP module slots	SFP: LC fiber-optic (for 1000Base-SX/LX) *or* RJ-45 (for 1000Base-T)	SFP: SMF/ MMF fiber-optic, *or* Cat5, 5e, or 6

Catalyst 3560/3560E Connectors and Cables

Identify the switch chassis part number. Use this table in order to match up the part number with the type of connector and cable used.

Part Number	Connector Type	Cable Type	Cable/Connector Specifications
WS-C3560-8PC	RJ-45 (10/100)	Two pair Cat 5, 5e, or 6 UTP	
	RJ-45 (10/100/1000)	Four pair Cat 5, 5e, or 6 UTP	
	SFP (100Base-FX/LX/BX)	LC Fiber-optic SMF/ MMF	
WS-C3560-24TS, WS-C3560-48TS, WS-C3560-24PS, WS-C3560-	RJ-45 (10/100) SFP (1000Base-T)	Two pair Cat 5, 5e, or 6 UTP	Catalyst 3560 Hardware Guide

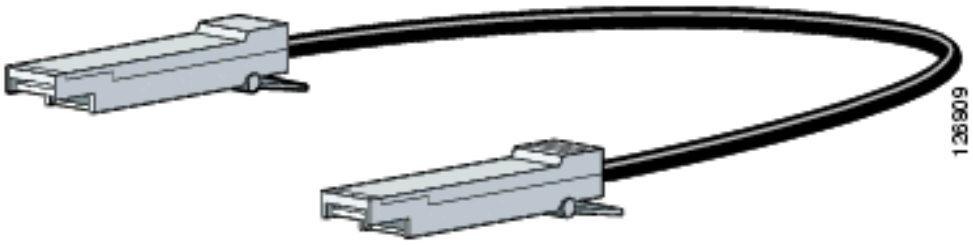
48PS	SFP (1000Base-LH/SX/ZX)	LC Fiber-optic SMF/ MMF	Also refer to Cisco Small Form-Factor Pluggable (SFP) Transceiver Modules Maintenance and Troubleshooting.
WS-C3560G-24TS, WS-C3560G-48TS, WS-C3560G-24PS, WS-C3560G-48PS	RJ-45 (10/100/1000) SFP (1000Base-T)	Four pair Cat 5, 5e, or 6 UTP	
	SFP (1000Base-LH/SX/ZX)	LC Fiber-optic SMF/ MMF	
WS-C3560E-24TD, WS-C3560E-24PD, WS-C3560E-48TD, WS-C3560E-48PD, WS-C3560E-48PD-F	RJ-45 (10/100/1000) SFP (1000Base-T)	Four pair Cat 5, 5e, or 6 UTP	
	SFP (100Base-FX, 1000Base-LH/SX/ZX)	LC Fiber-optic SMF/ MMF	
	X2 Based (10GBASE-SR/ LR/ER)	SC Fiber-optic SMF/ MMF	

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. The patch cable can connect two Catalyst 3560 switches in a cascaded configuration.

Part Number	Description

CAB-SFP-50CM=	Cisco Catalyst 3560 SFP Interconnect Cable (50 dcm)



Catalyst 3550 Connectors and Cables

Identify the switch chassis part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: Some Catalyst 3550 switches support the GigaStack GBIC, which requires a Cisco proprietary cable of either CAB-GS-50CM (0.5-meter cable) or CAB-GS-1M (1-meter cable).

Part Number	Connector Type	Cable Type	Cable/ Connector Specifications
WS-C3550-12T 10 10/100/1000 Ethernet ports and 2 GBIC module slots **WS-C3550-12G** 2 10/100/1000 Ethernet ports and 10 GBIC module slots	RJ-45 (for 10/100 or 10/100 inline power or 10/100/1000 ports)	Category 5, 5e, 6 UTP	
WS-C3550-24-SMI, WS-C3550-24-			

DC-SMI WS-C3550-48-SMI WS-C3550-24-EMI WS-C3550-48-EMI 24 or 48 10/100 Ethernet ports and 2 GBIC module slots **WS-C3550-24PWR-SMI WS-C3550-24PWR-EMI** 2410/100 inline-power Ethernet ports and 2 GBIC module slots	GBIC: RJ-45 for 1000Base-T GBIC *or* SC fiber-optic (for 1000Base-SX/LX/ZX and CWDM GBICs) *or* Gigastack GBIC	GBIC: Cat 5, 5e, 6 UTP *or* MMF/SMF fiber-optic *or* GigaStack cable	Catalyst 3550 Hardware Guide
WS-C3550-24-FX-SMI 24 100Base-FX ports and 2 GBIC module slots	MT-RJ fiber-optic (for 100Base-FX ports)	MMF fiber-optic	
	GBIC: RJ-45 for 1000Base-T GBIC *or* SC fiber-optic (for 1000Base-SX/LX/ZX and CWDM GBICs) *or* Gigastack GBIC	GBIC: Cat 5, 5e, 6 UTP *or* MMF/SMF fiber-optic *or* GigaStack cable	

Catalyst 2970 Connectors and Cables

Part Number	Connector Type	Cable Type	Cable/ Connector Specifications
WS-C2970G-24T 24 10/100/1000 Ethernet	RJ-45	Category 5, 5e, or 6 UTP	Catalyst 2970 Hardware Guide
WS-C2970G-24TS 24 10/100/1000 and 4 SFP module slots	RJ-45 (for 10/100/1000 ports)	Category 5, 5e, or 6 UTP	
	SFP: RJ-45 (for 1000Base-T) *or* LC fiber-optic (for 1000Base-SX/ LX/ZX)	SFP: Cat5, 5e, or 6 UTP *or* SMF/ MMF fiber-optic	

Catalyst 2950/2955 Connectors and Cables

Identify the switch chassis part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: This guide does not cover the Catalyst 2950 Long-Reach Ethernet (LRE) Switches. Refer to Long-Reach Ethernet Products for more information on cabling and specifications.

Note: Some Catalyst 2950 switches support the GigaStack GBIC, which requires a Cisco proprietary cable of either CAB-GS-50CM (0.5-meter cable) or CAB-GS-1M (1-meter cable).

Part Number	Connector Type	Cable Type	Cable/ Connector Specifications

WS-C2950-12 and WS-C2950-24 12 or 24 10/100 Ethernet ports	RJ-45	Category 5, 5e, or 6 UTP cable	
WS-C2955C-12 and WS-C2950C-24 12 or 24 10/100 Ethernet ports and 2 100BASE-FX ports	RJ-45 (for 10/100 ports)	Category 5, 5e, or 6 UTP cable	
	MT-RJ fiber-optic	MMF fiber-optic	
WS-C2950G-12-EI, WS-C2950G-24-EI, WS-C2950G-24-EI-DC, and WS-C2950G-48-EI 12, 24, or 48 10/100 Ethernet ports and 2 GBIC module slots	RJ-45 (for 10/100 ports)	Category 5, 5e, or 6 UTP	Catalyst 2950 Hardware Guide Catalyst 2955 Hardware Guide
	GBIC: RJ-45 for 1000Base-T GBIC *or* SC fiber-optic (for 1000Base-SX/LX/ZX and CWDM GBICs) *or* Gigastack GBIC	GBIC: Cat 5, 5e, 6 UTP *or* MMF/ SMF fiber-optic *or* GigaStack cable	
WS-C2950SX-24 and WS-C2950SX-48-SI 24 or 48 10/100 Ethernet ports and 2 1000BASE-SX ports	RJ-45 (for 10/100 ports)	Category 5, 5e, or 6 UTP	
	MT-RJ fiber-optic (for 1000BASE-SX ports)	MMF/ SMF fiber-optic	

WS-C2955T-12 WS-C2950T-24 WS-C2950T-48-SI 12, 24 or 48 10/100 Ethernet ports and 2 10/100/1000 Ethernet ports	RJ-45	Category 5, 5e, or 6 UTP cable	
WS-C2955S-12 12 10/100 Ethernet ports and 2 100Base-LX ports	RJ-45 (for 10/100 ports)	Category 5, 5e, or 6 UTP	
	MT-RJ fiber-optic	SMF fiber-optic	

Catalyst 2940 Connectors and Cables

Identify the switch chassis part number. Use this table in order to match up the part number with the type of connector and cable used.

Part Number	Connector Type	Cable Type	Cable/ Connector Specifications
WS-C2940-8TT-S 8 10/100 Ethernet ports and 1 10/100/1000 port	RJ-45	Category 5, 5e, or 6 UTP	Catalyst 2940 Hardware Guide
WS-C2940-8TF-S 8 10/100 Ethernet ports, 1 100BASE-FX port, and 1	RJ-45	Category 5, 5e, or 6 UTP	
	MT-RJ fiber-optic	MMF fiber-optic	

SFP module slot	SFP: RJ-45 (for 1000Base-T) *or* LC fiber-optic (for 1000Base-X)	SFP: Cat5, 5e, or 6 UTP *or* SMF/ MMF fiber-optic	

Catalyst 2900/3500 XL Connectors and Cables

Identify the switch chassis or expansion module part number. Use this table in order to match up the part number with the type of connector and cable used.

Note: This guide does not cover the WS-C2912-LRE-XL or WS-C2912-LRE-XL switches. Refer to the *Long-Range Ethernet Ports* section of Product Overview (Catalyst 2900 Series XL switches) for more information on cabling and specifications.

Note: Some Catalyst 3500XL switches support the GigaStack GBIC, which requires a Cisco proprietary cable of either CAB-GS-50CM or CAB-GS-1M.

Catalyst 2900/3500XL Switches			
Switch Chassis Part Number	**Connector Type**	**Cable Description**	**Cable/ Connector Specifications**
WS-C3508G-XL 8 GBIC module slots	SC fiber-optic (for 1000Base-SX/LX/ZX GBICs) *or* Gigastack GBIC	MMF/SMF fiber-optic	
WS-C3512-XL WS-C3524-XL WS-C3524-PWR-XL WS-C3548-	RJ-45 (for 10/100 ports)	Category 5 UTP	

XL 12, 24 or 48 10/100 or 10/100 inline power Ethernet ports and 2 GBIC module slots	GBIC: SC fiber-optic (for 1000Base-SX/LX/ZX GBICs) *or* Gigastack GBIC	GBIC: MMF/ SMF fiber-optic *or* GigaStack cable	Catalyst 3500XL Hardware Guide Catalyst 2900XL Hardware Guide
WS-C2912-XL WS-C2924-XL 12 or 24 10/100 Ethernet ports	RJ-45	Category 5 UTP	
WS-C2924C-XL 22 10/100 Ethernet ports and 2 100Base-FX ports	SC fiber-optic (for 100Base-FX ports)	MMF fiber-optic	
Catalyst 2900XL Switches with Expansion Slots			
Switch Chassis Part Number	**Connector Type**	**Cable Description**	**Cable/ Connector Specifications**
WS-C2924M-XL 24 10/100 Ethernet ports and 2 expansion slots	RJ-45	Category 5 UTP	Catalyst 2900XL

WS-C2912MF-XL 12 100Base-FX ports and 2 expansion slots	SC fiber-optic (for 100Base-FX ports)	MMF fiber-optic	Hardware Guide
Catalyst 2900XL Expansion Modules			
Switch Chassis Part Number	**Connector Type**	**Cable Description**	**Cable/ Connector Specifications**
WS-X2914-XL WS-X2914-XL-V 4 10/100 Ethernet ports **WS-X2922-XL** 2 10/100 Ethernet ports	RJ-45	Category 5 UTP	Catalyst 2900XL Hardware Guide
WS-X2922-XL-V 2 100Base-FX ports **WS-X2924-XL-V** 4 100Base-FX ports	SC fiber-optic (for 100 Base-FX)	MMF fiber-optic	
WS-X2931-XL 1 GBIC module slot	SC fiber-optic (for SX/LX GBICs)	MMF fiber-optic	

WS-X2932-XL 1 GBIC module slot	RJ-45 (for 1000Base-T GBIC)	
WS-X2951-XL 1 ATM-OC-3	RJ-45 (for ATM-OC-3)	Category 5 UTP
WS-X2961-XL 1 ATM-OC-3	SC fiber-optic (for ATM-OC-3)	MMF fiber-optic
WS-X2971-XL WS-X2972-XL 1 ATM-OC-3	SC fiber-optic (for ATM-OC-3)	SMF fiber-optic

AC Power Supplies, Connectors, and Cords for Catalyst Switches

In this section you see the summary of AC power supplies, power connectors, and cords for Catalyst 6500/6000, 5500/5000 and 4500/4000 series, and Catalyst 3750, 2950, 2940, and 2900/3500XL series switches. Refer to the Power Installation Guidelines in the tables that correspond in the next section for international power requirements, DC power requirements, and other technical specifications.

Different Modules require different amount of power. Inline Power modules supplies the power to the IP phones. Cisco has inline power module to power the IP phones. You have to choose the correct power supply in order to support the various line cards, modules and Supervisor Engines on the switch. Cisco offers a tool called the Cisco Power calculator which can be used in order to choose the correct power supply for your switch. Launch the Cisco Power calculator and fill out the Product family, Supervisor Engine, Input voltage, line cards and the number of PoE devices. IP phones are the example for PoE devices and most of the IP phones belong to IEEE 802.3af Device - Class 2 (7W). Then the power calculator shows the results of different choices of Power Supplies. From that you can choose the required power supply. The power supplies successfully operate at their greatest capacity if the input voltage is between 200 and 240 volts AC.

Catalyst 6500/6000 Series Switch Power Supplies and Cables

This table is a quick reference for the available power supplies and cables in North American standard. Refer to Catalyst 6500 Power supply specifications for the detailed specifications you can. These few points are important to know:

- The 950W (PWR-950-AC), 950W DC (PWR-950-DC) and 1400W AC (PWR-1400-AC) are used only with the Catalyst 6503 and Catalyst 6503-E Switches.
- The Power supplies 1000W and 1300W can be used only with Catalyst 6506, 6509, and 6509-NEB-A switches. The Supervisor Engines SUP32 and SUP720 are incompatible when 1000W and 1300W power supplies are used.
- With a fully populated Catalyst 6513 switch, two 2500 W power supplies are not fully redundant.
- If you operate the 2500 W power supply at the low range input (100 to 120 VAC), it is not redundant in a fully populated Catalyst 6509, Catalyst 6509-E, Catalyst 6509-NEB, or Catalyst 6509-NEB-A switch.
- The Power supplies 2500W, 2700W, and 3000W can operate at two different voltage levels (110Vac and 220Vac). The Power supply output depends on the supplied input AC power. This table shows the power ouput:

Power Supply	Power Output at 110Vac, 16A	Power Output at 220Vac, 16A
2500W	1300W	2500W
2700W	1350W	2700W
3000W	1400W	3000W

- The AC power cords are hardwired to the 4000W Power supplies (WS-CAC-4000W-US=). It supports only NEMA L6-30.
- The 6000W power supply cannot be installed in the Catalyst 6503, Catalyst 6503-E, and Catalyst 6504-E switch chassis.
- When 6000W power supply is used with the chassis Catalyst 6506, 6509, 6509-NEB, and 6509-NEB-A, it operates at 4000W maximum output. It operates at 6000W maximum output when it is used with Catalyst 6506-E, 6509-E, and 6513.
- 6000W power supply has two AC Power inputs. These are the various combinations of AC inputs and the corresponding net power output:

6000W Power Supply Power Options

AC Input 1	AC Input 2	Net Power Supply Output
110Vac, 16A	Not Connected	No Power Output
Not Connected	110Vac, 16A	No Power Output
110Vac, 16A	110Vac, 16A	2900W
220Vac, 16A	Not Connected	2900W
Not Connected	220Vac, 16A	2900W
110Vac, 16A	220Vac, 16A	2900W
220Vac, 16A	110Vac, 16A	2900W
220Vac, 16A	220Vac, 16A	6000W

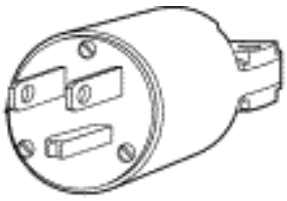
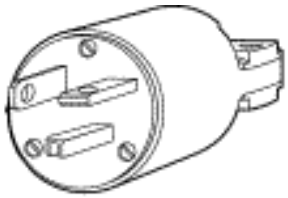
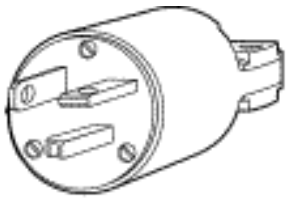
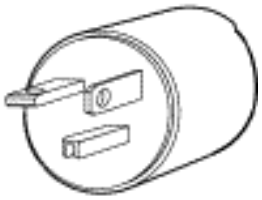
Note: If you have 110Vac power inputs, you have to connect both the AC inputs of the 6000W power supply in order to power on the switch.

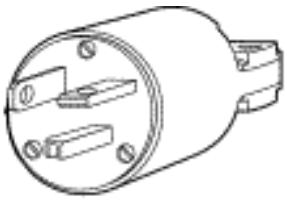
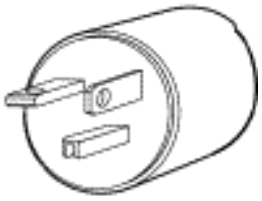
- The Catalyst 6500 series switches allow you to mix AC-input and DC-input power supplies in the same chassis.

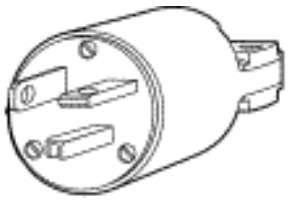
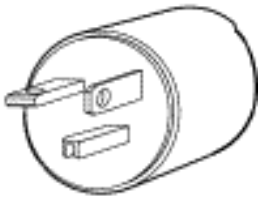
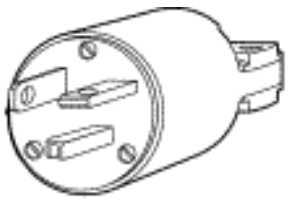
The modules have different power requirements, and some configurations require more power than a single power supply can provide. The power management feature allows you to power all installed modules with two power supplies. But, redundancy is not supported in this configuration because the total power drawn from both power supplies is at no time greater than the capability of one supply. Refer the Power Management and Environmental Monitoring of the Catalyst 6500 Software Configuration Guide for the detailed explanation of Power redundancy.

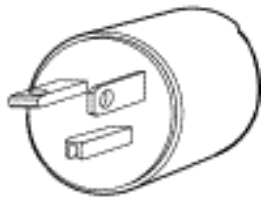
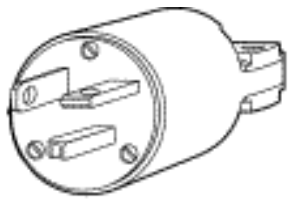
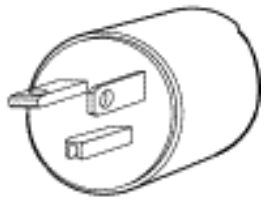
Note: This document does not discuss the total power available with the currently shipped power supplies for Catalyst 6500/6000 series switches or the amount drawn from each Catalyst 6500/6000 series line card. Refer to the document Power Management for Catalyst 6000 Series Switches for this information.

Catalyst 6500/6000			
Power Supply Part Number	**Power Cord Part Number**	**Connector Type**	**Power Installation Guidelines**

PWR-950-AC 950W power supply **WS-CAC-1000W** 1000W power supply	CAB-7KAC-15 AC Power Cord North America, 15A	 North America NEMA 5-15P plug (15A)	
WS-CAC-1300W 1300W Power Supply	CAB-7513AC AC Power Cord North America (110Vac, 20A)	 North America NEMA 5-20P plug (20A)	
PWR-1400-AC 1400W Power Supply	CAB-7513AC= AC Power Cord North America (110Vac, 20A)	 North America NEMA 5-20P plug (20A)	
	CAB-AC-2500W-US1= 250Vac 16A, straight-blade NEMA 6-20 plug	 North America (Non-locking) (2500W power supply) NEMA 6-20 plug (20A)	

	CAB-AC-C6K-TWLK= 250Vac 16A, twist-lock NEMA L6-20 plug	 North America (Locking) (2500W power supply) NEMA L6-20 plug (20A)	
WS-CAC-2500W 2500W AC Power Supply	CAB-7513AC AC Power Cord North America (110Vac, 20A)	 North America NEMA 5-20P plug (20A)	
	CAB-AC-2500W-US1 250Vac 16A, straight-blade NEMA 6-20 plug	 North America (Non-locking) (2500W power supply) NEMA 6-20 plug (20A)	
	CAB-AC-C6K-TWLK 250Vac 16A, twist-lock NEMA L6-20 plug	 North America (Locking) (2500W power supply) NEMA L6-20 plug (20A)	
			Catalyst 6500/6000

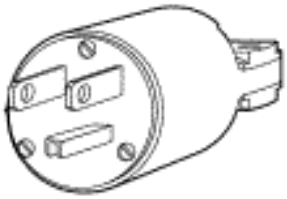
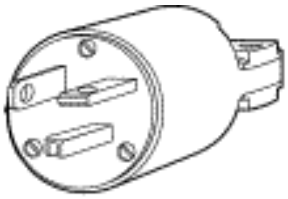
PWR-2700-AC/4 2700W AC Power Supply	CAB-7513AC AC Power Cord North America (110Vac, 20A)	 North America NEMA 5-20P plug (20A)
	CAB-AC-2500W-US1 250Vac 16A, straight-blade NEMA 6-20 plug	 North America (Non-locking) (2500W power supply) NEMA 6-20 plug (20A)
	CAB-AC-C6K-TWLK 250Vac 16A, twist-lock NEMA L6-20 plug	 North America (Locking) (2500W power supply) NEMA L6-20 plug (20A)
WS-CAC-3000W 3000 W AC-input power	**CAB-7513AC=** 110Vac 20A, NEMA 5-20 plug	 North America NEMA 5-20P plug (20A)

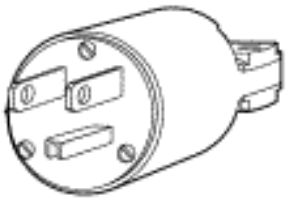
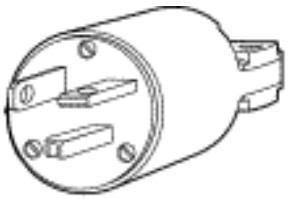
supply	**CAB-AC-2500W-US1=** 250Vac 16A, straight-blade NEMA 6-20 plug	 North America (Non-locking) (2500W power supply) NEMA 6-20 plug (20A)
	CAB-AC-C6K-TWLK= 250Vac 16A, twist-lock NEMA L6-20 plug	 North America (Locking) (2500W power supply) NEMA L6-20 plug (20A)
WS-CAC-4000W-US 4000W AC Power Supply	Cable-attached to the power supply 250Vac 30A	 North America (Locking) (4000W power supply) NEMA L6-30 plug (30A, 250V)
WS-CAC-6000W 6000W AC Power supply	**CAB-7513AC=** 110Vac 20A, NEMA 5-20 plug	 North America NEMA 5-20P plug (20A)
	CAB-AC-2500W-US1= 250Vac 16A, straight-blade NEMA 6-20 plug	 North America (Non-locking) (2500W power supply) NEMA 6-20 plug (20A)

	CAB-AC-C6K-TWLK= 250Vac 16A, twist-lock NEMA L6-20 plug	 North America (Locking) (2500W power supply) NEMA L6-20 plug (20A)	

Catalyst 5500/5000 Series Switch Power Supplies and Cables

This table has a quick reference for the available power supplies and the Power cord part number.

Catalyst 5002, 5505, 5500, and 5509			
Power Supply Part Number	**Power Cord Part Number**	**Connector Type**	**Power Installation Guidelines**
WS-C5008B (Catalyst 5002 and 5505)	CAB-7KAC	 North America NEMA 5-15P plug (13A for Catalyst 5000 series, Catalyst 5002 and 5505 switches) (15A for Catalyst 5509 swtiches)	Catalyst 5500/5000
WS-C5508 (Catalyst 5500)	CAB-7513AC	 North America NEMA 5-20P plug (20A)	

WS-C5518 (Catalyst 5509)	CAB-7KAC	 North America NEMA 5-15P plug (13A for Catalyst 5000 series, Catalyst 5002 and 5505 switches) (15A for Catalyst 5509 swtiches)
	CAB-7513AC	 North America NEMA 5-20P plug (20A)

Catalyst 4500/4000 Series Switch Power Supplies and Cables

Refer to the Power Connection Guidelines for AC-Powered Systems section in Catalyst 4500 Series Hardware Installation Guide - Preparing for Installation for the list of Power supplies, cables and the corresponding part numbers.

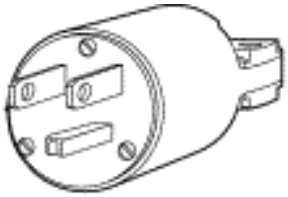
Refer to Catalyst 4000 Series Installation Guide - Site Planning for the list of Catalyst 4000 Power supplies, cables and the corresponding part numbers.

Catalyst 2900/3500XL, 2940, 2950, 3550 and 3750 Series Switch Power Supplies and Cables

Catalyst 2900/3500, 2940, 2950, 3550 and 3750 switches require standard 110V, 15 Amp AC input Power. Refer to these Hardware Installation Guides for the detailed power specifications:

- Catalyst 3750 Switch Hardware Installation Guide
- Catalyst 3550 Multilayer Switch Hardware Installation Guide
- Catalyst 2950 Switch Hardware Installation Guide

Catalyst 2900/3500XL, 2940, 2950, 3550 and 3750

Power Supply Part Number	Power Cord Part Number	Connector Type	Power Installation Guidelines
Internal non-replaceable AC power supply	CAB-AC=	 North America NEMA 5-15P plug (15A)	N/A

RJ-21 to RJ-45 Pin-Out Pattern

All Catalyst family 10/100TX telco switching modules incorporate industry-standard RJ-21 connectors and require compatible Category 5 cabling systems to achieve 100 Mbps data rates.

Category 5 telco cables can be ordered directly from Cisco. Refer to Cisco.com for ordering information. This is the information on Cisco part numbers.

Model Number	Description
CAB-5-M180M120-10=	10 foot, male 180 degree to male 120 degree, Category 5 telco cable
CAB-5-M180M120-5=	5 foot, male 180 degree to male 120 degree, Category 5 telco cable
CAB-5-M120M120-10=	10 foot, male 120 degree to male 120 degree, Category 5 telco cable
CAB-5-M120M120-5=	5 foot, male 120 degree to male 120 degree, Category 5 telco cable
CAB-5-M120HYD-10=	10 foot, male 120 degree to (12) RJ-45s, Category 5 telco cable
CAB-5-M120HYD-5=	5 foot, male 120 degree to (12) RJ-45s, Category 5 telco cable

This table shows the pin-out pattern used on Catalyst 10/100TX (and 10BaseT) RJ-21 switching modules.

RJ-21 Pin Number	Wire Color	RJ-45 Pin Number	Port Number
26	White/Blue	1	1
1	Blue/White	2	
27	White/ Orange	3	
2	Orange/ White	6	
28	White/Green	1	2
3	Green/White	2	
29	White/ Brown	3	
4	Brown/ White	6	
30	White/Slate	1	3
5	Slate/White	2	
31	Red/Blue	3	
6	Blue/Red	6	
32	Red/Orange	1	4
7	Orange/Red	2	
33	Red/Green	3	
8	Green/Red	6	
34	Red/Brown	1	5
9	Brown/Red	2	
35	Red/Slate	3	
10	Slate/Red	6	
36	Black/Blue	1	6
11	Blue/Black	2	

37	Black/ Orange	3	
12	Orange/ Black	6	
38	Black/Green	1	7
13	Green/Black	2	
39	Black/ Brown	3	
14	Brown/ Black	6	
40	Black/Slate	1	8
15	Slate/Black	2	
41	Yellow/Blue	3	
16	Blue/Yellow	6	
42	Yellow/ Orange	1	9
17	Orange/ Yellow	2	
43	Yellow/ Green	3	
18	Green/ Yellow	6	
44	Yellow/ Brown	1	10
19	Brown/ Yellow	2	
45	Yellow/Slate	3	
20	Slate/Yellow	6	
46	Violet/Blue	1	11
21	Blue/Violet	2	
47	Violet/ Orange	3	

22	Orange/ Violet	6	
48	Violet/Green	1	12
23	Green/Violet	2	
49	Violet/ Brown	3	
24	Brown/ Violet	6	
50	Violet/Slate	NA	NA
25	Slate/Violet	NA	NA

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Related Information

- **LAN Product Support Pages**
- **LAN Switching Support Page**

- **Technical Support & Documentation - Cisco Systems**
