Guide to Supported Hardware for Cisco 7600 Series Routers with Cisco IOS Release 12.2SR

This publication lists the supported hardware for Cisco 7600 series routers with Cisco IOS Release 12.2SR.

Use this publication with the *Release Notes for Cisco IOS Release 12.2SRA on the Cisco 7600 Series Routers*.

Contents

This publication contains these sections:

CISCO SYSTEMS

Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Document Revision History

Revision	Date	Change Summary
OL-10362-4	January, 2008	Added the following for Cisco IOS release 12.2(33)SRC: • SPA-2CHT3-CE-ATM on SIP-400 • WS-X6708-10G-3C, WS-X6708-10G-3CXL • RSP720-3C-10GE, RSP720-3CXL-10GE • SPA-1X10GE-L-V2 on the SIP-400 • SPA-1xCHSTM1/OC3 on the SIP-400 • SFP-GE-T Support on the SIP-400, SIP-600, and Ethernet Services 20G line cards • SPA-2XCT3/DS0, SPA-4XCT3/DS0 support on SIP-400 • SPA-8XCHT1/E1 on the SIP-400 • SPA-2XT3/E3, SPA-4XT3/E3 support on SIP-400 • Wireless Services Module (WiSM)
OL-10362-3	June, 2007	Added the following for Cisco IOS release 12.2(33)SRB1: • Cisco 7606-S router chassis • Cisco 7603-S router chassis • 1500 W DC input (PWR-1500-DC) power supply • XFP-10GZR-OC192LR Gigabit Ethernet Transceiver Module • Cisco 7600 Series ACE 20 HW for Session Border Controller
OL-10362-2	February, 2007	Added the following for Cisco IOS release 12.2SRB: • RSP 720 • Policy Feature Card 3C • Policy Feature Card 3CXL • Distributed Forwarding Card 3CXL • SFP-GE-S, SFP-GE-L, SFP-GE-Z • 1-Port and 24-Port Channelized CEoP SPAs • Ethernet Services 20G line cards • Application Control Engine (ACE) Module • Service Application Module for IP • 6000 W DC power supply • Cisco 7609-S router chassis
OL-10362-1	May, 2006	Initial version

Supported Hardware

These sections describe the hardware supported in Cisco IOS Release 12.2SR:

Note
- Use the values in the "Power Required" column to determine the exact power requirements for your configuration to ensure that you are within the power budget.
- Daughtercard power is shown separately.
- Enter the **show power** command to display current system power usage.

Supervisor Engines

Supervisor Engine 720

Supervisor Engine 720 Common Features

- Integrated 720-Gbps Switch Fabric
- 64-MB bootflash device
- 2 CompactFlash Type II slots (disk0 and disk1)

> ✎
> **Note**   Some Supervisor Engine 720 Release 12.2SR images are larger than the bootflash device and must be stored on a CompactFlash card.

- Two Ethernet uplink ports:
    – 1-MB packet buffer per port
    – Port 1—Gigabit Ethernet SFP
    – Port 2—Configurable as Gigabit Ethernet SFP or 10/100/1000 Mbps RJ-45
- QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**
- Port grouping:
    – Number of ports: 2
    – Number of port groups: 1
    – Port ranges per port group: 1–2
- Supervisor Engine 720 requires a high-capacity fan tray (see the "Fan Trays" section on page 52)

Supervisor Engine 720 with PFC3BXL

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-SUP720-3BXL	7.82 A@42 V	Supervisor Engine 720 with PFC3BXL:
		
		• 1-GB DRAM
		• Policy Feature Card 3BXL (PFC3BXL); see the "RSP720-3C-10GE" section on page 9
		• Multilayer Switch Feature Card 3 (MSFC3):
		    – 1-GB DRAM
		    – 64-MB bootflash
			12.2(33)SRA

Note   There are no memory upgrade options for WS-SUP720-3BXL.

Supervisor Engine 720 with PFC3B

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-SUP720-3B	7.50 A @42 V	Supervisor Engine 720 with PFC3B:
		
		• 512-MB DRAM
		
		• Policy Feature Card 3B (PFC3B); see the "RSP720-3C-10GE" section on page 9
		
		• Multilayer Switch Feature Card 3 (MSFC3):
		  – 512-MB DRAM
		  – 64-MB bootflash
			12.2(33)SRA

Note

- There are no memory-only upgrade options for WS-SUP720-3B.

- Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_16220.htm

Supervisor Engine 32

Note Supervisor Engine 32 does not support this hardware:

- WS-SUP720-3B
- WS-F6K-PFC3BXL—Policy Feature Card 3BXL (PFC3BXL)
- Distributed Forwarding Cards (DFCs) (installed DFCs do not power up with a Supervisor Engine 32)
- Switch Fabric Modules
- These switching modules:
    - WS-X6704-10GE—4-port 10-Gigabit Ethernet XENPAK
    - WS-X6748-SFP—48-port Gigabit Ethernet SFP
    - WS-X6724-SFP—24-port Gigabit Ethernet SFP
    - WS-X6816-GBIC—16-port Gigabit Ethernet GBIC
    - WS-X6748-GE-TX—48-port 10/100/1000 RJ-45
- 7600-SIP-600—SPA Interface Processor-600
- Optical Services Modules (OSMs)
- CISCO7603—3-slot chassis

- These service modules:
  - WS-SVC-AON-1-K9—Application-Oriented Networking Module
  - WS-SVC-AGM-1-K9—Anomaly Guard Module
  - WS-SVC-ADM-1-K9—Traffic Anomaly Detector Module
  - WS-SVC-MWAM-1—Multi-Processor WAN Application Module
- Supervisor Engine 32 does not support these software features and commands:
  - Protocol independent multicast (PIM) snooping designated-router flooding configurability
  - NetFlow version 9
  - Egress multicast replication
  - Multicast replication mode detection
  - All fabric configuration commands

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SUP32-10GE-3B	2.39 A@42 V	Supervisor Engine 32:	12.2(33)SRA
WS-SUP32-GE-3B	1.89 A@42 V	• One 10/100/1000 Mbps RJ-45 port	
		• WS-SUP32-10GE—two Gigabit Ethernet ports (requires XENPAKs)	
		• WS-SUP32-GE—eight Gigabit Ethernet SFP ports (requires Gigabit Ethernet SFPs)	
		• 512-MB DRAM	
		• 256-MB bootflash	
		• Policy Feature Card 3B (PFC3B); see the "RSP720-3C-10GE" section on page 9	
		• Multilayer Switch Feature Card 2A (MSFC2A):	
		– 512-MB DRAM	
		– 64-MB bootflash	

Note See this publication for Supervisor Engine 32 hardware information:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/6000hw/supe_gd/index.htm

Route Switching Processor 720

RSP 720 Common Features

- Two Gigabit Ethernet uplink ports: port 1 supports a 1-Gbps small form pluggable (SFP) module; port 2 is configurable with either a 1-Gbps SFP module or a 10/100/1000-Mbps RJ-45
- Integrated 720-Gbps switch fabric
- Two CompactFlash Type II slots (on front panel) and 2-GB internal CompactFlash (1 GB each for RP and SP)
- Requires larger power supplies and a high-speed fan tray

> • QoS port architecture (Rx/Tx) is **1p1q4t/1p2q2t**

RSP720-3C-GE

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

RSP720-3C-GE	6.66 A @42 V	Route Switch Processor 720 with PFC3C:
		
		• Two Gigabit Ethernet uplink ports: port 1 supports a 1-Gbps small form pluggable (SFP) module; port 2 is configurable with either a 1-Gbps SFP module or a 10/100/1000-Mbps RJ-45
		
		• Integrated 720-Gbps switch fabric
		
		• PFC3C and MSFC4 with 512-MB bootflash, 4-MB NVRAM, 4-MB ROMMON, and several DRAM options:
		
		  – Route processor (RP): 1- to 4-GB DRAM (default 1 GB)
		
		  – Switch processor (SP): 1- to 2-GB DRAM (default 1 GB)
		
		• 2 CompactFlash Type II slots (on front panel) and 2-GB internal CompactFlash (1 GB each for RP and SP)
		
		• Requires larger power supplies and a high-speed fan tray
		
		• QoS port architecture (Rx/Tx) is **1p1q4t/1p2q2t**
			12.2(33)SRB

Note

- There are no memory-only upgrade options for RSP720-3C-GE.
- The following hardware and features are not supported by the RSP720-3C-GE:
  - CISCO7603 router, OSR-7609 router.
  - Optical Service Modules (OSMs), FlexWAN module (Enhanced FlexWAN module is supported).
  - In-service software upgrade (ISSU) is not supported in Cisco IOS Release 12.2SRB.
  - Server load balancing (SLB) is not supported.
- The RSP720-3C-GE supports the IPSEC-SPA-2G beginning with Cisco IOS Release 12.2(33)SRC.

RSP720-3CXL-GE

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

RSP720-3CXL-GE	7.33 A@42 V	Route Switch Processor 720 with PFC3CXL:
		
		• Two Gigabit Ethernet uplink ports: port 1 supports a 1-Gbps small form pluggable (SFP) module; port 2 is configurable with either a 1-Gbps SFP module or a 10/100/1000-Mbps RJ-45
		
		• Integrated 720-Gbps switch fabric
		
		• PFC3CXL (high-capacity) and MSFC4 with 512-MB bootflash, 4-MB NVRAM, 4-MB ROMMON, and several DRAM options:
		
		  – Route processor (RP): 1- to 4-GB DRAM (default 2 GB)
		
		  – Switch processor (SP): 1- to 2-GB DRAM (default 1 GB)
		
		• 2 CompactFlash Type II slots (on front panel) and 2-GB internal CompactFlash (1 GB each for RP and SP)
		
		• Requires larger power supplies and a high-speed fan tray
		
		• QoS port architecture (Rx/Tx) is **1p1q4t/1p2q2t**
			12.2(33)SRB

Note

• There are no memory-only upgrade options for RSP720-3CXL-GE.

• The following hardware and features are not supported by the RSP720-3CXL-GE :

  – Unsupported chassis: CISCO7603, OSR-7609.

  – Unsupported modules: Optical Service Modules (OSMs), FlexWAN module (Enhanced FlexWAN module is supported).

  – In-service software upgrade (ISSU) is not supported in Cisco IOS Release 12.2SRB.

  – Server load balancing (SLB) is not supported.

• The RSP720-3CXL-GE supports the IPSEC-SPA-2G beginning with Cisco IOS Release 12.2(33)SRC.

RSP720-3C-10GE

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

RSP720-3C-10GE	7.33 A@42 V	Route Switch Processor 720 with uplink ports:
		
		• Two 10 Gigabit Ethernet (10-GE) uplink ports support 10-Gbps X2 modules
		
		• Three Gigabit Ethernet (1-GE) uplink ports: two ports support 1-Gbps small form-factor pluggable (SFP) module; one port supports 10/100/1000-Mbps RJ-45 connector
		
		• Integrated 720-Gbps switch fabric
		
		• PFC3C and MSFC4 with 512-MB bootflash, 4-MB NVRAM, 4-MB ROMmon, and several DRAM options:
		
		  – Route processor (RP): 1- to 2-GB DRAM (default 1 GB)
		
		  – Switch processor (SP): 1- to 2-GB DRAM (default 1 GB)
		
		• One CompactFlash Type II slot (on front panel) and one 2-GB internal CompactFlash (1 GB each for RP and SP)
		
		• Requires larger power supplies and a high-speed fan tray
		
		• QoS port architecture, 10-GE ports (Rx/Tx): **8q8t/1p7q8t** (CoS)
		
		• QoS port architecture, 1-GE ports (Rx/Tx): **2q8t/1p3q8t**
			12.2(33)SRC

Note

• There are no memory-only upgrade options for the RSP720-3C-10GE.

• The RSP720-3C-10GE does not support the following chassis and modules:

  – Unsupported chassis: Cisco 7603, 7606, and 7613 chassis

  – Unsupported modules: Services modules, Optical Service Modules (OSMs), FlexWAN module.

• The RSP720-3C-10GE supports the following 10-Gigabit Ethernet optics: X2-10GB-LR, X2-10GB-ER, X2-10GB-SR, X2-10GB-CX4, and X2-10GB-LX4.

• The RSP720-3C-10GE supports the following Gigabit Ethernet optics: GLC-SX-MM, GLC-LH-SM, GLC-ZX-SM, GLC-T, SFP-GE-S, SFP-GE-L, SFP-GE-T, and GLC-BX-D.

In Cisco IOS Release 12.2SRC, the RSP720-10GE does not support the following features, which are supported on the RSP720:

• High-availability features such as NonStop Forwarding with Stateful Switchover (NSF/SSO) and In-Service Software Upgrade (ISSU) are not supported. Only Route Processor Redundancy (RPR) mode is supported.

• The uplinks on the standby RSP720-10GE are not active. This restriction exists because the uplink ports must perform lookups on the active RSP, which is not possible in RPR mode.

• Broadband aggregation features are not supported.

RSP720-3CXL-10GE

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

RSP720-3CXL-10GE	7.33 A@42 V	Route Switch Processor 720 with PFC3CXL:
		
		• Two 10 Gigabit Ethernet (10-GE) uplink ports support 10-Gbps X2 modules
		
		• Three Gigabit Ethernet (1-GE) uplink ports: two ports support 1-Gbps small form-factor pluggable (SFP) module; one port supports 10/100/1000-Mbps RJ-45 connector
		
		• Integrated 720-Gbps switch fabric
		
		• PFC3CXL (high-capacity) and MSFC4 with 512-MB bootflash, 4-MB NVRAM, 4-MB ROMmon, and several DRAM options:
		
		  – Route processor (RP): 1- to 2-GB DRAM (default 2 GB)
		
		  – Switch processor (SP): 1- to 2-GB DRAM (default 1 GB)
		
		• One CompactFlash Type II slot (on front panel) and one 2-GB internal CompactFlash (1 GB each for RP and SP)
		
		• Requires larger power supplies and a high-speed fan tray
		
		• QoS port architecture, 10-GE ports (Rx/Tx): **8q8t/1p7q8t** (CoS)
		
		• QoS port architecture, 1-GE ports (Rx/Tx): **2q8t/1p3q8t**
			12.2(33)SRC

Note

- There are no memory-only upgrade options for the RSP720-3CXL-10GE.

- The RSP720-3CXL-10GE does not support the following chassis and modules:

  - Unsupported chassis: Cisco 7603, 7606, and 7613 chassis

  - Unsupported modules: Services modules, Optical Service Modules (OSMs), FlexWAN module.

- The RSP720-3CXL-10GE supports the following 10-Gigabit Ethernet optics: X2-10GB-LR, X2-10GB-ER, X2-10GB-SR, X2-10GB-CX4, and X2-10GB-LX4.

- The RSP720-3CXL-10GE supports the following Gigabit Ethernet optics: GLC-SX-MM, GLC-LH-SM, GLC-ZX-SM, GLC-T, SFP-GE-S, SFP-GE-L, SFP-GE-T, and GLC-BX-D.

In Cisco IOS Release 12.2SRC, the RSP720-3CXL-10GE does not support the following features, which are supported on the RSP720:

- High-availability features such as NonStop Forwarding with Stateful Switchover (NSF/SSO) and In-Service Software Upgrade (ISSU) are not supported. Only Route Processor Redundancy (RPR) mode is supported.

- The uplinks on the standby RSP720-10GE are not active. This restriction exists because the uplink ports must perform lookups on the active RSP, which is not possible in RPR mode.

- Broadband aggregation features are not supported.

Policy Feature Cards

Policy Feature Card Guidelines and Restrictions

- The PFC3 supports a theoretical maximum of 64,000 MAC addresses (32,000 MAC addresses recommended maximum).

- You cannot use one type of PFC3 (PFC3BXL or PFC3B) on one supervisor engine and a different type on the other supervisor engine for redundancy. You must use identical policy feature cards for redundancy.

- Enter the **show platform hardware pfc mode** command to display the PFC3 mode.

- Enter the **show platform earl-mode** command to display the PFC3 mode.

- PFC3B—These restrictions apply to a configuration with a PFC3B and these DFCs:

  - PFC3B and DFC3B—No restrictions.

  - PFC3B and DFC3BXL—The PFC3B restricts DFC3BXL functionality: after a reload with a DFC3BXL-equipped module installed, the DFC3BXL functions as a DFC3B.

- PFC3BXL—These restrictions apply to a configuration with a PFC3BXL and these DFCs:

  - PFC3BXL and DFC3B—PFC3BXL functionality is restricted by the DFC3B: after a reload with a DFC3B-equipped module installed (whether powered up or down), the PFC3BXL functions as a PFC3B.

  - PFC3BXL and DFC3BXL—No restrictions.

- The features that require the PFC3BXL or PFC3B are not supported in PFC3A mode (see the Release Notes for Cisco IOS Release 12.2SR on the Cisco 7600 Series Routers).

- To use DFC3B-equipped switching modules with a PFC3BXL, the DFC3B-equipped switching modules must be installed at bootup.

Policy Feature Card 3BXL

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-PFC3BXL	2.57 A@42 V	Policy Feature Card 3BXL (PFC3BXL)	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- There are no memory upgrade options for WS-F6K-PFC3BXL.

- Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720 or WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_16220.htm

Policy Feature Card 3B

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-PFC3B	2.25 A@42 V	Policy Feature Card 3B (PFC3B)	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note

- There are no memory upgrade options for WS-F6K-PFC3B.

- Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_16220.htm

Policy Feature Card 3C

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-PFC3C	**2.25** A@42 V	Policy Feature Card 3C (PFC3C)	
		Supported only with RSP 720	12.2(33)SRB

Note

- There are no memory upgrade options for WS-F6K-PFC3C.

- Use WS-F6K-PFC3CXL= to upgrade a RSP720-3C-GE with a PFC3CXL. WS-F6K-PFC3CXL= includes 1 GB memory upgrades for the Route Switch Processor 720 and the MSFC4.

Policy Feature Card 3CXL

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-PFC3CXL	**2.57** A@42 V	Policy Feature Card 3CXL (PFC3CXL)	
		Supported only with RSP 720	12.2(33)SRB

Note

- There are no memory upgrade options for WS-F6K-PFC3BXL.

Distributed and Centralized Forwarding Cards

Note See the "Route Switching Processor 720" section on page 6 for Policy Feature Cards (PFC) and Distributed Forwarding Card (DFC) restrictions.

Centralized Forwarding Card (WS-X6700-CFC)

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6700-CFC	0.75 A@42 V	Centralized Forwarding Card (CFC) for use on CEF720 modules	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note There are no memory upgrade options for WS-X6700-CFC.

Distributed Forwarding Card 3BXL

WS-F6700-DFC3BXL

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-F6700-DFC3BXL	3.30 A@42 V	Distributed Forwarding Card 3BXL (DFC3BXL) for use on CEF720 modules		
		Supported only with Supervisor Engine 720	12.2(33)SRA	

Note

- WS-F6700-DFC3BXL uses memory that is installed on the switching module.
- Refer to this publication for information about WS-F6700-DFC3BXL upgrades:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_15893.htm

WS-F6K-DFC3BXL

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-F6K-DFC3BXL	1.47 A@42 V	Distributed Forwarding Card 3BXL (DFC3BXL) for use on dCEF256 and CEF256 modules		
		Supported only with Supervisor Engine 720	12.2(33)SRA	

Note

- Refer to this publication for information about WS-F6K-DFC3BXL memory upgrades:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_12409.htm

- Supervisor Engine 720 supports a WS-F6K-DFC3BXL on these WS-X6516-GBIC switching module hardware revisions:

  - Lower than 5.0
  - 5.5 and higher

- Supervisor Engine 720 does not support a DFC3 on WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 do not power up.

- With a Supervisor Engine 720 but without a DFC3, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 operate in bus mode.

- Refer to external field notice 24494 for more information about Supervisor Engine 720 and a DFC3 on WS-X6516-GBIC switching modules:

  http://www.cisco.com/warp/public/770/fn24494.shtml

Distributed Forwarding Card 3B

WS-F6700-DFC3B

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6700-DFC3B	3.00 A@42 V	Distributed Forwarding Card 3B (DFC3B) for use on CEF720 modules	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- WS-F6700-DFC3B uses memory that is installed on the switching module.
- Refer to this publication for information about WS-F6700-DFC3B upgrades:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_15893.htm

WS-F6K-DFC3B

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-DFC3B	1.67 A@42 V	Distributed Forwarding Card 3B (DFC3B) for use on dCEF256 and CEF256 modules	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- Refer to this publication for information about WS-F6K-DFC3B memory upgrades:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_12409.htm

- Supervisor Engine 720 supports a WS-F6K-DFC3B on these WS-X6516-GBIC switching module hardware revisions:

  - Lower than 5.0
  - 5.5 and higher

- Supervisor Engine 720 does not support a DFC3 on WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 do not power up.

- With a Supervisor Engine 720 but without a DFC3, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 operate in bus mode.

- Refer to external field notice 24494 for more information about Supervisor Engine 720 and a DFC3 on WS-X6516-GBIC switching modules:

  http://www.cisco.com/warp/public/770/fn24494.shtml

Distributed Forwarding Card 3CXL

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-F6700-DFC3CXL	2.35 A@42 V	Distributed Forwarding Card 3CXL (DFC3CXL) for use on CEF720 modules		
			Supported with Supervisor Engine 720 and Route Switch Processor 720	12.2(33)SRB

Distributed Forwarding Card 3C

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-F6700-DFC3C	1.65 A@42 V	Distributed Forwarding Card 3C (DFC3C) for use on CEF720 modules		
			Supported with Supervisor Engine 720 and Route Switch Processor 720	12.2(33)SRB

10-Gigabit Ethernet Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-X6704-10GE	6.28 A@42 V	4-port 10-Gigabit Ethernet XENPAK
		
		• CEF720 with WS-X6700-CFC (adds 0.75 A@42 V)
		
		• dCEF720 with WS-F6700-DFC3BXL (adds 3.30 A@42 V)
		
		• dCEF720 with WS-F6700-DFC3B (adds 3.00 A@42 V)
		
		• Supports egress multicast replication
		
		• QoS port architecture (Rx/Tx):
		  – With DFC3: **8q8t/1p7q8t**
		  – With CFC: **1q8t/1p7q8t**
		
		• Number of ports: 4
		Number of port groups: 4
		Port ranges per port group: 1 port in each group	

		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- WS-X6704-10GE requires one of the following:
  - WS-F6700-DFC3BXL (3.30 A@42 V)
  - WS-F6700-DFC3B (3.00 A@42 V)
  - WS-X6700-CFC (0.75 A@42 V)
- WS-X6704-10GE ships with WS-X6700-CFC installed unless ordered with WS-F6700-DFC3BXL or WS-F6700-DFC3B.
- WS-X6704-10GE is supported in the WS-C6503-E chassis.
- WS-X6704-10GE is not supported in the WS-C6503 and CISCO7603 chassis.
- In a 13-slot chassis, WS-X6704-10GE is supported only in slots 9 through 13 and does not power up in other slots.
- On WS-X6704-10GE ports, Spanning Tree Protocol (STP) bridge protocol data units (BPDUs) are not exempt from Traffic Storm Control suppression. Do not configure Traffic Storm Control on STP-protected WS-X6704-10GE ports that interconnect network devices.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6502-10GE	3.30 A @42 V	1-port 10-Gigabit Ethernet	
		• With Supervisor Engine 720:	
		– dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A @42 V)	
		– dCEF256 with WS-F6K-DFC3B (adds 1.67 A @42 V)	
		• QoS port architecture (Rx/Tx): **1p1q8t/1p2q1t**	
		• Number of ports: 1 Number of port groups: 1 Port ranges per port group: 1 port in 1 group	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note WS-X6502-10GE does not support Inter-Switch Link (ISL) encapsulation.

Optical Interface Module (OIM) for WS-X6502-10GE

WS-G6488		10GBASE-LR serial 1310 nm long-reach OIM	12.2(33)SRA
WS-G6483		10GBASE-ER serial 1550 nm extended-reach OIM	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6708-10G-3C (**WS-X6708-10GE** with WS-F6700-DFC3C)	10.58A @42 V	8-port 10-Gigabit Ethernet X2 module	
WS-X6708-10G-3CXL (**WS-X6708-10GE** with WS-F6700-DFC3CXL**)**	11.28A @ 42V	• dCEF720	
		• Supports egress multicast replication	
		• QoS port architecture (Rx/Tx): **8q4t/1p7q4t**	
		• Dual switch-fabric connections Fabric Channel #1: Ports 2, 3, 6, 8 Fabric Channel #2: Ports 1, 4, 5, 7	
		• Number of ports: 8 Number of port groups: 8 Port ranges per port group: 1 port in each group	
		Supported only with Supervisor Engine 720, Route Switch Processor 720, and RSP720-10GE.	12.2(33)SRC
		X2 Modules Supported in Gigabit Ethernet SPAs	
		X2-10GB-SR	12.2(33)SRC
		X2-10GB-CX4	12.2(33)SRC
		X2-10GB-LX4	12.2(33)SRC
		X2-10GB-ER	12.2(33)SRC

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
		X2-10GB-LR	12.2(33)SRC

Note

- To configure WS-X6708-10GE port oversubscription, refer to the **hw-module oversubscription** command in the command reference at this URL:

  http://www.cisco.com/en/US/products/ps6922/prod_command_reference_list.html

- Installation of a WS-X6708-10GE switching module in a chassis other than the following prevents operation at levels that are fully NEBS-compliant:

  - WS-C6503-E

  - WS-C6504-E

  - WS-C6506-E

  - WS-C6509-E

  - WS-C6509-NEB-A with dual fan tray

  - CISCO7604

  - CISCO7609 with dual fan tray

- WS-X6708-10G-3C and WS-X6708-10G-3CXL are the orderable product IDs.

- The front panel is labeled WS-X6708-10GE.

- Cisco IOS software commands display WS-X6708-10GE with either WS-F6700-DFC3C or WS-F6700-DFC3CXL.

- WS-X6708-10GE ports do not support VACL capture. (CSCsb59015)

- WS-X6708-10GE is not supported in the WS-C6503 and CISCO7603 chassis.

- In a 13-slot chassis, WS-X6708-10GE is supported only in slots 9 through 13 and does not power up in other slots.

- On WS-X6708-10GE ports, STP BPDUs are not exempt from Traffic Storm Control suppression. Do not configure Traffic Storm Control on STP-protected WS-X6708-10GE ports that interconnect network devices.

XENPAKs

Product ID (append "=" for spares)	Product Description	Minimum Software Version
DWDM-XENPAK	10GBASE dense wavelength division multiplexing (DWDM) 100-GHz ITU grid	12.2(33)SRA
WDM-XENPAK-REC	10GBASE receive-only wavelength division multiplexing (WDM)	12.2(33)SRA
XENPAK-10GB-CX4	10GBASE for CX4 cable	12.2(33)SRA
XENPAK-10GB-SR	10GBASE-SR Serial 850-nm short-reach multimode fiber (MMF)	12.2(33)SRA
XENPAK-10GB-LX4	10GBASE-LX4 Serial 1310-nm multimode fiber (MMF)	12.2(33)SRA
XENPAK-10GB-ER	10GBASE-ER Serial 1550-nm extended-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(33)SRA

Product ID (append "=" for spares)	Product Description	Minimum Software Version
Note	XENPAK-10GB-ER units is not supported with Part Number 800-24557-01, as described in this external field notice (CSCee47030): http://www.cisco.com/warp/public/770/fn29736.shtml	
XENPAK-10GB-LR	10GBASE-LR Serial 1310-nm long-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(33)SRA

X2 Modules

Product ID (append "=" for spares)	Product Description	Minimum Software Version
X2-10GB-SR	10GBASE-SR Serial 850-nm short-reach multimode (MMF)	12.2(33)SRC
X2-10GB-CX4	10GBASE for CX4 (copper) cable	12.2(33)SRC
X2-10GB-LX4	10GBASE-LX4 Serial 1310-nm multimode (MMF)	12.2(33)SRC
X2-10GB-LR	10GBASE-LR Serial 1310-nm long-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(33)SRC
X2-10GB-ER	10GBASE-ER Serial 1550-nm extended-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(33)SRC

Gigabit Ethernet Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-X6748-SFP	5.32 A@42 V	48-port Gigabit Ethernet SFP
		
		• CEF720 with WS-X6700-CFC (adds 0.75 A@42 V)
		
		• dCEF720 with WS-F6700-DFC3BXL (adds 3.30 A@42 V)
		
		• dCEF720 with WS-F6700-DFC3B (adds 3.00 A@42 V)
		
		• Supports egress multicast replication
		
		• QoS architecture:
		  – With DFC3: **2q8t/1p3q8t**
		  – With CFC: **1q8t/1p3q8t**
		
		• Number of ports: 48
		  Number of port groups: 4
		  Port ranges per port group:
		   1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23
		   2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24
		  25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47
		  26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	

		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- WS-X6748-SFP requires one of the following:

  – WS-F6700-DFC3BXL (3.30 A@42 V)

  – WS-F6700-DFC3B (3.00 A@42 V)

  – WS-X6700-CFC (0.75 A@42 V)

- WS-X6748-SFP ships with WS-X6700-CFC installed unless ordered with WS-F6700-DFC3BXL or WS-F6700-DFC3B.

- WS-X6748-SFP is supported in the WS-C6503-E chassis.

- WS-X6748-SFP is not supported in the WS-C6503 and CISCO7603 chassis.

- In a 13-slot chassis, WS-X6748-SFP is supported only in slots 9 through 13 and does not power up in other slots.

- On WS-X6748-SFP ports, STP BPDUs are not exempt from Traffic Storm Control suppression. Do not configure Traffic Storm Control on STP-protected WS-X6748-SFP ports that interconnect network devices.

- See the "Small Form-Factor Pluggable Modules (SFPs)" section on page 25.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6724-SFP	2.23 A@42 V	24-port Gigabit Ethernet SFP	
		• CEF720 with WS-X6700-CFC (adds 0.75 A@42 V)	
		• dCEF720 with WS-F6700-DFC3BXL (adds 3.30 A@42 V)	
		• dCEF720 with WS-F6700-DFC3B (adds 3.00 A@42 V)	
		• Supports egress multicast replication	
		• QoS architecture:	
		– With DFC3: **2q8t/1p3q8t**	
		– With CFC: **1q8t/1p3q8t**	
		• Number of ports: 24 Number of port groups: 2 Port ranges per port group: 1–12, 13–24	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- WS-X6724-SFP requires one of the following:
  - WS-F6700-DFC3BXL (3.30 A@42 V)
  - WS-F6700-DFC3B (3.00 A@42 V)
  - WS-X6700-CFC (0.75 A@42 V)
- WS-X6724-SFP ships with WS-X6700-CFC installed unless ordered with WS-F6700-DFC3BXL or WS-F6700-DFC3B.
- WS-X6724-SFP is supported in the WS-C6503-E chassis.
- WS-X6724-SFP is not supported in the WS-C6503 and CISCO7603 chassis.
- On WS-X6724-SFP ports, STP BPDUs are not exempt from Traffic Storm Control suppression. Do not configure Traffic Storm Control on STP-protected WS-X6724-SFP ports that interconnect network devices.
- See the "Small Form-Factor Pluggable Modules (SFPs)" section on page 25.

Product ID	Power	Product Description	Minimum Software
WS-X6816-GBIC	3.84 A@42 V	16-port Gigabit Ethernet GBIC	
		• dCEF256	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
		With Supervisor Engine 720	12.2(33)SRA

Note

- WS-X6816-GBIC requires one of these for use with Supervisor Engine 720:
  - WS-F6K-DFC3BXL (adds 1.47 A@42 V)
  - WS-F6K-DFC3B (adds 1.67 A@42 V)
- In a 13-slot chassis, WS-X6816-GBIC is supported only in slots 9 through 13 and does not power up in other slots.

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version

WS-X6516A-GBIC	3.62 A@42 V	16-port Gigabit Ethernet GBIC
		
		• CEF256
		
		• With Supervisor Engine 720:
		  – dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)
		  – dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)
		
		• 1-MB per-port packet buffers
		
		• Supports egress multicast replication
		
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**
		
		• Number of ports: 16
		Number of port groups: 2
		Port ranges per port group: 1–8, 9–16		

		With Supervisor Engine 720		12.2(33)SRA
		With Supervisor Engine 32		12.2(33)SRA

WS-X6516-GBIC	3.40 A@42 V	16-port Gigabit Ethernet GBIC
		
		• CEF256
		
		• With Supervisor Engine 720:
		  – dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)
		  – dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)
		
		• 512-KB per-port packet buffers
		
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**
		
		• Number of ports: 16
		Number of port groups: 2
		Port ranges per port group: 1–8, 9–16		

		With Supervisor Engine 720		12.2(33)SRA
		With Supervisor Engine 32		12.2(33)SRA

Note

• Supervisor Engine 720 supports a DFC3 on these WS-X6516-GBIC hardware revisions:

  – Lower than 5.0

  – 5.5 and higher

• Supervisor Engine 720 does not support a DFC3 on WS-X6516-GBIC hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, WS-X6516-GBIC hardware revisions 5.0 through 5.4 do not power up.

• With a Supervisor Engine 720 but without a DFC3, WS-X6516-GBIC hardware revisions 5.0 through 5.4 operate in bus mode.

• Refer to external field notice 24494 for more information:

  http://www.cisco.com/warp/public/770/fn24494.shtml

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6416-GBIC	2.81 A@42 V	16-port Gigabit Ethernet GBIC	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		• Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6416-GE-MT	2.50 A@42 V	16-Port Gigabit Ethernet MT-RJ	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		• Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6316-GE-TX	5.15 A@42 V	16-port Gigabit Ethernet RJ-45	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		• Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note   Supervisor Engine 32 does not support WS-X6316-GE-TX.

Product ID	Power Required	Product Description	Minimum Software Version
WS-X6408A-GBIC	2.00 A@42 V	8-port Gigabit Ethernet GBIC	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		• Number of ports: 8 Number of port groups: 1 Port ranges per port group: 1–8	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6408-GBIC	2.00 A@42 V	8-port Gigabit Ethernet GBIC	
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**	
		• Number of ports: 8 Number of port groups: 1 Port ranges per port group: 1–8	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Small Form-Factor Pluggable Modules (SFPs)

These sections describe SFPs:

Gigabit Ethernet SFPs

See the Unsupported Hardware, page 60 section for information about unsupported DWDM-SFPs.

Product ID (append "=" for spares)	Product Description	Minimum Software Version
GLC-ZX-SM	1000BASE-ZX SFP	12.2(33)SRA
CWDM-SFP	1000BASE-CWDM SFP	12.2(33)SRA
GLC-T	1000BASE-T SFP	12.2(33)SRA
GLC-LH-SM	1000BASE-LX/LH SFP	12.2(33)SRA
GLC-SX-MM	1000BASE-SX SFP	12.2(33)SRA
SFP-GE-S	1000BASE-SX SFP	12.2(33)SRA
SFP-GE-L	1000BASE-LX/LH SFP	12.2(33)SRA
SFP-GE-Z	1000BASE-ZX SFP	12.2(33)SRA
SFP-GE-T	1000BASE-T SFP	12.2(33)SRC

Fast Ethernet SFPs

Note Only WS-X6148-FE-SFP supports these Fast Ethernet SFPs.

Product ID (append "=" for spares)	Product Description	Minimum Software Version
GLC-FE-100FX	100BASEFX SFP	12.2(33)SRA
GLC-FE-100LX	100BASELX SFP	12.2(33)SRA

10-Gigabit Ethernet Transceiver Modules

Product ID (append "=" for spares)	Product Description	Minimum Software Version
XFP-10GLR-OC192SR	Cisco multirate XFP transceiver module for 10GBASE-LR Ethernet and OC-192/STM-64 short-reach (SR-1) Packet-over-SONET/SDH (POS) applications, SMF, dual LC connector	12.2(33)SRA
XFP-10GER-OC192IR	Cisco multirate XFP transceiver module for 10GBASE-ER Ethernet and OC-192/STM-64 intermediate-reach (IR-2) Packet-over-SONET/SDH (POS) applications, SMF, dual LC connector	12.2(33)SRA
XFP-10GZR-OC192LR	Cisco multirate XFP transceiver module for 10GBASE-LR Ethernet and OC-192/STM-64 long-reach Packet-over-SONET/SDH (POS) applications, SMF, dual LC connector	12.2(33)SRB1

Gigabit Interface Converters (GBICs)

Note The support listed in this section applies to all modules that use GBICs, including OSM LAN ports and OSM Gigabit Ethernet WAN ports.

Product ID (append "=" for spares)	Product Description	Minimum Software Version
WDM-GBIC-REC	Receive-only wavelength division multiplexing (WDM) GBIC	12.2(33)SRA
DWDM-GBIC	Dense wavelength division multiplexing (DWDM) GBIC	12.2(33)SRA
CWDM-GBIC	Coarse wavelength division multiplexing (CWDM) GBIC	12.2(33)SRA
WS-G5483	1000BASET GBIC	12.2(33)SRA
WS-G5484	Short wavelength, 1000BASE-SX	12.2(33)SRA
WS-G5486	Long wavelength/long haul, 1000BASE-LX/LH	12.2(33)SRA
WS-G5487	Extended distance, 1000BASE-ZX	12.2(33)SRA

Power over Ethernet Daughtercards

Note
- The Power over Ethernet (PoE) daughtercard "Power Required" values do not include the power drawn by phones.
- Refer to this publication for more information about POE:

  http://www.cisco.com/en/US/products/hw/switches/ps708/products_white_paper0900aecd80233a77.shtml

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-F6K-FE48X2-AF	0.42 A@42 V	IEEE 802.3af PoE daughtercard for WS-X6148X2-RJ-45 and WS-X6196-RJ-21.	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-F6K-GE48-AF	0.18 A@42 V	IEEE 802.3af PoE daughtercard for WS-X6548-GE-TX and WS-X6148-GE-TX	
		With Supervisor Engine 720	12.2(33)SRA
WS-F6K-GE48-AF	0.18 A@42 V	IEEE 802.3af PoE daughtercard for WS-X6148-RJ-45 and WS-X6148-RJ-21	
		With Supervisor Engine 720	12.2(33)SRA
WS-F6K-VPWR-GE	0.42 A@42 V	PoE daughtercard for WS-X6548-GE-TX and WS-X6148-GE-TX	
		With Supervisor Engine 720	12.2(33)SRA
WS-F6K-VPWR	None	PoE daughtercard for WS-X6348-RJ-45, WS-X6348-RJ-21V, WS-X6148-RJ-45, and WS-X6148-RJ-21	
		With Supervisor Engine 720	12.2(33)SRA

10/100/1000 Ethernet Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-X6748-GE-TX	7.00 A@42 V	48-port 10/100/1000 RJ-45
		
		 • CEF720 with WS-X6700-CFC (adds 0.75 A@42 V)
		
		 • dCEF720 with WS-F6700-DFC3BXL (adds 3.30 A@42 V)
		
		 • dCEF720 with WS-F6700-DFC3B (adds 3.00 A@42 V)
		
		 • Supports egress multicast replication
		
		 • QoS architecture:
		   – With DFC3: **2q8t/1p3q8t**
		   – With CFC: **1q8t/1p3q8t**
		
		 • Number of ports: 48
		 Number of port groups: 4
		 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	

		Supported only with Supervisor Engine 720	12.2(33)SRA

Note

- WS-X6748-GE-TX requires one of the following:
  - WS-F6700-DFC3BXL (3.30 A@42 V)
  - WS-F6700-DFC3B (3.00 A@42 V)
  - WS-X6700-CFC (0.75 A@42 V)
- WS-X6748-GE-TX ships with WS-X6700-CFC installed unless ordered with WS-F6700-DFC3BXL or WS-F6700-DFC3B.
- WS-X6748-GE-TX is supported in the WS-C6503-E chassis.
- WS-X6748-GE-TX is not supported in the WS-C6503 and CISCO7603 chassis.
- In a 13-slot chassis, WS-X6748-GE-TX is supported only in slots 9 through 13 and does not power up in other slots.
- On WS-X6748-GE-TX ports, STP BPDUs are not exempt from Traffic Storm Control suppression. Do not configure Traffic Storm Control on STP-protected WS-X6748-GE-TX ports that interconnect network devices.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6548-GE-TX	2.98 A @ 42 V	48-port 10/100/1000 Mbps	
WS-X6548V-GE-TX	3.40 A @ 42 V	• RJ-45	
WS-X6548-GE-45AF	3.16 A @ 42 V	• CEF256	
		• WS-X6548-GE-TX supports WS-F6K-VPWR-GE and WS-F6K-GE48-AF	
		• WS-X6548V-GE-TX supports WS-F6K-VPWR-GE	
		• WS-X6548-GE-45AF has WS-F6K-GE48-AF	
		• QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	
		Number of ports: 48 Number of port groups: 2 Port ranges per port group: 1–24, 25–48	
		With Supervisor Engine 720 (except WS-F6K-GE48-AF)	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 32	12.2(33)SRA

Note

- More than 1 Gbps of traffic per EtherChannel is supported on the WS-X6548-GE-TX (and voice-power daughtercard-equipped) switching modules.

- WS-X6548-GE-TX and WS-X6548V-GE-TX do not support these features:
  - ISL trunking
  - Jumbo frames
  - 802.1Q tunneling
  - Traffic storm control

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6148A-GE-TX	2.50 A @ 42 V	48-port 10/100/1000 Mbps	
WS-X6148-GE-45AF	2.68 A @ 42 V	• RJ-45	
		• WS-X6148A-GE-TX supports WS-F6K-GE48-AF	
		• WS-X6148A-GE-45AF has WS-F6K-GE48-AF	
		• QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	
		• Number of ports: 48 Number of port groups: 2 Port ranges per port group: 1–24, 25–48	
		With Supervisor Engine 720	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
		With Supervisor Engine 32	12.2(33)SRA

Note WS-X6148A-GE-TX and WS-X6148A-GE-45AF do not support these features:

- More than 1 Gbps of traffic per EtherChannel
- WS-F6K-DFC3B, or WS-F6K-DFC3BXL
- ISL trunking
- Jumbo frames
- 802.1Q tunneling
- Traffic storm control

Product ID	Power Required	Product Description	Minimum Software Version
WS-X6148-GE-TX	2.47 A @42 V	48-port 10/100/1000 Mbps	
WS-X6148V-GE-TX	2.89 A @42 V	• RJ-45	
WS-X6148-GE-45AF	2.65 A @42 V	• WS-X6148-GE-TX supports WS-F6K-VPWR-GE and WS-F6K-GE48-AF	
		• WS-X6148V-GE-TX has WS-F6K-VPWR-GE	
		• WS-X6148-GE-45AF has WS-F6K-GE48-AF	
		• QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	
		• Number of ports: 48 Number of port groups: 2 Port ranges per port group: 1–24, 25–48	
		With Supervisor Engine 720 (except WS-F6K-GE48-AF)	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 32	12.2(33)SRA

Note WS-X6148-GE-TX, WS-X6148V-GE-TX, and WS-X6148-GE-45AF do not support these features:

- More than 1 Gbps of traffic per EtherChannel
- WS-F6K-DFC3B, or WS-F6K-DFC3BXL
- ISL trunking
- Jumbo frames
- 802.1Q tunneling
- Traffic storm control

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6516-GE-TX	3.45 A@42 V	16-port 10/100/1000BASE-T	
		• CEF256	
		• With Supervisor Engine 720:	
		– dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)	
		– dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	
		• Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Fast Ethernet Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6148-FE-SFP	2.30 A@42 V	48-port 100BASE-FX	
		• Requires Fast Ethernet SFPs	
		• QoS port architecture (Rx/Tx): **1p1q4t/1p3q8t**	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6524-100FX-MM	1.90 A@42 V	24-port 100FX Ethernet multimode	
		• CEF256	
		• With Supervisor Engine 720:	
		– dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)	
		– dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)	
		• QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**	
		• Number of ports: 24 Number of port groups: 1 Port ranges per port group: 1–24	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6324-100FX-SM	1.52 A@42 V	24-port 100FX Ethernet	

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-X6324-100FX-MM	1.52 A@42 V	• Single-mode and multimode MT-RJ
		
		• 128-KB per-port packet buffers
		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**
		
		• Number of ports: 24
		  Number of port groups: 2
		  Port ranges per port group: 1–12, 13–24	

		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

WS-X6224-100FX-MT	1.90 A@42 V	24-port 100FX Ethernet Multimode MT-RJ
		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**
		
		• Number of ports: 24
		  Number of port groups: 2
		  Port ranges per port group: 1–12, 13–24	

		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Ethernet/Fast Ethernet (10/100) Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version

WS-X6548-RJ-45	2.90 A@42 V	48-port 10/100TX RJ-45
		
		• CEF256
		
		• With Supervisor Engine 720:
		  – dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)
		  – dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)
		
		• QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**
		
		• Number of ports: 48
		  Number of port groups: 1
		  Port ranges per port group: 1–48	

		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-X6548-RJ-21	2.90 A@42 V	48-port 10/100TX RJ-21		
		• CEF256		
		• With Supervisor Engine 720:		
		– dCEF256 with WS-F6K-DFC3BXL (adds 1.47 A@42 V)		
		– dCEF256 with WS-F6K-DFC3B (adds 1.67 A@42 V)		
		• QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**		
		• Number of ports: 48 Number of port groups: 1 Port ranges per port group: 1–48		
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6148X2-RJ-45	2.65 A@42 V	96-port 10/100TX RJ-45		
WS-X6148X2-45AF	2.92 A@42 V	• QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**		
		• WS-X6148X2-RJ-45 supports WS-F6K-FE48X2-AF		
		• WS-X6148X2-45AF has WS-F6K-FE48X2-AF		
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6196-RJ-21	2.74 A@42 V	96-port 10/100TX RJ-21		
WS-X6196-21AF	3.16 A@42 V	• QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**		
		• WS-X6196-RJ-21 supports WS-F6K-FE48X2-AF		
		• WS-X6196-21AF has WS-F6K-FE48X2-AF		
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6348-RJ-45	2.39 A@42 V	48-port 10/100TX RJ-45		
WS-X6348-RJ-45V	2.39 A@42 V	• 128-KB per-port packet buffers		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**		
		• WS-X6348-RJ-45 supports WS-F6K-VPWR		
		• WS-X6348-RJ-45V has WS-F6K-VPWR		
		• Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48		
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-X6348-RJ-21V	2.39 A @42 V	48-port 10/100TX RJ-21		
		• 128-KB per-port packet buffers		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**		
		• Has WS-F6K-VPWR		
		• Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRA
WS-X6248-RJ-45	2.69 A @42 V	48-port 10/100TX RJ-45		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**		
		• Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRA
WS-X6248A-TEL	2.69 A @42 V	48-port 10/100TX RJ-21		
		• 128-KB per-port packet buffers		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**		
		• Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRA
WS-X6248-TEL	2.69 A @42 V	48-port 10/100TX RJ-21		
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**		
		• Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6148A-RJ-45 WS-X6148A-45AF	2.39 A@42 V 2.57 A@42 V	48-port 10/100TX RJ-45 • 128-KB per-port packet buffers • QoS port architecture (Rx/Tx): **1q4t/2q2t** • WS-X6148A-RJ-45 supports WS-F6K-GE48-AF • WS-X6148A-45AF has WS-F6K-GE48-AF • Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
WS-X6148-RJ-45	2.39 A@42 V	48-port 10/100TX RJ-45	
WS-X6148-RJ-45V	2.39 A@42 V	128-KB per-port packet buffers	
WS-X6148-45AF	2.57 A@42 V	QoS port architecture (Rx/Tx): **1q4t/2q2t** • WS-X6148-RJ-45 supports WS-F6K-VPWR and WS-F6K-GE48-AF • WS-X6148-RJ-45V has WS-F6K-VPWR • WS-X6148-45AF has WS-F6K-GE48-AF • Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
		With Supervisor Engine 720 (except with WS-F6K-GE48-AF)	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 32	12.2(33)SRA
WS-X6148-RJ-21	2.39 A@42 V	48-port 10/100TX RJ-21	
WS-X6148-RJ-21V	2.39 A@42 V	• 128-KB per-port packet buffers	
WS-X6148-21AF	2.57 A@42 V	• QoS port architecture (Rx/Tx): **1q4t/2q2t** • WS-X6148-RJ-21 supports WS-F6K-VPWR and WS-F6K-GE48-AF • WS-X6148-RJ-21V has WS-F6K-VPWR • WS-X6148-21AF has WS-F6K-GE48-AF • Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
		With Supervisor Engine 720 (except WS-F6K-GE48-AF)	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA
		WS-F6K-GE48-AF with Supervisor Engine 32	12.2(33)SRA

Ethernet Switching Modules

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6024-10FL-MT	1.52 A @ 42 V	24-port 10BASE-FL MT-RJ	
		• QoS port architecture (Rx/Tx): **1q4t/2q2t**	
		• Number of ports: 24 Number of port groups: 2 Port ranges per port group: 1–12, 13–24	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Optical Services Modules (OSMs)

OSM Guidelines and Restrictions

- Supervisor Engine 32 does not support OSMs.
- OSMs require a minimum of 128 MB of synchronous dynamic random-access memory (SDRAM) —Refer to this publication for memory upgrade procedures:

  http://www.cisco.com/univercd/cc/td/doc/product/core/cis7600/hardware/osmodule/app_upgr.htm
- OSMs are CEF256 modules.
- OSM WAN port numbering starts with 1.
- On OSMs with Gigabit Ethernet GBIC Layer 2 LAN ports:
    – OSM LAN port numbering starts with 1.
    – The LAN ports are in a single port group.
- The OSM-2+4GE-WAN+ and the OC-12 Packet-over-SONET OSMs have been tested with the service modules and WS-SUP720.

Gigabit Ethernet WAN

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-2+4GE-WAN+	5.08 A@42 V	4-port Gigabit Ethernet WAN (GBIC) with two Layer 2 LAN ports; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-48 Packet over SONET

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-1OC48-POS-SI+ OSM-1OC48-POS-SL+ OSM-1OC48-POS-SS+	3.90 A@42 V	Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-IR; CEF256 Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-LR; CEF256 Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-SR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-48 DPT/Packet over SONET

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-2OC48/1DPT-SS OSM-2OC48/1DPT-SI OSM-2OC48/1DPT-SL	5.75 A@42 V	2-port OC-48 DPT/POS, SM-SR; CEF256 2-port OC-48 DPT/POS, SM-IR; CEF256 2-port OC-48 DPT/POS, SM-LR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-12 Packet over SONET

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-4OC12-POS-SI+	4.55 A@42 V	Enhanced 4-port OC-12c/STM-4c POS, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-2OC12-POS-SI+	3.36 A@42 V	Enhanced 2-port OC-12c/STM-4c POS, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-3 Packet over SONET

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-16OC3-POS-SI+	4.80 A@42 V	Enhanced 16-port OC-3c/STM-1c POS, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA
OSM-8OC3-POS-SI+ OSM-8OC3-POS-SL+	3.57 A@42 V	Enhanced 8-port OC-3c/STM-1c POS, SM-IR; CEF256 Enhanced 8-port OC-3c/STM-1c POS, SM-LR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA
OSM-4OC3-POS-SI+	2.44 A@42 V	Enhanced 4-port OC-3c/STM-1c POS, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-12 Channelized

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-1CHOC12/T3-SI OSM-1CHOC12/T1-SI	4.40 A@42 V 2.80 A@42 V	1-port channelized OC-12, SM-IR; CEF256 1-port channelized OC-12, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

CT3/T1 Channelized/Unchannelized

> **Note** OSM-12CT3/T1 has mini-SMB connectors for use with 75-ohm copper coaxial cable.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-12CT3/T1	2.80 A@42 V	12-port channelized/unchannelized CT3/T1; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

OC-12 ATM

> **Note** Also has four Layer 2 LAN ports.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
OSM-2OC12-ATM-MM+ OSM-2OC12-ATM-SI+	4.00 A@42 V	Enhanced 2-port OC-12/STM-4 ATM OSM, MM; CEF256 Enhanced 2-port OC-12/STM-4 ATM OSM, SM-IR; CEF256	
		With Supervisor Engine 720	12.2(33)SRA

SPA Interface Processors (SIPs)

> **Note** See the Release Notes for Cisco IOS Release 12.2SR on the Cisco 7600 Series Routers for information about additional procedures required to support SIPs with Cisco IOS Release 12.2(33)SRA and later releases.

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
7600-SIP-600	8.14 A@42 V	SPA Interface Processor-600	
		Supported only with Supervisor Engine 720	12.2(33)SRA

Note Supervisor Engine 32 does not support 7600-SIP-600.

7600-SIP-400	6.31 A@42 V	SPA Interface Processor-400	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note For release 12.2(33)SRA, the total supported bandwidth for the SIP-400 is 4 Gigabits line rate for Ethernet and 2.5 Gigabits line rate for SONET with selected services. There is no oversubscription support. The product ordering tools would prevent combination of SPAs that add up to more than this bandwidth and would reject such configurations. For release 12.2(33)SRB, oversubscription is supported.

7600-SIP-200	5.72 A@42 V	SPA Interface Processor-200	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Shared Port Adapters (SPAs)

These sections describe SPAs:

- Ethernet SPAs, page 40
- POS SPAs, page 41

- ATM SPAs, page 42
- Serial SPAs, page 43
- Circuit Emulation over Packet (CEoP) SPAs, page 43

Ethernet SPAs

These sections describe Ethernet SPAs:

- Ten Gigabit Ethernet SPAs, page 40
- Gigabit Ethernet SPAs, page 40
- Fast Ethernet SPAs, page 41

Ten Gigabit Ethernet SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-1XTENGE-XFP	7600-SIP-600	1-port 10 Gigabit Ethernet SPA, LANPHY XFP Optics	12.2(33)SRA
SPA-1XTENGE-XFP-V2	7600-SIP-600	1-port 10 Gigabit Ethernet SPA, LANPHY XFP Optics	12.2(33)SRA
SPA-1X10GE-L-V2	7600-SIP-400	1-port 10 Gigabit Ethernet SPA, SFP Optics	12.2(33)SRC
		XFP Modules Supported in SPA-1XTENGE-XFP	
		XFP-10GLR-OC192SR	12.2(33)SRA
		XFP-10GER-OC192IR	12.2(33)SRA
		XFP-10GZR-OC192LR	12.2(33)SRB1

Gigabit Ethernet SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-10X1GE	7600-SIP-600	10-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRA
SPA-10X1GE-V2	7600-SIP-600	10-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRA
SPA-5X1GE	7600-SIP-600	5-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRA
SPA-5X1GE-V2	7600-SIP-600	5-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRA
SPA-5X1GE-V2	7600-SIP-400	5-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRB
SPA-2X1GE	7600-SIP-400	2-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRA
SPA-2X1GE-V2	7600-SIP-400	2-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SRB
		SFPs Supported in Gigabit Ethernet SPAs	
		SFP-GE-S	12.2(33)SRA
		SFP-GE-L	12.2(33)SRA
		SFP-GE-Z	12.2(33)SRA
		SFP-GE-T	12.2(33)SRC

Fast Ethernet SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-4X1FE-TX-V2	7600-SIP-200	4-port 10/100 Ethernet SPA TX	12.2(33)SRA
SPA-8X1FE-TX-V2	7600-SIP-200	8-port 10/100 Ethernet SPA TX	12.2(33)SRA

POS SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-2XOC3-POS	7600-SIP-200 7600-SIP-400	2-port OC-3c/STM-1c POS SPA	12.2(33)SRA
		SFP Modules Supported in SPA-2XOC3-POS	
		SFP-OC3-MM	12.2(33)SRA
		SFP-OC3-SR	12.2(33)SRA
		SFP-OC3-IR1	12.2(33)SRA
		SFP-OC3-LR1	12.2(33)SRA
		SFP-OC3-LR2	12.2(33)SRA
SPA-4XOC3-POS	7600-SIP-200 7600-SIP-400	4-port OC-3c/STM-1c POS SPA	12.2(33)SRA
		SFP Modules Supported in SPA-4XOC3-POS SPAs	
		SFP-OC3-MM	12.2(33)SRA
		SFP-OC3-SR	12.2(33)SRA
		SFP-OC3-IR1	12.2(33)SRA
		SFP-OC3-LR1	12.2(33)SRA
		SFP-OC3-LR2	12.2(33)SRA
SPA-1XOC12-POS	7600-SIP-400	1-port OC-12c/STM-4c POS SPA	12.2(33)SRA
		SFP Modules Supported in SPA-1XOC12-POS SPA	
		SFP-OC12-MM	12.2(33)SRA
		SFP-OC12-SR	12.2(33)SRA
		SFP-OC12-IR1	12.2(33)SRA
		SFP-OC12-LR1	12.2(33)SRA
		SFP-OC12-LR2	12.2(33)SRA
SPA-OC192POS-LR	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, SM-LR	12.2(33)SRA
SPA-OC192POS-XFP	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, XFP Optics	12.2(33)SRA
		XFP Modules Supported in SPA-OC192POS-XFP SPA	
		XFP-10GLR-OC192SR	12.2(33)SRA
		XFP-10GER-OC192IR	12.2(33)SRA

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
		XFP-10GZR-OC192LR	12.2(33)SRB1
SPA-1XOC48POS/RPR	7600-SIP-400	1-port OC-48c/STM-16 SPA	12.2(33)SRA
		SFP Modules Supported in SPA-1XOC48POS/RPR SPA	
		SFP-OC48-SR	12.2(33)SRA
		SFP-OC48-IR1	12.2(33)SRA
		SFP-OC48-LR2	12.2(33)SRA
SPA-2XOC48POS/RPR	7600-SIP-600	2 port OC-48 POS/RPR SPA with SFP Optics	12.2(33)SRA
		SFP Modules Supported in SPA-2XOC48POS/RPR SPA	
		SFP-OC48-SR	12.2(33)SRA
		SFP-OC48-IR1	12.2(33)SRA
		SFP-OC48-LR2	12.2(33)SRA
SPA-4XOC48POS/RPR	7600-SIP-600	4-port OC-48c/STM-16 POS/DPT/RPR SPA	12.2(33)SRA
		SFP Modules Supported in SPA-4XOC48POS/RPR	
		SFP-OC48-SR	12.2(33)SRA
		SFP-OC48-IR1	12.2(33)SRA
		SFP-OC48-LR2	12.2(33)SRA

ATM SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-2XOC3-ATM	7600-SIP-200 7600-SIP-400	2-port OC-3c/STM-1c ATM SPA	12.2(33)SRA
		SFP Modules Supported in SPA-2XOC3-ATM	
		SFP-OC3-MM	12.2(33)SRA
		SFP-OC3-IR1	12.2(33)SRA
		SFP-OC3-LR1	12.2(33)SRA
		SFP-OC3-LR2	12.2(33)SRA
SPA-4XOC3-ATM	7600-SIP-200 7600-SIP-400	4-port OC-3c/STM-1c ATM SPA	12.2(33)SRA
		SFP Modules Supported in SPA-4XOC3-ATM	
		SFP-OC3-MM	12.2(33)SRA
		SFP-OC3-IR1	12.2(33)SRA
		SFP-OC3-LR1	12.2(33)SRA
		SFP-OC3-LR2	12.2(33)SRA
SPA-1XOC12-ATM	7600-SIP-400	1-Port OC-12c/STM-4c ATM SPA	12.2(33)SRA
		SFP Modules Supported in SPA-1XOC12-ATM SPA	

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
		SFP-OC12-MM	12.2(33)SRA
		SFP-OC12-SR	12.2(33)SRA
		SFP-OC12-IR1	12.2(33)SRA
		SFP-OC12-LR1	12.2(33)SRA
		SFP-OC12-LR2	12.2(33)SRA
SPA-1XOC48-ATM	7600-SIP-400	1 port OC-48c/STM-16 ATM SPA	12.2(33)SRA

Serial SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-8XCHT1/E1	7600-SIP-200	8-Port Channelized T1/E1 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC
SPA-2XT3/E3	7600-SIP-200	2-port Clear Channel T3/E3 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC
SPA-4XT3/E3	7600-SIP-200	4-port Clear Channel T3/E3 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC
SPA-2XCT3/DS0	7600-SIP-200	2-port Channelized T3 to DS0 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC
SPA-4XCT3/DS0	7600-SIP-200	4-port Channelized T3 to DS0 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC
SPA-1XCHSTM1/OC3	7600-SIP-200	1-port Channelized STM1/OC3 to DS0 SPA	12.2(33)SRA
	7600-SIP-400		12.2(33)SRC

Circuit Emulation over Packet (CEoP) SPAs

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
SPA-2CHT3-CE-ATM	7600-SIP-400	2-Port Channelized T3/E3 ATM CEoP SPA	12.2(33)SRC
Note The SPA-2CHT3-CE-ATM does not use SFPs, use a Telco connector with a Y cable to connect to a patch panel.			
SPA-1CHOC3-CE-ATM	7600-SIP-400	1-Port Channelized OC-3 STM1 ATM CEoP SPA	12.2(33)SRB
		SFP Modules Supported in SPA-1XCHOC3-CE	
		SFP-OC3-MM	12.2(33)SRB
		SFP-OC3-IR1	12.2(33)SRB
		SFP-OC3-LR1	12.2(33)SRB
		SFP-OC3-LR2	12.2(33)SRB

Product ID (append "=" for spares)	SIP Support	Product Description	Minimum Software Version
		SFP-OC3-SR	12.2(33)SRB
SPA-24CHT1-CE-ATM	7600-SIP-400	24-Port Channelized T1/E1/J1 ATM CEoP SPA	12.2(33)SRB

Note The SPA-24CHT1-CE-ATM does not use SFPs, use a Telco connector with a Y cable to connect to a patch panel.

Services SPA Carrier (SSC)

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
7600-SSC-400	5.43 A @42 V	Services SPA Carrier (SSC)	12.2(33)SRA

Note

- 7600-SSC-400 does not maintain state when an NSF with SSO redundancy mode switchover occurs.
- Supervisor Engine 720 and Supervisor Engine 32 support the 7600-SSC-400 beginning with Cisco IOS Release 12.2(33)SRA .
- Route Switching Processor 720-1GE supports the 7600-SSC-400 beginning with Cisco IOS Release 12.2(33)SRC .

Services SPAs

Product ID (append "=" for spares)	Carrier	Product Description	Minimum Software Version
IPSEC-SPA-2G	7600-SSC-400	IPSec SPA	12.2(33)SRA

Note The IPSEC-SPA-2G supports the Route Switching Processor 720 beginning with Cisco IOS Release 12.2(33)SRC.

Enhanced FlexWAN Module

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-X6582-2PA	2.50 A @42 V	Enhanced FlexWAN Module; CEF256	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note See the Release Notes for Cisco IOS Release 12.2SR on the Cisco 7600 Series Routers for information about additional procedures required to support WS-X6582-2PA with Cisco IOS Release 12.2(33)SRA and later releases.

Enhanced FlexWAN Module Port Adapters

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PA-2FE-TX, -FX	2-port Fast Ethernet port adapter (supported only in WS-X6582-2PA)	12.2(33)SRA
PA-1FE-TX, -FX	1-port Fast Ethernet port adapter (supported only in WS-X6582-2PA)	12.2(33)SRA
PA-POS-1OC3	1-port Packet over SONET OC3c/STM1 port adapter	12.2(33)SRA
PA-POS-2OC3	2-port POS OC3c/STM1 port adapter	12.2(33)SRA
SFPs for PA-POS-2OC3		
SFP-OC3-MM	Short range, multimode fiber	12.2(33)SRA
SFP-OC3-IR1	Intermediate range, single-mode fiber	12.2(33)SRA
SFP-OC3-LR1	Long range, single-mode fiber	12.2(33)SRA
PA-A6-OC3MM	1-port ATM OC-3c/STM-1 multimode port adapter, enhanced	12.2(33)SRA
PA-A6-OC3SMI	1-port ATM OC-3c/STM-1 single-mode (IR) port adapter, enhanced	12.2(33)SRA
PA-A6-OC3SML	1-port ATM OC-3c/STM-1 single-mode (LR) port adapter, enhanced	12.2(33)SRA
PA-A6-T3	1-port ATM DS3 port adapter, enhanced	12.2(33)SRA
PA-A6-E3	1-port ATM E3 port adapter, enhanced	12.2(33)SRA
PA-POS-OC3MM PA-POS-OC3SMI PA-POS-OC3SML	Packet over SONET (OC-3) port adapters	12.2(33)SRA
PA-A3-OC3MM PA-A3-OC3SMI PA-A3-T3 PA-A3-OC3SML PA-A3-E3 PA-A3-8T1IMA PA-A3-8E1IMA	ATM with traffic shaping port adapters	12.2(33)SRA
PA-T3 PA-T3+ PA-2T3 PA-2T3+ PA-E3 PA-2E3 PA-MC-T3 PA-MC-E3 PA-MC-2T3+	T3/E3 (clear-channel and channelized) port adapters	12.2(33)SRA
PA-4T+ PA-8T-V35 PA-8T-X21 PA-8T-232 PA-MC-2E1/120 PA-MC-8T1 PA-MC-8E1/120 PA-MC-2T1 PA-MC-4T1	T1/E1 port adapters	12.2(33)SRA
PA-4E1G/75 PA-4E1G/120	T1/E1 port adapters	12.2(33)SRA

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PA-MC-8TE1+	Multichannel T1/E1 8PRI port adapters	12.2(33)SRA
PA-H PA-2H	HSSI port adapters	12.2(33)SRA
PA-MC-STM-1	Multichannel STM-1 port adapters	12.2(33)SRA

Ethernet Services 20G Line Cards

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
7600-ES20-GE3C	8.1 A@42 V	Cisco 7600 ES20 line card, 20xGE SFP with DFC 3C	
		With Supervisor Engine 720	12.2(33)SRB
		With Supervisor Engine 32	12.2(33)SRB
		With RSP 720	12.2(33)SRB
		SFPs Supported	
		SFP-GE-S	12.2(33)SRB
		SFP-GE-L	12.2(33)SRB
		SFP-GE-Z	12.2(33)SRB
		SFP-GE-T	12.2(33)SRC
7600-ES20-GE3CXL	8.1 A@42 V	Cisco 7600 ES20 line card, 20xGE SFP with DFC 3CXL	
		With Supervisor Engine 720	12.2(33)SRB
		With Supervisor Engine 32	12.2(33)SRB
		With RSP 720	12.2(33)SRB
		SFPs Supported	
		SFP-GE-S	12.2(33)SRB
		SFP-GE-L	12.2(33)SRB
		SFP-GE-Z	12.2(33)SRB
		SFP-GE-T	12.2(33)SRC
7600-ES20-10G3C	8.1 A@42 V	Cisco 7600 ES20 line card, 2x10GE XFP with DFC 3C	
		With Supervisor Engine 720	12.2(33)SRB
		With Supervisor Engine 32	12.2(33)SRB
		With RSP 720	12.2(33)SRB
		XFPs Supported	
		XFP-10GLR-OC192SR	12.2(33)SRB
		XFP-10GER-OC192IR	12.2(33)SRB
		XFP-10GZR-OC192LR	12.2(33)SRB1

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
7600-ES20-10G3CXL	8.1 A@42 V	Cisco 7600 ES20 line card, 2x10GE XFP with DFC 3CXL	
		With Supervisor Engine 720	12.2(33)SRB
		With Supervisor Engine 32	12.2(33)SRB
		With RSP 720	12.2(33)SRB
		XFPs Supported	
		XFP-10GLR-OC192SR	12.2(33)SRB
		XFP-10GER-OC192IR	12.2(33)SRB
		XFP-10GZR-OC192LR	12.2(33)SRB1

Note The Ethernet Services 20G line cards support all Cisco 7600 series routers except for the Cisco 7603 router

Service Modules

Anomaly Guard Module

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SVC-AGM-1-K9	4.00 A@42 V	Anomaly Guard Module	
		With Supervisor Engine 720	12.2(33)SRA
		With Route Switching Processor 720-1GE	12.2(33)SRC
		With Route Switching Processor 720-1GE	12.2(33)SRC

Note

- Supervisor Engine 32 does not support WS-SVC-AGM-1-K9.
- WS-SVC-AGM-1-K9 runs its own software—Refer to this publication:

  http://www.cisco.com/univercd/cc/td/doc/product/secure/ad_g/jaffa/jaffaagd.htm

Traffic Anomaly Detector Module

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-SVC-ADM-1-K9	4.00 A@42 V	Traffic Anomaly Detector Module		
			With Supervisor Engine 720	12.2(33)SRA
			With Route Switching Processor 720-1GE	12.2(33)SRC
			With Route Switching Processor 720-1GE	12.2(33)SRC

Note

- Supervisor Engine 32 does not support WS-SVC-ADM-1-K9.

- WS-SVC-ADM-1-K9 runs its own software—Refer to this publication:

  http://www.cisco.com/univercd/cc/td/doc/product/secure/ad_g/jaffa/jaffatad.htm

Persistent Storage Device (PSD) Module

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-SVC-PSD-1	4.00 A@42 V	Persistent Storage Device Module		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRC

Note

- WS-SVC-PSD-1 runs its own software—See this publication for more information:

- http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/relnotes/ol_4781.htm

- WS-SVC-PSD-1 maintains state when an NSF with SSO redundancy mode switchover occurs.

- Route Switching Processor 720 does not support WS-SVC-PSD-1.

Multi-Processor WAN Application Module (MWAM)

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-SVC-MWAM-1	3.57 A@42 V	Multi-Processor WAN Application Module		
			With Supervisor Engine 720	12.2(33)SRA

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
		With Supervisor Engine 32	12.2(33)SRC

Note

- Route Switching Processor 720 does not support WS-SVC-MWAM-1.
- WS-SVC-MWAM-1 runs its own software—See this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/relnotes/mwam/index.htm
- WS-SVC-MWAM-1 maintains state when an NSF with SSO redundancy mode switchover occurs.

Content Services Gateway (CSG) Module

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SVC-CSG-1	3.00 A@42 V	Content Services Gateway (CSG) Module	
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRC

Explanation

- WS-SVC-CSG-1 runs its own software—Refer to this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/wireless/moblwrls/csg/index.htm

Firewall Services Module

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SVC-FWM-1-K9	4.09 A@42 V	Firewall Services Module; CEF256	
		With Route Switching Processor 720-1GE	12.2(33)SRC
		With Supervisor Engine 720	12.2(33)SRA
		With Supervisor Engine 32	12.2(33)SRA

Note

- Supervisor Engine 32 requires Firewall Services Module Software Release 2.3(3) or a later rebuild.
- WS-SVC-FWM-1-K9 runs its own software—See this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/mod_icn/fwsm/index.htm
- With Firewall Services Module Software Release 2.3(1), WS-SVC-FWM-1-K9 maintains state when an NSF with SSO redundancy mode switchover occurs.
- WS-SVC-FWM-1-K9 does not maintain state when a single router mode with stateful switchover (SRM with SSO) redundancy mode switchover occurs.

Intrusion Detection System Modules (IDSMs)

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-SVC-IDSM2-K9	2.50 A@42 V	Intrusion Detection System Module 2; CEF256		
			With Supervisor Engine 720	12.2(33)SRA
			With Route Switching Processor 720-1GE	12.2(33)SRC
			With Supervisor Engine 32	12.2(33)SRC

Note

- WS-SVC-IDSM2-K9 runs its own software—See this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/iaabu/csids/csids10/4029_02.htm

- WS-SVC-IDSM2-K9 has been tested with OSM-2+4GE-WAN+ and the OC-12 Packet-over-SONET OSMs.

Network Analysis Modules (NAMs)

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
WS-SVC-NAM-2	3.47 A@42 V	Network Analysis Module 2; CEF256		
			With Supervisor Engine 720	12.2(33)SRC
			With Supervisor Engine 32	12.2(33)SRC
			With Route Switching Processor 720-1GE	12.2(33)SRC
WS-SVC-NAM-1	2.89 A@42 V	Network Analysis Module 1; CEF256		
			With Supervisor Engine 720	12.2(33)SRA
			With Supervisor Engine 32	12.2(33)SRA
			With Route Switching Processor 720-1GE	12.2(33)SRC

Note

- WS-SVC-NAM-2 and WS-SVC-NAM-1 run their own software—See this publication for more information:

  http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/relnotes/78_15353.htm

- WS-SVC-NAM-2 and WS-SVC-NAM-1 have been tested with OSM-2+4GE-WAN+ and the OC-12 Packet-over-SONET OSMs.

Application Control Engine (ACE) Module

Product ID (append "=" for spares)	Power Required	Product Description		Minimum Software Version
ACE10-6500-K9	5.23 A@42 V	Application Control Engine (ACE) module		
			With Supervisor Engine 720	12.2(33)SRB
			With Route Switching Processor 720-1GE	12.2(33)SRC

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
ACE20-SBC-K9	5.23 A @ 42 V	Cisco 7600 Series ACE 20 HW for Session Border Controller	
		With Supervisor Engine 720	12.2(33)SRB1
		With Route Switching Processor 720-1GE	12.2(33)SRC

- ACE10-6500-K9 runs its own software—See these publications:

- http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/mod_icn/ace/index.htm

- See the ACE10-6500-K9 software release notes for information about the minimum required ACE10-6500-K9 software version.

Note

- Cisco IOS Software modularity does not support ACE10-6500-K9.

- Supervisor Engine 32 does not support ACE10-6500-K9.

Service Application Module for IP

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SVC-SAMI-BB	7.14 A @ 42 V	Cisco Service and Application Module IP	
		With Supervisor Engine 720-3BXL	12.2(33)SRB
		With Supervisor Engine 32	12.2(33)SRC
		With Route Switching Processor 720-1GE	12.2(33)SRC

Wireless Services Module (WiSM)

Product ID (append "=" for spares)	Power Required	Product Description	Minimum Software Version
WS-SVC-WISM-1-K9	6.07 A @ 42 V	Wireless Services Module (WiSM)	
		With Supervisor Engine 720	12.2(33)SRC
		With Route Switching Processor 720-1GE	12.2(33)SRC

- WS-SVC-WISM-1-K9 runs its own software—See these publications:

- http://www.cisco.com/univercd/cc/td/doc/product/wireless/control/c44/index.htm

- See the WS-SVC-WISM-1-K9 software release notes for information about the minimum required WS-SVC-WISM-1-K9 software version.

Note

- Supervisor Engine 32 does not support WS-SVC-WISM-1-K9.

- RSP720 does not support WS-SVC-WISM-1-K9.

- In a 13-slot chassis, WS-SVC-WISM-1-K9 is supported only in slots 9 through 13 and does not power up in other slots.

Fan Trays

✎ **Note**   The fan trays required by the Supervisor Engine 720 are supported only with the power supplies listed in the "WS-C6503, WS-C6503-E, and CISCO7603 Power Supplies" and "CISCO7603-S Power Supplies" sections.

✎ **Note**   Enter the **show environment status | include fan** command or the **show environment cooling** command to display information about the installed fan trays.

High-Capacity Fan Trays

These high-capacity fan trays support the Supervisor Engine 720.

Product ID (append "=" for spares)	Power Allocated at 42 V	Product Description	Minimum Software Version
WS-C6503-E-FAN	1.37 A@42 V	High-capacity fan tray for WS-C6503-E chassis	12.2(33)SRA
FAN-MOD-3HS	2.98 A@42 V	High-capacity fan tray for WS-C6503 and CISCO7603 chassis	12.2(33)SRA
FAN-MOD-6HS	4.29 A@42 V	High-capacity fan tray for CISCO7606 chassis	12.2(33)SRA
WS-C6506-E-FAN	2.35 A@42 V	High-capacity fan tray for WS-C6506-E chassis	12.2(33)SRA
WS-C6K-6SLOT-FAN2	12 V fan	High-capacity fan tray for WS-C6506 chassis	12.2(33)SRA
FAN-MOD-09	5.75 A@42 V	High-capacity fan tray for WS-C6509-NEB-A and CISCO7609 chassis	12.2(33)SRA
WS-C6509-E-FAN	3.58 A@42 V	High-capacity fan tray for WS-C6509-E chassis	12.2(33)SRA
WS-C6K-9SLOT-FAN2	12 V fan	High-capacity fan tray for WS-C6509 chassis	12.2(33)SRA
WS-C6K-13SLT-FAN2	7.10 A@42 V	High-capacity fan tray for WS-C6513 and CISCO7613 chassis	12.2(33)SRA

Power Supplies

CISCO7606 Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PWR-1900-AC/6	1900 W AC power supply	12.2(33)SRA
PWR-2700-AC	2700 W AC power supply	12.2(33)SRA
PWR-2700-DC	2700 W DC power supply	12.2(33)SRA

CISCO7606-S Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PWR-2700-AC	2700 W AC power supply	12.2(33)SRB1
PWR-2700-DC	2700 W DC power supply	12.2(33)SRB1

WS-C6504-E and CISCO7604 Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PWR-2700-DC/4	2700 W DC power supply	12.2(33)SRA

WS-C6503, WS-C6503-E, and CISCO7603 Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PWR-1400-AC	1400 W AC power supply	12.2(33)SRA
PWR-950-AC	950 W AC power supply	12.2(33)SRA
PWR-950-DC	950 W DC power supply	12.2(33)SRA

CISCO7603-S Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
PWR-1500-DC	1500 W DC input (PWR-1500-DC)	12.2(33)SRB1

All Other Power Supplies

Product ID (append "=" for spares)	Product Description	Minimum Software Version
WS-CAC-6000W	6000 W AC power supply **Note** Limited to 4,000 W in WS-C6509 and WS-C6506.	12.2(18)SXD
PWR-4000-DC	4000 W DC power supply	12.2(33)SRA
WS-CAC-4000W	4000 W AC power supply	12.2(33)SRA
+WS-CAC-3000W	3000 W AC power supply **Note** • Required with Supervisor Engine 720 in WS-C6509-NEB or OSR7609. • Included in the WS-6509-NEB-UPGRD= upgrade kit.	12.2(33)SRA
WS-CAC-3000W	3000 W AC power supply	12.2(33)SRA
WS-CAC-2500W	2500 W AC power supply	12.2(33)SRA
WS-CDC-2500W	2500 W DC power supply	12.2(33)SRA
PWR-6000-DC	6000 W DC power supply	12.2(33)SRB

Chassis

Note   Cisco IOS Release 12.2SR is developed for and intended to run on Cisco 7600 series routers. If you are interested in running this release on Cisco Catalyst 6500 series switches, contact your account team.

13-Slot Chassis

Product ID (append "=" for spare)	Product Description	Minimum Software Version

WS-C6513	Catalyst 6513 chassis:
	
	• 13 slots
	
	• 64 chassis MAC addresses
	
	• Use with Supervisor Engine 720 requires WS-C6K-13SLT-FAN2
	
	• Does not support WS-C6500-SFM
	
	• These modules are supported only in slots 9 through 13 and do not power up in other slots:
	
	  – WS-X6704-10GE
	
	  – WS-X6748-SFP
	
	  – WS-X6816-GBIC
	
	  – WS-X6748-GE-TX	

	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA

CISCO7613	Cisco 7613 chassis:
	
	• 13 slots
	
	• 64 chassis MAC addresses
	
	• Use with Supervisor Engine 720 requires WS-C6K-13SLT-FAN2
	
	• Does not support WS-C6500-SFM
	
	• These modules are supported only in slots 9 through 13 and do not power up in other slots:
	
	  – WS-X6704-10GE
	
	  – WS-X6748-SFP
	
	  – WS-X6816-GBIC
	
	  – WS-X6748-GE-TX	

	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
	With Route Switch Processor 720	12.2(33)SRB

9-Slot Chassis

Product ID (append "=" for spare)	Product Description	Minimum Software Version
WS-C6509-E	Catalyst 6509 chassis: • 9 horizontal slots • 1024 chassis MAC addresses • Requires WS-C6509-E-FAN • Requires 2500 W or higher power supply	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
WS-C6509	Catalyst 6509 chassis: • 9 horizontal slots • 1024 chassis MAC addresses • Use with Supervisor Engine 720 requires WS-C6K-9SLOT-FAN2 • WS-CAC-6000W limited to 4000 W in WS-C6509	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
WS-C6509-NEB-A	Catalyst 6509-NEB chassis • 9 vertical slots • 64 chassis MAC addresses • No fan tray upgrade required for use with Supervisor Engine 720	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
CISCO7609	Cisco 7609 chassis • 9 vertical slots • 64 chassis MAC addresses • No fan tray upgrade required for use with Supervisor Engine 720	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
	With Route Switch Processor 720	12.2(33)SRB
CISCO7609-S	Cisco 7609-S chassis • 9 vertical slots • 64 chassis MAC addresses • FAN-MOD-9SHS high-speed fan module • No fan tray upgrade required for use with Supervisor Engine 720	

Product ID (append "=" for spare)	Product Description	Minimum Software Version
	With Supervisor Engine 720	12.2(33)SRB
	With Supervisor Engine 32	12.2(33)SRB
	With Route Switch Processor 720	12.2(33)SRB

6-Slot Chassis

Product ID (append "=" for spare)	Product Description	Minimum Software Version
WS-C6506-E	Catalyst 6506 chassis: • 6 slots • 1024 chassis MAC addresses • Requires WS-C6506-E-FAN • Requires 2500 W or higher power supply	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
WS-C6506	Catalyst 6506 chassis: • 6 slots • 1024 chassis MAC addresses • Use with Supervisor Engine 720 requires WS-C6K-6SLOT-FAN2 • WS-CAC-6000W limited to 4000 W in WS-C6506	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
CISCO7606	Cisco 7606 chassis: • 6 slots • 64 chassis MAC addresses • Use with Supervisor Engine 720 requires FAN-MOD-6HS	
	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
	With Route Switch Processor 720	12.2(33)SRB
CISCO7606-S	Cisco 7606-S chassis • 6 vertical slots • 64 chassis MAC addresses • FAN-MOD-6SHS high-speed fan module • No fan tray upgrade required for use with Supervisor Engine 720	
	With Supervisor Engine 720	12.2(33)SRB1
	With Supervisor Engine 32	12.2(33)SRB1

Product ID (append "=" for spare)	Product Description	Minimum Software Version
	With Route Switch Processor 720	12.2(33)SRB1

4-Slot Chassis

Product ID (append "=" for spare)	Product Description	Minimum Software Version

WS-C6504-E	Catalyst 6504-E chassis:
	• 4 slots
	• 64 chassis MAC addresses
	• Does not support:
	  – WS-X6500-SFM2
	  – WS-C6500-SFM
	  – WS-F6K-DFC	

	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA

CISCO7604	Cisco 7604 chassis:
	• 4 slots
	• 64 chassis MAC addresses
	• Does not support:
	  – WS-X6500-SFM2
	  – WS-C6500-SFM
	  – WS-F6K-DFC	

	With Supervisor Engine 720:	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
	With Route Switch Processor 720	12.2(33)SRB

3-Slot Chassis

Product ID (append "=" for spare)	Product Description	Minimum Software Version

WS-C6503-E	• 3 slots
	
	• 64 chassis MAC addresses
	
	• Use with Supervisor Engine 720 requires WS-C6503-E-FAN
	
	• WS-C6503-E supports:
	
	  – WS-X6704-10GE
	
	  – WS-X6748-SFP
	
	  – WS-X6724-SFP
	
	  – WS-X6748-GE-TX
	
	• WS-C6503-E does not support:
	
	  – WS-X6500-SFM2
	
	  – WS-C6500-SFM
	
	  – WS-F6K-DFC	

	With Supervisor Engine 720	12.2(33)SRA
	With Supervisor Engine 32	12.2(33)SRA
CISCO7603-S	Cisco 7603-S chassis • 3 slots • 64 chassis MAC addresses • FAN-MOD-3SHS high-speed fan module • No fan tray upgrade required for use with Supervisor Engine 720	
	With Supervisor Engine 720	12.2(33)SRB1
	With Supervisor Engine 32	12.2(33)SRB1
	With Route Switch Processor 720	12.2(33)SRB1

Unsupported Hardware

The following hardware is not supported:

- See the "Supervisor Engine 32" section on page 5 for information about hardware that is not supported with the Supervisor Engine 32.
- 1000BASE-BX10 SFP (GLC-BX-U, GLC-BX-U)
- The SFP-GE-S, SFP-GE-L, SFP-GE-Z, and SFP-GE-T are not supported on WS-X67xx-SFPs or on Supervisor Engine 720 uplink GE ports.
- With a Supervisor Engine 720, WS-X6516-GBIC hardware revisions 5.0 through 5.4 with a DFC3 installed.

  Supervisor Engine 720 supports a DFC3 on these WS-X6516-GBIC hardware revisions:

  - Lower than 5.0
  - 5.5 and higher

  With a Supervisor Engine 720 and a DFC3 installed, WS-X6516-GBIC hardware revisions 5.0 through 5.3 do not power up. Without a DFC3, WS-X6516-GBIC hardware revisions 5.0 through 5.4 operate in bus mode.

  Refer to external field notice 24494 for more information:

  http://www.cisco.com/warp/public/770/fn24494.shtml

Additionally, the following hardware is not supported:

Unsupported Service Modules

- WS-X6381-IDS—Intrusion Detection System (IDS) Module
- WS-X6380-NAM—Network Analysis Module (NAM)
- WS-SVC-WLAN-1-K9—Wireless LAN Service Module
- WS-SVC-IPSEC-1—IPsec VPN Acceleration Services Module
- WS-SVC-WEBVPN-K9—WebVPN Services Module
- WS-SVC-CMM—Communication Media Module
- WS-X6066-SLB-S-K9—Content Switching Module with SSL (CSM-S)
- WS-X6066-SLB-APC—Content Switching Module (CSM)
- WS-SVC-AON-1-K9—Application-Oriented Networking Module (AON)
- WS-SVC-SSL-1—Secure Sockets Layer (SSL) Services Module

Unsupported Port Adapters

- WS-SVC-CMM-24FXS—24-Port FXS Interface Port Adapter
- WS-SVC-CMM-ACT—Adhoc Conferencing and Transcoding Port Adapter
- WS-SVC-CMM-6T1—6-Port T1 Interface Port Adapter
- WS-SVC-CMM-6E1—6-Port E1 Interface Port Adapter

Unsupported Supervisor Engines

- Supervisor Engine 1 (WS-X6K-S1A-MSFC2, WS-X6K-SUP1A-MSFC)
- Supervisor Engine 2 (WS-X6K-S2U-MSFC2, WS-X6K-S2-MSFC2)

Unsupported Policy Feature Cards and Distributed Forwarding Cards

- PFC2
- PFC3A (WS-F6K-PFC3A)
- DFC3A (WS-F6700-DFC3A)

Unsupported Line Cards

- FlexWAN module (WS-X6182-2PA)
- OSM-4GE-WAN-GBIC
- OSM-1OC48-POS-SS, SI, SL
- OSM-4OC12-POS-MM, SI, SL
- OSM-2OC12-POS-MM, SI, SL
- OSM-16OC3-POS-MM, SI, SL
- OSM-8OC3-POS-MM, SI, SL
- OSM-4OC3-POS-SI
- OSM-2OC12-ATM-MM, SI

Unsupported Service Modules

- WS-X6624-FXS, WS-X6608-T1, and WS-X6608-E1 voice modules
- WS-X6101-OC12-MMF and WS-X6101-OC12-SMF ATM LANE modules
- WS-X6302-MSM—Multilayer Switch Module

Unsupported Chassis

- Catalyst 6000 series chassis
- WS-C6509-NEB—Catalyst 6509-NEB chassis
- OSR-7609—Cisco 7609 chassis
- CISCO7603—Cisco 7603 chassis
- WS-C6503—Catalyst 6503 chassis

Unsupported Power Supplies

These power supplies cannot support high-capacity fan trays:

- WS-CAC-1300W
- WS-CDC-1300W
- WS-CAC-1000W

Note Unsupported modules remain powered down if detected and do not affect system behavior.

Related Documentation

The following publications are available for the Cisco 7600 series routers:

- *Cisco 7600 Series Router Installation Guide*
- *Cisco 7600 Series Router Module Installation Guide*
- *Cisco 7600 Series Router SIP, SSC, and SPA Hardware Installation Guide*
- *Cisco 7600 Series Router SIP, SSC, and SPA Software Configuration Guide*
- *Cisco 7600 Series Router Cisco IOS Command Reference*
- *Cisco 7600 Series Internet Router System Message Guide*
- *Release Notes for Cisco IOS Release 12.2SRA on the Cisco 7600 Series Routers*
- Cisco IOS Configuration Guides and Command References—Use these publications to help you configure Cisco IOS software features not described in the Cisco 7600 series router publications:
  - *Configuration Fundamentals Configuration Guide*
  - *Configuration Fundamentals Command Reference*
  - *Bridging and IBM Networking Configuration Guide*
  - *Bridging and IBM Networking Command Reference*
  - *Interface Configuration Guide*
  - *Interface Command Reference*
  - *Network Protocols Configuration Guide*, Parts 1, 2, and 3
  - *Network Protocols Command Reference*, Parts 1, 2, and 3
  - *Security Configuration Guide*
  - *Security Command Reference*
  - *Switching Services Configuration Guide*
  - *Switching Services Command Reference*
  - *Voice, Video, and Home Applications Configuration Guide*
  - *Voice, Video, and Home Applications Command Reference*
  - *Software Command Summary*
  - *Software System Error Messages*
  - *Debug Command Reference*

- *Internetwork Design Guide*
- *Internetwork Troubleshooting Guide*
- *Configuration Builder Getting Started Guide*

The Cisco IOS Configuration Guides and Command References are located at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/index.htm

- For information about MIBs, go to this URL:

http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtmlObtaining Documentation

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

Cisco.com

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

http://www.cisco.com/techsupport

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

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

Product Documentation DVD

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

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

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

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

Ordering Documentation

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

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

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

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

Documentation Feedback

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

Cisco Product Security Overview

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

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

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

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

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

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

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

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

Reporting Security Problems in Cisco Products

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

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

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

- For nonemergencies — psirt@cisco.com

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

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

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

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

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

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

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

Product Alerts and Field Notices

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

To access the Product Alert Tool, you must be a registered Cisco.com user. Registered users can access the tool at this URL:

http://tools.cisco.com/Support/PAT/do/ViewMyProfiles.do?local=en

To register as a Cisco.com user, go to this URL:

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

Obtaining Technical Assistance

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

Cisco Support Website

The Cisco 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 at this URL:

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

Access to all tools on the Cisco 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

Note   Before you submit a request for service online or by phone, use the **Cisco Product Identification Tool** to locate your product serial number. You can access this tool from the Cisco Support website by clicking the **Get Tools & Resources** link, clicking the **All Tools (A-Z)** tab, and then choosing **Cisco Product Identification Tool** from the alphabetical list. This tool offers three search options: by product ID or model name; by tree view; or, for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

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

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

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

Submitting a Service Request

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

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

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

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

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

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

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

Definitions of Service Request Severity

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

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

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

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

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

Obtaining Additional Publications and Information

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

- The Cisco Online Subscription Center is the website where you can sign up for a variety of Cisco e-mail newsletters and other communications. Create a profile and then select the subscriptions that you would like to receive. To visit the Cisco Online Subscription Center, go to this URL:

  http://www.cisco.com/offer/subscribe

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco channel product offerings. To order and find out more about the *Cisco Product Quick Reference Guide*, go to this URL:

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

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

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

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

  http://www.ciscopress.com

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

  http://www.cisco.com/ipj

- Networking products offered by Cisco, as well as customer support services, can be obtained at this URL:

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

- Networking Professionals Connection is an interactive website where networking professionals share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

  http://www.cisco.com/discuss/networking

- "What's New in Cisco Documentation" is an online publication that provides information about the latest documentation releases for Cisco products. Updated monthly, this online publication is organized by product category to direct you quickly to the documentation for your products. You can view the latest release of "What's New in Cisco Documentation" at this URL:

  http://www.cisco.com/univercd/cc/td/doc/abtunicd/136957.htm

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

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