Cisco 2500 Series

This chapter provides information on the Cisco 2500 series routers. It is organized into the following sections:

- Product Overview
- Standard Features
- Hardware
  - Single LAN Routers
  - Mission-Specific Routers
  - Router/Hub Combinations
  - Access Servers
  - Dual LAN Routers
  - Modular Routers
  - Hardware Product Numbers
- Software
  - Software Feature Sets
  - Software Feature Packs
  - Software Product Numbers
  - Cisco IOS Feature Set Upgrades

Product Overview

The Cisco 2500 series routers provide a variety of models designed for small office and remote site environments. Each model supports at least two of the following interfaces:

- Ethernet
- Token Ring
- Synchronous serial
- Asynchronous serial
- ISDN BRI
- Hub

Cisco 2500 routers come with Flash EPROM technology for simplified software maintenance. These systems support a variety of Cisco IOS software feature sets, so you can choose a feature set that supports your specific protocol environment. The software feature sets range from an IP and bridging-only to the full array of Cisco's software functionality, including APPN and RMON.

Mission-specific models contain less memory and less hardware functionality to support a subset of protocols. Each mission-specific model can be upgraded to full router capability by downloading a new Cisco IOS software feature set and, if necessary, adding memory.

Cisco 2500 series models can be divided into the following categories:

- Single LAN routers—Models 2501, 2502, 2503, 2504, 2520, 2521, 2522, and 2523
- Mission-specific, entry-level routers—Models 2501CF, 2502CF, 2503I, 2504I, 2520CF, 2520LF, 2521CF, 2521LF, 2522CF, 2522LF, 2523CF, and 2523LF
- Router/hub combinations—Models 2505, 2507, and 2516
- Access servers—Models 2509 to 2512 (refer to the "Cisco 2500 Series Access Servers" section in the "Access Servers" chapter later in the catalog)
- Dual LAN routers—Models 2513, 2514, and 2515
- Modular routers—Models 2524 and 2525

Standard Features

All the Cisco 2500 series models support the features listed in Table 158.

Table 158 Cisco 2500 Series Summary of Features

Characteristic	Description
Flash memory	Minimum of 8 MB of Flash memory, except for the mission-specific routers which require only 4 MB of Flash memory. However, depending on the Cisco IOS release that shipped with the system, it might require more memory. Refer to Table 168 and Table 169, later in this chapter, for the minimum Flash memory required for each feature set.[1]
DRAM memory expandability	Minimum DRAM required by the Cisco IOS release that shipped with the system. Refer to Table 168 and Table 169, later in this chapter, for the minimum DRAM required for each feature set.
Processor type	20-MHz 68030
Software options—Cisco IOS Release 11.2	IP Routing IP Routing Plus IP/IPX with IBM base functionality and APPN Desktop (IP/IPX/AppleTalk/DEC) Desktop (IP/IPX/AppleTalk/DEC) Plus Enterprise Enterprise Plus Enterprise/APPN/Plus Mission-specific Cisco 2500 series: application-specific software
Software options—Cisco IOS Release 11.1 and 11.0	IP Routing IP Routing with IBM base functionality IP/IPX Routing IP/IPX Routing with IBM base functionality IP/IPX with IBM base functionality and APPN[2] Desktop Desktop with IBM base functionality Enterprise Enterprise/APPN[2] RMON Mission-specific Cisco 2500 series: application-specific software
Dimensions (H x W x D)	Models 2501 to 2516 and 2520 to 2525: 1.75 x 17.5 x 10.56 in. (4.44 x 44.45 x 26.82 cm)
Weight (average shipping)	Models 2501 to 2516 and 2520 to 2525: 10 lb (4.5 kg)
Standard components	Power supply and cord Console cable kit[3] RJ-45-to-DB-9 adapter 19 in. rack-mount/wall-mount kit

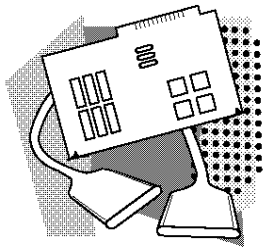
1. If your system requires more than 8 MB of Flash memory, the additional memory must be ordered separately.
2. This feature set is available with Cisco IOS Release 11.0 and later releases.
3. The console cable kit includes an RJ-45-to-RJ-45 roll-over console cable, an RJ-45-to-DB-25 male DCE adapter, an RJ-45-to-DB-25 female DTE adapter, and an RJ-45-to-DB-9 female DTE adapter.

The environmental specifications for the Cisco 2500 series are listed in Table 159.

Table 159 Cisco 2500 Series Environmental Specifications

Description	Specification
Consumption	For models 2501 to 2525: 40W
Input	For models 2501 to 2516 and 2520 to 2525: 110 to 220 VAC[1], 50 to 60 Hz –48 VDC[2]
Current rating	For models 2501 to 2516 and 2520 to 2525: 1.0A at 60 Hz, 0.5A at 50 Hz
Operating temperature range	For models 2501 to 2516 and 2520 to 2525: 32 to 104 F (0 to 40 C)
Nonoperating temperature range	For models 2501 to 2516 and 2520 to 2525: –40 to 185 F (–40 to 85 C)
Humidity (noncondensing)	For models 2501 to 2525: 5 to 95%

1. VAC = volts alternating current.
2. VDC = volts direct current.



Hardware

The Cisco 2500 series routers are discussed in the following sections:

- Memory Options
- Single LAN Routers
- Mission-Specific Routers
- Router/Hub Combinations
- Access Servers
- Dual LAN Routers
- Modular Routers
- Hardware Product Numbers

Memory Options

All Cisco 2500 models include a minimum of 8 MB of Flash memory, except for the mission-specific routers which include 4 MB of Flash memory. However, depending on the Cisco IOS software release shipped with the system, it might require more memory. Additional Flash memory can be purchased to allow for dual banking or potential future code growth.

There are two types of DRAM memory in the Cisco 2500 series routers: primary and shared (packet). Primary memory is used to store the operating configuration, routing tables, caches, and queues. Shared memory is used to store incoming and outgoing packets. In Table 160, the physical configuration column lists the amount of DRAM SIMM memory supported. The system usage column lists how the system allocates the total DRAM memory installed.

Table 160 Shared and Primary DRAM Memory—Cisco 2500 Series

Physical Configuration		System Usage	
Total DRAM Memory	DRAM SIMM	Shared DRAM Memory	Primary DRAM Memory
4 MB	4 MB	2 MB	2 MB
8 MB	8 MB	2 MB	6 MB
16 MB	16 MB	2 MB	14 MB

Hardware Product Numbers

The Cisco 2500 series offers the hardware, memory, and NPM cable options listed in Table 161. If a product number ends with an equal sign (=), the item can be ordered only as a spare. If a product number does not end with an equal sign, the item can be ordered as a spare or as a configurable part of a system order. Other hardware options can also be ordered through the Cisco authorized reseller channel.

Note For options that apply to most systems, refer to the "Cables and Transceivers" or "Power Cords" chapters later in the catalog.

Table 161 Cisco 2500 Series Hardware Options

Description	Product Number
Rack-Mount Kits	
19-in. rack-mount kit[1]	ACS-2500RM-19=
24-in. rack-mount kit	A25-2500RM-24=
Memory Options	
Boot ROM upgrade	BOOT-2500=
DRAM Memory Options	
4-MB DRAM SIMM (spare)	MEM-1X4D=
4-MB to 8-MB DRAM SIMM Factory Upgrade	MEM-2500-4U8D
8-MB DRAM SIMM (spare)	MEM-1X8D=
4-MB to 16-MB DRAM SIMM Factory Upgrade	MEM-2500-4U16D
16-MB DRAM SIMM (spare)	MEM-1X16D=
8-MB to 16-MB DRAM SIMM Factory Upgrade	MEM-2500-8U16D
Flash Memory Options	
4-MB Flash SIMM (spare)	MEM-1X4F=
8-MB to 16-MB Flash SIMM Factory Upgrade	MEM-2500-8U16F
8-MB Flash SIMM (spare)	MEM-1X8F=

Description	Product Number
Modules	
2-wire switched 56-kbps CSU/DSU module (for Cisco 2524 and Cisco 2525 routers only)	SM25-56K2
4-wire 56/64-kbps DSU/CSU module (for Cisco 2524 and Cisco 2525 routers only)	SM25-56K4
Fractional T1/T1 DSU/CSU module (for Cisco 2524 and Cisco 2525 routers only)	SM25-T1
Five-in-one synchronous serial module (for Cisco 2524 and Cisco 2525 routers only)	SM25-5IN1
ISDN BRI module (for Cisco 2524 and Cisco 2525 routers only)	SM25-BRI-S/T
ISDN with integrated NT1 device module (for Cisco 2524 and Cisco 2525 routers only)	SM25-BRI-U
Blank slot cover (for Cisco 2524 and Cisco 2525 routers only)	SM25-BLANK
Redundant Power Systems	
600W redundant AC power system for the Cisco 2500 series routers	PWR-600-AC-RPS
Redundant power supply 22/18 OIR Y-load cable	CAB-RPSY-2208
Redundant power supply 22/18 load cable	CAB-RPS-2218=
Redundant power supply 22/08 load cable	CAB-RPS-2208=
Redundant power supply field upgrade for Cisco 2500 series routers	ACS-2500RPS=
Cables	
EIA/TIA-232 male DTE interface, 10 ft (3 m)	CAB-232MT
EIA/TIA-232 female DCE interface, 10 ft (3 m)	CAB-232FC
EIA/TIA-449 male DTE interface, 10 ft (3 m)	CAB-449MT
EIA/TIA-449 female DCE interface, 10 ft (3 m)	CAB-449FC
EIA-530 male DTE interface, 10 ft (3 m)	CAB-530MT
V.35 male DTE interface, 10 ft (3 m)	CAB-V35MT
V.35 female DCE interface, 10 ft (3 m)	CAB-V35FC
X.21 male DTE interface, 10 ft (3 m)	CAB-X21MT
X.21 female DCE interface, 10 ft (3 m)	CAB-X21FC
Ethernet AUI adapter cable	CAB-3CE18=
Auxiliary/console cable kit[2]	ACS-2500ASYN
RJ-45-to-DB-25 management card console cable	CAB-MGMT-RH
Shielded power cable, United States	CABS-AC
Shielded power cable, Australia	CABS-ACA
Shielded power cable, Italy	CABS-ACI

Description	Product Number
Shielded power cable, Europe	CABS-ACE
Shielded power cable, United Kingdom	CABS-ACU

1. The 19-inch rack-mount kit can only be ordered as a spare; a 19-inch rack-mount kit is included with all Cisco 2500 series routers. An optional 24-inch rack-mount kit can be ordered from Cisco Systems.
2. The auxiliary/console cable kit includes an RJ-45-to-RJ-45 roll-over console cable, an RJ-45-to-DB-25 male DCE adapter, an RJ-45-to-DB-25 female DTE adapter, and an RJ-45-to-DB-9 adapter.

Single LAN Routers

Models 2501, 2502, 2503, 2504, 2520, 2521, 2522, and 2523 (see Figure 149 through Figure 156) contain the common Cisco 2500 series features listed in Table 162. In addition, these models support the network interfaces listed in Table 163.

Note This section discusses standard models. The mission-specific models are described in the "Mission-Specific Routers" section later in this chapter.

Table 162 Single LAN Router Network Interfaces

Model	Ethernet	Token Ring	Low-Speed Serial[1]	Serial[2]	ISDN BRI
2501	1	0	0	2	0
2502	0	1	0	2	0
2503	1	0	0	2	1
2504	0	1	0	2	1
2520	1	0	2	2	1
2521	0	1	2	2	1
2522	1	0	8	2	1
2523	0	1	8	2	1

1. Synchronous and asynchronous.
2. Synchronous.

Figure 149 Cisco 2501 Rear View

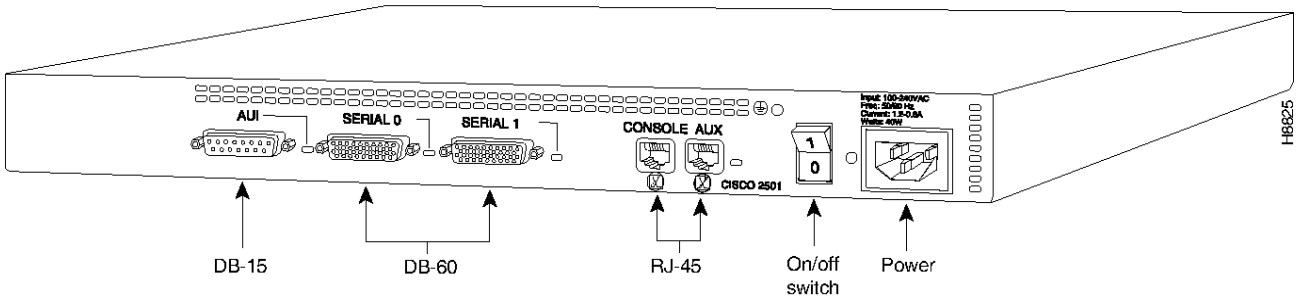


Figure 150 Cisco 2502 Rear View

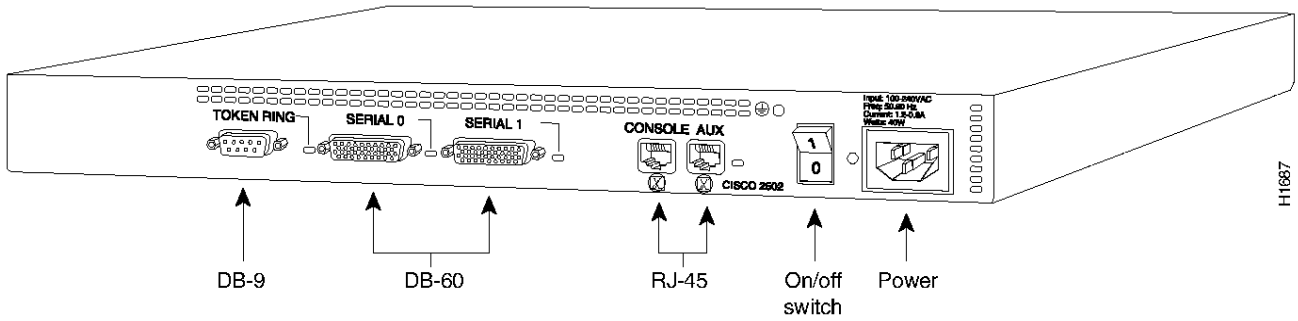


Figure 151 Cisco 2503 Rear View

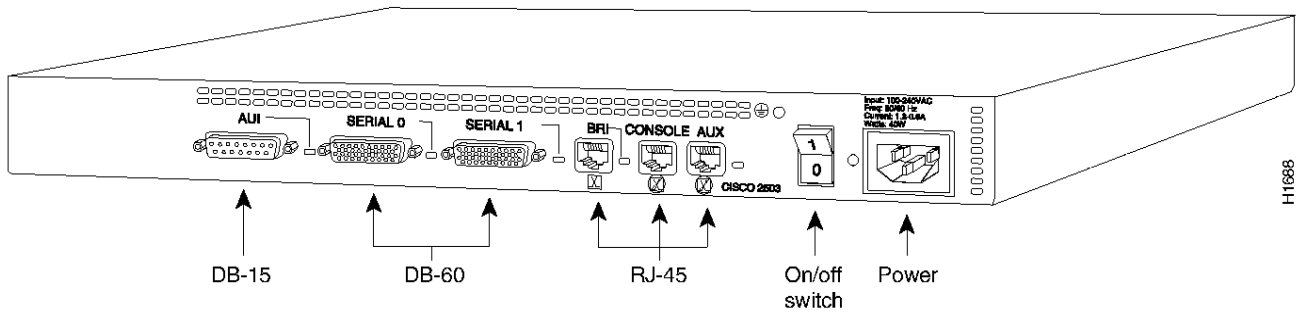


Figure 152 Cisco 2504 Rear View

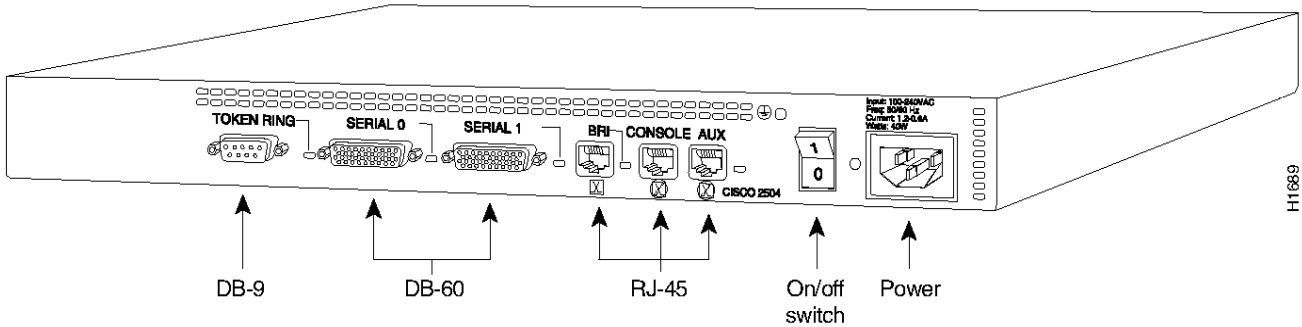


Figure 153 Cisco 2520 Rear View

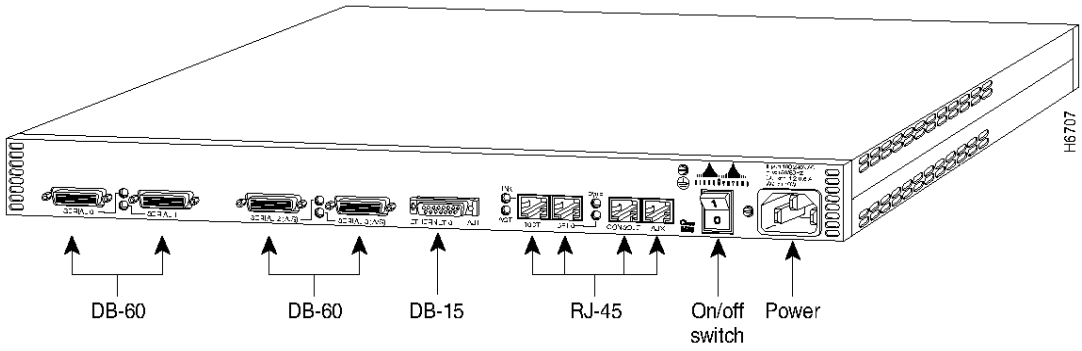


Figure 154 Cisco 2521 Rear View

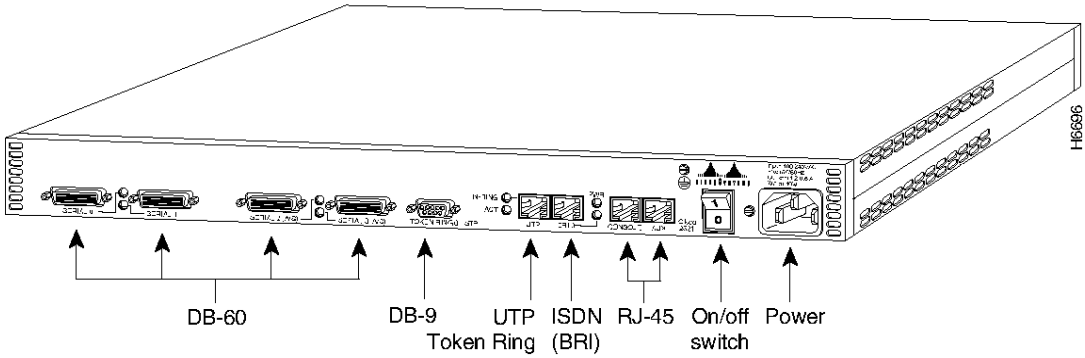


Figure 155 Cisco 2522 Rear View

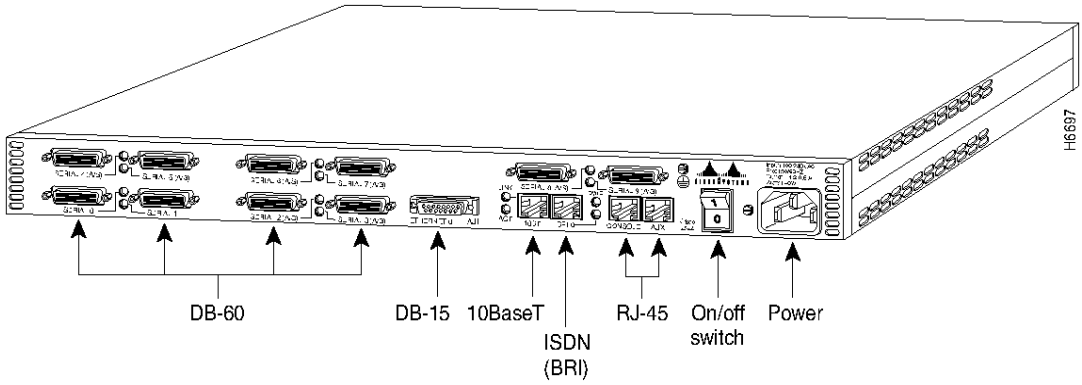
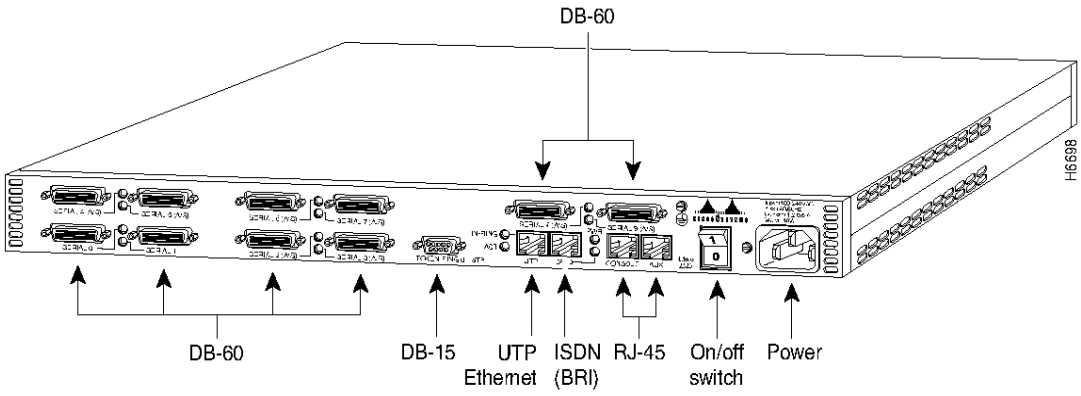


Figure 156 Cisco 2523 Rear View



Mission-Specific Routers

Mission-specific routers are entry-level routers that are based on standard Cisco 2500 hardware. However, mission-specific routers contain less memory than standard models and run reduced software images designed for CFRAD, LAN FRAD, and ISDN applications. These reduced software images disable unused ports. Mission-specific routers can be upgraded to full standard-model functionality by purchasing additional software and memory.

The network interfaces for the Cisco 2500 series mission-specific routers are listed in Table 163.

Table 163 Mission-Specific Router Network Interfaces

Model	Ethernet	Token Ring	Serial	Low-Speed Serial	ISDN BRI
2501CF	Software disabled	0	2	0	0
2501LF	1	0	2	0	0
2502CF	0	Software disabled	2	0	0
2502LF	0	1	2	0	0
2503I	1	0	Software disabled	0	1
2504I	0	1	Software disabled	0	1
2520CF	Software disabled	0	2	2	Software disabled
2520LF	1	0	2	2	Software disabled
2521CF	0	Software disabled	2	2	Software disabled
2521LF	0	1	2	2	Software disabled
2522CF	Software disabled	0	2	8	Software disabled
2522LF	1	0	2	8	Software disabled
2523CF	0	Software disabled	2	8	Software disabled
2523LF	0	1	2	8	Software disabled

Router/Hub Combinations

Models 2505, 2507, and 2516 (see Figure 157 through Figure 159) support integrated hub functionality as well as all the common features listed in Table 162. In addition, these models support the interfaces listed in Table 164.

Table 164 Router/Hub Interface Options

Model	Ethernet 10BaseT	Ethernet AUI	Token Ring	Token Ring Ring In/ Ring Out	Serial	Hub Ports	BRI
2505	1	0	0	0	2	8	0
2507	1	0	0	0	2	16	0
2516	1	0	0	0	2	14	1

Figure 157 Cisco 2505 Rear View

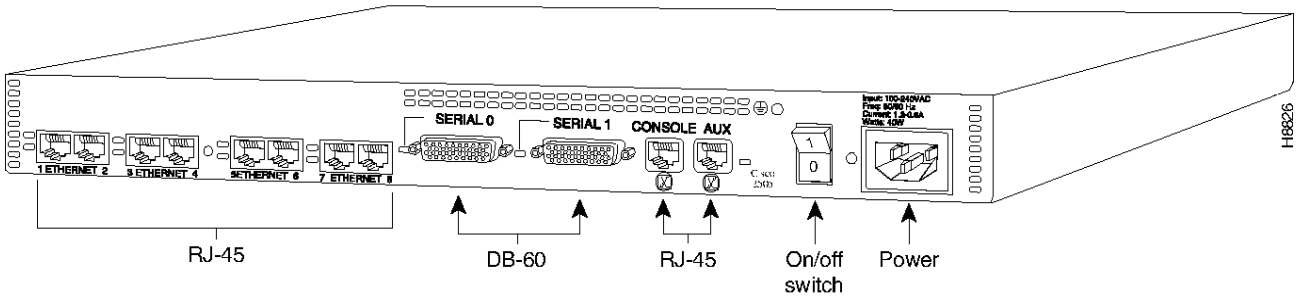


Figure 158 Cisco 2507 Rear View

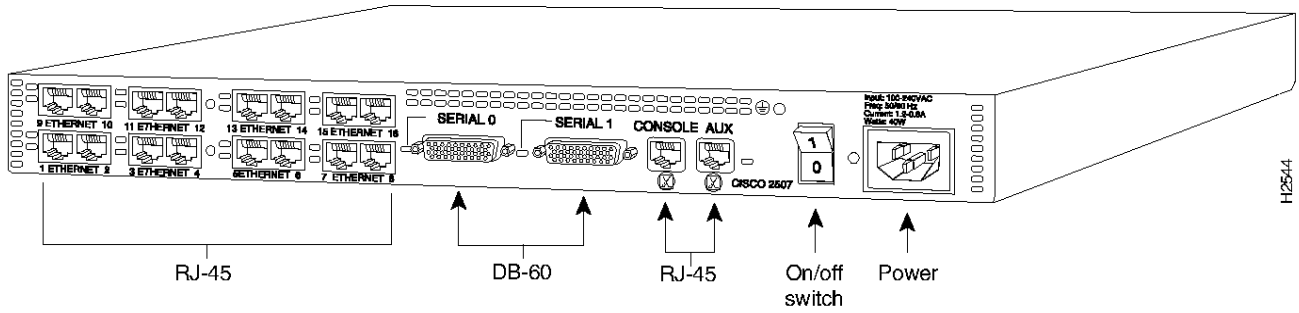
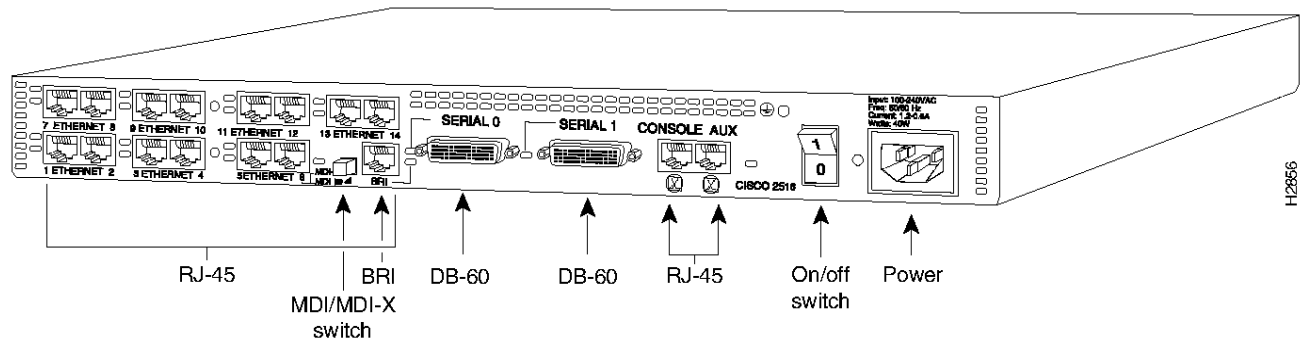


Figure 159 Cisco 2516 Rear View



Access Servers

Models 2509, 2510, 2511, and 2512 are designed to function as access servers for remote node and asynchronous/synchronous routing. For complete information, refer to the "Access Servers" chapter later in the catalog.

Dual LAN Routers

Models 2513, 2514, and 2515 (see Figure 160 through Figure 162) provide higher-density LAN support and include all the common features listed in Table 162. In addition, these models support the interfaces listed in Table 165.

Table 165 Dual LAN Router Interface Options

Model	Ethernet	Token Ring	Serial	ISDN BRI
2513	1	1	2	0
2514	2	0	2	0
2515	0	2	2	0

Figure 160 Cisco 2513 Rear View

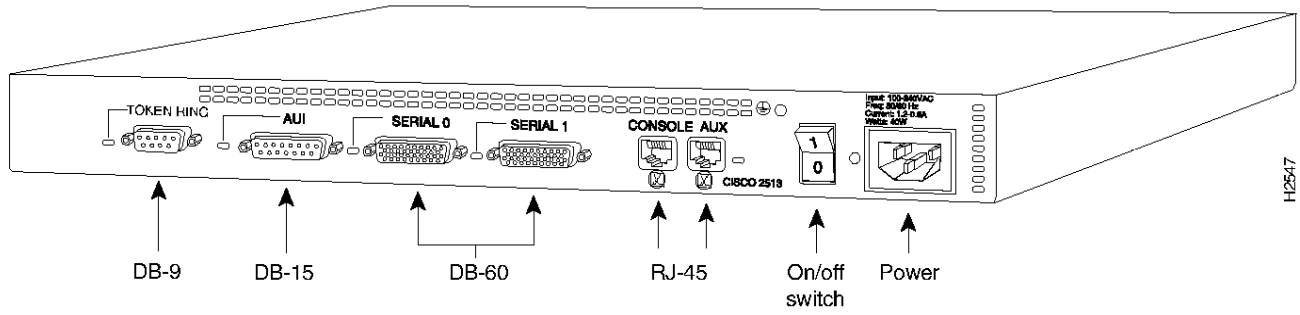


Figure 161 Cisco 2514 Rear View

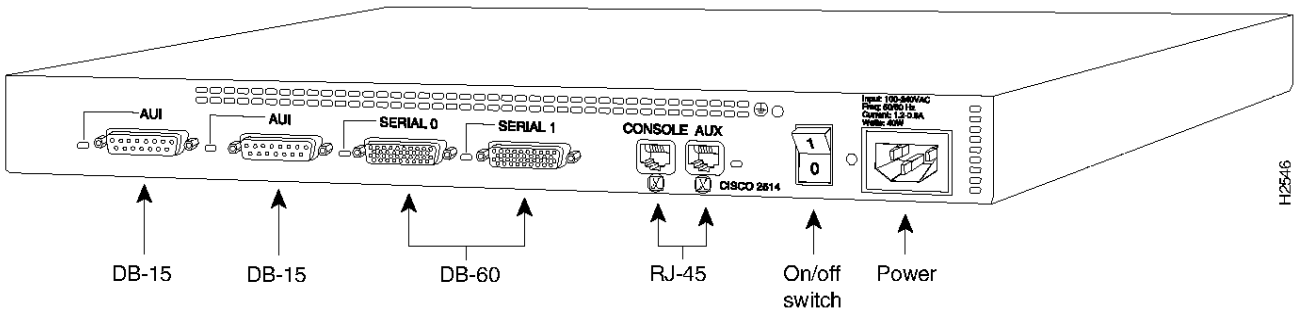
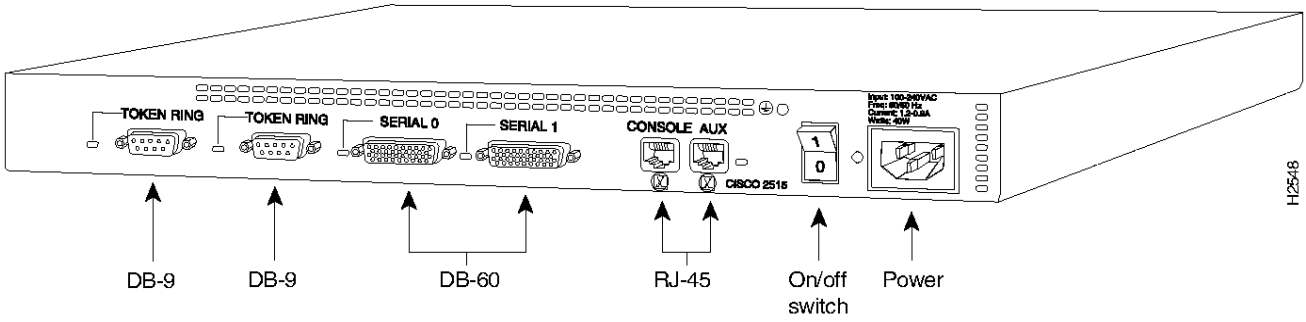


Figure 162 Cisco 2515 Rear View



Modular Routers

Models 2524 and 2525 provide LAN and WAN access in a low-cost modular router platform that can grow with your internetworking needs. The Cisco 2524 offers an Ethernet (AUI or 10BaseT) LAN connection, and the Cisco 2525 offers a Token Ring (STP or UTP) LAN connection. Both routers can accommodate up to three WAN modules—two synchronous serial and one ISDN.

The choice of synchronous serial WAN modules is as follows:

- 2-wire, switched, 56-kbps DSU/CSU
- 4-wire, 56/64-kbps DSU/CSU
- Fractional T1/T1 DSU/CSU
- Five-in-one synchronous serial

Note The five-in-one synchronous serial WAN module gets its name from the five types of signaling it supports, which include the following: EIA/TIA-232, EIA/TIA-449, V.35, X.21, and EIA-530. You can order a DB-60 shielded serial transition cable. The router end of the cable has a DB-60 connector; the other end of the cable has the appropriate connector for the standard interface you specify.

The choice of ISDN WAN modules is as follows:

- ISDN BRI
- ISDN with integrated NT1 device

The ISDN WAN modules are keyed so that you cannot insert them into the synchronous serial WAN slots. A blank slot cover is installed over unused slots.

Figure 163 shows the rear view of the Cisco 2524 router, and Figure 164 shows the rear view of the Cisco 2525 router.

Figure 165 through Figure 170 show the WAN modules. Figure 171 shows the blank slot cover.

Figure 163 Cisco 2524 Rear View

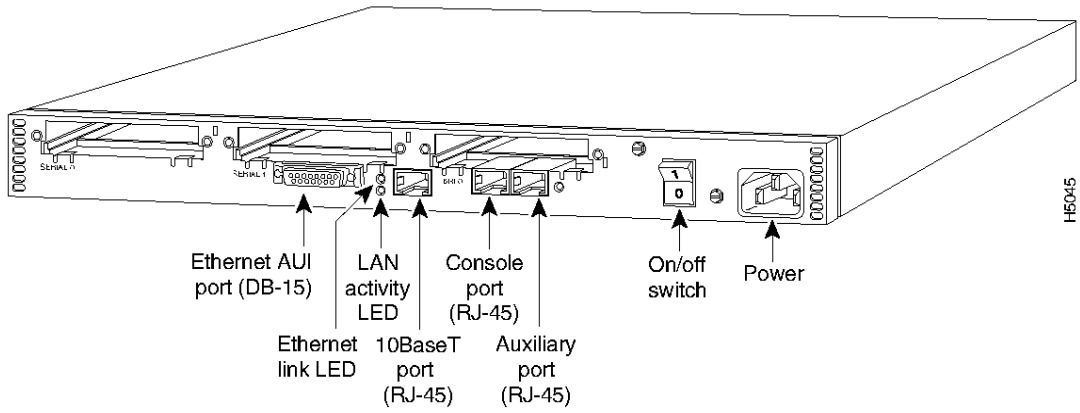


Figure 164 Cisco 2525 Rear View

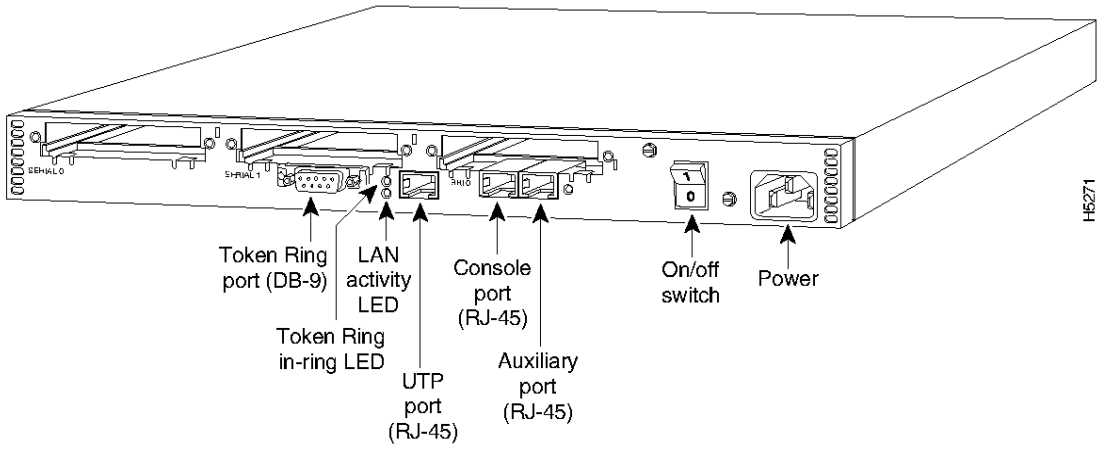


Figure 165 2-Wire, Switched, 56-kbps DSU/CSU WAN Module

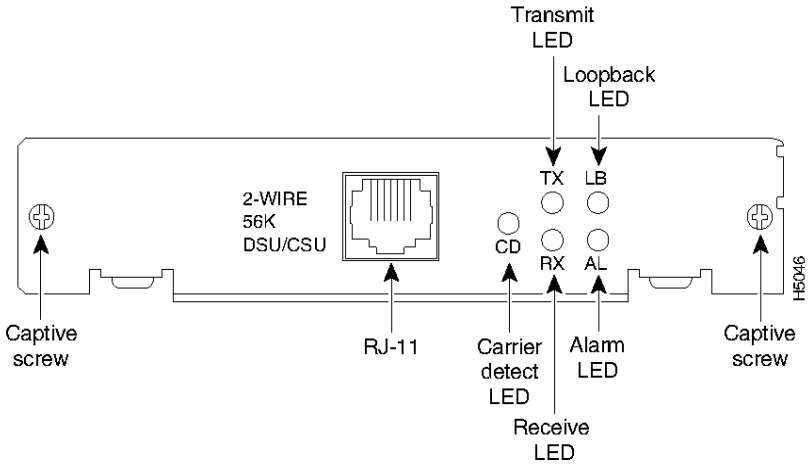


Figure 166 4-Wire, 56/64-kbps DSU/CSU WAN Module

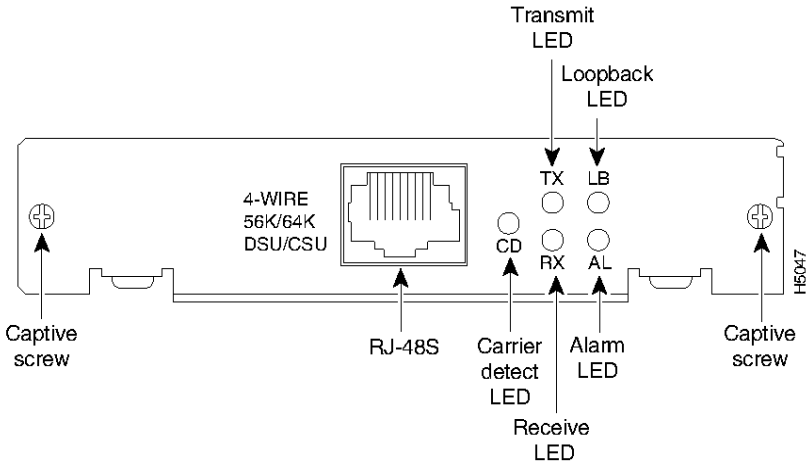


Figure 167 Fractional T1/T1 DSU/CSU WAN Module

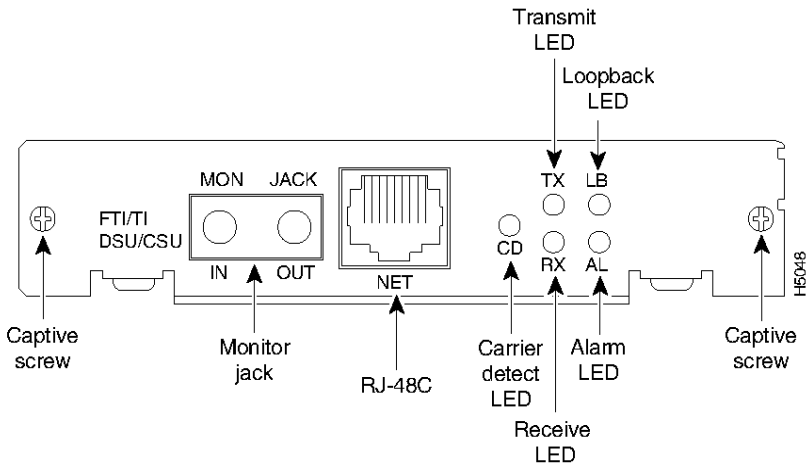


Figure 168 ISDN BRI WAN Module

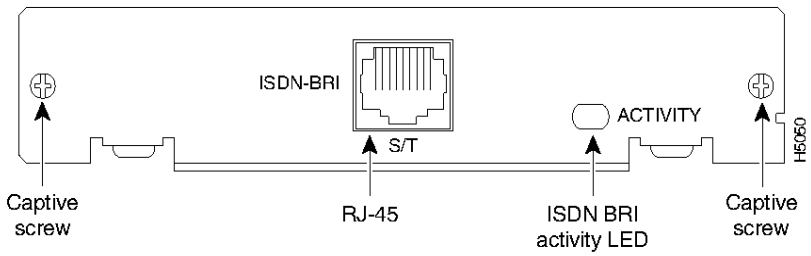


Figure 169 ISDN BRI with Integrated NT1 WAN Module

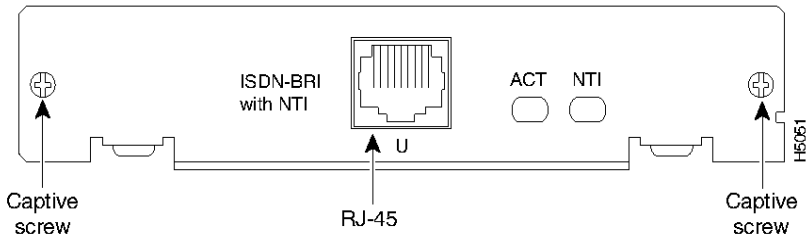


Figure 170 Five-in-One Synchronous Serial WAN Module

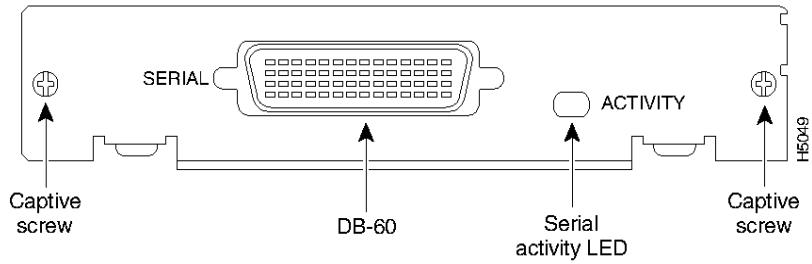
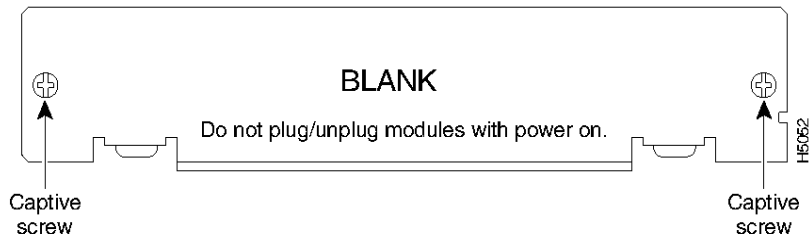


Figure 171 Blank Slot Cover



Hardware Product Numbers

The hardware options for Cisco 2500 series routers include additional rack-mount kits, memory, and cables. Table 166 lists the base product numbers for each model, and Table 161 lists the hardware options available. If a product number ends with an equal sign (=), you can order the item as a spare only. If a product number does not end with an equal sign, you can order the item as a spare or as a configurable part of a system order.

The Cisco 2500 series routers also come with a 19-inch rack-mount kit and a console cable kit (which includes an RJ-45-to-RJ-45 roll-over console cable, an RJ-45-to-DB-25 male DCE adapter, an RJ-45-to-DB-25 female DTE adapter, and a DB-9 adapter).

Note For more information, including cable illustrations, refer to the "Cables and Transceivers" chapter. The "Power Cords" chapter provides international power cord product numbers.

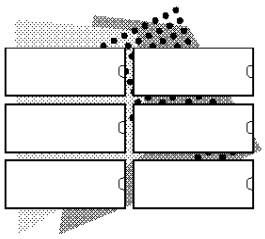
Table 166 Cisco 2500 Series Base Models Hardware Product Numbers

Model	Description	Product Number
Cisco 2501	1 Ethernet, 2 serial, AC power supply	CISCO2501
Cisco 2501-DC	1 Ethernet, 2 serial, DC power supply	CISCO2501-DC
Cisco 2501CF[1]	2 serial, CFRAD software, AC power supply	CISCO2501CF
Cisco 2501LF	1 Ethernet, 2 serial, LAN FRAD software, AC power supply	CISCO2501LF
Cisco 2502	1 Token Ring, 2 serial, AC power supply	CISCO2502
Cisco 2502CF[1]	2 serial, CFRAD software, AC power supply	CISCO2502CF
Cisco 2502LF	1 Token Ring, 2 serial, LAN FRAD software, AC power supply	CISCO2502LF
Cisco 2503	1 Ethernet, 2 serial, 1 ISDN BRI, AC power supply	CISCO2503
Cisco 2503-DC	1 Ethernet, 2 serial, 1 ISDN BRI, DC power supply	CISCO2503-DC
Cisco 2503I[1]	1 Ethernet, 1 ISDN BRI, ISDN software, AC power supply	CISCO2503I
Cisco 2503I-DC[1]	1 Ethernet, 1 ISDN BRI, ISDN software, DC power supply	CISCO2503I-DC
Cisco 2504	1 Token Ring, 2 serial, 1 ISDN BRI, AC power supply	CISCO2504
Cisco 2504-DC	1 Token Ring, 2 serial, 1 ISDN BRI, DC power supply	CISCO2504-DC
Cisco 2504I[1]	1 Token Ring, 1 ISDN BRI, ISDN software, AC power supply	CISCO2504I
Cisco 2505	8 Ethernet UTP hub ports, 2 serial, AC power supply	CISCO2505

Model	Description	Product Number
Cisco 2505-DC	8 Ethernet UTP hub ports, 2 serial, DC power supply	CISCO2505-DC
Cisco 2507	16 Ethernet UTP hub ports, 2 serial, AC power supply	CISCO2507
Cisco 2507-DC	16 Ethernet UTP hub ports, 2 serial, DC power supply	CISCO2507-DC
Cisco 2509[2]	1 Ethernet, 2 serial, 8 async serial, AC power supply	CISCO2509
Cisco 2509-DC[2]	1 Ethernet, 2 serial, 8 async serial, DC power supply	CISCO2509-DC
Cisco 2510[2]	1 Token Ring, 2 serial, 8 async serial, AC power supply	CISCO2510
Cisco 2511[2]	1 Ethernet, 2 serial, 16 async serial, AC power supply	CISCO2511
Cisco 2511-DC[2]	1 Ethernet, 2 serial, 16 async serial, DC power supply	CISCO2511-DC
Cisco 2512[2]	1 Token Ring, 2 serial, 16 async serial, AC power supply	CISCO2512
Cisco 2513	1 Ethernet, 1 Token Ring, 2 serial, AC power supply	CISCO2513
Cisco 2514	2 Ethernet, 2 serial, AC power supply	CISCO2514
Cisco 2514-DC	2 Ethernet, 2 serial, DC power supply	CISCO2514-DC
Cisco 2515	2 Token Ring, 2 serial, AC power supply	CISCO2515
Cisco 2516	14 Ethernet UTP hub ports, 2 sync serial, 1 ISDN BRI, AC power supply	CISCO2516
Cisco 2516-DC	14 Ethernet UTP hub ports, 2 sync serial, 1 ISDN BRI, DC power supply	CISCO2516-DC
Cisco 2520	1 Ethernet, 2 high-speed sync serial, 2 low-speed async/sync serial, 1 ISDN BRI interface, AC power supply	CISCO2520
Cisco 2520-DC	1 Ethernet, 2 high-speed sync serial, 2 low-speed async/sync serial, 1 ISDN BRI interface, DC power supply	CISCO2520-DC
Cisco 2520CF[1]	2 high-speed sync serial, 2 low-speed async/sync serial, CFRAD software, AC power supply	CISCO2520CF
Cisco 2520LF[1]	1 Ethernet, 2 high-speed sync serial, 2 low-speed async/sync serial, LAN FRAD software, AC power supply	CISCO2520LF
Cisco 2521	1 Token Ring, 2 high-speed sync serial, 2 low-speed async/sync serial, 1 ISDN BRI interface, AC power supply	CISCO2521
Cisco 2521-DC	1 Token Ring, 2 high-speed sync serial, 2 low-speed async/sync serial, 1 ISDN BRI interface, DC power supply	CISCO2521-DC
Cisco 2521CF[1]	2 high-speed sync serial, 2 low-speed async/sync serial, CFRAD software, AC power supply	CISCO2521CF
Cisco 2521LF[1]	1 Token Ring, 2 high-speed sync serial, 2 low-speed async/sync serial, LAN FRAD software, AC power supply	CISCO2521LF
Cisco 2522	1 Ethernet, 2 high-speed sync serial, 8 low-speed async/sync serial, 1 ISDN BRI interface, AC power supply	CISCO2522
Cisco 2522-DC	1 Ethernet, 2 high-speed sync serial, 8 low-speed async/sync serial, 1 ISDN BRI interface, DC power supply	CISCO2522-DC
Cisco 2522CF[1]	2 high-speed sync serial, 8 low-speed async/sync serial, CFRAD software, AC power supply	CISCO2522CF
Cisco 2522LF[1]	1 Ethernet, 2 high-speed sync serial, 8 low-speed async/sync serial, LAN FRAD software, AC power supply	CISCO2522LF
Cisco 2523	1 Token Ring, 2 high-speed sync serial, 8 low-speed async/sync serial, 1 ISDN BRI interface, AC power supply	CISCO2523
Cisco 2523-DC	1 Token Ring, 2 high-speed sync serial, 8 low-speed async/sync serial, 1 ISDN BRI interface, DC power supply	CISCO2523-DC

Model	Description	Product Number
Cisco 2523CF[1]	2 high-speed sync serial, 8 low-speed async/sync serial, CFRAD software, AC power supply	CISCO2523CF
Cisco 2523LF[1]	1 Token Ring, 2 high-speed sync serial, 8 low-speed async/sync serial, LAN FRAD software, AC power supply	CISCO2523LF
Cisco 2524	1 Ethernet (AUI or 10BaseT) with 3 slots for WAN modules, AC power supply	CISCO2524
Cisco 2524-DC	1 Ethernet (AUI or 10BaseT) with 3 slots for WAN modules, DC power supply	CISCO2524-DC
Cisco 2525	1 Token Ring (STP or UTP) with 3 slots for WAN modules, AC power supply	CISCO2525

1. Mission-specific router. Mission-specific routers are based on standard Cisco 2500 hardware, but they contain less memory and run reduced Cisco IOS images that disable unused ports and support a subset of protocols. By adding software, and possibly memory, mission-specific routers can be upgraded to full standard router functionality.
2. See the "Access Servers" chapter later in this catalog, for more information.



Software

The Cisco IOS software available for the Cisco 2500 series router is described in the following sections:

- Software Feature Sets
- Software Feature Packs
- Software Product Numbers
- Cisco IOS Feature Set Upgrades

The Cisco 2500 series routers support the following software releases:

- Cisco IOS Releases 11.2, 11.1, and 11.0 feature sets (see Table 14)

Note that entry-level, mission-specific models are not listed because software is included with the hardware. For more information about mission-specific software, refer to Table 172.

Software Feature Sets

The Cisco 2500 series offers the following types of feature sets:

- Basic. The basic feature set for the hardware platform.
- Plus. The basic feature set plus additional features.
- Plus 40. The basic feature set, Plus features, and 40-bit data encryption.
- Plus 56. The basic feature set, Plus features, and 56-bit data encryption.

Note Cisco IOS images with 40-bit Data Encryption Standard (DES) support may legally be distributed to any party eligible to receive Cisco IOS software. 40-bit DES is not a cryptographically strong solution so its use should be carefully evaluated.

Cisco IOS images with 56-bit DES are possibly subject to export and/or import controls and may have a limited distribution. For more information, contact your sales representative or distributor, or visit CCO at http://www.cisco.com/wwl/export/encrypt.html, or send e-mail to export@cisco.com.

The Cisco IOS feature set tables use the following conventions to identify features:

- X: The feature is offered in the basic feature set.
- –: The feature is not offered in the feature set.
- Plus: The feature is offered in the Plus feature sets.
- Encrypt: The feature is offered in the Encryption (Plus 40 and Plus 56) feature sets.

Software Feature Packs

Software feature packs consist of CD-ROMs that contain Cisco IOS software feature set images and a Windows 95 application, which loads the images onto a router.

Software feature packs are available for most of the Cisco IOS Release 11.2 feature set images listed in Table 14. Table 168 lists the product numbers for feature sets and feature packs available in Cisco IOS Release 11.2.

For more information about software feature packs, see the section "Cisco IOS Feature Packs" in the chapter "Cisco IOS Software," earlier in the catalog.

Note You can also order a Cisco IOS software feature pack for the standard versions of the models listed above.

The RMON MIB (RFC 1757) allows you to monitor all nodes and their interaction on a LAN segment. Standard Cisco IOS Release 11.1 feature sets provide support for the RMON alarm and event groups only. If you prefer more network management support, you can order an enhanced RMON feature set that includes full support for the following nine groups: statistics, history, alarms, hosts, hostTopN, matrix, filter, capture, and events. Table 167 describes the contents of the enhanced IP/RMON, IP/IPX/RMON, and Enterprise/RMON feature sets.

In Cisco IOS Release 11.2, the feature RMON full is available in the Plus feature sets.

Table 167 Cisco IOS Release 11.1 RMON Platform-Specific Feature Sets—Cisco 2500 Series

	RMON Platform-Specific Feature Sets[1]		
Features	**IP/RMON Routing**	**IP/IPX/RMON Routing**	**Enterprise/ RMON**
Cisco IOS Release	**11.1**	**11.1**	**11.1**
Platforms Supported			
Cisco 2500 series routers: Ethernet models 2501, 2503, 2505, 2507, 2509, 2511, 2513, 2514, 2516, 2520, 2522, 2524	X	X	X
LAN Support			
Apollo Domain	–	–	X
AppleTalk 1 and 2	–	–	X
Banyan VINES	–	–	X
Concurrent routing and bridging	X	X	X
DECnet IV	–	–	X
DECnet V	–	–	X
GRE	X	X	X
IP	X	X	X
LAN extension host	X	X	X
Multiring	X	X	X
Novell IPX	–	X	X
OSI	–	–	X
Transparent and translational bridging[2]	X	X	X
XNS	–	–	X
WAN Services			
Frame Relay	X	X	X
HDLC	X	X	X
IPXWAN 2.0	–	X	X
ISDN[3]	X	X	X
PPP[4]	X	X	X
SMDS	X	X	X
Switched 56	X	X	X
X.25[5]	X	X	X
WAN Optimization			
Bandwidth-on-demand	X	X	X
Custom and priority queuing	X	X	X
Dial backup	X	X	X
Dial-on-demand	X	X	X
Header[6], link, and payload compression[7]	X	X	X

Features	RMON Platform-Specific Feature Sets[1]		
	IP/RMON Routing	IP/IPX/RMON Routing	Enterprise/ RMON
Cisco IOS Release	**11.1**	**11.1**	**11.1**
Snapshot routing	X	X	X
Weighted fair queuing	X	X	X
IP Routing			
BGP	X	X	X
EGP	X	X	X
Enhanced IGRP	X	X	X
ES-IS	–	–	X
IGRP	X	X	X
IS-IS	–	–	X
NHRP	X	X	X
On Demand Routing (ODR)	–	–	–
OSPF	X	X	X
PIM	X	X	X
Policy-based routing	X	X	X
RIP	X	X	X
RIP Version 2	X	X	X
Other Routing			
AURP	–	–	X
IPX RIP	–	X	X
NLSP	–	X	X
RTMP	–	–	X
SMRP	–	–	X
SRTP	–	–	X
Management			
AutoInstall	X	X	X
Automatic modem configuration	X	X	X
RMON nine-group Ethernet[8]	X	X	X
SNMP	X	X	X
Telnet	X	X	X
Security			
Access lists	X	X	X
Access security	X	X	X
Extended access lists	X	X	X
Kerberized login	–	–	X
Lock and key	X	X	X

Features	RMON Platform-Specific Feature Sets[1]		
	IP/RMON Routing	IP/IPX/RMON Routing	Enterprise/ RMON
Cisco IOS Release	**11.1**	**11.1**	**11.1**
MAC security for hubs[9]	X	X	X
MD5 routing authentication	X	X	X
RADIUS	X	X	X
TACACS+	X	X	X
IBM Support (Optional)[10]			
BAN for SNA Frame Relay support	X	X	X
Bisync	X	X	X
Caching and filtering	X	X	X
DLSw+	X	X	X
Downstream PU concentration (DSPU)	–	–	X
Frame Relay SNA support (RFC 1490)	X	X	X
NetView Native Service Point	X	X	X
QLLC	X	X	X
SDLC integration	X	X	X
SDLC transport (STUN)	X	X	X
SDLC-to-LAN conversion (SDLLC)	X	X	X
SNA and NetBIOS WAN optimization via local acknowledgment	X	X	X
SRB/RSRB	X	X	X
SRT	X	X	X
TG/COS	–	–	X
Protocol Translation			
LAT	–	–	X
PPP	–	–	X
Rlogin	–	–	X
Telnet	–	–	X
TN3270	–	–	X
X.25	–	–	X

	RMON Platform-Specific Feature Sets[1]		
Features	**IP/RMON Routing**	**IP/IPX/RMON Routing**	**Enterprise/ RMON**
Cisco IOS Release	**11.1**	**11.1**	**11.1**
Remote Node[11]			
Asynchronous master interfaces	X	X	X
ATCP	–	–	X
CPPP	X	X	X
CSLIP	X	X	X
DHCP	X	X	X
IP pooling	X	X	X
IPX on virtual asynch interfaces	–	X	X
IPXCP[6]	–	X	X
MacIP	–	–	X
NASI[12]	–	–	X
NetBEUI over PPP	–	–	X
PPP	X	X	X
SLIP	X	X	X
Terminal Services[11]			
LAT[13]	–	–	X
Rlogin	X	X	X
Telnet	X	X	X
TN3270	–	–	X
X.25 PAD	X	X	X
Xremote	–	–	X

1. In Cisco IOS Release 11.2 and later releases, RMON is available in the Plus feature sets. It is listed as "RMON full" in the appropriate hardware platform tables. RMON is available only as a separate feature set in Cisco IOS Release 11.1.
2. See the category "IBM Support" for information about source-route bridging (SRB).
3. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.
4. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, PPP compression, and Multilink PPP.
5. X.25 Includes X.25 switching.
6. IPX header compression (RFC 1553) is available in the feature sets that support IPX with Cisco IOS Release 11.1(1) and later releases.
7. X.25 and Frame Relay payload compression.
8. The RMON events and alarms groups are supported for all interfaces; however, the full nine groups are supported for Ethernet interfaces only. For security reasons, packet capture only captures packet headers, not data.
9. MAC security for hubs applies to the following Cisco 2500 series Ethernet hubs: 2505, 2507, and 2516.
10. IBM support is available as a separate Cisco IOS feature set with the IBM base option: IP/IBM base, IP/IPX//IBM base.
11. Remote node and terminal services are supported on access servers (with limited support on router auxiliary ports).
12. NASI is available in Cisco IOS Release 11.1(2) and later releases.
13. LAT terminal services are available for Cisco 2500 series access servers; not routers. Use of LAT requires a terminal license. For more details, see the "LAT Terminal License" section in the "Access Servers" chapter later in the catalog.

Software Product Numbers

This section describes the software product numbers for the Cisco 2500 series. Table 169 lists the software feature set and feature pack product numbers and minimum memory requirements for Cisco IOS Release 11.2. Table 168 lists the software feature set product numbers and minimum memory requirements for Cisco IOS Releases 11.1 and 11.0.

Note All Cisco 2500 series models include a minimum of 8 MB of Flash memory; however, depending on the Cisco IOS release feature set or feature pack that you order with the system, it might require more memory. Refer to Table 168 and Table 169 for the minimum Flash memory required for each feature set.

The minimum memory requirements listed were chosen for typical branch and remote office applications. If your network is very large, using complex routing protocols, or using RMON, you might need more memory. Configuration analysis and testing are encouraged.

Table 168 Software Product Numbers and Memory Requirements for Cisco IOS Release 11.2—Cisco 2500 Series

	Product Numbers and Memory Requirements			
		Cisco IOS Release 11.2		
Feature Set	Product Number[1]	Flash	Minimum DRAM[2] Models 2501–2516[3] and 2520–2525	Default DRAM[2] 2501-2516[3] and 2520-2525
IP	SF25C-11.2.1 SW25C-11.2.1= CD25-C-11.2=[4]	8 MB	4 MB	4 MB
IP Plus	SF25CP-11.2.1 SW25CP-11.2.1= CD25-CP/E-11.2=[4]	8 MB	4 MB	4 MB
IP Plus 40	SF25CW-11.2.1 SW25CW-11.2.1= CD25-CW-11.2=[4]	8 MB	4 MB	4 MB
IP Plus 56	SF25CY-11.2.1 SW25CY-11.2.1 CD25-CY-11.2=[4]	8 MB	4 MB	4 MB
Desktop (IP/IPX/AppleTalk/DEC)	SF25B-11.2.1 SW25B-11.2.1= CD25-B-11.2=[4]	8 MB	4 MB	4 MB
Desktop Plus	SF25BP-11.2.1 SW25BP-11.2.1= CD25-BP-11.2=[4]	8 MB	4 MB	4 MB
Desktop Plus 40	SF25BW-11.2.1 SW25BW-11.2.1= CD25-BW-11.2=[4]	8 MB	4 MB	4 MB

	Product Numbers and Memory Requirements			
		Cisco IOS Release 11.2		
Feature Set	**Product Number[1]**	**Flash**	**Minimum DRAM[2] Models 2501–2516[3] and 2520–2525**	**Default DRAM[2] 2501-2516[3] and 2520-2525**
Desktop Plus 56	SF25BY-11.2.1 SW25BY-11.2.1= CD25-BY-11.2=[4]	8 MB	4 MB	4 MB
Enterprise	SF25A-11.2.1 SW25A-11.2.1= CD25-A-11.2=[4]	8 MB	6 MB	8 MB
Enterprise Plus	SF25AP-11.2.1 SW25AP-11.2.1= CD25-AP-11.2=[4]	8 MB	6 MB	8 MB
Enterprise Plus 40	SF25AW-11.2.1 SW25AW-11.2.1= CD25-AW-11.2=[4]	8 MB	6 MB	8 MB
Enterprise Plus 56	SF25AY-11.2.1 SW25AY-11.2.1= CD25-AY-11.2=[4]	8 MB	6 MB	8 MB
Enterprise/APPN Plus	SF25ANP-11.2.1 SW25ANP-11.2.1=	16 MB	8 MB	8 MB
Enterprise/APPN Plus 40	SF25ANW-11.2.1 SW25ANW-11.2.1=	16 MB	8 MB	8 MB
Enterprise/APPN Plus 56	SF25ANY-11.2.1 SW25ANY-11.2.1=	16 MB	8 MB	8 MB
ISDN	SF25I-11.2.1 SW25I-11.2.1=	8 MB	4 MB	4 MB
CFRAD	SF25F-11.2.1 SW25F-11.2.1=	4 MB	4 MB[4]	4 MB
LAN FRAD	SF25LF-11.2.1 SW25LF-11.2.1=	4 MB	4 MB	4 MB

1. Substitute the release number for xx.x.x in the product number (for example, SW-25C-11.2.1=).
2. The total DRAM memory is the total combined primary and shared DRAM memory.
3. The software product numbers and minimum memory requirements for Cisco IOS Release 11.2 for the Cisco 2500 series access servers (Cisco 2509–2512) are listed in Table 122 in the "Access Servers" chapter earlier in the catalog.
4. Software feature pack on a CD-ROM. You must order a feature pack with a -CH model of the Cisco 2500 series. The feature pack software is preinstalled on -CH models.

Table 169 Software Product Numbers and Memory Requirements for Cisco IOS Releases 11.1 and 11.0—Cisco 2500 Series

		Product Numbers and Memory Requirements					
		Cisco IOS Releases					
		11.1			11.0		
Description	Product Number[1]	Flash	Minimum DRAM[2] Models 2501–2516[3] and 2520–2525	Default DRAM[2] Models 2501-2516[3] and 2520-2525	Flash	Minimum DRAM[2] Models 2501–2516[3] and 2520–2525	Default DRAM[2] Models 2501-2516[3] and 2520-2525
IP	SF25C-xx.x.x SW25C-xx.x.x=	4 MB	2 MB[4]	4 MB	4 MB	2 MB	4 MB
IP with IBM base	SF25CS-xx.x.x SW25CS-xx.x.x=	8 MB	4 MB	4 MB	8 MB	4 MB	4 MB
IP/IPX	SF25D-xx.x.x SW25D-xx.x.x=	8 MB	4 MB	4 MB	4 MB	4 MB	4 MB
IP/IPX with IBM base	SF25DS-xx.x.x SW25DS-xx.x.x=	8 MB	4 MB	4 MB	8 MB	4 MB	4 MB
IP/IPX with IBM base and APPN	SF25DSN-xx.x.x SW25DSN-xx.x.x=	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
Desktop	SF25B-xx.x.x SW25B-xx.x.x=	8 MB	4 MB	4 MB	8 MB	4 MB	4 MB
Desktop with IBM base	SF25BS-xx.x.x SW25BS-xx.x.x=	8 MB	4 MB	4 MB	8 MB	4 MB	4 MB
Enterprise	SF25A-xx.x.x SW25A-xx.x.x=	8 MB	6 MB	8 MB	8 MB	6 MB	8 MB
Enterprise with APPN	SF25AN-xx.x.x SW25AN-xx.x.x=	16 MB	8 MB	8 MB	8 MB	8 MB	8 MB
IP and RMON	SF25CR-xx.x.x SW25CR-xx.x.x=	4 MB	4 MB	4 MB	–	–	–
IP with IBM and RMON	SF25CSR-xx.x.x SW25CSR-xx.x.x=	8 MB	4 MB	4 MB	–	–	–
IP/IPX and RMON	SF25DR-xx.x.x SW25DR-xx.x.x=	8 MB	4 MB	4 MB	–	–	–
IP/IPX with IBM and RMON	SF25DSR-xx.x.x SW25DSR-xx.x.x=	8 MB	4 MB	4 MB	–	–	–
Enterprise and RMON	SF25AR-xx.x.x SW25AR-xx.x.x=	8 MB	6 MB	8 MB	–	–	–

1. Substitute the release number for xx.x.x in the product number (for example, SW-25C-11.2.1=).
2. The total DRAM memory is the total combined primary and shared DRAM memory.
3. The software product numbers and minimum memory requirements for Cisco IOS Releases 11.1 and 11.0 for the Cisco 2500 series access servers (Cisco 2509–2512) are listed in Table 122 in the "Access Servers" chapter earlier in the catalog.
4. The Cisco 2522 and Cisco 2523 require 4-MB DRAM. All other models require 2-MB DRAM.

Cisco IOS Feature Set Upgrades

Cisco IOS feature set upgrades are easy to order for Cisco 2500 series routers. The following is an example:

You have a Cisco 2505 router running the Cisco IOS Release 11.2 IP Routing feature set. You want to upgrade to the Cisco IOS Release 11.2 Enterprise Plus feature set. You are crossing two feature sets: one to get from IP to Enterprise, and one to get to the Plus feature set. To complete the upgrade, use the following guidelines:

- Order FL25-CA= (IP to Enterprise upgrade license, charged item).
- Order FL25-P= (Plus upgrade license, charged item).
- Order DRAM (if you do not have the minimum required DRAM for the new feature set)
- Order SW25AP-11.2.1= (Cisco 2500 Enterprise Plus software on diskette, charged item).

Feature sets for Cisco IOS Release 11.2 can be upgraded as described in Table 170.

Table 170 Software Upgrades for Cisco IOS Release 11.2—Cisco 2500 Series

Feature Set Upgrade	Product Number[1]
Plus with Enterprise with Desktop (IP/IPX/AT/DEC) with IP	FL25-P= and SW25AP-xx.x.x= SW25BP-xx.x.x= SW25CP-xx.x.x=
Plus 40 with Enterprise with Desktop (IP/IPX/AT/DEC) with IP	FL25-W= and SW25AW-xx.x.x= SW25BW-xx.x.x= SW25CW-xx.x.x=
Plus 56 with Enterprise with Desktop (IP/IPX/AT/DEC) with IP	FL25-Y= and SW25AY-xx.x.x= SW25BY-xx.x.x= SW25CY-xx.x.x=
Plus and APPN with Enterprise with IP/IPX/IBM	FL25-APPN= and SW25ANP-xx.x.x= SW25DSN-xx.x.x=
Plus 40 and APPN with Enterprise	FL25-APPN=, FL25-W=, and SW25ANW-xx.x.x=
Plus 56 and APPN with Enterprise	FL25-APPN=, FL25-Y=, and SW25ANY-xx.x.x=
CFRAD to IP	FL25-FC= and SW25C-xx.x.x=
CFRAD to Desktop (IP/IPX/AT/DEC)	FL25-FB= and SW25B-xx.x.x=
CFRAD to Enterprise	FL25-FA= and SW25A-xx.x.x=
LAN FRAD to IP	FL25-LFC= and SW25C-xx.x.x=
LAN FRAD to Desktop (IP/IPX/AT/DEC)	FL25-LFB= and SW25B-xx.x.x=
LAN FRAD to Enterprise	FL25-LFA= and SW25A-xx.x.x=

Feature Set Upgrade	Product Number[1]
ISDN to IP	FL25-IC= and SW25C-xx.x.x=
ISDN to Desktop (IP/IPX/AT/DEC)	FL25-IB= and SW25B-xx.x.x=
ISDN to Enterprise	FL25-IA= and SW25A-xx.x.x=
IP to Desktop (IP/IPX/AT/DEC)	FL25-CB= and SW25B-xx.x.x=
IP to Enterprise	FL25-CA= and SW25A-xx.x.x=
Desktop (IP/IPX/AT/DEC) to Enterprise	FL25-BA= and SW25A-xx.x.x=
IP/IPX to Desktop (IP/IPX/AT/DEC)	FL25-DB= and SW25B-xx.x.x=
IP/IPX to Enterprise	FL25-DA and SW25A-xx.x.x=

1. Substitute the release number for xx.x.x in the product number (for example, SW25A-11.2.1=).

Feature sets for Cisco IOS Releases 11.1 and 11.0 can be upgraded as described in Table 171. To order an upgrade, you must use two product numbers; one represents the upgrade license, and the other represents the software. For example, to upgrade from an IP feature set to an IP feature set with IBM base functionality, order product number FRAP-CCS= (the upgrade license) and SW25CS-xx.x.x= (the software). To upgrade to a feature set with APPN, you must first purchase the upgrade license for the desired feature set and then purchase the upgrade license and upgrade software for the APPN feature set.

Table 171 Software Upgrades for Cisco IOS Release 11.1 and 11.0—Cisco 2500 Series

Feature Set Upgrade	Product Number[1]
IP to IP with IBM base functionality	FR25-CCS= and SW25CS-xx.x.x=
IP to IP/IPX	FR25-CD= and SW25D-xx.x.x=
IP to IP/IPX with IBM base functionality	FR25-CDS= and SW25DS-xx.x.x=
IP to IP/IPX with IBM base functionality and APPN	FR25-CDS=, FR25-APPN=, and SW25DSN-xx.x.x=
IP to Desktop	FR25-CB= and SW25B-xx.x.x=
IP to Desktop with IBM base functionality	FR25-CBS= and SW25BS-xx.x.x=
IP to Enterprise	FR25-CA= and SW25A-xx.x.x=
IP to Enterprise and APPN	FR25-CA=, FR25-APPN=, and SW25AN-xx.x.x=
IP with IBM base to IP/IPX with IBM base functionality	FR25-CSDS= and SW25DS-xx.x.x=
IP with IBM base to IP/IPX with IBM base functionality and APPN	FR25-CSDS=, FR25-APPN=, and SW25DSN-xx.x.x=
IP with IBM base to Desktop with IBM base functionality	FR25-CSBS= and SW25BS-xx.x.x=
IP with IBM base to Enterprise	FR25-CSA= and SW25A-xx.x.x=
IP with IBM base to Enterprise and APPN	FR25-CSA=, FR25-APPN=, and SW25AN-xx.x.x=
IP/IPX to IP/IPX with IBM base functionality	FR25-DDS= and SW25DS-xx.x.x=
IP/IPX to IP/IPX with IBM base functionality and APPN	FR25-DDS=, FR25-APPN=, and SW25DSN-xx.x.x=
IP/IPX to Desktop	FR25-DB= and SW25B-xx.x.x=
IP/IPX to Desktop with IBM base functionality	FR25-DBS= and SW25BS-xx.x.x=

Feature Set Upgrade	Product Number[1]
IP/IPX to Enterprise	FR25-DA= and SW25A-xx.x.x=
IP/IPX to Enterprise and APPN	FR25-DA=, FR25-APPN=, and SW25AN-xx.x.x=
IP/IPX with IBM base to Desktop with IBM base functionality	FR25-DSBS= and SW25BS-xx.x.x=
IP/IPX with IBM base to Enterprise	FR25-DSA= and SW25A-xx.x.x=
IP/IPX with IBM base to Enterprise and APPN	FR25-DSA=, FR25-APPN=, and SW25AN-xx.x.x=
IP/IPX with IBM base to IP/IPX with IBM base and APPN	FR25-APPN= and SW25DSN-xx.x.x=
Desktop to Desktop with IBM base functionality	FR25-BBS= and SW25BS-xx.x.x=
Desktop to Enterprise	FR25-BA= and SW25A-xx.x.x=
Desktop to Enterprise and APPN	FR25-BA=, FR25-APPN=, and SW25AN-xx.x.x=
Desktop with IBM base to Enterprise	FR25-BSA= and SW25A-xx.x.x=
Desktop with IBM base to Enterprise and APPN	FR25-BSA=, FR25-APPN=, and SW25AN-xx.x.x=
IP to IP/RMON	FR25-RMON= and SW25CR-x.x.x=
IP to IP/IBM/RMON	FR25-CCS=, FR25-RMON=, and SW25CSR-x.x.x=
IP to IP/IPX/RMON	FR25-CD=, FR25-RMON=, and SW25DR-x.x.x=
IP to IP/IPX/IBM/RMON	FR25-CDS=, FR25-RMON=, and SW25DSR-x.x.x=
IP to Enterprise/RMON	FR25-CA=, FR25-RMON=, and SW25AR-x.x.x=
IP/RMON to IP/IBM/RMON	FR25-CCS= and SW25CSR-x.x.x=
IP/RMON to IP/IPX/RMON	FR25-CD= and SW25DR-x.x.x=
IP/RMON to IP/IPX/IBM/RMON	FR25-CDS= and SW25DSR-x.x.x=
IP/RMON to Enterprise/RMON	FR25-CA= and SW25AR-x.x.x=
IP/IBM to IP/IBM/RMON	FR25-RMON= and SW25CSR-x.x.x=
IP/IBM to IP/IPX/IBM/RMON	FR25-CSDS=, FR25-RMON=, and SW25DSR-x.x.x=
IP/IBM to Enterprise/RMON	FR25-CSA=, FR25-RMON=, and SW25AR-x.x.x=
IP/IBM/RMON to IP/IPX/IBM/RMON	FR25-CSDS= and SW25DSR-x.x.x=
IP/IBM/RMON to Enterprise/RMON	FR25-CSA= and SW25AR-x.x.x=
IP/IPX to IP/IPX/RMON	FR25-RMON= and SW25DR-x.x.x=
IP/IPX to IP/IPX/IBM/RMON	FR25-DDS=, FR25-RMON=, and SW25DSR-x.x.x=
IP/IPX to Enterprise/RMON	FR25-CSA=, FR25-RMON=, and SW25AR-x.x.x=
IP/IPX/RMON to IP/IPX/IBM/RMON	FR25-DDS= and SW25DSR-x.x.x=
IP/IPX/RMON to Enterprise/RMON	FR25-DA= and SW25AR-x.x.x=

Feature Set Upgrade	Product Number[1]
IP/IPX/IBM to IP/IPX/IBM/RMON	FR25-RMON= and SW25DSR-x.x.x=
IP/IPX/IBM to Enterprise/RMON	FR25-DSA=, FR25-RMON=, and SW25AR-x.x.x=
IP/IPX/IBM/RMON to Enterprise/RMON	FR25-DSA= and SW25AR-x.x.x=
Desktop to Enterprise/RMON	FR25-BA=, FR25-RMON=, and SW25AR-x.x.x=
Desktop/IBM to Enterprise/RMON	FR25-BSA=, FR25-RMON=, and SW25AR-x.x.x=
Enterprise to Enterprise/RMON	FR25-RMON= and SW25AR-x.x.x=

1. Substitute the release number for xx.x.x in the product number (for example, SW25D-11.1.1=).

Mission-specific routers can be upgraded to run Cisco IOS feature sets by using the product numbers listed in Table 170 for Cisco IOS Release 11.2, and Table 172 for Cisco IOS Releases 11.1 and 11.0. Note that you must order two product numbers: an upgrade path, plus the release-specific software for the Cisco IOS release using the information in Table 172. For example, to upgrade a Cisco 2501CF to the IP routing feature set, order FR25-FC= to upgrade from mission-specific software to the IP feature set, and also order SW25C-xx.x.x= to obtain the Cisco IOS IP routing software.

Table 172 Software Upgrades for Cisco IOS Release 11.1 and 11.0—Mission-Specific Routers

Upgrade to Feature Set	CFRAD Product Number[1, 2]	ISDN Product Number[1, 3]
IP Routing	FR25-FC= and SW25C-xx.x.x=	FR25-IC= and SW25C-xx.x.x=
IP with IBM base functionality	FR25-FCS= and SW25CS-xx.x.x=	FR25-ICS= and SW25CS-xx.x.x=
IP/IPX	FR25-FD= and SW25D-xx.x.x=	FR25-ID= and SW25D-xx.x.x=
IP/IPX with IBM base functionality	FR25-FDS= and SW25DS-xx.x.x=	FR25-IDS= and SW25DS-xx.x.x=
IP/IPX/IBM/APPN	FR25-FDS=, FR25-APPN=, and SW25DSN-xx.x.x=	FR25-IDS=, FR25-APPN=, and SW25DSN-x.x.x=
Desktop	FR25-FB= and SW25B-xx.x.x=	FR25-IB= and SW25B-xx.x.x=
Desktop with IBM base functionality	FR25-FBS= and SW25BS-xx.x.x=	FR25-IBS= and SW25BS-xx.x.x=
Enterprise	FR25-FA= and SW25A-xx.x.x=	FR25-IA= and SW25A-xx.x.x=
IP/RMON	FR25-FC=, FR25-RMON=, and SW25CR-x.x.x=	FR25-IC=, FR25-RMON=, and SW25CR-x.x.x=
IP/IBM/RMON	FR25-FCS=, FR25-RMON=, and SW25CSR-x.x.x=	FR25-ICS=, FR25-RMON=, and SW25CSR-x.x.x=
IP/IPX/RMON	FR25-FD=, FR25-RMON, and SW25DR-x.x.x=	FR25-ID=, FR25-RMON=, and SW25DR-x.x.x=
IP/IPX/IBM/RMON	FR-FDS=, FR25-RMON=, and SW25DSR-x.x.x=	FR25-IDS=, FR25-RMON=, and SW25DSR-x.x.x=
Enterprise/RMON	FR25-FA=, FR25-RMON=, and SW25DSR-x.x.x=	FR25-IA=, FR25-RMON=, and SW25AR-x.x.x=

1. Substitute the release number for xx.x.x in the product number (for example, SW25C-11.2.1=).
2. Applies to the Cisco 2501CF and 2502CF only.
3. Applies to the Cisco 2503I and 2504I only.