Overview of Cisco 3600 Series Routers

Cisco 3600 series routers are modular access routers with LAN and WAN connections that can be configured by means of interchangeable modules and WAN interface cards. With over 70 modular interface options, Cisco 3600 series routers provide solutions for data, voice, video, hybrid dial access, Virtual Private Networks (VPNs), and multiprotocol data routing.

This chapter includes the following sections:

- Hardware Features, page 1-1
- Modules and Interface Cards, page 1-5
- Memory, page 1-6
- Interface Numbering, page 1-8
- System Specifications, page 1-12
- Regulatory Compliance, page 1-15

Hardware Features

The Cisco 3600 series includes the Cisco 3620, Cisco 3640, Cisco 3631, and Cisco 3660 routers, which have the following features:

- Two slots for Personal Computer Memory Card International Association (PCMCIA) cards (Cisco 3620, Cisco 3640, and Cisco 3660 routers only)
- Flash memory capability
- Sockets for memory modules; either:
  - Four sockets for DRAM single in-line memory modules (SIMMs), user-configurable as shared memory or main (processor) memory (Cisco 3620 and Cisco 3640 routers only)
  - Two sockets for SDRAM dual in-line memory modules (DIMMs), user-configurable as shared memory or main (processor) memory (Cisco 3631 and Cisco 3660 routers only)
- High-speed console and auxiliary ports (up to 115.2 kbps)
- Hardware thermal alarm to warn of excessively high operating temperature

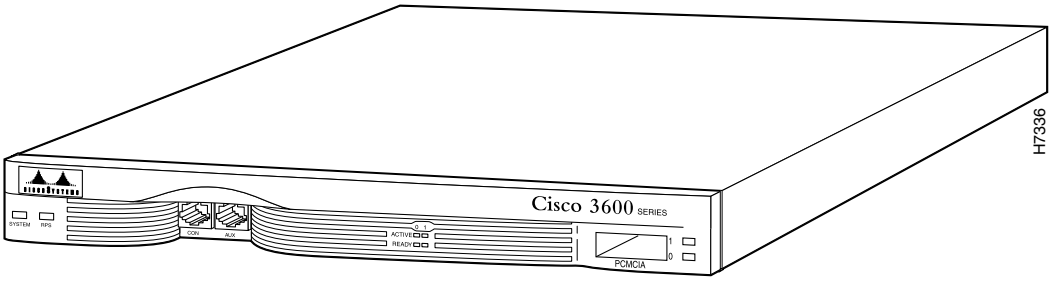
Figure 1-1 through Figure 1-4 show the front panels of the Cisco 3600 series routers.

Cisco 3620

The Cisco 3620 router includes these additional features:

- High-performance 80-MHz Reduced Instruction Set Computer (RISC) processor
- Two slots for network modules
- Can be installed in a 19-, 23-, or 24-inch rack, on a wall, or on a desk
- Can receive DC power from the Cisco Redundant Power System (RPS)

Figure 1-1 Front Panel of the Cisco 3620 Router

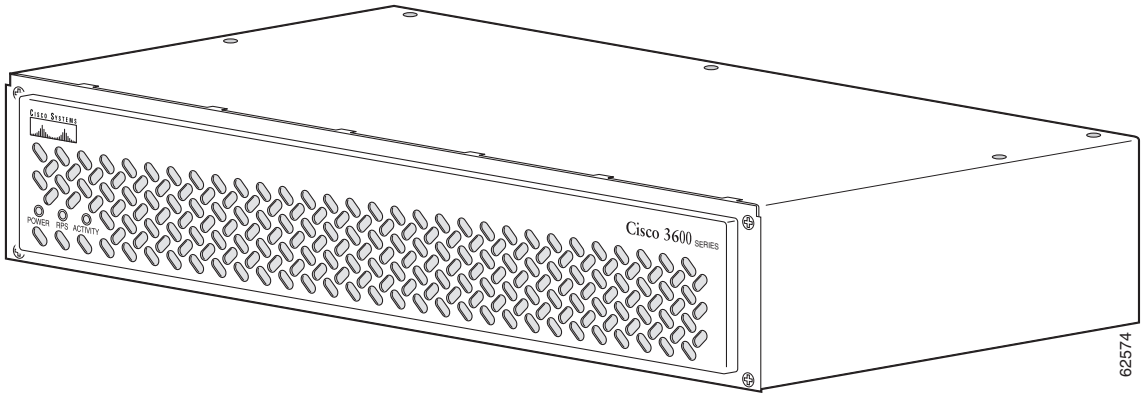


Cisco 3631

The Cisco 3631 router includes these additional features:

- High-performance 240-MHz PMC-Sierra RM7061A RISC processor
- One 10/100 Ethernet port
- Two slots for network modules
- One compact Flash memory card slot
- One Advanced Integration Module (AIM) slot
- 2 WIC/VIC slots
- Can be installed in a 19- or 23-inch rack or on a desk

Figure 1-2 Front Panel of the Cisco 3631 Router

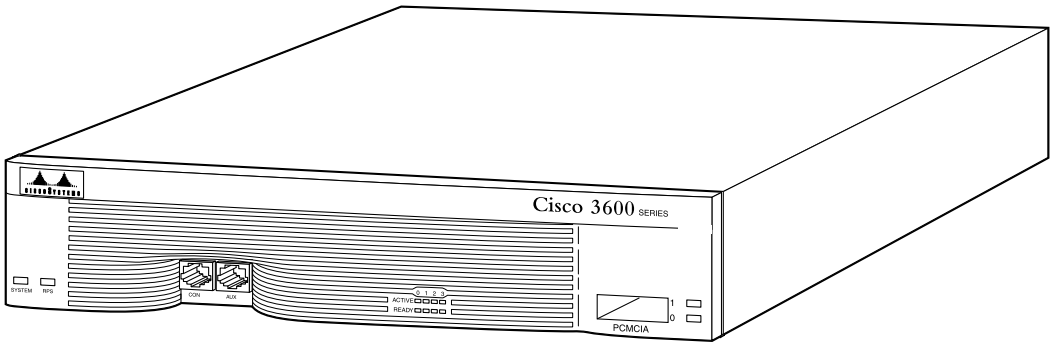


Cisco 3640

The Cisco 3640 router includes these additional features:

- High-performance 100-MHz RISC processor
- Four slots for network modules
- Can be installed in a 19-, 23-, or 24-inch rack, or on a desk
- Can receive DC power from the Cisco Redundant Power System (RPS)

Figure 1-3 Front Panel of the Cisco 3640 Router

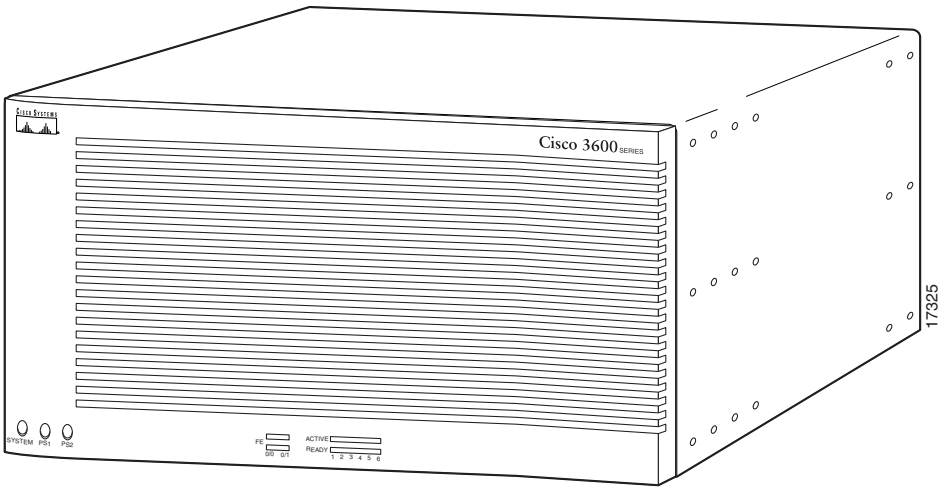


Cisco 3660

The Cisco 3660 router includes these additional features:

- High-performance 225-MHz RISC processor installed on a removable mainboard tray
- Six slots for hot swapping similar network modules
- Can be installed in a 19- or 23-inch rack, or on a desk
- Dual redundant, hot-swappable power supplies (second power supply is optional)
- Hot-swappable fan cage used to cool the chassis
- One or two onboard, autosensing, 10/100 Fast Ethernet interfaces
- Supports two Advanced Integration Modules (AIMs)

Figure 1-4 Front Panel of the Cisco 3660 Router



Note The Cisco 3660 router platform consists of two router models: Cisco 3661 and Cisco 3662. The Cisco 3661 router with one Fast Ethernet interface (part number CISCO3661-xC) is shown in Figure 1-5, and the Cisco 3662 router with two Fast Ethernet interfaces (part number CISCO3662-xC or CISCO3662-xC-CO) is shown in Figure 1-6.

Figure 1-5 and Figure 1-6 show Cisco 3660 AC power supplies installed. The DC power supplies differ in appearance but occupy the same bays in the router.

Note In this publication, references to Cisco 3660 routers include both Cisco 3661 and Cisco 3662 models.

Figure 1-5 Cisco 3661 Router with One Fast Ethernet Interface

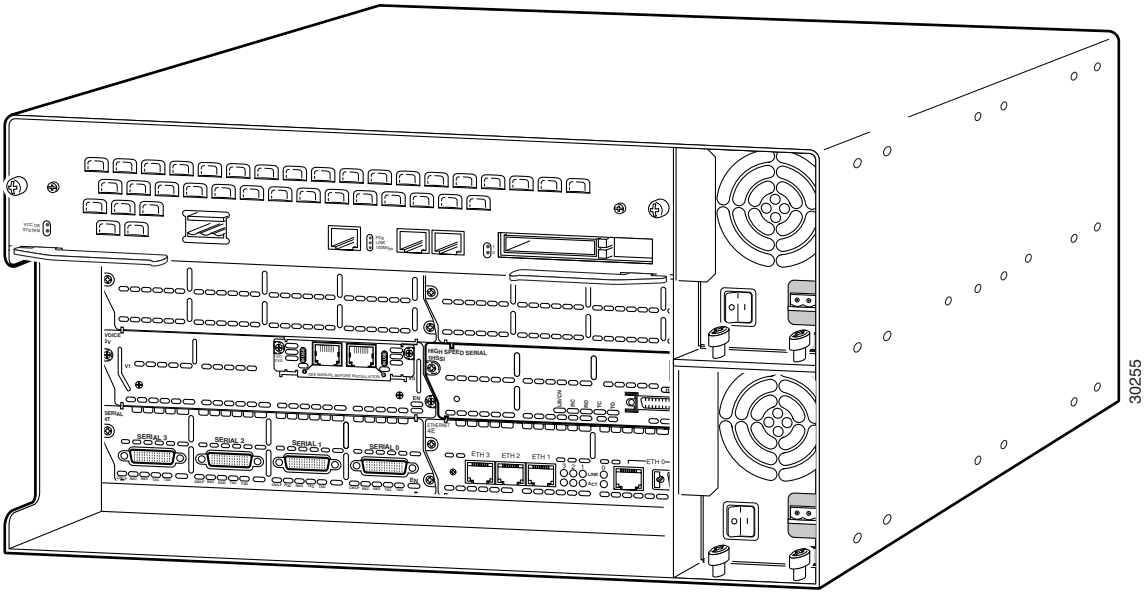
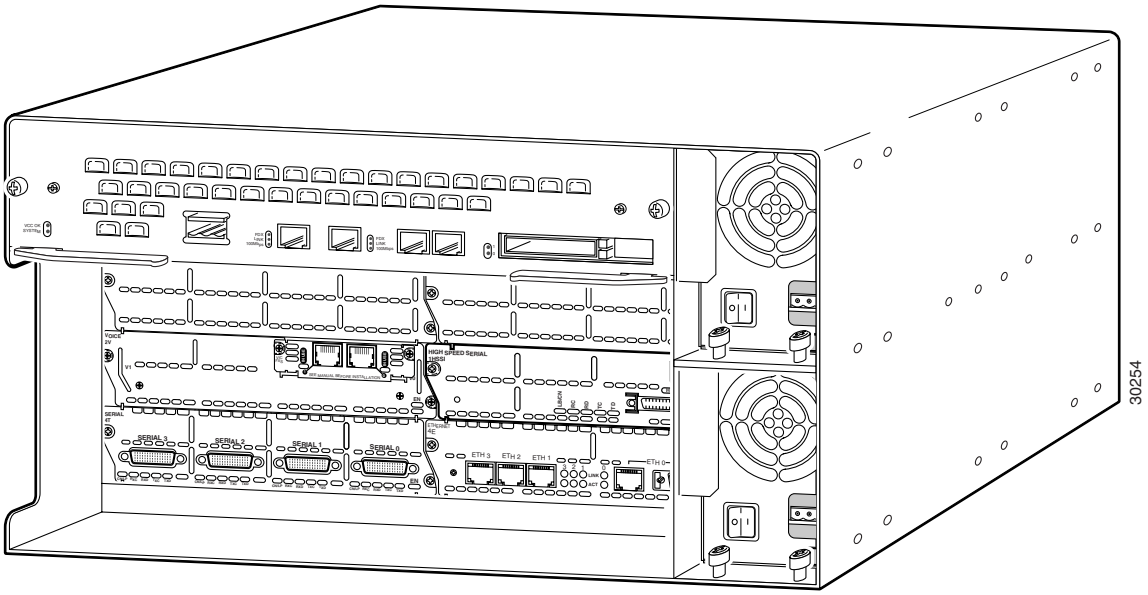


Figure 1-6 Cisco 3662 Router with Two Fast Ethernet Interfaces



Modules and Interface Cards

The latest information on network modules, WAN interface cards (WICs), voice interface cards (VICs), and advanced integration modules (AIMs) is available online and on the documentation CD-ROM.

- For information on installing network modules, refer to the following documents:
  - *Quick Start Guide: Network Modules for Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers*
  - *Cisco Network Modules Hardware Installation Guide*
- For information on installing WICs and VICs, refer to the following documents:
  - *Quick Start Guide: Interface Cards for Cisco 1600, 1700, 2600, 3600, and 3700 Series*
  - *Cisco Interface Cards Hardware Installation Guide*
- For information on installing AIMs, refer to the following documents:
  - *AIM Installation Quick Start Guide: Cisco 2600, 3600, and 3700 Series*
  - *Installing Advanced Integration Modules in Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers*

Memory

This section describes the various types of memory that may be present in a Cisco 3600 series router.

Memory Types

Cisco 3600 series routers support the following types of memory:

- DRAM or SDRAM—Stores the running configuration and routing tables, and is used for packet buffering by the router's network interfaces. The Cisco IOS software executes from DRAM.
- Nonvolatile random-access memory (NVRAM)—Stores the system configuration file and the virtual configuration register. (For more information, see Appendix C, "Configuration Register.")
- Flash memory—Stores the operating system software image. You can also add Flash memory on PCMCIA cards and compact Flash cards, depending on the router.
- EPROM-based memory—Stores the ROM monitor, which allows you to boot an operating system software image from Flash memory or PCMCIA memory.

Memory Installation Documentation

For information about installing DRAM, SDRAM, NVRAM, and Flash memory SIMMs, refer to the following hardware configuration note:

- *Upgrading System Memory in Cisco 3600 Series Routers*

For information about installing Flash memory PCMCIA cards, refer to the following hardware configuration note:

- *Installing and Configuring Flash Memory Cards in Cisco 3600 Series Routers*

For information about installing compact Flash memory cards, refer to the following hardware configuration note:

- *Installing and Formatting Cisco 2691, Cisco 3631 and Cisco 3700 Compact Flash Memory Cards*

Memory Specifications

Table 1-1 through Table 1-4 list processor and memory specifications for the routers.

Table 1-1 Cisco 3620 Router Processor and Memory Specifications

Description	Specification
Processor	80-MHz IDT[1] R4700 RISC
DRAM (main plus shared)	4 to 64 MB
NVRAM	32 KB
Flash memory (SIMM)	4 to 32 MB
Flash memory (PCMCIA)	2 to 40 MB
Boot ROM	512 KB

1. IDT = Integrated Device Technology.

Table 1-2 Cisco 3631 Router Processor and Memory Specifications

Description	Specification
Processor	240-MHz PMC-Sierra RM7061A RISC processor
SDRAM (main plus shared)	64 to 256 MB
NVRAM	55 KB
Flash memory (compact Flash)	32 to 128 MB
Boot ROM	512 KB

Table 1-3 Cisco 3640 Router Processor and Memory Specifications

Description	Specification
Processor	100-MHz IDT R4700 RISC
DRAM (main plus shared)	4 to 128 MB
NVRAM	128 KB
Flash memory (SIMM)	4 to 32 MB
Flash memory (PCMCIA)	2 to 40 MB
Boot ROM	512 KB

Table 1-4 Cisco 3660 Router Processor and Memory Specifications

Description	Specification
Processor	225-MHz QED RM5271
SDRAM (main plus shared)	32 to 256 MB
NVRAM	128 KB
Flash memory (SIMM)	8 to 64 MB
Flash memory (PCMCIA)	2 to 40 MB
Boot ROM	512 KB

Interface Numbering

Cisco 3620 and Cisco 3640 Interfaces

Each individual network interface on a Cisco 3620 or Cisco 3640 router is identified by a slot number and a unit number.

Slot Numbering

The Cisco 3620 or Cisco 3640 router chassis contains two or four slots in which you can install modules. You can install any module into any available slot in the chassis. For Cisco 3620 and Cisco 3640 routers, the slots are numbered as follows:

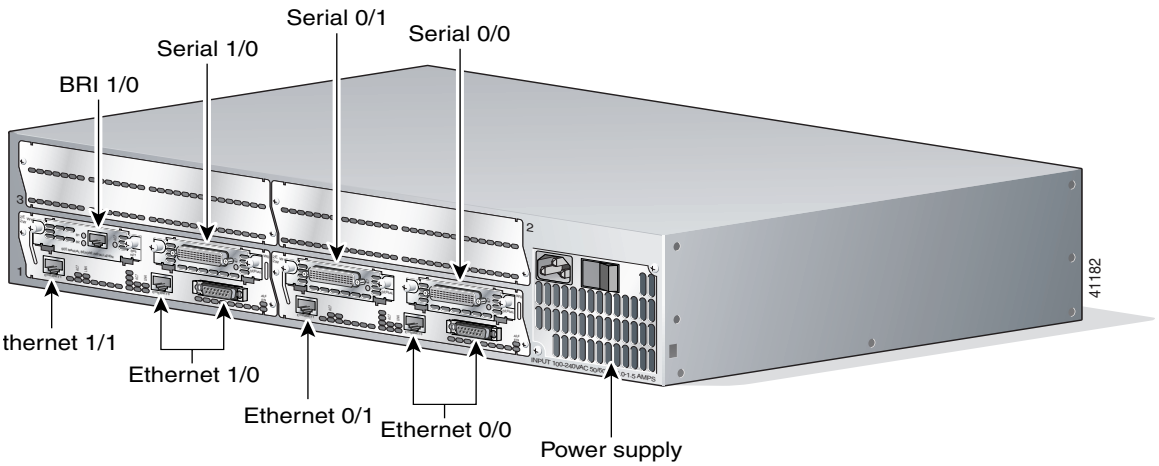
- Slot 0 is at the bottom right (as viewed from the rear of the chassis), near the power supply.
- Slot 1 is at the bottom left.
- Slot 2 is at the top right, above slot 0.
- Slot 3 is at the top left, above slot 1.

Unit Numbering

Cisco 3600 series routers have unit numbers that identify the interfaces on the modules and WAN interface cards installed in the router. Unit numbers begin at 0 for each interface type, and continue from right to left and (if necessary) from bottom to top. Modules and WAN interface cards are identified by interface type, slot number, followed by a forward slash (/), and then the unit number; for example, Ethernet 0/0.

Figure 1-7 shows a router with a 2E 2-slot module in slots 0 and 1. Two serial WAN interface cards are installed in the module in slot 0. One serial and one ISDN BRI WAN interface card are installed in the module in slot 1.

Figure 1-7 Cisco 3600 Series Unit Numbers



Voice Interface Numbering

Voice interfaces are numbered as follows:

interface-type chassis-slot/voice-module-slot/voice-interface

For example, Slot 1, voice network module slot 0, is referred to as *voice 1/0/0* (closest to chassis slot 0).

Cisco 3631 Interfaces

Each individual interface (port) on a Cisco 3631 router is identified by number as described in the following sections.

WAN and LAN Interface Numbering

The Cisco 3631 router chassis contains the following WAN and LAN interface types:

- One built-in FastEthernet LAN interface
- Two slots in which you can install WAN interface cards (WICs)
- Two single-width slots (slot 1 and slot 2) in which you can install single-width network modules

The numbering format is *Interface-type Slot-number/Interface-number*. Two examples are:

- `FastEthernet 0/0`
- `Serial 1/2`

The slot numbers are as follows:

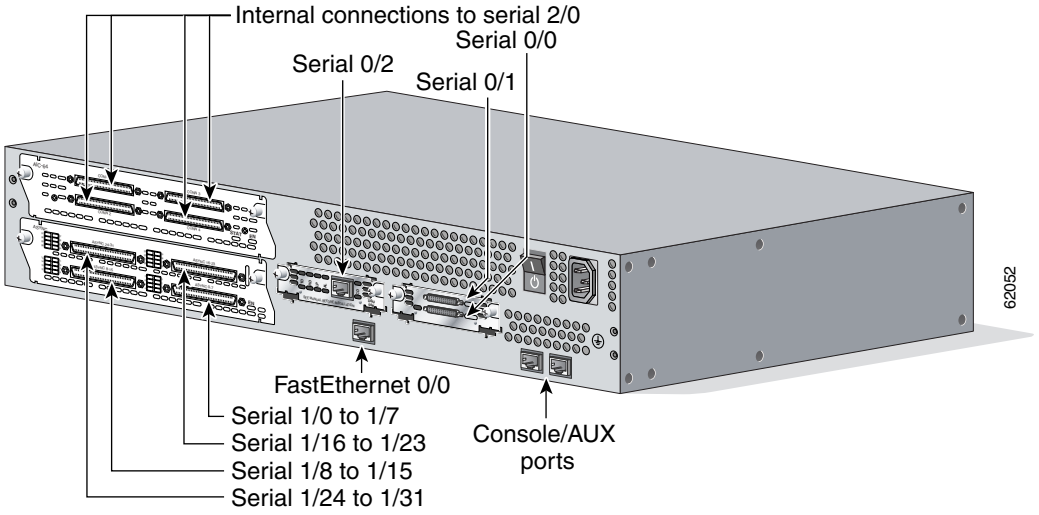
- 0 for all built-in interfaces
- 0 for all WIC interfaces
- 1 for interfaces in the lower network module slot
- 2 for interfaces in the upper network module slot

Interface (port) numbers begin at 0 for each interface type, and continue from right to left and (if necessary) from bottom to top.

Figure 1-8 shows an example of interface numbering on a Cisco 3631 router with:

- A WIC in each WIC slot (containing interfaces serial 0/0 and serial 0/1 in physical slot W0, and interface serial 0/2 in physical slot W1)
- A 32-port asynchronous network module in slot 1 (containing interfaces serial 1/0 through serial 1/31)
- An alarm interface controller network module in slot 2 (internally connected to interface serial 2/0)
- One built-in Ethernet 10/100 interface—FastEthernet 0/0

Figure 1-8 Interface Numbering—Example



Note The slot number for all WIC interfaces is always 0. (The W0 and W1 slot designations are for physical slot identification only.) Interfaces in the WICs are numbered from right to left, starting with 0/0 for each interface type, regardless of which physical slot the WICs are installed in. Some examples are:

- If slot W0 is empty and slot W1 contains a 1-port serial WIC, the interface in the WIC is numbered serial 0/0.
- If slot W0 contains a 2-port serial WIC and slot W1 contains a 1-port serial WIC, the interfaces in physical slot W0 are numbered serial 0/0 and serial 0/1, and the interface in physical slot W1 is numbered serial 0/2.
- If slot W0 contains a 2-port serial WIC and slot W1 contains a 1-port BRI WIC, the interfaces in physical slot W0 are numbered serial 0/0 and serial 0/1, and the interface in physical slot W1 is numbered BRI 0/0.

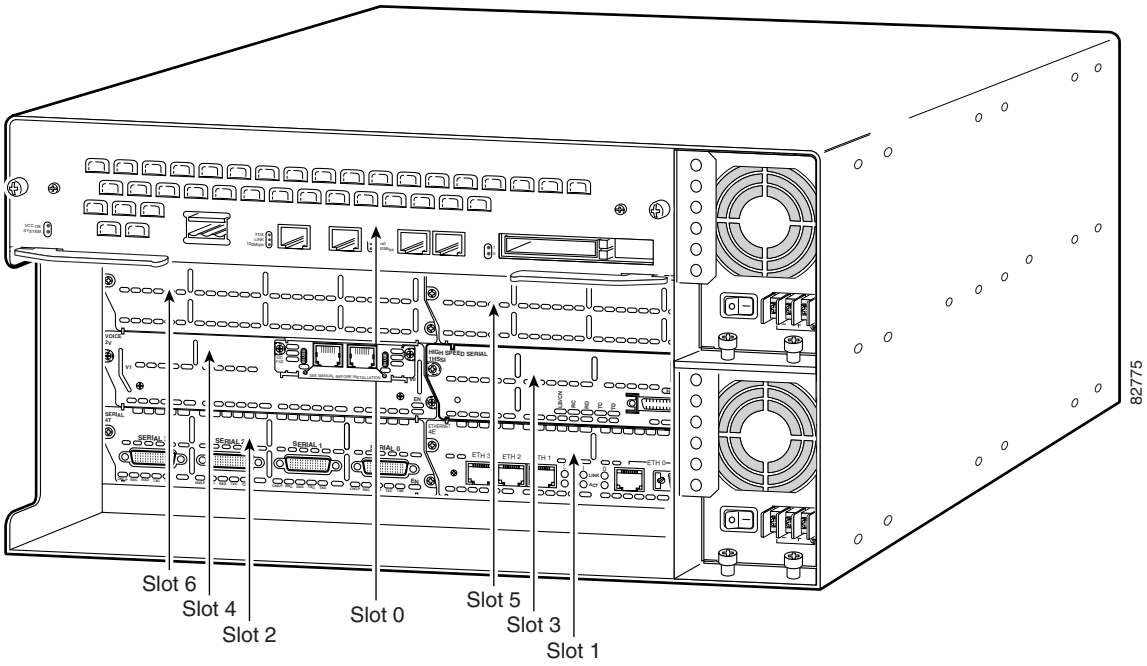
Cisco 3660 Interfaces

Each individual network interface on a Cisco 3600 series router is identified by a slot number and port number.

Slot Numbering

The Cisco 3660 router chassis has six network module slots. Each network module slot accepts a variety of network module interface cards, supporting a variety of LAN and WAN technologies. Figure 1-9 shows the locations of the network module slots.

Figure 1-9 Cisco 3660 Slot Numbers



Modules and WAN interface cards are identified by interface type, slot number, followed by a forward slash (/), and then the port number; for example, Ethernet 0/0.

- Slot 0 contains fixed Fast Ethernet ports and is located at the top of the chassis.
- Slot 1 through Slot 6 accept up to six network modules.

Port numbers usually begin at 0 for each interface slot, and continue from right to left and, if necessary, from bottom to top. However, interface numbering for the Cisco 3660 series routers and for Ethernet and Token Ring network modules with two WAN interface card slots differs in the following ways:

- WAN interface card slot numbers always appear as slot 0, even if the interface card is installed in the slot labeled W1.
- WAN interface cards are numbered dynamically, starting with the first card installed. For example:
  - If slot W0 is empty and slot W1 contains a 1-port serial WAN interface card, the interface number would be serial 0/0.
  - If slot W0 contains a 2-port serial WAN interface card and slot W1 contains a 1-port serial interface card, serial 0/0 and 0/1 would reside in slot W0 and serial 0/2 would reside in slot W1.

Voice Interface Numbering

Voice interfaces are numbered differently from WAN interfaces. Voice interfaces are numbered as follows:

interface-type chassis-slot/voice-module-slot/voice-interface

If you have a 4-channel voice network module installed in slot 1 of your router, the voice interfaces will be as follows:

- Chassis-slot 1, voice-network-module-slot 0, voice-interface 0, referred to as **voice 1/0/0** (closest to chassis-slot 0)
- Chassis-slot 1, voice-network-module-slot 0, voice-interface 1, referred to as **voice 1/0/1**
- Chassis-slot 1, voice-network-module-slot 1, voice-interface 0, referred to as **voice 1/1/0**
- Chassis-slot 1, voice-network-module-slot 1, voice-interface 1, referred to as **voice 1/1/1** (farthest from chassis-slot 0)

System Specifications

Table 1-5 through Table 1-8 contain Cisco 3600 series system specifications.

Table 1-5 Cisco 3620 Router System Specifications

Description	Specification
Dimensions (H x W x D)	1.75 x 17.5 x 13.5 inches (4.4 x 44.5 x 34.3 cm), one rack unit in height
Weight	23 lb (10.45 kg), maximum including chassis and two network modules
Input voltage, AC power supply Current Frequency Input surge current (AC)	100 to 240 VAC, autoranging 2.0A 47 to 64 Hz 50A, one cycle
Input rating, DC power supply Current Input surge current (DC)	–3 to –75 VDC 5.0 A 65 A, 250 ms
Power dissipation	95 W (maximum)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	–40 to 185°F (–40 to 85°C)
Noise level	45 dBA (maximum)
Regulatory compliance	FCC Part 15 Class A. For additional compliance information, refer to the *Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Regulatory Compliance and Safety Information* document that accompanied the router.
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; AS/NZS 3260; TS001

Table 1-6 Cisco 3631 Router System Specifications

Description	Specification
Dimensions (H x W x D)	3.46 x 17.07 x 11.20 inches (8.78 x 45.36 x 28.45 cm), two rack units in height
Weight	15 lb (6.8 kg)
Input voltage, AC power supply Current Frequency Input surge current (AC)	100 to 240 VAC, autoranging 2.0 A 47 to 63 Hz 50 A, one cycle
Input rating, DC power supply Operational between Current Input surge current (DC)	–48 to –60 VDC –48 to –60 VDC 4.0 A 50 A, 250 ms
Power dissipation	105 W (maximum)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	–40 to 185°F (–40 to 85°C)
Noise level	45 dBA (maximum)
Regulatory compliance	FCC Part 15 Class A. For additional compliance information, refer to the *Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Regulatory Compliance and Safety Information* document that accompanied the router.
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; AS/NZS 3260; TS001

Table 1-7 Cisco 3640 Router System Specifications

Description	Specification
Dimensions (H x W x D)	3.44 x 17.5 x 15.8 inches (8.7 x 44.5 x 40.0 cm), two rack units in height
Weight	30 lb (13.6 kg), including chassis and four modules
Input voltage, AC power supply Current Frequency Input surge current (AC)	100 to 240 VAC, autoranging 2.0 A 47 to 64 Hz 50 A, one cycle
Input rating, DC power supply Current Input surge current (DC)	–38 to –75 VDC 5.0 A 65 A, 250 ms
Power dissipation	220 W (maximum)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	–40 to 185°F (–40 to 85°C)
Noise level	51.9 dBA (maximum)
Regulatory compliance	FCC Part 15 Class A. For additional compliance information, refer to the *Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Regulatory Compliance and Safety Information* document that accompanied the router.
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; AS/NZS 3260; TS001

Table 1-8 Cisco 3660 Router System Specifications

Description	Specification
Dimensions (H x W x D)	8.75 x 17.5 x 11.5 inches (22.1 x 44.5 x 29.1 cm), five rack units in height
Weight	48 lb (21.8 kg), including chassis, six modules, and two power supplies
Input voltage, AC power supply (dual, redundant) Current Frequency Input surge current (AC)	100 to 240 VAC, autoranging 4.0 A/2.0 A 47 to 63 Hz 50 A, half-cycle
Input rating, DC power supply (dual, redundant) Operational between Current Input surge current (DC)	–48 to –60 VDC –36 to –72 VDC 10.0 A 50 A, 10 ms
Power dissipation	380 W (maximum)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	–40 to 185°F (–40 to 85°C)
Noise level	50 dBA
Regulatory compliance	FCC Part 15 Class A. For additional compliance information, refer to the *Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Regulatory Compliance and Safety Information* document.
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; AS/NZS 3260; TS001

Regulatory Compliance

For compliance information, refer to the *Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Regulatory Compliance and Safety Information* document that accompanied your router.