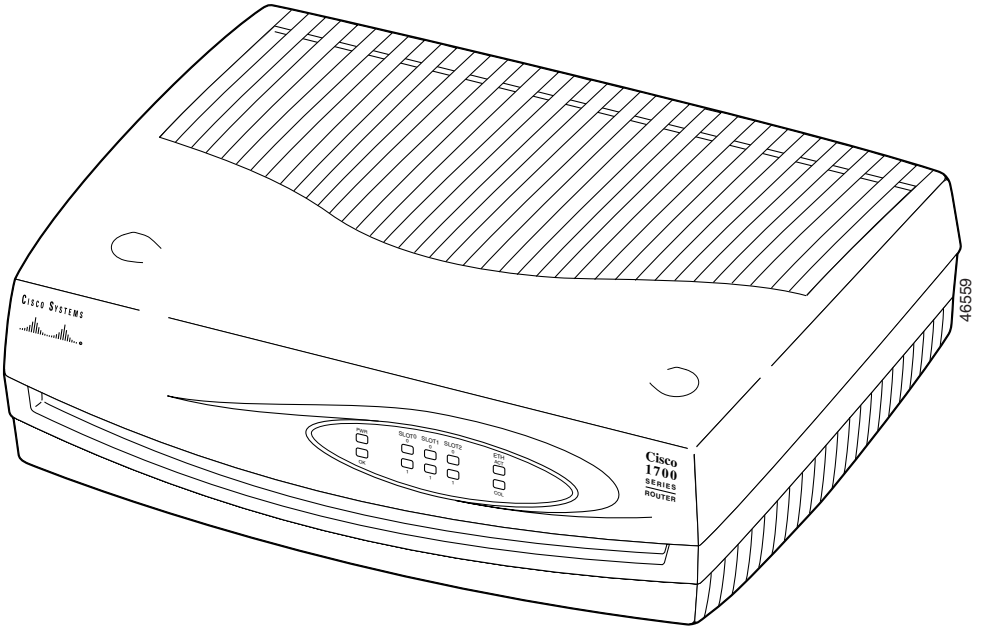
Cisco 1751 Router Overview

This chapter introduces the Cisco 1751 router, also referred to in this guide as *the router*, and covers the following topics:

Figure 1-1 shows the Cisco 1751 router.

Figure 1-1 Cisco 1751 Router



Key Features

The Cisco 1751 router is a voice-and-data capable router that provides Voice-over-IP functionality (VoIP) and can carry voice traffic (for example, telephone calls and faxes) over an IP network. Using one to four WAN connections, the router links small-to-medium-size remote Ethernet and FastEthernet LANs to central offices. Table 1-1 lists the router key features.

Table 1-1 Key Features

Feature	Description
One FastEthernet (10/100BaseTX) port	• Operates in full- or half-duplex mode (with software override support). • Supports autosensing for 10- or 100-Mbps operation (with software override support).
Cisco interface cards	• Supports two slots for either WAN interface cards (WICs) or voice interface cards (VICs). • Supports one VIC-only slot. • Supports the following WICs: ISDN BRI (U and S/T), 56- or 64-kbps DSU/CSU, FT1/T1 DSU/CSU, WIC-1ADSL, WIC-1ENET (Ethernet), highspeed serial, dual-serial, and 2Async/Sync. • Supports the following VICs: 2FXS, 2FXO, 2E&M, F2XO-EU, 2FXO-M3, and 2-port ISDN Voice-BRI. • Changes in WAN interface configuration can be made as your network requirements change.
Console port	Supports router configuration and management from a connected terminal or PC. Supports up to 115.2 kbps.
Auxiliary port	Supports modem connection to the router, which can be configured and managed from a remote location. Supports up to 115.2 kbps.
Security slot	Supports Kensington or similar lockdown equipment.
SNMP support	Supports Simple Network Management Protocol (SNMP) to manage the router over a network.
VoIP, VoFR, and VoATM support	Supports Voice over IP, Voice over Frame Relay, and Voice over ATM connections.
AutoInstall support	Supports AutoInstall to download configuration files to the router over a WAN connection.

Table 1-1 Key Features (continued)

Feature	Description
Cisco ConfigMaker support	Supports Cisco ConfigMaker application, a wizard-based software tool, to configure a network that includes the Cisco 1751 router.
Cisco Voice Manager support	Supports Cisco Voice Manager to help you install and operate voice and fax services over the IP network.
Compatible with Cisco Networked Office stack	Stackable with other Cisco Networked Office stack products.

Rear-Panel Ports and LEDs

This section describes the router rear-panel ports and LEDs, which are shown in Figure 1-2 and described in Table 1-2 and Table 1-3.

Figure 1-2 Rear-Panel Components and LEDs

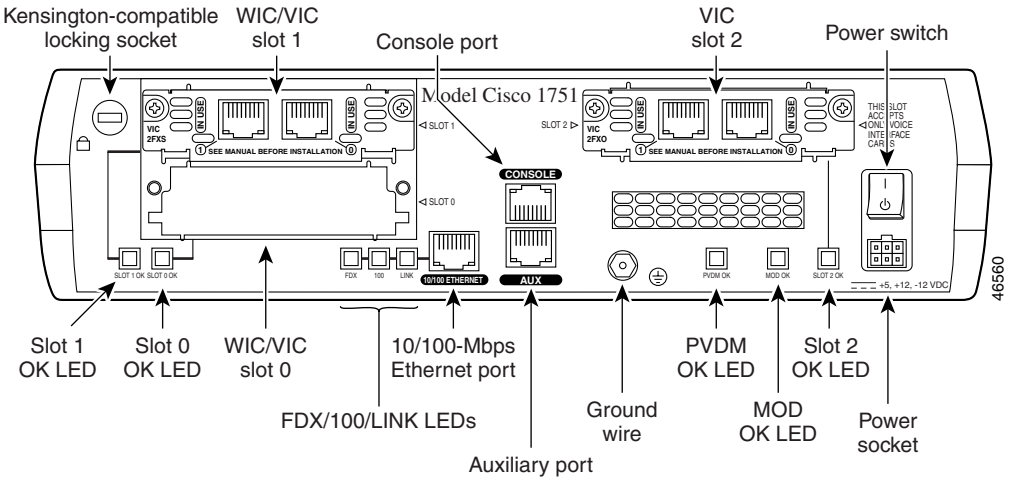


Table 1-2 Rear-Panel Connectors

Connector/Slot	Label/Color	Description
Ethernet port	10/100-Mbps ETHERNET (yellow)	Router connection to the local Ethernet network. This port autosenses the speed (10 or 100 Mbps) and duplex mode (full or half) of the device to which it is connected and then operates at the same speed and in the same duplex mode.
Auxiliary port	AUX (black)	Modem connection for remote configuration using Cisco IOS software.
Console port	CONSOLE (light blue)	Terminal or PC connection for local configuration using Cisco IOS software.
WIC/VIC slot	SLOT 0	Supports either a Cisco WIC or VIC. For detailed information, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with every card.
WIC/VIC slot	SLOT 1	Supports either a Cisco WIC or VIC. For detailed information, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with every card.
VIC slot	SLOT 2	Supports one Cisco VIC. For detailed information, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with every card.
Power socket	+5, +12, –12 VDC	Router connection to the external power supply.
Protective earth	Ground wire	Router connection to earth ground by using a green and yellow 14 AWG ground wire.

Use the rear-panel LEDs (see Table 1-3) during router installation to confirm that you have correctly connected all cables to the router.

Table 1-3 Rear Panel LEDs

LED Label	Color	Description
FDX	Green	On—Ethernet port is operating in full-duplex mode. Off—Ethernet port is operating in half-duplex mode.
100	Green	On—Ethernet port is operating at 100 Mbps. Off—Ethernet port is operating at 10 Mbps.
LINK	Green	On when the Ethernet link is up.
SLOT 0 OK	Green	On when either a WIC or VIC is correctly inserted in the card slot.
SLOT 1 OK	Green	On when either a WIC or VIC is correctly inserted in the card slot.
SLOT 2 OK	Green	On when a VIC is correctly inserted in the card slot.
PVDM OK	Green	On when a packet voice data module (PVDM) is correctly inserted in the card slot.
MOD OK	Green	On when a VPN module is present.

Front-Panel LEDs

Use the router front-panel LEDs to determine network activity and status on the Ethernet port and on the WIC and VIC ports. The front-panel LEDs are illustrated in Figure 1-3 and described in Table 1-4.

Figure 1-3 Front-Panel LEDs

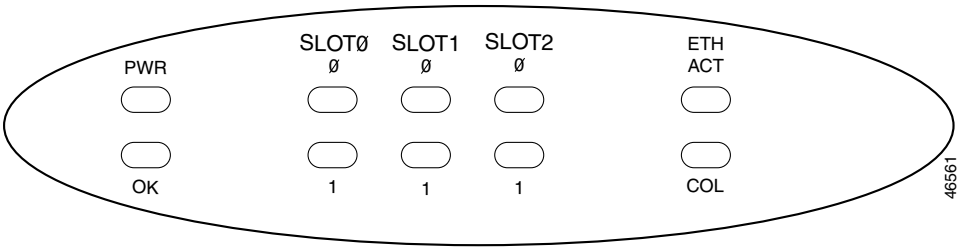


Table 1-4 Front-Panel LEDs

LED	Color	Cards Supported	LED Meaning
PWR	Green	–	On when DC power is being supplied to the router.
OK	Green	–	On when the router has successfully booted up and the software is functional. This LED blinks during the power-on self-test (POST). Refer to Table 3-1 in the "Troubleshooting" chapter for information on how to use this LED for router diagnostics.
ETH			
ACT	Green	–	Blinks when there is network activity on the Ethernet port.
COL	Yellow	–	Blinks when there are packet collisions on the local Ethernet network.
SLOTØ			
Ø	Green	ISDN	On when the first ISDN B channel is connected.
		Serial and CSU/DSU	Blinks when data is being sent to or received from the port. For the VIC-2BRI-ST-NT/TE, blinks when data is being sent to or received from any of the B channels.
		2-port serial	
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-ST-NT/TE	
		WIC1-ADSL	

Table 1-4 Front-Panel LEDs (continued)

LED	Color	Cards Supported	LED Meaning
1	–	Serial and CSU/DSU	Off.
	Green	ISDN	On when the first ISDN B channel is connected.
		2-port serial	Blinks when data is being sent to or received from the port.
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
SLOT1			
Ø	Green	ISDN	On when the first ISDN B channel is connected.
		Serial and CSU/DSU	Blinks when data is being sent to or received from the port.
		2-port serial	
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		WIC1-ADSL	
1	–	Serial and CSU/DSU	Off.
	Green	ISDN	On when the first ISDN B channel is connected.
		2-port serial	Blinks when data is being sent to or received from the port.
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	

Table 1-4 Front-Panel LEDs (continued)

LED	Color	Cards Supported	LED Meaning
SLOT2			
Ø	Green	VIC-2E&M	Blinks when data is being sent to or received from the port.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
1	Green	VIC-2E&M	Blinks when data is being sent to or received from the port.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	

Router Memory

This section describes the types of memory stored in the router and how to find out how much of each the router has.

For instructions on how to upgrade memory in the router, refer to the "Installing and Upgrading Memory and Packet Voice Data Modules" appendix in this guide.

Types of Memory

The router has the following types of memory:

- Dynamic RAM (DRAM)—This is the main storage memory for the router. DRAM is also called working storage and contains the dynamic configuration information. The router stores a working copy of Cisco IOS software, dynamic configuration information, and routing table information in DRAM. The Cisco 1751 router ships with 32 MB of DRAM.
- Nonvolatile RAM (NVRAM)—This type of memory contains the startup configuration.

- Flash memory—This special kind of erasable, programmable memory contains a copy of the Cisco IOS software. The Flash memory structure can store multiple copies of the Cisco IOS software. You can load a new level of the operating system in every router in your network and then, when convenient, upgrade the whole network to the new level. The Cisco 1751 router ships with 32 MB of Flash memory and is not upgradeable.

Amounts of Memory

Use the **show version** command to view the amount of DRAM, NVRAM, and Flash memory stored in your router. The following example shows the output of the **show version** command. The bold text displays the amount of memory stored in this router.

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-SV8Y7-M), Version 12.2(8)YN, EARLY
DEPLOYMENT RELEASE SOFTWARE (fc1)
Synched to technology version 12.2(11.2u)T
TAC Support:http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Wed 30-Oct-02 11:07 by ealyon
Image text-base:0x80008120, data-base:0x81329648

ROM:System Bootstrap, Version 12.2(1r)XE1, RELEASE SOFTWARE (fc1)
ROM:C1700 Software (C1700-SV8Y7-M), Version 12.2(8)YN, EARLY
DEPLOYMENT RELEASE SOFTWARE (fc1)

Router uptime is 0 minutes
System returned to ROM by reload
System image file is "flash:c1700-sv8y7-mz.122-8.YN"

cisco 1751 (MPC860P) processor (revision 0x200) with 55706K/9830K
bytes of memory.
Processor board ID JAD060409KG (290786369), with hardware revision
0000
MPC860P processor:part number 5, mask 2
Bridging software.
X.25 software, Version 3.0.0.
1 FastEthernet/IEEE 802.3 interface(s)
2 ATM network interface(s)
2 Voice FXS interface(s)
32K bytes of non-volatile configuration memory.
32768K bytes of processor board System flash (Read/Write)
Configuration register is 0x0
```

Unpacking the Router

Table 1-5 lists the items that come with your router. All these items are in the accessory kit that is inside the box that your router came in.

Table 1-5 Router Box Contents

• Power cord (black)
• Power supply
• DB-25 to DB-9 adapter
• Console cable, RJ-45 to DB-9 (light blue)
• Product documentation

Additional Required Equipment

Depending on your local network and which Cisco WICs and VICs you install in your router, you might need other items listed in Table 1-6 to complete your router installation.

Table 1-6 Additional Required Equipment

Equipment	When You Use It
Ethernet hub	A hub connects pieces of network equipment (including the router) to create a network. You can use a 10-, 100-, or 10/100-Mbps hub with the router.
Ethernet switch	A switch connects pieces of network equipment (including the router) to create a network. You can use a 10-, 100-, or 10/100-Mbps switch with the router.
Phillips screwdriver	Although the WICs and VICs use thumbscrews, you might need a Phillips screwdriver to loosen the WIC and VIC cover.
Cisco WIC	To make a WAN connection, the router must have a supported WIC installed. The router supports up to two cards. You can either order the cards when ordering the router, and they will be installed for you, or you can order the cards separately, after receiving the router, and install them yourself.

Table 1-6 Additional Required Equipment (continued)

Equipment	When You Use It
Cisco VIC	To make a voice connection, the router must have a supported VIC installed. The router supports up to three cards. You can either order the cards when ordering the router, and they will be installed for you, or you can order the cards separately, after receiving the router, and install them yourself. You must install digital signal processors (DSPs) to use VICs in the router.
Straight-through RJ-45-to-RJ-45 cable	This cable connects the router to the Ethernet LAN and the WICs to various WAN services, including ISDN, T1/FT1, and 56-kbps services. You will need one cable for each of these connections.
Standard RJ-11 telephone cable	This cable connects the VIC to a telephone, fax machine, or a telephone wall-jack. You will need one cable for each of these connections.
Standard RJ-48 telephone cable	This cable connects the VIC to a PBX trunk line. You will need one cable for each of these connections.
Serial cable	This cable connects a serial card to serial services. You must order this cable from Cisco. For detailed information about serial cable types, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with every card.
NT1	Some ISDN service providers require a Network Termination 1 device to connect an ISDN S/T port to the ISDN line.
Asynchronous modem	To configure the router from a remote location, connect a modem to the AUX port on the router.