



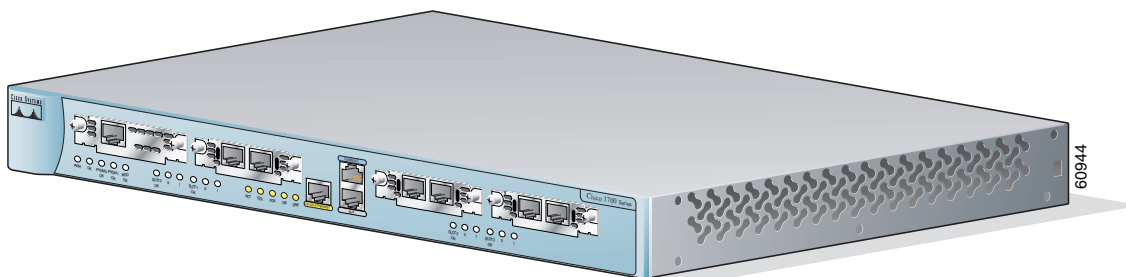
Cisco 1760 Router Overview

This chapter introduces the Cisco 1760 router, also referred to in this guide as *the router*, and covers the following topics:

- [Key Features](#)
- [Ports and LEDs](#)
- [Router Memory](#)
- [Unpacking the Router](#)
- [Additional Required Equipment](#)

Figure 1-1 shows the Cisco 1760 router.

Figure 1-1 Cisco 1760 Router



Key Features

The Cisco 1760 router is a voice-and-data-capable router that provides Voice-over-IP (VoIP) functionality and can carry voice traffic (for example, telephone calls and faxes) over an IP network. Using one or two WAN interface card (WIC) connections, the router links small-to-medium-size Ethernet and Fast Ethernet LANs in remote offices to central offices.

The Cisco 1760 router is available in two models. The Cisco 1760 runs data and data-plus-voice images, providing digital and analog voice support. The Cisco 1760-V includes all the features needed for immediate integration of data and voice services with support for multiple voice channels.

[Table 1-1](#) lists the key features of the router.

Table 1-1 Key Features

Feature	Description
One Fast Ethernet (10/100BASE-TX) port	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Supports two slots (slots 0 and 1) for either WICs or voice interface cards (VICs). Supports two slots (slots 2 and 3) for VICs only. Supports the following WICs: 1T, 2T, 2A/S, 1B-S/T, 1B-U, 1DSU-56K4, 1DSU-T1, 1ADSL, and 1ENET. Supports the following VICs: 2FXS, 2FXO, 2E&M, 2FXO-EU, 2FXO-M1, 2FXO-M2, 2FXO-M3, 2DID, and 2BRI-NT/TE. 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.
SNMP support	Supports Simple Network Management Protocol (SNMP) to manage the router over a network.

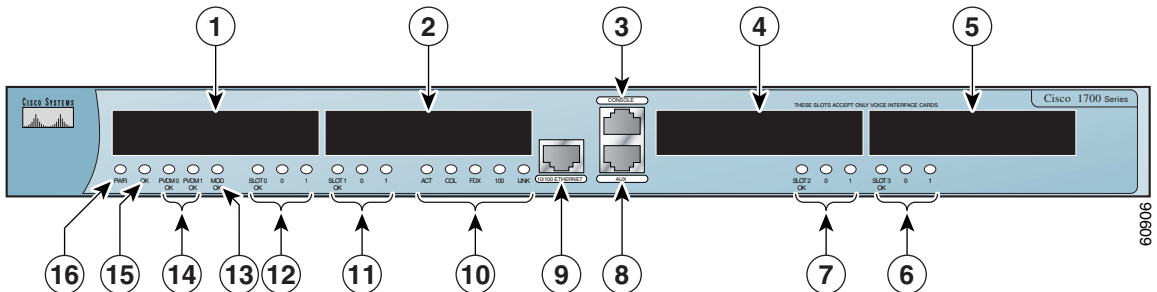
Table 1-1 Key Features (continued)

Feature	Description
VoIP and VoFR support	Supports VoIP and Voice-over-Frame Relay (VoFR) connections.
AutoInstall support	Supports AutoInstall for downloading configuration files to the router over a WAN connection.

Ports and LEDs

This section describes the router ports and LEDs, all on the front panel, which are shown in [Figure 1-2](#) and described in the sections immediately following.

Figure 1-2 Ports and LEDs



1	Interface Card Slot 0 (WIC/VIC)	9	Ethernet Port
2	Interface Card Slot 1 (WIC/VIC)	10	Ethernet LEDs
3	Console Port	11	Interface Card Slot 1 LEDs
4	Interface Card Slot 2 (VIC only)	12	Interface Card Slot 0 LEDs
5	Interface Card Slot 3 (VIC only)	13	MOD OK LED
6	Interface Card Slot 3 LEDs	14	PVDM 0/1 OK LEDs
7	Interface Card Slot 2 LEDs	15	Router OK LED
8	Auxiliary Port	16	Power LED

Ports

The ports of the 1760 router are described in [Table 1-2](#).

Table 1-2 Port Connectors

Connector/Slot	Label/Color	Description
Ethernet port	10/100 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 a Cisco VIC. For detailed information, refer to the <i>Cisco WAN Interface Cards Hardware Installation Guide</i> .
WIC/VIC slot	SLOT 1	Supports either a Cisco WIC or a Cisco VIC. For detailed information, refer to the <i>Cisco WAN Interface Cards Hardware Installation Guide</i> .
VIC slot	SLOT 2	Supports a Cisco VIC. For detailed information, refer to the <i>Cisco WAN Interface Cards Hardware Installation Guide</i> .
VIC slot	SLOT 3	Supports a Cisco VIC. For detailed information, refer to the <i>Cisco WAN Interface Cards Hardware Installation Guide</i> .

System LEDs

The system LEDs, described in [Table 1-3](#), confirm the presence of power to the router, basic router functionality, and the presence of packet voice data modules (PVDMs) and Virtual Private Network (VPN) modules.

Table 1-3 System LEDs

LED Label	Color	Description
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). See Table 3-1 in the “Troubleshooting” chapter for how to use this LED in router diagnostics.
PVDM 0 OK	Green	On when a packet voice data module (PVDM) is correctly inserted in PVDM card slot 0.
PVDM 1 OK	Green	On when a packet voice data module (PVDM) is correctly inserted in PVDM card slot 1.
MOD OK	Green	On when a VPN module is present.

Ethernet LEDs

The Ethernet LEDs show network activity and status on the Ethernet port. These LEDs are described in [Table 1-4](#).

Table 1-4 Ethernet LEDs

LED Label	Color	Description
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.
FDX	Green	On—Ethernet port is operating in full-duplex mode. Off—Ethernet port is operating in half-duplex mode.

Table 1-4 Ethernet LEDs (continued)

LED Label	Color	Description
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.

WIC/VIC LEDs

The WIC/VIC LEDs show network activity and status on the WIC and VIC ports. These LEDs are described in [Table 1-5](#).

Table 1-5 WIC/VIC LEDs

LED	Color	Cards Supported	LED Meaning
SLOT 0 OK	Green		On when either a WIC or a VIC is correctly inserted in the card slot.
0	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 port 0 in slot 0. 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	
		VIC-2DID	
		WIC-1ADSL	
		WIC-1ENET	

Table 1-5 WIC/VIC LEDs (continued)

LED	Color	Cards Supported	LED Meaning
1	-	Serial and CSU/DSU	Off.
	Green	ISDN	On when the second ISDN B channel is connected.
		2-port serial	Blinks when data is being sent to or received from port 1 in slot 0.
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
VIC-2DID			
SLOT 1 OK	Green		On when either a WIC or a VIC is correctly inserted in the card slot.
0	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 port 0 in slot 1.
		2-port serial	
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		VIC-2DID	
		WIC-1ADSL	
		WIC-1ENET	

Table 1-5 WIC/VIC LEDs (continued)

LED	Color	Cards Supported	LED Meaning
1	-	Serial and CSU/DSU	Off.
	Green	ISDN	On when the second ISDN B channel is connected.
		2-port serial	Blinks when data is being sent to or received from port 1 in slot 1.
		VIC-2E&M	
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
VIC-2DID			
SLOT 2 OK	Green		On when a VIC is correctly inserted in the card slot.
0	Green	VIC-2E&M	Blinks when data is being sent to or received from port 0 in slot 2.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		VIC-2DID	
1	Green	VIC-2E&M	Blinks when data is being sent to or received from port 1 in slot 2.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		VIC-2DID	

Table 1-5 WIC/VIC LEDs (continued)

LED	Color	Cards Supported	LED Meaning
SLOT 3 OK	Green		On when a VIC is correctly inserted in the card slot.
0	Green	VIC-2E&M	Blinks when data is being sent to or received from port 0 in slot 3.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		VIC-2DID	
1	Green	VIC-2E&M	Blinks when data is being sent to or received from port 1 in slot 3.
		VIC-2FXO	
		VIC-2FXS	
		VIC-2BRI-NT/TE	
		VIC-2DID	

Router Memory

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

For instructions on how to upgrade memory in the router, See [Appendix C, “Installing and Upgrading Memory and Packet Voice Data Modules,”](#) 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.
- **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; then, when it is convenient, you can upgrade the whole network to the new level.

Amounts of Memory

The Cisco 1760 is shipped with 64 MB of DRAM and 32 MB of Flash memory on board.

The Cisco 1760-V is shipped with 96 MB of DRAM (64 MB on board and 32 MB in a DIMM socket) and 32 MB of Flash memory (32 MB on board and one empty SIMM socket).

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.

```
Router> show version
```

```
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-SV3Y-M), Version 12.2(2)XK, EARLY
DEPLOYMENT
RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Fri 13-Oct-01 15:26 by ealyon
Image text-base: 0x800080FC, data-base: 0x80D117A8
```

```
ROM: System Bootstrap, Version 12.2(2)XK, RELEASE SOFTWARE (fc1)
ROM: C1700 Software (C1700-SV3Y-M), Version 12.2(4)XL, EARLY
DEPLOYMENT
RELEASE SOFTWARE (fc1)
```

```
Router uptime is 2 days, 1 minute
System returned to ROM by reload
Running default software
```

```
cisco 1760 (MPC860) processor (revision 0x00) with 62260K/3276K bytes
of memory.
Processor board ID 0000 (1314672220), with hardware revision 0000
MPC860 processor: part number 5, mask 2
Bridging software.
X.25 software, Version 3.0.0.
```

```
Basic Rate ISDN software, Version 1.1.  
1 FastEthernet/IEEE 802.3 interface(s)  
2 Serial(sync/async) network interface(s)  
2 ISDN Basic Rate interface(s)  
4 Voice FXS interface(s)  
4 Voice NT or TE BRI interface(s)  
32K bytes of non-volatile configuration memory.  
8192K bytes of processor board System flash partition 1 (Read/Write)  
8192K bytes of processor board System flash partition 2 (Read/Write)
```

```
Configuration register is 0x0
```

Unpacking the Router

[Table 1-6](#) 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 1-6 Router Box Contents

-
- Power cord (black)
-
- Console cable, RJ-45 to DB-9 (light blue)
-
- Rack-mounting brackets
-
- DB-25 to DB-9 adapter
-
- Cable guide
-
- Product documentation
-

Additional Required Equipment

Depending on your local network and on which Cisco WICs and VICs you install in your router, you might need other items listed in [Table 1-7](#) to complete the router installation.

Table 1-7 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 or VIC covers.
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 you order the router, and they will be installed for you, or you can order the cards separately, after you receive the router, and install them yourself.
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.

Table 1-7 Additional Required Equipment (continued)

Equipment	When You Use It
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 <i>Cisco WAN Interface Cards Hardware Installation Guide</i> that comes with every card.
NT1	Some ISDN service providers require a Network Termination 1 (NT1) 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.

■ Additional Required Equipment