CHAPTER 1

Overview

The Cisco 3640 router, a member of the Cisco 3600 series of routers, is a four-slot modular access router with interchangeable modules and WAN interface cards. The modular design of the router provides flexibility, allowing you to configure or reconfigure the router according to your needs.

Note The Cisco 3640 router is generally referred to as “the router” in this publication.

This chapter includes the following sections:

- Features
- Identifying Network Interfaces
- Memory
- Specifications
- Customer Service
- Cisco Connection Online
- Ordering Documentation

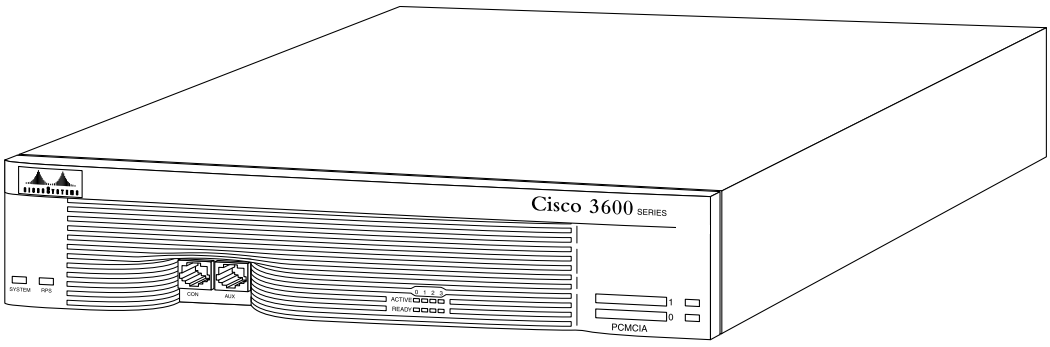
Features

The features of the router include:

- High-performance, 100-MHz reduced instruction-set computer (RISC) processor
- Four slots for modules
- Two slots for Personal Computer Memory Card International Association (PCMCIA) cards
- Flash memory capability
- Four slots for dynamic random-access memory (DRAM), user-configurable as shared memory or main (processor) memory
- Supports connection to an optional external redundant power supply
- High-speed console and auxiliary ports (up to 115.2 kbps)
- Hardware thermal alarm to warn of excessively high operating temperature
- Can be installed in a 19-, 23-, or 24-inch rack, on a wall, or on a desk

Figure 1-1 shows the front panel of the router.

Figure 1-1 Front Panel of the Router



Identifying Network Interfaces

Each individual network interface on the router is identified by a slot number and a unit number.

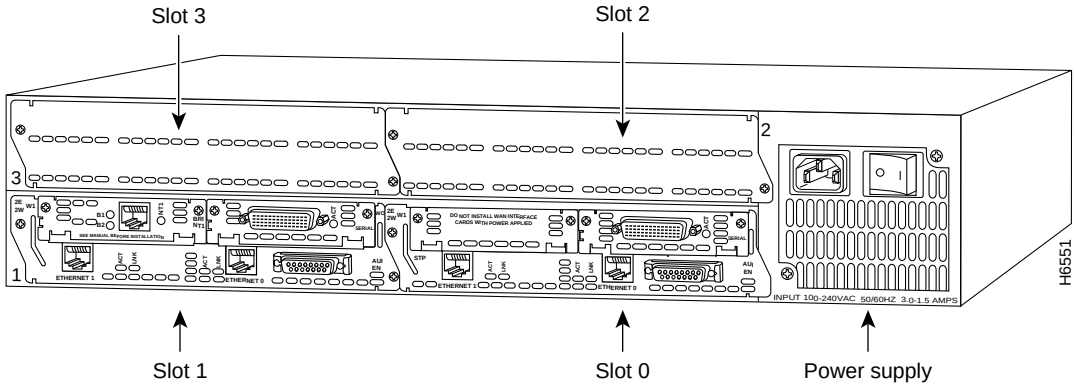
Slot Numbering

The chassis includes four slots in which you can install modules. You can install any module into any available slot in the chassis.

As shown in Figure 1-3, the slots are numbered from 0 to 3, as follows:

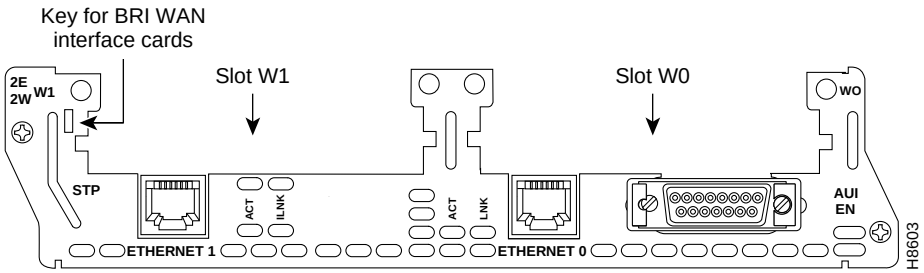
- Slot 0 is at the bottom right (as viewed from the rear of the chassis), near the power supply.
- Slot 1 is at the bottom left.
- Slot 2 is at the top right, above slot 0.
- Slot 3 is at the top left, above slot 1.

Figure 1-2 Module Card Slots



Some modules have two small slots, labeled W0 and W1, for WAN interface cards. For example, Figure 1-3 shows the W0 and W1 slots of the 2 Ethernet 2 WAN card slot (2E 2-slot) module. You can install WAN interface cards into the small module slots (W0 and W1). Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) WAN interface cards are keyed so that you can install them into slot W1 only. Serial WAN interface cards can be installed into either slot, W0 or W1.

Figure 1-3 WAN Interface Card Slots



Unit Numbering

Unit numbers 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.

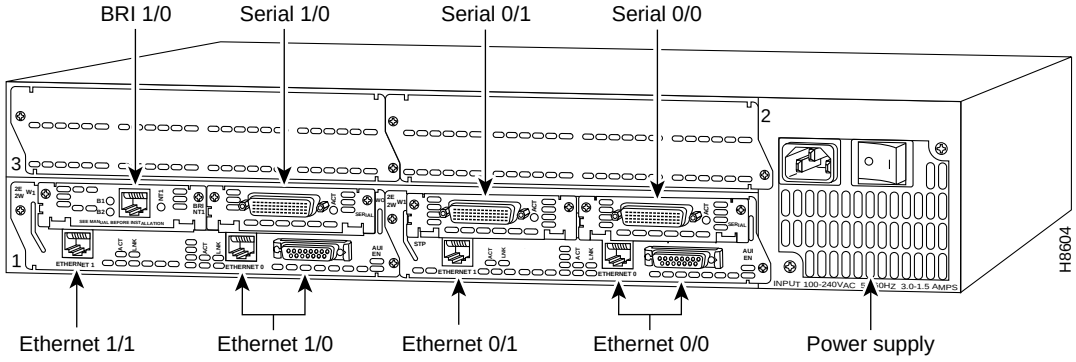
Figure 1-4 shows a router with a 2E 2-slot module in slots 0 and 1. Two serial WAN interface cards are installed in the module in slot 0. One serial and one ISDN BRI WAN interface card are installed in the module in slot 1.

As shown in Figure 1-4, the unit numbers are as follows:

- Slot 0, Ethernet interface 0, referred to as Ethernet 0/0
- Slot 0, Ethernet interface 1, referred to as Ethernet 0/1
- Slot 0, serial interface 0, referred to as serial 0/0
- Slot 0, serial interface 1, referred to as serial 0/1
- Slot 1, Ethernet interface 0, referred to as Ethernet 1/0
- Slot 1, Ethernet interface 1, referred to as Ethernet 1/1
- Slot 1, serial interface 0, referred to as serial 1/0
- Slot 1, BRI interface 0, referred to as BRI 1/0

Note The 2E 2-slot module described in this example provides both an attachment unit interface (AUI) and 10BaseT port. Only one of these ports can be used at a time. The module automatically detects which port, AUI or 10BaseT, is in use.

Figure 1-4 Unit Numbers



Memory

The router has the following types of memory:

- DRAM—Serves two functions: it stores the running configuration and routing tables and it is used for packet buffering by the router's network interfaces. The Cisco IOS software executes from DRAM memory.
- Nonvolatile random-access memory (NVRAM)—Stores the system configuration file and the virtual configuration register. (For more information, see the appendix "Virtual Configuration Register.")
- Flash memory—Stores the operating system software image. You can also add Flash memory on PCMCIA cards.
- EPROM-based memory—Stores the ROM monitor, which allows you to boot an operating system software image from Flash memory or PCMCIA memory when Flash memory does not contain a valid boot helper image.

Table 1-1 lists processor and memory specifications for the router.

Table 1-1 Processor and Memory Specifications

Description	Specification
Processor	100-MHz IDT[1] R4700 RISC
DRAM (main plus shared)	4 to 128 MB
NVRAM	128 KB
Flash memory (SIMM[2])	4 to 48 MB
Flash memory (PCMCIA)	4 to 128 MB (64 MB x 2)
Boot ROM	512 KB

1. IDT = Integrated Device Technology.
2. SIMM = single in-line memory module.

Specifications

Table 1-2 lists the module interface options available for the router. Some of the modules provide two empty slots which accept optional WAN interface cards. Table 1-3 lists the WAN interface cards available for the router.

Table 1-2 Module Interface Options

Module	Short Name Used in this Publication	Port Option	Part Number
1 Ethernet 2 WAN card slot	1E 2-slot	One Ethernet port, slots for two WAN interface cards	NM-1E2W
2 Ethernet 2 WAN card slot	2E 2-slot	Two Ethernet ports, slots for two WAN interface cards	NM-2E2W
1 Ethernet 1 Token Ring 2 WAN card slot	1E1R 2-slot	One Ethernet port, one Token Ring port, slots for two WAN interface cards	NM-1E1R2W
Async/sync serial	A/S serial	Four ports Eight ports	NM-4A/S NM-8A/S
ISDN BRI	BRI S/T[1]	Four ports Eight ports	NM-4B-S/T NM-8B-S/T
ISDN BRI with NT1[2]	BRI U[3]	Four ports Eight ports	NM-4B-U NM-8B-U
Channelized T1/ISDN PRI[4]	CT1/PRI	One port Two ports	NM-1CT1 NM-2CT1
Channelized T1/ISDN PRI with CSU[5]	CT1/PRI-CSU	One port Two ports	NM-1CT1-CSU NM-2CT1-CSU
Channelized E1/ISDN PRI balanced	CE1/PRI-B	One port Two ports	NM-1CE1B NM-2CE1B
Channelized E1/ISDN PRI unbalanced	CE1/PRI-U	One port Two ports	NM-1CE1U NM-2CE1U

1. The BRI S/T module requires an external NT1.
2. NT1 = Network Termination 1.
3. The BRI U module does not require an external NT1.
4. PRI = Primary Rate Interface.
5. CSU = channel service unit.

Table 1-3 WAN Interface Card Options

WAN Interface Card	Port Option	Part Number
1-port serial	Synchronous serial EIA/TIA-232, EIA/TIA-449, V.35, X.21, or EIA-530	WIC-1T
1-port ISDN BRI	One BRI port with S/T interface	WIC36-1B-S/T
1-port ISDN BRI with NT1	One BRI port with U interface	WIC36-1B-U

Table 1-4 lists the specifications of the router.

Table 1-4 Specifications

Description	Specification
Dimensions (H x W x D)	3.44 x 17.5 x 14.5" (8.7 x 44.5 x 36.8 cm), two rack units in height
Weight	25 lb (13.6 kg), including chassis and four modules
Input voltage, AC power supply Current Frequency Power dissipation	100 to 240 VAC[1], autoranging 2.0A 50 to 60 Hz 140W (maximum)
Input voltage, DC power supply Current Power dissipation	38 to 72 VDC[2] 5.0A 140W (maximum)
Network interface options	Ethernet, serial, Token Ring, BRI (S/T and U interfaces), T1/PRI, E1/PRI
Serial interfaces	EIA/TIA-232[3], EIA/TIA-449, V.35, X.21, NRZ/NRZI[4], DTE/DCE[5], and EIA-530 DTE. All serial interfaces use a DB-60 connector.
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)

Table 1-4 Specifications (Continued)

Description	Specification
Noise level	51.9 dB maximum
Regulatory compliance	FCC Part 15 Class B. For additional compliance information, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.

1. VAC = volts alternating current.
2. VDC = volts direct current.
3. EIA/TIA = Electronic Industries Association/Telecommunications Industry Association.
4. NRZ/NRZI = nonreturn to zero/nonreturn to zero inverted.
5. DTE/DCE = Data Terminal Equipment/Data Communications Equipment.

Customer Service

Cisco offers a wide variety of service and support programs, which are described in the information packet that shipped with your router. For service and support for a product purchased directly from Cisco, use Cisco Connection Online (CCO).

Cisco Connection Online

CCO is Cisco Systems' primary, real-time support channel. SMARTnet customers and partners can self-register on CCO to obtain additional content and services.

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You can access CCO in the following ways:

- WWW: http://www.cisco.com.
- WWW: http://www-europe.cisco.com.
- WWW: http://www-china.cisco.com.
- Telnet: cco.cisco.com.
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and baud rates up to 14.4 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

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