Doc. No. 78-3051-01

4-Port and 8-Port ISDN-BRI Network Module Configuration Note

Product Numbers:
NM-4B-S/T, NM-4B-U, NM-8B-S/T, NM-8B-U

CPANM-4B-S/T, CPANM-4B-U, CPANM-8B-S/T, CPANM-8B-U

This document provides information about the following network modules for the Cisco 3600 series of modular access routers:

- The 4-port ISDN-BRI network module, Cisco product number NM-4B-S/T or CPANM-4B-S/T, connects to an ISDN WAN through an external NT1 device (also known as an S/T interface). (See Figure 1.) This module will also be referred to as the 4-port BRI S/T network module.
- The 8-port ISDN-BRI network module, Cisco product number NM-8B-S/T or CPANM-8B-S/T, connects to an ISDN WAN through an external NT1 device (also known as an S/T interface). (See Figure 2.) This module will also be referred to as the 8-port BRI S/T network module.
- The 4-port ISDN-BRI with NT1 network module, Cisco product number NM-4B-U or CPANM-4B-U, connects to an ISDN WAN using a built-in NT1 device (also known as a U interface). (See Figure 3.) This module will also be referred to as the 4-port BRI U network module.
- The 8-port ISDN-BRI with NT1 network module, Cisco product number NM-8B-U or CPANM-8B-U, connects to an ISDN WAN using a built-in NT1 device (also known as a U interface). (See Figure 4.) This module will also be referred to as the 8-port BRI U network module.

Unless specifically identified, references to BRI modules in this configuration note include all these network modules.

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Figure 1 4-Port ISDN-BRI Network Module (S/T Interface)

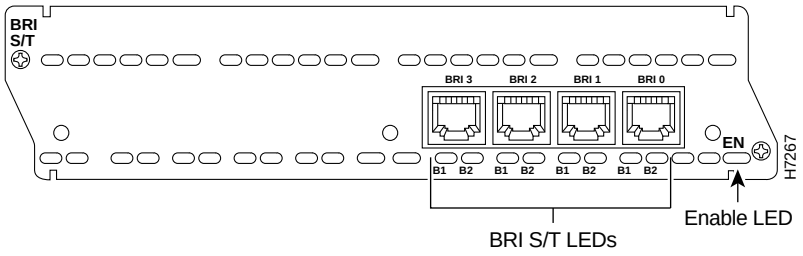


Figure 2 8-Port ISDN-BRI Network Module (S/T Interface)

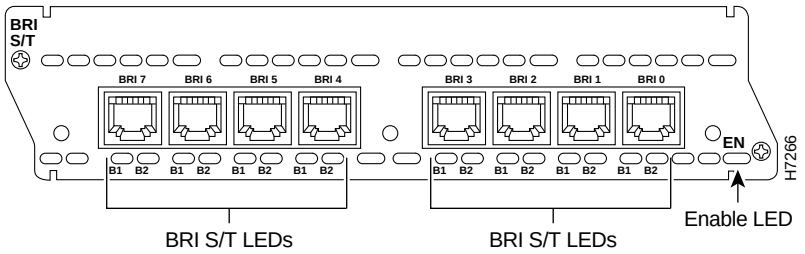


Figure 3 4-Port ISDN-BRI with NT1 Network Module (U Interface)

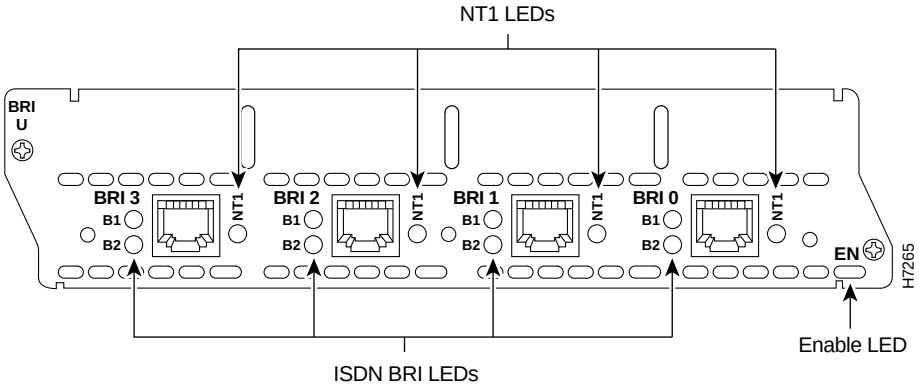
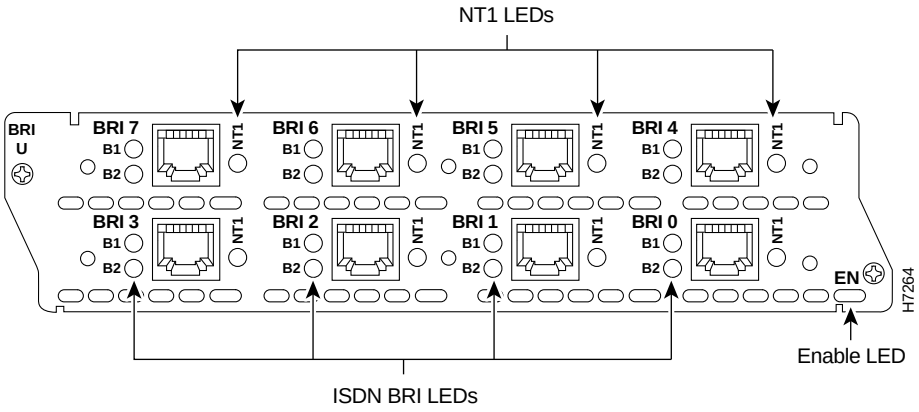


Figure 4 8-Port ISDN-BRI with NT1 Network Module (U Interface)



Use this document in conjunction with your router installation and configuration guide and the *Regulatory Compliance and Safety Information* document for your router. If you have questions or need help, refer to the section "Obtaining Service and Support" later in this document for further information.

This document contains the following sections:

- Safety Recommendations, page 4
- Required Tools and Equipment, page 6
- Installing BRI Network Modules in a Chassis Slot, page 6
- Connecting the BRI Module to the Network, page 7
- BRI Module Pinout, page 9
- BRI Module LEDs, page 9
- Configuring the BRI Interfaces, page 11
- Obtaining Service and Support, page 17
- Cisco Connection Online, page 17

Warning Only trained and qualified personnel should be allowed to install or replace this equipment. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Warning Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Warning Ultimate disposal of this product should be handled according to all national laws and regulations. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Caution To avoid damaging electrostatic discharge (ESD)-sensitive components, ensure that you have discharged all static electricity from your body before opening the chassis. Before performing procedures described in this document, review the next section, “Safety Recommendations.”

Safety Recommendations

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Put the removed chassis cover in a safe place.
- Keep tools away from walk areas where you or others could fall over them.
- Do not wear loose clothing that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes equipment unsafe.

Warning The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Do not attempt to tamper with or open any public telephone operator (PTO)-provided equipment or connection hardware. Any hardwired connection (other than by a nonremovable, connect-one-time-only plug) must be made only by PTO staff or suitably trained engineers. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Warning Network hazardous voltages are present in the BRI cable. If you detach the BRI cable, detach the end away from the router first to avoid possible electric shock. Network hazardous voltages also are present on the system card in the area of the BRI port (RJ-45 connector), regardless of when power is turned off. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Warning The Ethernet 10BaseT, Token Ring, serial, console, and auxiliary ports contain safety extra-low voltage (SELV) circuits. BRI circuits are treated like telephone-network voltage (TNV) circuits. Avoid connecting SELV circuits to TNV circuits. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Safety with Electricity

Warning Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Follow these guidelines when working on equipment powered by electricity:

- Locate the emergency power-OFF switch in the room in which you are working. Then, if an electrical accident occurs, you can quickly shut the power OFF.
- Before working on the router, turn OFF the power and unplug the power cord.
- Disconnect all power before doing the following:
  - Installing or removing a router chassis
  - Working near power supplies
- Do not work alone if potentially hazardous conditions exist.

Warning Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

- Never assume that power is disconnected from a circuit. Always check.

Warning Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is OFF and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn OFF power to the router.
  - If possible, send another person to get medical aid. Otherwise, determine the condition of the victim and then call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic printed circuit cards are improperly handled and can result in complete or intermittent failures. Always follow ESD prevention procedures when removing and replacing cards. Ensure that the router chassis is electrically connected to earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis

frame to safely channel unwanted ESD voltages to ground. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

Caution For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohm).

Required Tools and Equipment

You need the following tools and equipment to install a network module in a Cisco 3600 series chassis slot:

- Network module
- Number 1 Phillips screwdriver or small flat-blade screwdriver
- ESD-preventive wrist strap

Installing BRI Network Modules in a Chassis Slot

Caution Network modules do not support online insertion and removal (hot swap). To avoid damaging the module, before you insert a network module into a chassis slot, you must turn OFF electrical power and disconnect network cables.

The following instructions apply only to installing network modules in a chassis slot. To install a WAN interface card in a network module, see the configuration note for the WAN interface card.

You can install network modules in the chassis either before or after mounting the router, whichever is more convenient.

Note Do not install a BRI network module in the same chassis as an ISDN Primary Rate Interface (PRI) network module. This configuration is not supported.

Follow this procedure to install a network module:

Step 1 Turn OFF electrical power to the router. However, to channel ESD voltages to ground, do not unplug the power cable. Remove all network interface cables, including telephone cables, from the rear panel.

The following warning applies to routers that use a DC power supply:

Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Step 2 Using either a number 1 Phillips screwdriver or a small flat-blade screwdriver, remove the blank filler panel from the chassis slot where you plan to install the module. Save the blank panel for future use.

Step 3 Align the network module with the guides in the chassis and slide it gently into the slot.

Step 4 Push the module into place until you feel its edge connector mate securely with the connector on the motherboard.

Step 5 Fasten the module's captive mounting screws into the holes in the chassis, using the Phillips or flat-blade screwdriver.

Step 6 If the router was previously running, reinstall the network interface cables and turn ON power to the router.

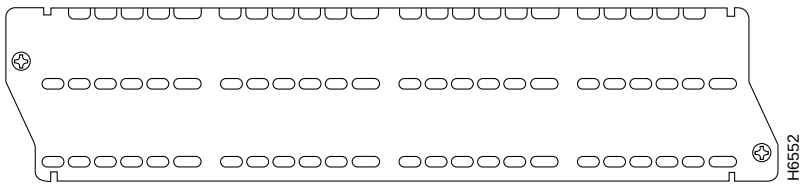
The following warning applies to routers that use a DC power supply:

Warning After wiring the DC power supply, remove the tape from the circuit breaker switch handle and reinstate power by moving the handle of the circuit breaker to the ON position. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the router.)

Blank Network Module Panels

If the router is configured with fewer than four network modules, make sure that blank panels fill the open chassis slots to provide proper airflow. (See Figure 5.)

Figure 5 Blank Network Module Panel



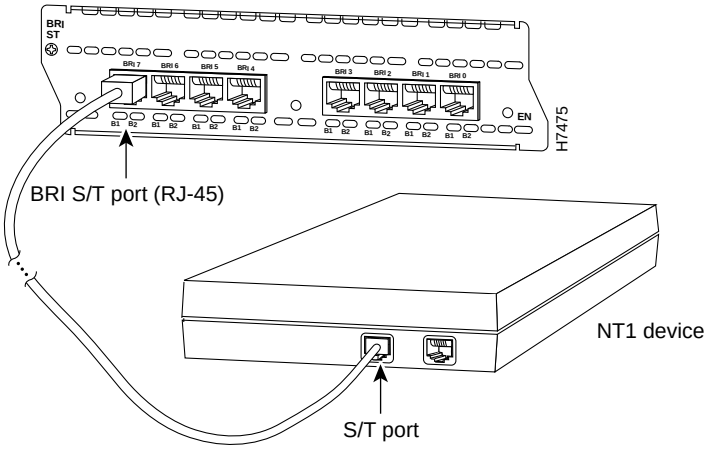
Connecting the BRI Module to the Network

This section explains how to connect a BRI network module to a WAN.

BRI S/T Modules

To connect a BRI S/T network module, use a straight-through RJ-45-to-RJ-45 cable to connect the ISDN BRI port to an NT1. (See Figure 6.)

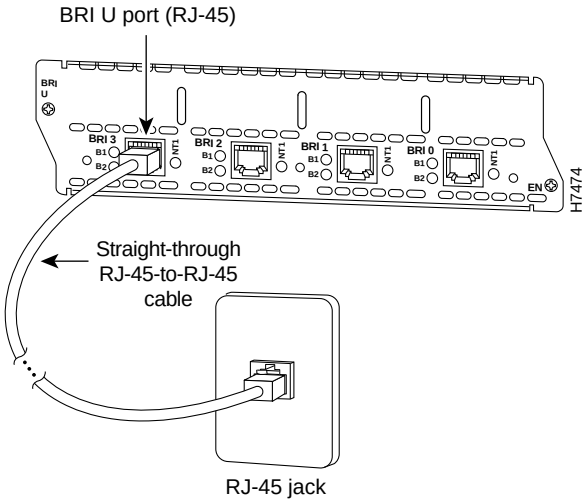
Figure 6 Connecting a BRI S/T Network Module to an NT1



BRI U Modules

To connect a BRI U module, use a straight-through RJ-45-to-RJ-45 cable to connect the ISDN BRI port to an RJ-45 jack. (See Figure 7.)

Figure 7 Connecting a BRI U Network Module to an RJ-45 ISDN Jack



BRI Module Pinout

Table 1 shows the pinout for the BRI RJ-45 connector.

Table 1 BRI Port Pinout (RJ-45)

8-Pin[1]	TE[2]	NT[3]	Polarity
3	Transmit	Receive	+
4	Receive	Transmit	+
5	Receive	Transmit	–
6	Transmit	Receive	–

1. Pins 1, 2, 7, and 8 are not used.
2. TE refers to terminal terminating layer 1 aspects of TE1, TA, and NT2 functional groups.
3. NT refers to network terminating layer 1 aspects of NT1 and NT2 functional groups.

BRI Module LEDs

All network modules have an enable LED. This LED indicates that the module has passed its self-tests and is available to the router.

BRI S/T Modules

In addition to the enable LED, BRI S/T modules have two LEDs for each port. These LEDs indicate call activity on the two ISDN-BRI B-channels, as listed in Table 2.

Table 2 BRI S/T Network Module LEDs

LED	Meaning
B1	Call active on B1 channel
B2	Call active on B2 channel

Figure 8 shows LEDs for the 4-port BRI S/T network module, and Figure 9 shows LEDs for the 8-port BRI S/T network module.

Figure 8 4-Port BRI S/T Network Module LEDs

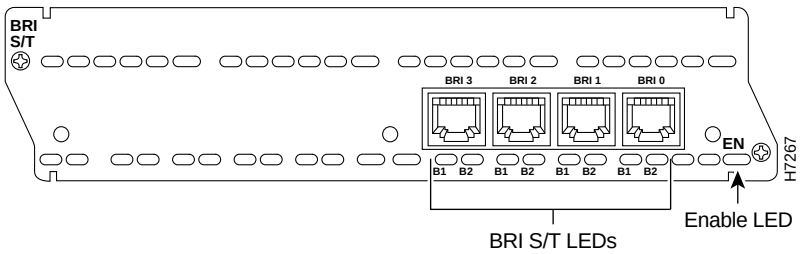
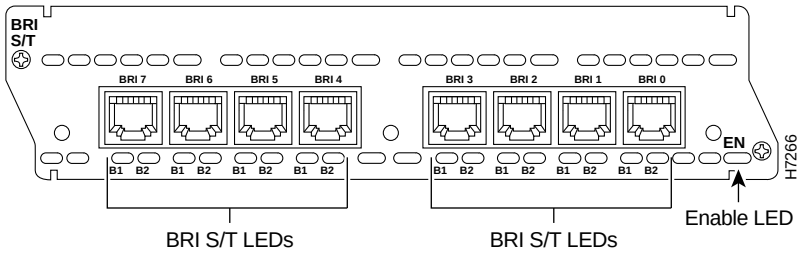


Figure 9 8-Port BRI S/T Network Module LEDs



BRI U Modules

In addition to the enable LED, BRI U modules have three LEDs for each port. Two of these LEDs indicate call activity on the two ISDN-BRI B-channels, as listed in Table 3. The third LED, labeled NT1, indicates synchronization status of the NT1.

Table 3 BRI U Network Module LEDs

LED	Meaning
B1	Activity on B1 channel
B2	Activity on B2 channel
NT1	Synchronous status of NT1

Figure 10 shows LEDs for the 4-port BRI U network module, and Figure 11 shows LEDs for the 8-port BRI U network module.

Figure 10 4-Port BRI U Network Module LEDs

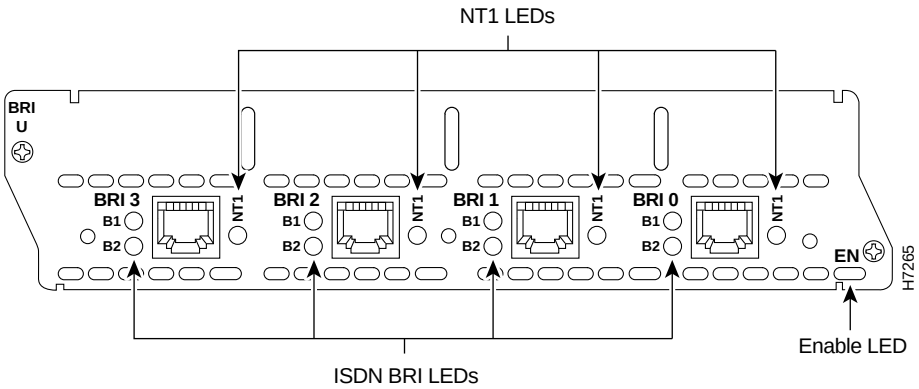
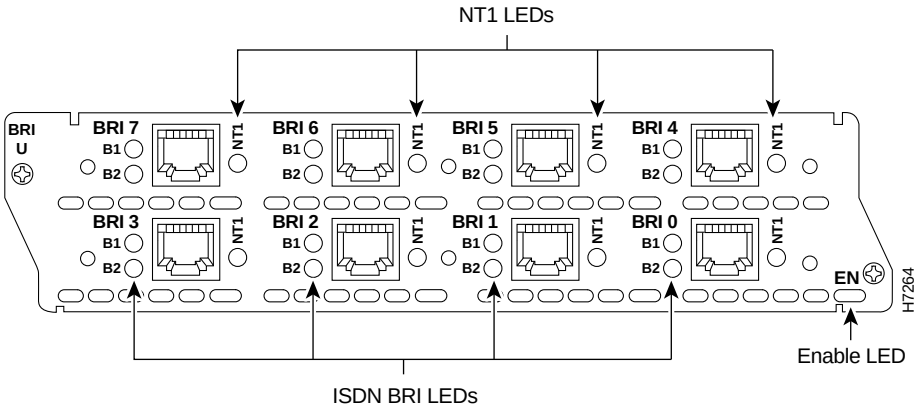


Figure 11 8-Port BRI U Network Module LEDs



Configuring the BRI Interfaces

Whenever you install a new interface, or if you want to change the configuration of an existing interface, you must configure the interface. If you replace a module that was already configured, the router recognizes it and brings up the interface in the existing configuration.

Before you configure an interface, have the following information available:

- Protocols you plan to route on the new interface
- IP addresses, subnet masks, network numbers, zones, or other information related to the routing protocol

Timesaver Obtain this information from your system administrator or network plan before you begin router configuration.

You can configure the new interfaces and other router parameters by using any of the following methods:

- Configuration Mode (manual configuration)—Recommended if you are familiar with Cisco Internetwork Operating System (Cisco IOS) commands. Enter the commands at the prompt.
- AutoInstall—Recommended for automatic installation if another router running Cisco IOS software is installed on the network. This configuration method must be set up by someone with experience using Cisco IOS software.
- System Configuration Dialog (setup facility)—Recommended if you are not familiar with Cisco IOS commands. You are prompted for each response.

These procedures are explained in the following sections. If you have questions or need help, refer to the section “Obtaining Service and Support” later in this document for further information.

Both configuration mode and the System Configuration Dialog require you to enter the ISDN switch type. These switch types are shown in Table 4.

Table 4 ISDN Switch Types

Country	ISDN Switch Type	Description
Australia	basic-ts013	Australian TS013 switches
Europe	basic-1tr6	German 1TR6 ISDN switches
	basic-nwnet3	Norwegian NET3 ISDN switches (phase 1)
	basic-net3	NET3 ISDN switches (UK and others)
	basic-net5	NET5 switches (UK and Europe)
	vn2	French VN2 ISDN switches
	vn3	French VN3 ISDN switches
Japan	ntt	Japanese NTT ISDN switches
New Zealand	basic-nznet3	New Zealand NET3 switches
North America	basic-5ess	AT&T basic rate switches
	basic-dms100	NT DMS-100 basic rate switches
	basic-ni1	National ISDN-1 switches

Configuration Mode

You can configure the BRI interfaces on your BRI network module manually, by entering Cisco IOS commands on the command line. This method, called configuration mode, provides the greatest power and flexibility.

Before you begin, disconnect all WAN cables from the router to keep it from trying to run the AutoInstall process. The router tries to run AutoInstall whenever you power it ON if there is a WAN connection on both ends and the router does not have a valid configuration file stored in nonvolatile random-access memory (NVRAM) (for instance, when you add a new interface). It can take several minutes for the router to determine that AutoInstall is not connected to a remote Transmission Control Protocol/Internet Protocol (TCP/IP) host.

To enter configuration mode, follow this procedure:

Step 1 Connect a console to the router. If you need instructions for connecting a console, refer to the installation chapter of your router installation and configuration guide. Power up the router.

Step 2 If the current configuration is no longer valid, after about a minute you see the following prompt:

```
Would you like to enter the initial dialog? [yes]:
```

Answer **no**. You now enter the normal operating mode of the router.

Note If the current configuration is valid, you enter the normal operating mode automatically.

Step 3 After a few seconds you see the user EXEC prompt (Router>). Type **enable** and the password to enter enable (privileged EXEC) mode:

```
Router> enable
Password:
```

Configuration changes can be made only in enable mode. The prompt changes to the privileged EXEC (enable) prompt (Router#):

```
Router#
```

Step 4 Enter the command **config terminal** to enter configuration mode:

```
Router# config terminal
```

The router enters global configuration mode, indicated by the Router(config)# prompt.

Step 5 Enter an ISDN switch type from Table 4 earlier in this document, for example:

```
Router(config)# isdn switch-type basic-5ess
```

Step 6 If you have not configured the router before, or want to change the configuration, configure global parameters, passwords, network management, and routing protocols. In this example, IP routing, AppleTalk routing, and Internetwork Packet Exchange (IPX) routing are all enabled:

```
Router(config)# ip routing
Router(config)# appletalk routing
Router(config)# ipx routing
```

For complete information about global configuration commands, refer to the Cisco IOS configuration guides and command references.

Step 7 Select the BRI interface to configure:

```
Router(config)# interface bri 0/0
Router(config-if)#
```

The prompt changes again to show that you are in interface configuration mode.

Step 8 Configure routing protocols on the interface. (You must have previously enabled these protocols as part of global configuration.) In this example, IP, AppleTalk, and IPX are being configured on the BRI interface:

```
Router(config-if)# ip address 172.16.74.2 255.255.255.0
Router(config-if)# appletalk static cable-range 5-5
Router(config-if)# appletalk zone ZZBRI
Router(config-if)# ipx network B004
```

Step 9 To configure another BRI interface, enter the **exit** command to return to the Router(config)# prompt. Repeat Step 7 and Step 8 of this procedure to configure the next BRI interface.

Step 10 By default, the router allocates 25 percent of dynamic random-access memory (DRAM) to shared memory (used for data transmitted or received by network modules and WAN interface cards). If your router includes 16 or more ISDN BRI interfaces, you must increase the amount of shared memory by entering the **memory-size iomem** command. The following example increases shared memory from 25 percent to 40 percent:

```
Router(config)# memory-size iomem 40
```

Note For further information about the **memory-size iomem** command, refer to the Cisco IOS configuration guides and command references.

Step 11 When you are finished with configuration, exit configuration mode and return to the enable prompt by pressing **Ctrl-Z**. To see the current operating configuration, including any changes you just made, enter the **show running-config** command:

```
Router# show running-config
```

To see the configuration currently stored in NVRAM, enter the command **show startup-config** at the enable prompt.

```
Router# show startup-config
```

Step 12 The results of the **show running-config** and **show startup-config** commands differ from each other if you have made changes to the configuration, but have not yet written them to NVRAM. To write your changes to NVRAM, making them permanent, enter the command **copy running-config startup-config** at the enable prompt:

```
Router# copy running-config startup-config
Building configuration. . .
[OK]
Router#
```

The router is now configured to boot in the new configuration.

AutoInstall

The AutoInstall process is designed to configure the router automatically after it connects to your WAN. For AutoInstall to work properly, a TCP/IP host on your network must be configured to provide the configuration files. The TCP/IP host can reside anywhere on the network if the following two conditions are met:

- The host must be on the remote side of the router's synchronous serial connection to the WAN.
- User Datagram Protocol (UDP) broadcasts to and from the router and the TCP/IP host must be enabled.

This functionality is coordinated by your system administrator at the TCP/IP host site. You should not try to use AutoInstall unless the required files have been installed on the TCP/IP host.

Follow this procedure to prepare your router for the AutoInstall process:

Step 1 Connect the router to the WAN, following the instructions in the section "Connecting the BRI Module to the Network" earlier in this document.

Step 2 Turn ON power to the router.

The router loads the operating system image from Flash memory. If the remote end of the WAN connection is connected and properly configured, the AutoInstall process begins.

Step 3 If AutoInstall succeeds, you should write the configuration data to the router's NVRAM. To do this, enter the **copy running-config startup-config** command at the Router# prompt:

```
Router# copy running-config startup-config
Building configuration. . .
[OK]
Router#
```

Note This step saves the configuration settings that the AutoInstall process created. If you do not do this, your new configuration will be lost the next time you boot the router.

System Configuration Dialog

You can configure the router manually using the System Configuration Dialog facility. Unlike configuration mode, the System Configuration Dialog prompts you for each response.

Before you begin, disconnect all WAN cables from the router to keep it from trying to run the AutoInstall process. The router tries to run AutoInstall whenever you power it ON if there is a WAN connection on both ends and the router does not have a configuration file in NVRAM. It can take several minutes for the router to determine that AutoInstall is not connected to a remote TCP/IP host.

This section shows a sample configuration using the System Configuration Dialog. You should enter values appropriate for your router and network.

Many prompts in the System Configuration Dialog include default answers, shown in square brackets following the question. Enter your response, or press **Return** to accept the default answer.

You can request help at any time by entering a question mark (**?**) at a System Configuration Dialog prompt.

Follow this procedure to configure the router using the System Configuration Dialog:

Step 1 Connect a console to the router. If you need instructions for connecting a console, refer to your router installation and configuration guide. Power up the router.

Step 2 If the current configuration is no longer valid, after about a minute you see the following prompt:

```
Would you like to enter the initial dialog? [yes]:
```

Press **Return** or enter **yes** to enter the System Configuration Dialog.

Note You can enter the System Configuration Dialog at any time from the enable prompt (Router#) by entering the **setup** command.

Step 3 When the System Configuration Dialog asks whether you want to view the current interface summary, press **Return** or enter **yes**:

```
First, would you like to see the current interface summary? [yes]:

Interface      IP-Address    OK?   Method   Status   Protocol

BRI0/0         unassigned    NO    unset    up       up
BRI0/1         unassigned    NO    unset    up       up
BRI0/2         unassigned    NO    unset    up       up
BRI0/3         unassigned    NO    unset    up       up
```

Step 4 If you have not configured the router before, or want to change the configuration, you should now configure global parameters, passwords, network management, and routing protocols. Refer to the procedures in the Cisco IOS configuration guides and command references. Press **Return** if you want to accept the default values.

When you reach the following prompt, enter an ISDN switch type from Table 4 earlier in this document:

```
Enter ISDN BRI Switch Type [none]:
```

Step 5 The System Configuration Dialog prompts you to configure network interfaces. When you reach the first BRI interface, determine which protocols you want on the interface and enter the appropriate responses. (You must have previously enabled these protocols as part of global configuration.) In the following example, the interface is being configured for IP, AppleTalk, and IPX:

```
Configuring interface BRI0/0:
Is this interface in use? [yes]
Configure IP on this interface? [yes]
IP address for this interface: 172.16.74.2
Number of bits in subnet field [0]: 8
Class B network is 172.16.0.0, 8 subnet bits; mask is
    255.255.255.0
  Configure AppleTalk on this interface? [no]: yes
    Extended AppleTalk network? [no]: yes
    AppleTalk starting cable range [0]: 5
    AppleTalk ending cable range [1]: 5
    AppleTalk zone name [myzone]: ZZBRI
AppleTalk additional zone name:
  Configure IPX on this interface? [no]: yes
    IPX network number [1]: B004
```

Step 6 Repeat Step 5 for the remaining BRI interfaces.

Step 7 The configuration you entered is displayed as a command script and you are asked if you want to use it. If you enter **no**, the information you just entered is discarded and you can begin the configuration again. If you enter **yes**, the configuration is saved in the startup configuration:

```
Use this configuration? [yes/no]: yes
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.


Press RETURN to get started!
```

The configuration is saved. If you added an interface, the router reboots in the new configuration when you press **Return**.

Obtaining Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section "Service and Support" in the information packet that shipped with your chassis.

Note If you purchased your product from a reseller, you can access Cisco Connection Online (CCO) as a guest. CCO is Cisco Systems' primary, real-time support channel. Your reseller offers programs that include direct access to CCO's services.

For service and support for a product purchased directly from Cisco, use 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.

Note If you purchased your product from a reseller, you can access CCO as a guest. Your reseller offers programs that include direct access to CCO's services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously—a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

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.

Note If you need technical assistance with a Cisco product that is under warranty or covered by a Cisco maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com.

Please use CCO to obtain general information about Cisco Systems, Cisco products, or upgrades. If CCO is not accessible, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

This document is to be used in conjunction with your router installation and configuration guide and the *Regulatory Compliance and Safety Information* document for your router.

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