



3

Troubleshooting

Use the information in this chapter to help isolate problems you might encounter with the router or to rule out the router as the source of the problem.

This chapter contains the following sections:

- Contacting Cisco or Your Reseller
- Recovering a Lost Password
- Problem Solving

Contacting Cisco or Your Reseller

If you cannot locate the source of a problem, contact your local reseller for advice. Before you call, you should have the following information ready:

- Chassis type and serial number
- Maintenance agreement or warranty information
- Cisco IOS release installed on your router
- Date you received the router
- Brief description of the problem
- Brief description of the steps you have taken to isolate the problem

- Output from the **show tech-support** command

Recovering a Lost Password

This section describes how to recover a lost enable or enable secret password. The process of recovering a password consists of the following major steps:

- Changing the Configuration Register
- Resetting the Router
- Resetting the Password (for lost enable secret passwords only)
- Resetting the Configuration Register Value



Note

See the “Hot Tips” section on Cisco Connection Online (CCO) for additional information on replacing enable secret passwords.

Changing the Configuration Register

Follow these steps to change the configuration register:

-
- Step 1** Connect an ASCII terminal or a PC running a terminal-emulation program to the console port on the rear panel of the router. Refer to the section “Connecting a PC” in the “Installation” chapter.
 - Step 2** Configure the terminal to operate at 9600 baud, 8 data bits, no parity, and 1 stop bit.
 - Step 3** Reboot the router by pressing the power switch to the off position, and then to the on (I) position.

- Step 4** At the user EXEC prompt (Router>), enter the **show version** command to display the existing configuration register value (shown in bold in this example output):

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-SV3Y-M), Experimental Version
12.0(19980308:184442) [syaji-grammy-v6 189]
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Mon 22-Mar-99 12:58 by syaji
Image text-base: 0x80008088, data-base: 0x806B2BB8

ROM: System Bootstrap, Version 12.0(1)XA1,RELEASE SOFTWARE (fc1)

Router uptime is 15 minutes
System restarted by power-on
System image file is "flash:syaji/c1700-sv3y-mz"

cisco 1750 (MPC860) processor (revision 0x00) with 24576K/8192K bytes
of memory.
Processor board ID 0000 (1314672220), with hardware revision 0000
M860 processor: part number 0, mask 32
Bridging software.
X.25 software, Version 3.0.0.
1 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
2 Voice FXS interface(s)
2 Voice E & M interface(s)
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)

Configuration register is 0x0
```

- Step 5** Record the setting of the configuration register. It is usually 0x0.

- Step 6** Record the break setting.

- Break enabled—bit 8 is set to 0.
- Break disabled (default setting)—bit 8 is set to 1.

Resetting the Router

Follow these steps to reset the router:

Step 1 Do one of the following:

- If break is enabled, go to Step 2.
- If break is disabled, turn the router off, wait 5 seconds, and turn it on again. Within 60 seconds, press the **Break** key. The terminal displays the ROM monitor prompt. Go to Step 3.



Note Some terminal keyboards have a key labeled Break. If your keyboard does not have a Break key, refer to the documentation that came with the terminal for instructions on how to send a break. To send a break in Windows HyperTerminal, enter Ctrl-Break.

Step 2 Send a break. The terminal displays the following prompt:

```
rommon 2>
```

Step 3 Enter **confreg 0x142** to reset the configuration register:

```
rommon 2> confreg 0x142
```

Step 4 Initialize the router by entering the **reset** command:

```
rommon 2> reset
```

The router resets, and the configuration register is set to 0x142. The router boots the system image in Flash memory and displays the following:

```
--- System Configuration Dialog ---
```

Step 5 Enter **no** in response to the prompts until the following message is displayed:

```
Press RETURN to get started!
```

Step 6 Press **Return**. The following prompt appears:

```
Router>
```

- Step 7** Enter the **enable** command to enter privileged EXEC mode. Configuration changes can be made only in this mode.

```
Router> enable
```

The prompt changes to the privileged EXEC prompt:

```
Router#
```

- Step 8** Enter the **show startup-config** command to display an enable password in the configuration file:

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

- Step 9** Enter the **copy startup-config running-config** command to return to your startup configuration:

```
Router# copy startup-config running-config
```

If you are recovering an enable password, skip the following “Resetting the Password” section, and complete the password recovery process by performing the steps in the next section, “Resetting the Configuration Register Value.”

If you are recovering an enable secret password, you will not see the display in the **show startup-config** command output. Complete the password recovery process by performing the steps in the following “Resetting the Password” section.

Resetting the Password

Follow these steps to reset the password:

-
- Step 1** Enter the **configure terminal** command to enter configuration mode:

```
Router# configure terminal
```

- Step 2** Enter the **enable secret** command to reset the enable secret password in the router:

```
Router(config)# enable secret <gobbledegook>
```

- Step 3** Enter the **config-register** command and the original configuration register value that you recorded in Step 5 in the “Changing the Configuration Register” section earlier in this chapter.

Step 4 Press **Ctrl-Z** to exit configuration mode.

```
Router(config)# Ctrl-Z
```

Step 5 Save your configuration changes:

```
Router# copy running-config startup-config
```

Resetting the Configuration Register Value

Follow these steps once you have recovered or reconfigured a password:

Step 1 Enter the **configure terminal** command to enter configuration mode:

```
Router# configure terminal
```

Step 2 Enter the **config-register** command and the original configuration register value that you recorded in Step 5.

Step 3 Press **Ctrl-Z** to exit configuration mode:

```
Router(config)# Ctrl-Z
```

Step 4 Reboot the router, and enter the recovered password.

Problem Solving

The key to problem solving is to isolate the problem to a specific subsystem by comparing what the router is doing to what it should be doing.

When problem solving, consider the following subsystems of the router:

- WICs and VICs—Refer to the LEDs on the cards and the LEDs on the router front panel to help identify a failure. For more information on WICs and VICs, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with each card.
- Cables—Check all the external cables that connect the router to the network.
- Power system—Check the external power source, power cable, router power supply, and circuit breaker. Check for inadequate ventilation or air circulation that might cause overheating.

- ISDN configuration—Consider ISDN-specific hardware and software configurations (ISDN BRI WICs only).

OK LED Diagnostics

Use the front-panel OK LED to help determine any problems with the router. When the router first boots up, it performs a power-on self-test (POST). If the router detects a problem during the POST, the OK LED blinks in a different pattern (described in Table 1), depending on the problem. A pattern is a specific number of blinks that is repeated until the router is turned off. If the router experiences any of these problems, contact your Cisco reseller.

Table 1 *OK LED Blinking Patterns*

Number of Blinks	Meaning
2	The 860T dual-port RAM (DPRAM) failed.
3	The parameter RAM area of the 860T DPRAM failed.
4	The 860T system protection control register has a write failure.
5	The router cannot detect the dynamic RAM (DRAM).
6	The user programmable machine has a write failure.
9	The router DRAM failed.

Troubleshooting WICs and VICs

Use the **show diag** command to help determine problems with a card.

```
Router#show diag
Slot 0:
C1750 1FE VE Mainboard port adapter, 7 ports
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware revision 0.0 Board revision UNKNOWN
Serial number 1314672220 Part number 00-0000-00
Test history 0x0 RMA number 00-00-00
0x20:01 C9 00 00 4E 5C 4E 5C 00 00 00 00 00 00 00
0x30:00 00 00 04 00 00 00 00 00 00 00 00 00 00 00
WIC Slot 0:
Serial 2A/S (12in1) WAN daughter card
Hardware revision 1.0 Board revision A0
Serial number 0007947084Part number 800-03182-01
Test history 0x00 RMA number 00-00-00
Connector type PCI
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 13 01 00 00 79 43 4C 50 0C 6E 01 00 00 00 00
0x30: 50 00 00 00 98 04 17 17 FF FF FF FF FF FF FF FF
WIC Slot 1:
Dual FXS Voice Interface Card WAN daughter card
Hardware revision 1.1 Board revision C0
Serial number 0009907586 Part number 800-02493-01
Test history 0x00 RMA number 00-00-00
Connector type WAN Module
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 0E 01 01 00 97 2D 82 50 09 BD 01 00 00 00 00
0x30: 60 00 00 00 98 08 22 01 FF FF FF FF FF FF FF FF
```

The **show diag** command displays similar information for each port available on the router.

Table 2 lists problems that could occur with the WICs and VICs and the possible solutions of these problems.

Table 2 Troubleshooting WICs and VICs

Symptom	Possible Solution(s)
Router does not recognize the card.	<ul style="list-style-type: none"> • Confirm that the Cisco IOS release installed in the router supports the WIC or VIC. • Make sure you have a Cisco IOS feature set that supports voice. The <i>Cisco WAN Interface Cards Hardware Installation Guide</i> lists the software requirements for each card. • Make sure that the card is correctly installed in the router. Refer to the “Installing WICs and VICs” section in the “Installation” chapter.
Router recognizes the card(s), but the card port(s) do not initialize.	<ul style="list-style-type: none"> • Make sure that the card is correctly installed in the router. Refer to the “Installing WICs and VICs” section in the “Installation” chapter. • Check the external cable connections to make sure they are secure.
Router does not boot properly or continuously or intermittently reboots.	Make sure that the WIC or VIC is correctly installed in the router. Refer to the “Installing WICs and VICs” section in the “Installation” chapter.
Router does not boot or reset after the WIC or VIC is inserted.	There might be a short. Turn off the router immediately.
Router boots, but the console screen is frozen.	<ul style="list-style-type: none"> • Make sure the console cable is securely connected to the router and to the PC or terminal. • Verify that the parameters for your terminal are set to the following: <ul style="list-style-type: none"> – 9600 baud – 8 data bits – No parity – 1 stop bit – no flow control

Table 2 *Troubleshooting WICs and VICs (continued)*

Symptom	Possible Solution(s)
Router powers on and boots only when a particular WIC or VIC is removed from the router.	<ul style="list-style-type: none"> • Confirm that the Cisco IOS release installed in the router supports the WIC or VIC. The <i>Cisco WAN Interface Cards Hardware Installation Guide</i> lists the software requirements for each card. • The router might be overheating. Contact your Cisco reseller.
Router powers on and boots only when a particular cable is disconnected.	There might be a problem with the WIC or VIC cables. Consult your Cisco reseller for warranty information.

Troubleshooting the Power System

If the router external power supply fails, return it to your Cisco reseller. Table 3 lists symptoms and possible solutions of power problems.

Table 3 *Troubleshooting the Power System*

Symptom	Possible Solution(s)
Router shuts down after being on for a short time.	<ul style="list-style-type: none"> • Make sure that the area in which the router is installed meets the environmental site requirements in the “Technical Specifications” appendix in this guide and in the “Site Requirements” section in the <i>Regulatory Compliance and Safety Information for the Cisco 1600 and Cisco 1700 Routers</i> document that came with your router. • Make sure nothing is blocking the fan vent on top of the router. • If the front-panel PWR LED is not on, the power supply has failed.
The router attempts to boot, but all LEDs remain off.	The power supply has failed. Return the router to your Cisco reseller.

Table 3 Troubleshooting the Power System

Symptom	Possible Solution(s)
The router is on, but the front-panel PWR LED is off.	The power supply has failed. Return the router to your Cisco reseller.
The front-panel PWR LED is on, the front-panel OK LED is off, and the router does not pass console or EIA data.	The power supply has failed. Return the router to your Cisco reseller.

Troubleshooting ISDN

Because ISDN uses many variables and supports many different configurations, it sometimes can cause problems for the router. This section describes problems related to the ISDN line that might occur.

Two commands are useful when troubleshooting ISDN:

- For routers with an ISDN S/T WIC, enter the **clear interface** command to terminate any active ISDN calls and to reset the ISDN BRI interface. Do this for each ISDN port installed in the router:

```
Router# clear interface bri0
Router# clear interface bri1
```

- For routers with an ISDN U WIC, use the **clear controller** command to terminate any active ISDN calls, to reset the ISDN BRI interface, and to reset the ISDN line between the router and the central office switch. Do this for each ISDN port installed in the router:

```
Router# clear controller bri0
Router# clear controller bri1
```

Table 4 lists troubleshooting methods for ISDN-specific problems that might occur.

Table 4 *Troubleshooting ISDN*

WIC	Symptom	Check the Following	Possible Solution(s)
ISDN S/T	Router is on, but the OK LED on the card is off.	<ul style="list-style-type: none"> • Is the OK LED on the router front panel on? 	<ul style="list-style-type: none"> • If no, the router might be malfunctioning. Contact your Cisco reseller.
		<ul style="list-style-type: none"> • Are all ISDN cables properly connected? 	<ul style="list-style-type: none"> • If yes, the ISDN line might be malfunctioning. Check with your ISDN service provider.
		<ul style="list-style-type: none"> • Is the NT1 LED on? 	<ul style="list-style-type: none"> • If no, the NT1 might be malfunctioning.
ISDN U	Router is on, but the NT1 LED on the card is off.	<ul style="list-style-type: none"> • Is the OK LED on? 	<ul style="list-style-type: none"> • If no, the router might be malfunctioning. Contact your Cisco reseller.
		<ul style="list-style-type: none"> • Are all ISDN cables properly connected? 	<ul style="list-style-type: none"> • If yes, the ISDN line might be malfunctioning. Check with your ISDN service provider.
		<ul style="list-style-type: none"> • Is the ISDN line connected to the card ISDN U port? 	<ul style="list-style-type: none"> • If yes, the ISDN line might be malfunctioning. Check with your ISDN service provider.

Table 4 Troubleshooting ISDN (continued)

WIC	Symptom	Check the Following	Possible Solution(s)
ISDN S/T or ISDN U	Card cannot make a connection to the remote router.	Use show isdn status command to check the following: <ul style="list-style-type: none"> Does the current ISDN switch type match actual switch type being used? 	<ul style="list-style-type: none"> Use the isdn switch-type command to configure correct switch type.
		<ul style="list-style-type: none"> Is Layer 1 status deactivated? 	<ul style="list-style-type: none"> Use the show controller bri0 command to check for the messages CO RUNNING LOOPBACK TESTS or CO TESTING. If you receive these messages, contact the service provider.
		<ul style="list-style-type: none"> If Layer 1 status is active, does Layer 3 status say “2 Active Layer 3 calls”? 	<ul style="list-style-type: none"> Router might have called itself. Check destination phone number configured with the dialer map command or the dialer string command.
		<ul style="list-style-type: none"> If Layer 1 status is active, does Layer 3 status say “No Active Layer 3 call(s)”? 	<ul style="list-style-type: none"> Check destination phone number and make sure it matches the remote router phone number. Check route to the destination and make sure it matches the remote router network address.
		<ul style="list-style-type: none"> If Layer 1 status is active, does Layer 3 status say “1 Active Layer 3 call”? 	<ul style="list-style-type: none"> Check router protocol configurations.

