



Troubleshooting

Use the information in this chapter to help isolate problems you might encounter with the Cisco 815 integrated services router or to rule out the router as the source of the problem.

This appendix contains the following sections:

- [Contacting Your Cisco Reseller](#)
- [Recovering a Lost Password](#)
- [Problem Solving](#)

Contacting Your Cisco 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
- Type and version number of the Cisco IOS software that is installed on your router
- Date that 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 password and how to enter a new enable secret password.

Password recovery consists of the following major processes:

- [Determining the Configuration Register Value](#)

With this process, you determine the configuration of the router, so that you may restore the configuration after the password is recovered.

- [Resetting the Router](#)

With this process, you reconfigure the router to its initial startup configuration. You then display the enable password, if one is used.

- [Resetting the Password](#)

If you are using an enable secret password, you enter a new password with this process. You then restore the router to its previous configuration.

- [Resetting the Configuration Register Value](#)

If you are using an enable password, you use this process to restore the router to its previous configuration.

**Note**

See the “Hot Tips” section on Cisco.com for additional information on replacing enable secret passwords.

Determining the Configuration Register Value

Follow these steps to determine the configuration register value:

-
- Step 1** Connect an ASCII terminal or a PC that is running a terminal-emulation program to the console port on the router. See the “[Connecting a PC](#)” section in Chapter 2, “[Installation](#).”
 - Step 2** Configure the terminal to operate at 9600 baud, 8 data bits, no parity, 1 stop bit and no flow control.
 - Step 3** Reboot the router by pressing the power switch to the off (0) position and then to the on (|) position.

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

```
815# show version
Cisco IOS Software, C815 Software (C815-IPBASE-M), Version
12.4(5.13.5)PIA5 ENGINEERING WEEKLY BUILD, synced to haw_t_pi4_abu
HAW_T_PI4_ABU_5_13_1_PIA4
Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Wed 22-Mar-06 18:07 by ealyon

ROM: System Bootstrap, Version 12.2(20060221:032620)
[yiye-after815rmon 101], DEVELOPMENT SOFTWARE

815B uptime is 6 days, 14 hours, 41 minutes
System returned to ROM by reload at 22:59:26 PST Mon Apr 24 2006
System restarted at 23:01:51 PST Mon Apr 24 2006
System image file is "flash:c815-ipbase-mz.124-5.13.5.PIA5"

Cisco 815 (MPC860P) processor (revision 0x500) with 59569K/5967K bytes
of memory.
Processor board ID FOC09250KK8 (1061493493), with hardware revision
0000
MPC860P processor: part number 5, mask 2
1 Ethernet interface
5 FastEthernet interfaces
1 Cable Modem interface
32K bytes of NVRAM.
32768K bytes of processor board System flash (Read/Write)
Configuration register is 0x2102
815#
```

Step 5 Record the setting of the configuration register.

Step 6 Record the break setting, as given by bit 8 of the configuration register.

- 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 off the router, 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, press **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
```

If you are using an enable password, it will appear in the startup configuration. Write down the password and keep the record secure.

If you are using an enable secret password, there will be no enable password in the startup configuration.

- 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 next section, “[Resetting the Password](#),” and complete the password recovery process by performing the steps in the “[Resetting the Configuration Register Value](#)” section.

If you are resetting an enable secret password, you will not see it displayed in the **show startup-config** command output. Complete the password recovery process by performing the steps in the “[Resetting the Password](#)” section, which follows.

Resetting the Password

Follow these steps to reset an enable secret password and restore the configuration of the router:

-
- 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 <password>
```
- Step 3** Enter the **config-register** command and the original configuration register value that you recorded in [Step 5](#) in the “[Determining the Configuration Register Value](#)” section on page 3-2.
- 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
```
- Step 6** Reboot the router, and enter the enable secret password.
-

Resetting the Configuration Register Value

Follow these steps to restore the configuration of the router after you have recovered an enable 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](#) in the “[Determining the Configuration Register Value](#)” section on page 3-2.

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

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

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

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## 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.

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

- **WICs**—Refer to the LEDs on the cards and the LEDs on the router front panel to help identify a failure. For more information on WAN interface cards (WICs), refer to the *Cisco Interface Cards Hardware Installation Guide*.
- **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.

## OK LED Diagnostics

Use the front panel OK LED to 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 different patterns (described in [Table 3-1](#)), depending on the problem. A pattern consists of 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 3-1** OK LED Blinking Patterns

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

## Troubleshooting WICs and Cables

Use the **show diag** command to help determine problems with a card. [Table 3-2](#) lists problems that could occur with WAN interface cards (WICs) and the possible causes of these problems.

**Table 3-2** Troubleshooting WICs

| Symptom                                                                          | Possible Cause(s)                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Router does not recognize WIC.                                                   | <ul style="list-style-type: none"> <li>Confirm that the Cisco IOS software version installed in the router supports the WIC. The <a href="#">Cisco Interface Cards Hardware Installation Guide</a> lists the software requirements for each card.</li> <li>Use the <b>show diag</b> command to display information about the card as shown in <a href="#">Example, page 3-9</a>.</li> </ul> |
| Router recognizes the WIC(s), but the card port(s) do not initialize.            | <ul style="list-style-type: none"> <li>Make sure that the WIC is correctly installed in the router.</li> <li>Check the external cable connections to make sure they are secure.</li> </ul>                                                                                                                                                                                                  |
| Router does not boot properly, or router continuously or intermittently reboots. | Make sure that the WIC is correctly installed in the router.                                                                                                                                                                                                                                                                                                                                |



**Table 3-2** Troubleshooting WICs (continued)

| Symptom                                                                           | Possible Cause(s)                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Router boots, but the console screen is frozen.                                   | <ul style="list-style-type: none"> <li>• Make sure that the console cable is securely connected to the router and to the PC or terminal.</li> <li>• Verify that the parameters for your terminal are set to the following: <ul style="list-style-type: none"> <li>– 9600 baud</li> <li>– 8 data bits</li> <li>– No parity generated or checked</li> <li>– 1 stop bit</li> </ul> </li> </ul> |
| Router powers on and boots only when a particular WIC is removed from the router. | <ul style="list-style-type: none"> <li>• Confirm that the Cisco IOS software version installed in the router supports the WIC. The <a href="#">Cisco Interface Cards Hardware Installation Guide</a> lists the software requirements for each card.</li> <li>• The router might be overheating. Contact your Cisco reseller.</li> </ul>                                                     |
| Router powers on and boots only when a particular cable is disconnected.          | There might be a problem with the WIC or with the card cables. Consult your Cisco reseller for warranty information.                                                                                                                                                                                                                                                                        |

## Example

Below is an example of the **show diag** command:

```
815# show diag
Slot 0:
C815 1FE 4ESW CM Mainboard Port adapter, 6 ports
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware Revision : 5.0
PCB Serial Number : FOC09250KK8
Part Number : 73-7546-05
Board Revision : A0
Fab Version : 04
Product (FRU) Number : Unknown
Version Identifier :
EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 05 14 41 05 00 C1 8B 46 4F 43 30 39 32
0x10: 35 30 4B 4B 38 82 49 1D 7A 05 42 41 30 02 04 FF
0x20: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```

0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

```

```

WIC/VIC Slot 0:
4 Port FE Switch
Daughter card-Version 4 TLV Cookie Format
Hardware Revision : 1.0
Part Number : 73-8958-01
Board Revision : D0
Deviation Number : 0-0
Fab Version : 01
PCB Serial Number : FOC092153W5
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00
Top Assy. Part Number : 800-24817-01
Connector Type : 01
Base MAC Address : 0014.6a56.a5dc
MAC Address block size : 20
Product (FRU) Number : WIC-4ESW
CLEI Code : IPMED00BRA

```

```

WIC/VIC Slot 1:
DOCSIS 2.0 Cable modem
Daughter card-Version 4 TLV Cookie Format
Hardware Revision : 2.0
Board Revision : 01
Deviation Number : 0-0
Fab Version : 02
PCB Serial Number : FHH1003007G
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00
Processor type : 02
Top Assy. Part Number : 800-27077-02
Product (FRU) Number : HWIC-CABLE-D-2
Version Identifier : V01

```

```

Cable Modem Daughter Card
Base MAC Address : 00d0.2bfe.66e6
MAC Address block size : 2
PCB Serial Number : FOC06040116
Hardware Revision : 2.0
Part Number : 74-3862-02
Board Revision : 01

```

```

EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF CF 06 00 D0 2B FE 66 E6 43 00 02 C1 8B 46
0x10: 4F 43 30 36 30 34 30 31 31 36 40 04 EA 41 02 00
0x20: 82 4A 0F 16 02 42 30 31 FF FF FF FF FF FF FF FF
0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xA0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xB0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xC0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xD0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xE0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0xF0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

```

815#

## Troubleshooting the Power System

If the router external power supply fails, you should return it to your Cisco reseller. [Table 3-3](#) lists symptoms and possible causes of power problems.

**Table 3-3** Troubleshooting the Power System

| Symptom                                               | Possible Cause(s)                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The router shuts down after being on a short time.    | <ul style="list-style-type: none"> <li>Make sure that the area in which the router is installed meets the environmental site requirements in <a href="#">Appendix A, “Technical Specifications,”</a> in this guide.</li> <li>If the front panel PWR LED is not on, the power supply has failed.</li> </ul> |
| The router attempts to boot, but all LEDs remain off. | The power supply has failed.                                                                                                                                                                                                                                                                               |

**Table 3-3**      *Troubleshooting the Power System (continued)*

| <b>Symptom</b>                                                                                                  | <b>Possible Cause(s)</b>     |
|-----------------------------------------------------------------------------------------------------------------|------------------------------|
| The router is on, but the front panel PWR LED is off.                                                           | The power supply has failed. |
| 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. |