Troubleshooting the Installation

Your Cisco uBR7100 series router went through extensive testing before leaving the factory. However, if you encounter problems starting the router, use the information in this chapter to help isolate the cause of the problems. This chapter contains the following sections:

The procedures in this chapter assume that you are troubleshooting the initial system startup, and that your router is in the original factory configuration. If you have removed or replaced components or changed any default settings, the recommendations in this chapter might not apply. Make sure to review the safety warnings listed in the publication that accompanied your Cisco uBR7100 series router before using the troubleshooting procedures in this chapter.

Troubleshooting Overview

This section describes the troubleshooting methods used in this chapter and describes how Cisco uBR7100 series routers are divided into subsystems for more efficient problem solving.

Figure 5-2 shows the general troubleshooting strategy described in this chapter. Refer to this chart, as necessary, to follow the steps to isolate problems to a specific subsystem; then resolve the problem if possible.

Before You Call for Technical Assistance

If you are unable to easily solve the problem, contact a customer service representative for assistance and further instructions. Provide the representative with the following information:

- Date you received the router
- Chassis serial number
- Type of software and release number
- Brief description of the problem you are having
- Brief explanation of the steps you have taken to isolate and resolve the problem
- Maintenance agreement or warranty information

Locating the Serial Number on Your Router

The serial number label is located on the input/output (I/O) side, lower-right corner of the chassis.

The serial number format is: 3 letters, 4 numbers, and 4 characters (combination of letters and numbers)

See Figure 5-1 for the location.

Figure 5-1   Serial Number Location
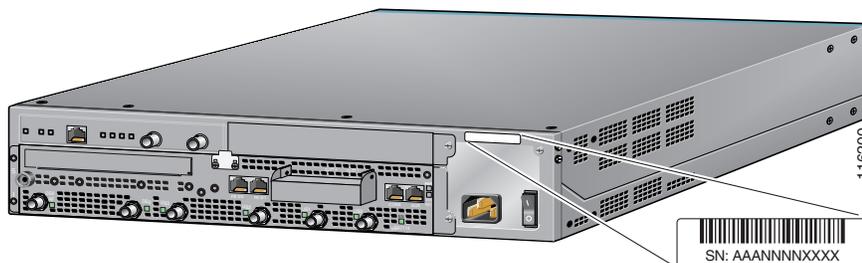
Problem Solving Using a Subsystems Approach

The key to solving problems with the system is isolating the problem to a specific subsystem. The first step in solving startup problems is to compare what the system *is doing* to what it *should be doing*. Because a startup problem is usually caused by a single component, it is more efficient to first isolate the problem to a subsystem rather than to troubleshoot each component in the system. For these troubleshooting procedures, consider the following subsystems:

- Power subsystem—Includes the power supply and the external power cable.

- Processor subsystem—Includes the network processing card, the modular port adapter, the service module, and the fixed RF ports. The system memory and management functions reside on the network processing card, and the enabled LED on each port indicates if the port is initialized. A port adapter that is partially installed in the router can cause the system to hang and crash.

- Cooling subsystem—Includes the fans.

The following sections help you isolate a problem to one of these subsystems and direct you to the appropriate troubleshooting section.

Identifying Startup Problems

Startup problems are commonly due to the source power or to a port adapter that is dislodged from the router. Although an overtemperature condition is unlikely at initial startup, the environmental monitoring functions are included in this chapter because they also monitor internal voltages.

When you start up the router for the first time, you should observe the startup sequence described in the "Starting the System" section on page 4-2, which contains a more detailed description of the normal startup sequence.

LEDs indicate all system states in the startup sequence. By checking the state of the LEDs, you can determine when and where the system failed in the startup sequence. Use the following descriptions to isolate the problem to a subsystem, and then proceed to the appropriate sections to try to resolve the problem. See Figure 5-2.

Figure 5-2   Troubleshooting Strategy for Startup Problems
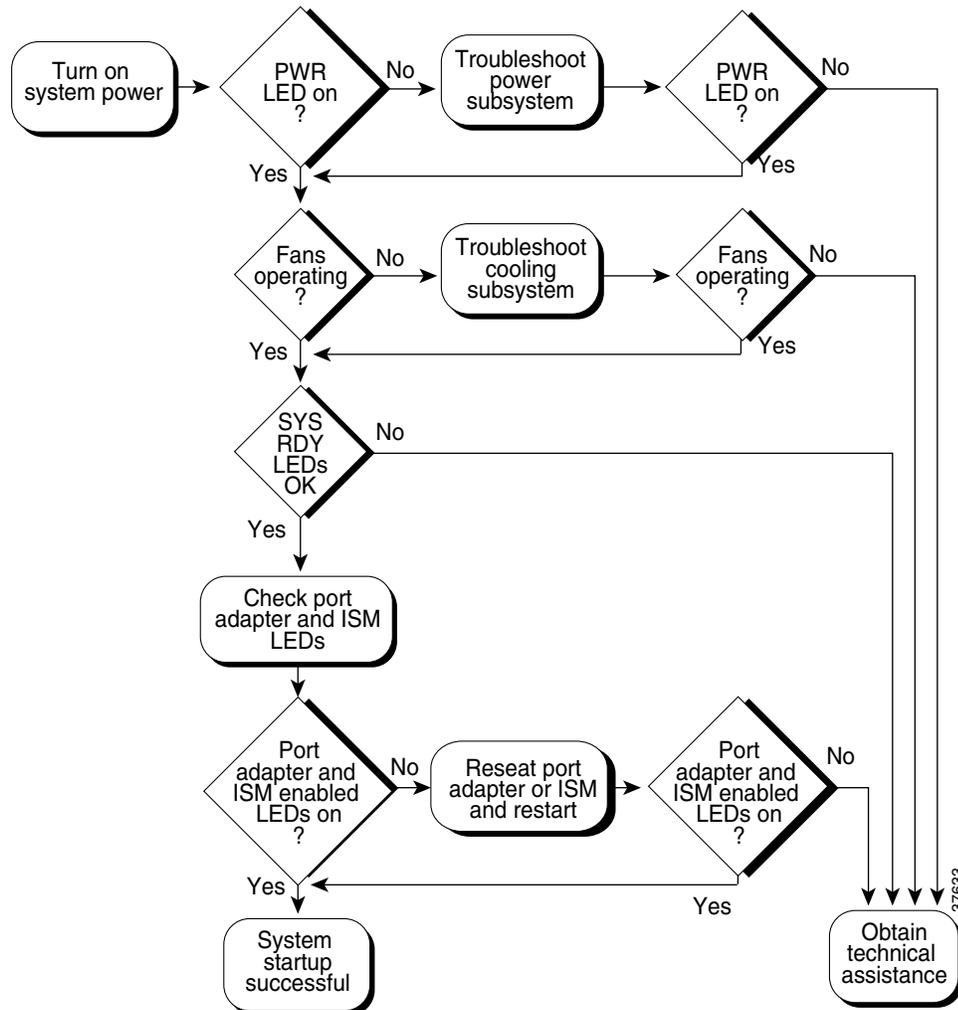
When you start up the system by turning the power supply switch to the ON (|) position, the following should occur:

- You should immediately hear the fans operating.

    If not, proceed to the "Troubleshooting the Cooling Subsystem" section on page 5-6. If you determine that the power supply is functioning normally and that a fan is faulty, contact a customer service representative. If a fan does not function properly at initial startup, there are no installation adjustments that you should make.

- The LEDs on the router should come on as follows:

    – The power LED (PWR) comes on immediately and indicates that the router is receiving power. This LED comes on during a successful router boot and remains on during normal operation of the router.

    If this LED remains off when you start the router, either there is a problem with the power supply (it is damaged or not connected correctly), or the network processing card is not connected properly. Proceed to the "Troubleshooting the Power Subsystem" section on page 5-4.

- The system ready LED (SYS RDY) comes on after the power LED and indicates that the network processor card is enabled for operation by the system; however, it does not mean that the Fast Ethernet port is functional or enabled. This LED comes on during a successful router boot and remains on during normal operation of the router.

  If this LED remains off when you start the router, it is probably a problem with the main processor card. Contact your service representative for technical assistance.

- Each enabled LED for the cable interface (EN, DS0 RF, DS0, U0, U1, U2, and U3) comes on initially at power-on and then turns off. The LED then comes on again and remains on when the corresponding port is enabled and configured for operations.

  If an enabled LED fails to come on at initial power-on, or if the LED fails to come on and remain on after the port is enabled and configured, proceed to the "Troubleshooting the Port Adapter and Fixed RF Ports" section on page 5-5.

- The slot 0 and slot 1 LEDs only come on when the PCMCIA card slot is being accessed by the system. These LEDs remain off during normal operation of the router and do not indicate startup problems.

• The initial system banner should be displayed on the console screen.

  If it is not displayed, see the "Connecting the Console Port and Auxiliary Port" section on page 3-10 to verify that the terminal is set up correctly and that it is properly connected to the router's console port.

Troubleshooting the Power Subsystem

Check the following to help isolate a problem with the power subsystem:

• Is the power LED (PWR) on?

  - If yes, the power source is good, and the power supply is functional.

  - If no, make sure that the power cable is connected at both ends.

  - If the power LED remains off, and the power switch is set correctly, suspect the power source or the power cable. Turn the switch off, connect the power cable to another power source, if available, and turn the switch back on. If the LED comes on, the problem is the first power source.

  - If the power LED fails to come on after you connect the power supply to a new power source, replace the power cord, and turn the switch back on. If the LED comes on, return the first power cable for replacement.

  - If the LED still fails to come on when the power supply is connected to a different power source with a new power cable, the power supply is probably faulty. Contact a service representative for further instructions.

Troubleshooting the Processor Subsystem

The processor subsystem comprises the network processing card and the ports. The system can operate without a port adapter installed as long as none are in *partial* contact with the connector pins. A port adapter that is partially connected to the router sends incomplete signals to the processor, which faults the Peripheral Component Interconnect (PCI) bus and causes the system to hang. Therefore, first ensure

that the system software has initialized successfully. If not, remove the port adapter and restart the system. If the system then boots, reinsert the port adapter card and, if necessary, troubleshoot the port adapter.

Troubleshooting the Network Processor Card

The procedures in this section assume that the router is in the original factory configuration, and that you have not made changes to your configuration file.

If the system ready LED (SYS RDY) does not come on as expected (see the "When you start up the system by turning the power supply switch to the ON (|) position, the following should occur:" section on page 5-3), check the following items to help isolate the problem:

- Do all of the LEDs remain off when the system power switch is turned on?

  - If the LEDs stay off, first see the "Troubleshooting the Power Subsystem" section on page 5-4 and the "Troubleshooting the Cooling Subsystem" section on page 5-6 to ensure that both the fans and the power supply are functioning properly.

  - If the power supply and fans appear operational but the system ready or enable LEDs are off, suspect that an improperly connected port adapter has hung the system. Reinsert the port adapter, tighten all captive installation screws, and then restart the system.

- Is the system ready LED on?

  - If yes, the system software has initialized successfully, and the system is operational.

  - If the system ready LED remains off, the system detected a processor hardware failure. (This LED should be on in normal operation.) Contact a service representative for instructions.

Troubleshooting the Port Adapter and Fixed RF Ports

Check the following to help isolate a problem with a port adapter or fixed RF port:

- Are *all* enabled LEDs on?

  If yes, the system is operational.

- Are *any* enabled LEDs off?

  - If the enabled LED on a port adapter is off, first verify that the port adapter has been enabled and configured for operations. The enabled LED remains off when a port adapter has not been configured and enabled.

  - If the port has been enabled but its corresponding enabled LED is still off, suspect that the adapter has pulled away from the router. Reseat the adapter in its slot. (You do not have to turn off the system power when removing or replacing port adapters.) After the system reinitializes the interfaces, the enabled LED on the adapter should come on.

  - If the enabled LED remains off after the above checks, it is likely that the system has detected a processor hardware failure. Contact a service representative for instructions.

Troubleshooting the Cooling Subsystem

Check the following to help isolate a problem with the cooling system:

- When you start up the system, do the fans start operating?

  To determine if the fans are operating, listen for them. In noisy environments, place your hand on the front of the chassis to feel for air being pushed out of the vents. If necessary, pop off the front bezel to expose the fans and verify that they are operating correctly.

  - If yes, the power to the fans is good.

  - If no, there is a problem with the fan or power. (See the "Troubleshooting the Power Subsystem" section on page 5-4.)

- The following messages, if displayed, indicate that the system has detected a critical overtemperature condition or out-of-tolerance power inside the chassis:

```
Queued messages:

00:01:19:%ENVM-4-ENVWARN:+2.5 V measured at +2.59
00:01:19:%ENVM-4-ENVWARN:+5.15 V measured at +5.31

00:00:19:%ENVM-2-ENVCRIT:chassis core measured at 31C/87F
00:00:19:%ENVM-2-ENVCRIT:chassis inlet measured at 27C/80F
00:00:19:%ENVM-2-ENVCRIT:chassis outlet 1 measured at 30C/86F
00:00:19:%ENVM-2-ENVCRIT:chassis outlet 2 measured at 30C/86F
```

Although an overtemperature condition is unlikely at initial startup, ensure that heated exhaust air from other equipment is not entering the router's inlet vent and that there is sufficient clearance around the sides of the chassis to allow cooling air to flow.

The above message could also indicate a faulty component or temperature sensor. Use the **show environment** or **show environment table** command to display the internal chassis environment.

If you experience trouble with the startup that is not resolved with these procedures, manually power off the router and contact a service representative for assistance and further instructions.