Basic Troubleshooting Tasks and Startup Issues

This section describes the basic procedures that users should perform before undertaking a detailed troubleshooting analysis of the Cisco uBR10012 router or logging a case with the Cisco Technical Assistance Center (TAC).

These basic troubleshooting checks are organized as follows:

Basic Troubleshooting Checklist

If you encounter a problem after you install the Cisco uBR10012 router, go through the following troubleshooting checklist to check for the most common error conditions before you contact the Cisco Technical Assistance Center (TAC) or before you perform a detailed troubleshooting analysis:

1. Is the power on?

2. Is each Power Entry Module (PEM) securely inserted into the router? Is each PEM connected to a power source that is supplying voltage in the proper AC or DC range? Are all power leads and cables firmly connected at both ends?

3. Is the fan assembly module installed in the chassis and operating? Can you hear the fans operating, and when you put your hand in front of the fan blowers, can you feel the air flow? Are all empty slots covered with blank front panels, to ensure the correct air flow through the chassis for cooling?

4. Is each PRE-1 module firmly seated and securely inserted in the chassis?

5. Is at least one Timing, Communication and Control Plus (TCC+) card installed in the router?

6. Are the other line cards firmly seated and securely screwed to the chassis?

7. Are all data cables firmly connected at both ends?

8. Are the ports properly configured? Refer to the *Cisco uBR10012 Universal Broadband Router Software Configuration Guide* for configuration examples.

After going through this checklist, go through the remaining sections in this chapter to verify the installation and to perform basic troubleshooting.

Confirming the Hardware Installation

Start troubleshooting the installation by issuing the **show hardware** command. The **show hardware** command displays all hardware components that are recognized by the system. These components can include the following:

- Performance Routing Engine (PRE-1) modules (minimum of one, maximum of two)
- FastEthernet Interface (onboard the active PRE-1 module)
- Cable Interface line cards (minimum of one, maximum of eight):
  - Cisco uBR10-MC5X20S-D
  - Cisco uBR-LCP2-MC16C
  - Cisco uBR-LCP2-MC16E
  - Cisco uBR-LCP2-MC16S
  - Cisco uBR-LCP2-MC28C
- WAN interface uplink line cards (minimum of one, maximum of four):
  - Cisco uBR10-1GE Gigabit Ethernet (GigE)
  - Cisco uBR10-1OC12/P-SMI Packet Over SONET (POS)
  - Cisco uBR10-SRP-OC12SML Dynamic Packet Transport (DPT) Spatial Reuse Protocol (SRP)
  - Cisco uBR10-OC-48 DPT/POS
- Timing, Communication and Control Plus (TCC+) card (minimum of one, maximum of two)

If an installed item does not appear in the command output, make sure the item is properly installed. For example, make sure the line cards are fully inserted into the slot and the captive screws are tightened. If the problem persists, consult the Cisco uBR10012 release notes to confirm that this is not an existing problem. Finally, you should consider replacing the component.

The following example shows typical output from the **show hardware** command:

```
UBR10K-ROUTER1#show hardware

Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-P6-M), Released Version 12.2(8)BC2
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Mon 12-Aug-02 17:53 slacmar
Image text-base: 0x60008940, data-base: 0x61730000

ROM: System Bootstrap, Version 12.0(9r)SL2, RELEASE SOFTWARE (fc1)
BOOTLDR: 10000 Software (C10K-EBOOT-M), Version 12.0(17)ST, RELEASE SOFTWARE)

UBR10K-ROUTER1 uptime is 3 weeks, 21 hours, 43 minutes
System returned to ROM by power-on
System restarted at 13:00:51 PDT Mon Dec 13 2003
System image file is "disk0:/ubr10k-k9p6-mz"

cisco uBR10000 (PRE1-RP) processor with 425983K/98304K bytes of memory.
Processor board ID DEFGHIJKLMN
R7000 CPU at 262Mhz, Implementation 39, Rev 2.1, 256KB L2, 2048KB L3 Cache
Backplane version 1.0, 8 slot

Last reset from power-on
PXF processor tmc0 is running.
PXF processor tmc1 is running.
2 TCCplus card(s)
1 FastEthernet/IEEE 802.3 interface(s)
```

```
2 Gigabit Ethernet/IEEE 802.3 interface(s)
4 Cable Modem network interface(s)
509K bytes of non-volatile configuration memory.

125440K bytes of ATA PCMCIA card at slot 1 (Sector size 512 bytes).
32768K bytes of Flash internal SIMM (Sector size 256KB).
Configuration register is 0x2102

UBR10K-ROUTER1#
```

Displaying the Cisco IOS Software Version

Use the **show version** command to confirm that the router is running the proper version of Cisco IOS software and has a sufficient amount of system memory. The command also reports the system uptime and the method by which the system was powered up.

In the following sample of output from the **show version** command, some of the information that may be useful for troubleshooting appears in bold type:

```
UBR10K-ROUTER1# show version

Cisco Internetwork Operating System Software
IOS (tm) 10000 Software (UBR10K-P6-M), Released Version 12.2(8)BC2
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Thu 19-Apr-01 13:47 by skabar
Image text-base: 0x60008960, data-base: 0x612B0000

ROM: System Bootstrap, Version 12.0(9r)SL1, RELEASE SOFTWARE (fc1)
BOOTFLASH: 10000 Software (C10K-EBOOT-M), Released Version 12.2(1)

UBR10K-ROUTER1 uptime is 3 weeks, 21 hours, 43 minutes
System returned to ROM by power-on
System restarted at 13:00:51 PDT Mon Dec 13 2003

cisco uBR10000 (PRE-1-RP) processor with 393215K/131072K bytes of memory.
Processor board ID DEFGHIJKLMN
R7000 CPU at 262Mhz, Implementation 39, Rev 2.1, 256KB L2, 2048KB L3 Cache
Backplane version 1.0, 8 slot

Last reset from power-on
PXF processor tmc0 is running.
PXF processor tmc1 is running.
2 TCCplus card(s)
1 FastEthernet/IEEE 802.3 interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)
4 Cable Modem network interface(s)
509K bytes of non-volatile configuration memory.

125440K bytes of ATA PCMCIA card at slot 1 (Sector size 512 bytes).
32768K bytes of Flash internal SIMM (Sector size 256KB).
Configuration register is 0x2102

UBR10K-ROUTER1#
```

Displaying System Environment Information

Use the **show environment** command to display the basic system environment status, to verify the following:

- Make sure the system operating temperature is equal to or less than 41°F at the inlet and 104°F degrees at the core (5°C and 40°C).

- That the fan assembly module is installed in the chassis and operating properly.

- Report the operational status of the PEMs and blower

If the operating temperature is not between 41°F and 104°F, refer to the "Fan Assembly Module Faults" section on page 2-7.

The following example is sample output from the **show environment** command for a system with two DC PEMs installed:

```
UBR10K-ROUTER1# show environment

Temperature normal:chassis inlet measured at 29C/84F
Temperature normal:chassis core measured at 39C/98F
Fan: OK
Power Entry Module 0 type DC status:          OK
Power Entry Module 0 Power:                    555w
Power Entry Module 0 Voltage:                  62v
Power Entry Module 1 type DC status:          OK
Power Entry Module 1 Power:                    558w
Power Entry Module 1 Voltage:                  62v

UBR10K-ROUTER1#
```

Hardware Troubleshooting Flowchart

Use Figure 1-1 to determine which component of your Cisco uBR10012 router is malfunctioning. Figure 1-1 describes a series of hardware dependent startup events that must take place for a Cisco uBR10012 router to allow the passage of IP traffic. At each main point of the flowchart, there are pointers to the chapters in this guide that describe how to troubleshoot individual pieces of hardware.

Note   This flowchart does not address software configuration problems.

Figure 1-1   Hardware Troubleshooting Flowchart
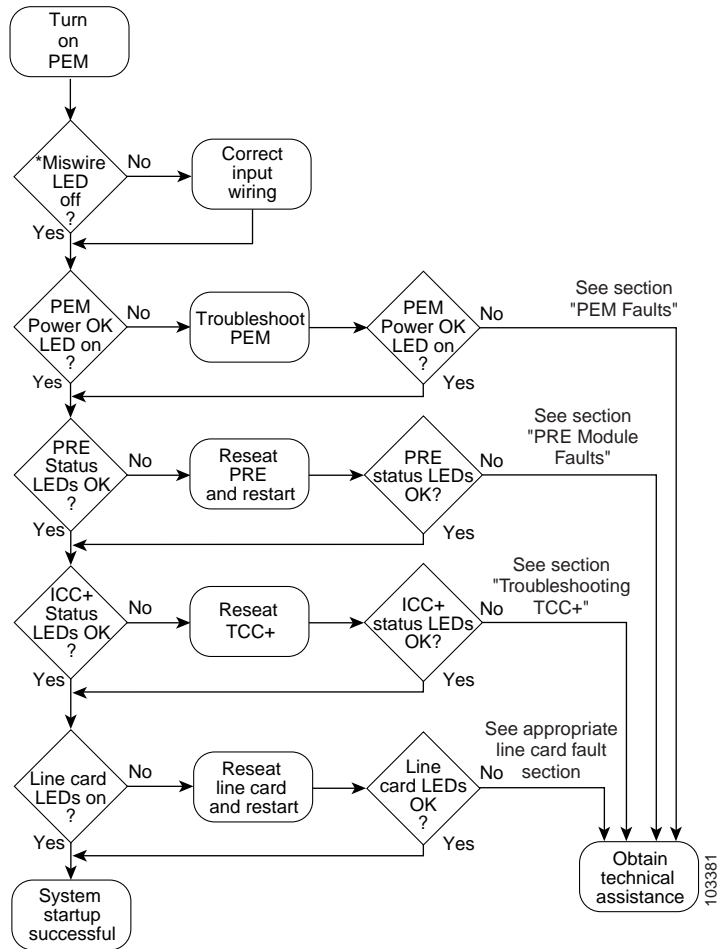
Cisco uBR10012 System Startup Sequence

Table 1-1 describes the visible sequence of events that occur during a typical Cisco uBR10012 power up.

Table 1-1   Cisco\ uBR10000 Series System Startup Sequence

Startup Event	Event Description
PEM is powered off	The Fault LED on each PEM is lit yellow to indicate that power is being supplied to the PEM but that the router is not turned on.
Power on the Cisco uBR10012 router	1. The Power LED on each PEM is lit green. 2. The yellow Critical, Major, and Minor alarm and Fail LEDs illuminate for about 2 seconds. 3. The alphanumeric display on the active PRE-1 module counts up through a range of numbers from 1111 to 9999 (1111, 2222, and so on). 4. The alpha numeric display counts up through a sequence of letters from AAA to CCC (AAA, BBB, and CCC). 5. The message ROM DONE appears on the alphanumeric display. **Note** If the system is not configured to auto boot, it stops at the ROM DONE message. The console displays a `rommon>` prompt. 6. The Power LED on each TCC+ card turns green. The Status LED on each TCC+ lights yellow. After a few seconds, the Status LED on the primary TCC+ card lights green, and the Status LED on the backup TCC+ card begins blinking green.

Cisco IOS software loads	1. If the system is set to boot from the slot0: file system, the green slot LED lights.
	
	2. The message BOOT IMGE appears on the alphanumeric display on the active PRE-1 module.
	
	3. The console displays a series of pound signs (#) as the IOS software image is decompressed.
	
	4. The following messages appear on the alphanumeric display on the active PRE-1 module.
	
	  • IOS STRT
	  • IOS EXC
	  • IOS FPGA
	  • IOS FPOK
	  • IOS FILE
	  • IOS STBY
	  • IOS DRVR
	  • IOS LIB
	  • IOS MGMT
	  • IOS CONF
	
	5. The console displays the bootup screen, followed by the prompt:
	
	    `Press RETURN to get started!`
	
	6. The message IOS RUN appears in the alphanumeric display on the active PRE-1 module. In a redundant configuration, the message IOS STBY appears on the alphanumeric display of the standby PRE-1 module.
	
	If the boot process fails, no console access is available. If you cannot boot the Cisco uBR10012 router, call Cisco TAC.