CHAPTER 6

Troubleshooting the System Hardware

This chapter provides basic troubleshooting information to help you identify some common problems that might occur with your WAVE-7541, WAVE-7571, and WAVE-8541.

This chapter contains the following sections:

- Identifying System Problems
- Checking Connections and Switches
- Troubleshooting the Ethernet Controller
- Undetermined Problems
- Problem-Solving Tips
- Error Symptoms

Use the information in this chapter to determine whether a problem originates with the hardware or the software. For further assistance, contact your Cisco customer service representative.

> **Note** When console redirection is enabled (it is disabled by default), all the tests available from a keyboard are accessible through the console connection as well. (Mouse support, however, is not available through the console connection.)

> **Caution** Customer-replaceable components include the WAVE Interface Modules, hard disk drives, power supply assemblies, and fans. All other components that are not orderable as spare hardware options can only be replaced by a qualified service technician. Once you have identified a faulty component, contact the Cisco Technical Assistance Center (TAC).

Identifying System Problems

To identify system problems, follow these steps:

Step 1 Check the power LED.

Step 2 Check the system fault LED (see System fault LED in Chapter 1, "Introducing the Cisco Wide Area Virtualization Engine 7541, 7571, and 8541). If the status is yellow, check for alarms using the **show alarms** command.

Step 3 Power down the appliance and all external devices.

Step 4   Check all cables and power cords. (See Checking Connections and Switches.)

Step 5   Power up the appliance.

Step 6   If the self-diagnostic programs were completed successfully and you still suspect a problem, see Undetermined Problems.

Step 7   Check the system error log to see if an error was recorded by the system.

Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the chassis or other external equipment. A quick check of all the switches, controls, and cable connections can easily solve these problems. (See Figure 1-1 for the location of front panel controls and indicators. See Figure 1-3 for the location of back panel connectors on the system.)

To check all the connections and switches, follow these steps:

Step 1   Power down the system. Disconnect all the power cables from their electrical outlets.

Step 2   If the system is connected to a power strip (or power distribution unit), turn the power strip off and then on again.

If the power strip is receiving power go to Step 5.

If the power strip is not receiving power go to Step 3.

Step 3   Plug the power strip into another electrical outlet.

If the power strip is receiving power, the original electrical outlet probably does not function. Use a different electrical outlet.

If the power strip is not receiving power go to Step 4.

Step 4   Plug a system that you know works into the electrical outlet.

If the system receives power, the power strip is probably not functioning properly. Use another power strip.

If the system does not receive power, go to Step 5.

Step 5   Reconnect the system to the electrical outlet or power strip.

Make sure that all connections fit tightly together.

Step 6   Power up the system.

If the problem is resolved, the connections were loose. You have fixed the problem.

If the problem is not resolved, call your customer service representative. (See Obtaining Documentation and Submitting a Service Request in the Preface.)

Troubleshooting the Ethernet Controller

This section provides troubleshooting information for problems that might occur with the 10/100/1000-Mbps Ethernet controller.

This section contains the following topics:

- Network Connection Problems
- Ethernet Controller Troubleshooting Chart

Network Connection Problems

If the Ethernet controller cannot connect to the network, check the following conditions:

- Make sure that the cable is installed correctly.

    The network cable must be securely attached at all connections. If the cable is attached but the problem remains, try a different cable.

    If you set the Ethernet controller to operate at either 100 Mbps or 1000 Mbps, you must use Category 5 or higher cabling.

- Determine whether the switch or device to which the WAVE appliance is connected supports autonegotiation. If it does not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the switch.

- Check the Ethernet controller LEDs on the appliance front panel. (See Figure 1-2 in Chapter 1, "Introducing Cisco Wide Area Virtualization Engine 7541, 7571, and 8541.)

    These LEDs indicate whether a problem exists with the connector, cable, or switch:

    – The Ethernet link status LED is on when the Ethernet controller receives a link pulse from the switch. If the LED is off, there might be a defective connector or cable or a problem with the switch.

    – The Ethernet activity LED is on when the Ethernet controller sends or receives data over the Ethernet network. If the Ethernet activity LED is off, make sure that the switch and network are operating and that the correct device drivers are installed.

Ethernet Controller Troubleshooting Chart

Table 6-1 lists solutions to 10/100/1000-Mbps Ethernet controller problems.

Table 6-1   Ethernet Troubleshooting Chart

Ethernet Controller Problem	Actions
Ethernet link status LED does not work.	Check the following: • Make sure that the switch to which the WAVE appliance is connected is powered on. • Check all connections at the Ethernet controller and the switch. • Use another port on the switch. • If the switch does not support autonegotiation, manually configure the Ethernet controller to match the switch. (Both sides of the connection must be set the same. Mixing autonegotiation and hard-coded configurations will result in half duplex, which causes a CRC error on the interface.) • If you manually configured duplex mode, make sure that you also manually configure the speed.
The Ethernet activity LED does not work.	Check the following: • The network might be idle. Try sending data from this appliance. • Check all connections at the Ethernet controller and the switch. • Use another port on the switch.
Data is incorrect or sporadic.	Check the following: • Make sure that you are using Category 5 or higher cabling when operating the appliance at 100 Mbps or 1000 Mbps. • Make sure that the cables do not run close to noise-inducing sources such as fluorescent lights. • Make sure the RJ-45 jack is securely latched (avoid cables with broken latches).
The Ethernet controller stopped working without apparent cause.	Check the following: • Try a different connector on the switch. • If you suspect the adapter is faulty, contact the Cisco Technical Assistance Center (TAC).

Undetermined Problems

Use the information in this section if the diagnostic tests did not identify the failure, the devices list is incorrect, or the system is inoperative.

Note   Damaged data in CMOS can cause undetermined problems.

Note   Damaged data in BIOS code can cause undetermined problems.

Check the system LEDs for the power supplies (see Back Panel Components and LEDs in Chapter 1, "Introducing the Cisco Wide Area Virtualization Engine 7541, 7571, and 8541"). If the LEDs indicate the power supplies are working correctly, follow these steps:

Step 1   Power down the appliance.

Step 2   Be sure the appliance is cabled correctly.

Step 3   Remove or disconnect the following devices (one at a time) until you find the failure (power up the appliance and reconfigure it each time):

- Any non-Cisco devices
- Surge suppressor device (on the appliance)
- Each Cisco Interface Module
- Disk drives

> **Note**   Any component that is internal to the appliance must be serviced by trained and qualified personnel. Contact your customer service representative.

Step 4   Power up the appliance. If the problem remains, contact Cisco TAC.

> **Note**   If the problem goes away when you remove a device from the system, and replacing that device does not correct the problem, contact Cisco TAC.

> **Note**   If you suspect a networking problem and all the system tests pass, check if there is a network cabling problem external to the system.

Problem-Solving Tips

Because of the variety of hardware and software combinations that can be encountered, use the following information to assist you in identifying the problems. If possible, have this information available when requesting technical assistance.

- Machine type and model
- Hardware upgrades
- Failure symptom
    - What, when, where; single or multiple systems?
    - Is the failure repeatable?
    - Has this configuration ever worked?
    - If it has been working, what changes were made before it failed?
    - Is this the original reported failure?
- Hardware configuration

     – Print (print screen) configuration currently in use

     – BIOS level

- WAAS system software type and version level

To eliminate confusion, identical systems are considered identical only if they meet all these conditions:

- Are the exact machine type and models

- Have the same BIOS level

- Have the same devices or attachments in the same locations

- Have the same cabling

- Have the same WAAS software versions and levels

- Have the same configuration options set in the system

- Have the same setup for the operating system control files

Comparing the configuration and software setup in working and nonworking systems might help to resolve the problem.

Error Symptoms

You can use the error symptom tables to find solutions to problems that have definite symptoms.

In the following tables (Table 6-2 to Table 6-8), the first entry in the "Cause and Action" column is the most likely cause of the symptom.

Table 6-2   Hard Disk Drive Problems

Symptom	Cause and Action
Hard disk drive stops responding during system startup.	1. Remove the hard disk drive that stopped responding and try starting the appliance again. 2. If the system starts successfully, the drive that you removed needs to be replaced.
A hard disk drive was not detected while the operating system was being started.	Reseat all hard disk drives and cables.

Table 6-3   General Problems

Symptom	Cause and Action
Problems such as broken cover latch or indicator LEDs not working.	Broken component. Call your customer service representative.

Table 6-4   *Intermittent Problems*

Symptom	Cause and Action

A problem occurs only occasionally and is difficult to detect.	1. Verify the following items:
	
	   a. All cables and cords are connected securely to the rear of the appliance and attached hardware options.
	
	   b. When the appliance is powered on, air is flowing from the rear of the appliance at the fan grille. If there is no airflow, the fans are not working. This causes the appliance to overheat and shut down.
	
	2. Check the system error log.
	
	3. See Undetermined Problems.

Table 6-5   *Memory Problems*

Symptom	Cause and Action
The amount of system memory displayed is less than the amount of physical memory installed.	1. Verify the system fault LED is not lit on the front panel. 2. Verify the correct number of DIMMS are present (including serial numbers) using the **show hardware** command. 3. Check for memory alarms using the **show alarms** command.

Table 6-6   *Hardware Option Problems*

Symptom	Cause and Action

A hardware option that was just installed does not work.	1. Verify the following items:
	
	   a. The hardware option is designed for the appliance.
	
	   b. You followed the installation instructions that came with the hardware option.
	
	   c. The hardware option is installed correctly.
	
	   d. You have not loosened any other installed hardware options or cables.
	
	2. Check the hardware option that you just installed.

A hardware option that used to work does not work now.	1. Verify that all of the hardware options and cable connections are secure. 2. Check for a failing hardware option and replace it if necessary.

Table 6-7   *Power Problems*

Symptom	FRU or Action

The power-control button does not work (the appliance does not start).
 	
Note   The power-control button will not function until 20 seconds after the appliance has been connected to power.
	1. Verify the following items:
	  a. The power cables are properly connected to the appliance.
	  b. The electrical outlet functions properly.
	
	2. If you just installed a hardware option, remove it, and restart the appliance.
	
	3. See Undetermined Problems.

The appliance does not power down.	1. Turn off the appliance by pressing the power-control button for 5 seconds. 2. Restart the appliance. 3. If the power-control button does not work, disconnect the power cord for 20 seconds. Reconnect the power cord and restart the appliance.
The appliance unexpectedly shuts down, and the LEDs on the operator information panel are not lit.	See Undetermined Problems.

Table 6-8   *Console Port Problems*

Symptom	FRU or Action
A console connection does not work. For more information about the console port, see Console Port Connectors in Chapter 1, "Introducing the Cisco Wide Area Virtualization Engine 7541, 7571, and 8541."	1. Verify that the console device is connected to the correct port (see Console Port Connectors in Chapter 1, "Introducing the Cisco Wide Area Virtualization Engine 7541, 7571, and 8541"). 2. If using the mini-USB console port, verify that the driver has been installed (see Console Port Connectors in Chapter 1, "Introducing the Cisco Wide Area Virtualization Engine 7541, 7571, and 8541").