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CallPilot

Installation and Configuration
Part 5: 200i Server Maintenance and Diagnostics

Product release 2.0 Standard 1.0 October 2002

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CallPilot

Installation and Configuration
Part 5: 200i Server Maintenance and Diagnostics

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Contents

1 About this guide 11

Maintenance and diagnostics overview 12
Resolving system problems 14
Replacing hardware components 17

2 Troubleshooting your CallPilot system 19

Overview. 20

Section A: LEDs and hex displays 21

Status LED and hex display location 22
Understanding the Status LED 23
Understanding the hex display 25
Diagnostic codes. 28

Section B: Troubleshooting startup problems 33

What to do when the 200i server fails to start 34
Power-On Self-Test (POST) diagnostics 35

Section C: Working with Console Redirection 41

About Console Redirection. 42
Console Redirection requirements 45
Setting up a direct serial connection. 47
Setting up a modem connection 50
Using Console Redirection. 53

3 Using Windows NT online diagnostic tools 55

Overview. 56
Viewing event logs 58
Checking hardware using Windows NT Diagnostics. 63
Using TCP/IP diagnostic tools 66

4 Using CallPilot Manager to monitor hardware 77

Understanding fault management 78

Section A: Tools for isolating and fixing hardware problems 79

Overview 80
Alarm Monitor 82
Event Browser 85
Maintenance page 88
Channel and Multimedia Monitors 89

Section B: Working with the Maintenance page 91

Introducing the Maintenance page 92
Viewing component states 96
Starting and stopping components 99
Running integrated diagnostics 103
Viewing the last diagnostic results 108

Section C: Working with the Multimedia and Channel Monitors 111

Working with the Multimedia Monitor 112
Working with the Channel Monitor 114

5 Using CallPilot system utilities 117

Overview 118
Diagnostics Tool 119
PEP Maintenance utility 122
System Monitor 124

6 Performing hardware maintenance 129

Overview 130
About PC cards 131

Section A: Preparing for server maintenance 133

Shutting down the server 134
Removing the server from the switch 135

Section B: Removing components 137

Replacing the server 138
Replacing or adding Multimedia Processing Cards 140
Removing the daughterboard 145
Replacing the Nortel Networks software feature key 149
Replacing the EIDE hard drive 151
Installing network interface cards 156
Replacing the DIMM 158

Index 161

Chapter 1

About this guide

In this chapter

Maintenance and diagnostics overview 12

Resolving system problems 14

Replacing hardware components 17

Maintenance and diagnostics overview

Introduction

The maintenance and diagnostic activities discussed in this guide are divided into two groups of activities:

- troubleshooting and diagnostics (identifying the cause of and resolving system problems)
- performing hardware maintenance

Who should read this guide

This guide is for administrators, technicians, and engineers responsible for maintaining a CallPilot server. It is intended to act as a guide for

- using system tools to identify the cause of system problems
- installing, replacing, or upgrading hardware components

This guide assumes that you have basic computing skills, and are familiar with necessary safety procedures. For more information about safety, refer to Part 1 of the *CallPilot Installation and Configuration* binder.

Resolving system problems

This guide describes how to use a variety of CallPilot resources for resolving system problems.

If you are not able to resolve your problem with the resources described in this guide, you can also refer to the following documents:

- *CallPilot Administrator's Guide* (NTP 555-7101-301)

- *CallPilot Troubleshooting Reference*

  Note: The *CallPilot Troubleshooting Reference* is written for Nortel Networks distributors and technical support representatives; therefore it is not part of the customer documentation package. Nortel Networks continually updates the *CallPilot Troubleshooting Reference*, which is available from the Partner Information Center (PIC) at http://my.nortelnetworks.com.

Note: For more details, see "Resolving system problems" on page 14.

Preparing for hardware or software maintenance

The "Starting up and shutting down the CallPilot server" chapter in Part 1 of the *CallPilot Installation and Configuration* binder explains how to restart, shut down, and power up the CallPilot server. You may be asked to perform one or more of these tasks while maintaining your server.

Performing hardware maintenance

Chapter 6, "Performing hardware maintenance," explains how to replace hardware components. For more details, see "Replacing hardware components" on page 17.

Rebuilding the CallPilot system

When you purchased your CallPilot server, it came preinstalled with the Windows NT operating system and CallPilot server software. If your CallPilot server no longer functions because of a software problem, you may need to reinstall the CallPilot software or rebuild the system.

To locate instructions for these tasks, refer to Part 4 of the *CallPilot Installation and Configuration* binder.

Resolving system problems

Introduction

Chapters 2 to 5 in this guide describe how to use a variety of CallPilot resources for resolving system problems.

If you are not able to resolve your problem with the resources described in this guide, you can also refer to the following documents:

- *CallPilot Administrator's Guide* (NTP 555-7101-301)
- *CallPilot Troubleshooting Reference*

Using this guide

This guide provides instructions for using the resources provided by your 200i server, as follows:

To	See
interpret the LEDs on the 200i server	Chapter 2, "Troubleshooting your CallPilot system" on page 19
interpret diagnostic codes	Chapter 2, "Troubleshooting your CallPilot system" on page 19
use Windows NT 4.0 diagnostic tools, including Event Viewer and TCP/IP diagnostic tools	Chapter 3, "Using Windows NT online diagnostic tools" on page 55
use the Event Browser, Alarm Monitor, and Maintenance page in CallPilot Manager	Chapter 4, "Using CallPilot Manager to monitor hardware" on page 77

To	See
use the following CallPilot system utilities: ■ Diagnostics Tool ■ System Monitor	Chapter 5, "Using CallPilot system utilities" on page 117

Using the *CallPilot Administrator's Guide*

The *CallPilot Administrator's Guide* (NTP 555-7101-301) provides valuable information for monitoring system performance. The *CallPilot Administrator's Guide* describes how to

- view and filter server events
- monitor the CallPilot server performance, disk space, and database
- monitor and manage CallPilot channels
- troubleshoot CallPilot call service and system operation problems

Using the *CallPilot Troubleshooting Reference*

The *CallPilot Troubleshooting Reference* describes symptoms that can appear on all CallPilot server platforms, and ways to resolve them. Nortel Networks continually updates the *CallPilot Troubleshooting Reference*, which is available on the Nortel Networks Partner Information Center (PIC) at http://my.nortelnetworks.com.

Note: If you are not a Nortel Networks distributor, then contact your Nortel Networks technical support representative for assistance.

Use the *CallPilot Troubleshooting Reference* to resolve the following types of problems:

- server boot cycle failures
- peripheral device problems
- monitor display problems

- server to network connection problems
- remote access connection problems
- CallPilot application problems

Replacing hardware components

Introduction

This guide describes how to replace or install hardware components as follows:

To replace or install	See
the 200i server (in the event of a complete system failure)	Chapter 6, “Replacing the server” on page 138
the hard drive	Chapter 6, “Replacing the EIDE hard drive” on page 151
the software feature key (dongle)	Chapter 6, “Replacing the Nortel Networks software feature key” on page 149
MPC-8 cards	Chapter 6, “Replacing or adding Multimedia Processing Cards” on page 140

Approved replacement parts

Before replacing any parts on your server, refer to the Nortel Networks product catalog for the part codes.

CAUTION

Risk of system damage

The use of parts that are not approved by Nortel Networks can cause serious system problems or void your Nortel Networks warranty.

Preparing for maintenance activities

Before you proceed with hardware maintenance activities, review Part 1 of the *CallPilot Installation and Configuration* binder for the following information:

- required tools and equipment
- recommended safety precautions for electrostatic discharge, handling cards, and handling your server
- instructions for shutting down your 200i server or for taking it out of service

Chapter 2

Troubleshooting your CallPilot system

In this chapter

Overview 20

Section A: LEDs and hex displays 21

Status LED and hex display location 22

Understanding the Status LED 23

Understanding the hex display 25

Diagnostic codes 28

Section B: Troubleshooting startup problems 33

What to do when the 200i server fails to start 34

Power-On Self-Test (POST) diagnostics 35

Section C: Working with Console Redirection 41

About Console Redirection 42

Console Redirection requirements 45

Setting up a direct serial connection 47

Setting up a modem connection 50

Using Console Redirection 53

Overview

Introduction

This chapter describes troubleshooting methods and resources for major problems with the CallPilot server, such as an inability to start up the server.

See also

Additional documentation and resources are available for troubleshooting your CallPilot system, as follows:

- Chapters 3 to 5 of this guide describe additional diagnostic tools.

  These diagnostic tools can only be used if you are able to start the CallPilot server. See "Resolving system problems" on page 14 for more details.

- *CallPilot Administrator's Guide* (NTP 555-7101-301)

  See "Using the *CallPilot Administrator's Guide*" on page 15 for more details.

- *CallPilot Troubleshooting Reference*

  The *CallPilot Troubleshooting Reference* guide is written for Nortel Networks distributors and technical support representatives, and therefore is not part of the customer documentation package. See "Using the "*CallPilot Troubleshooting Reference* " on page 15 for more details.

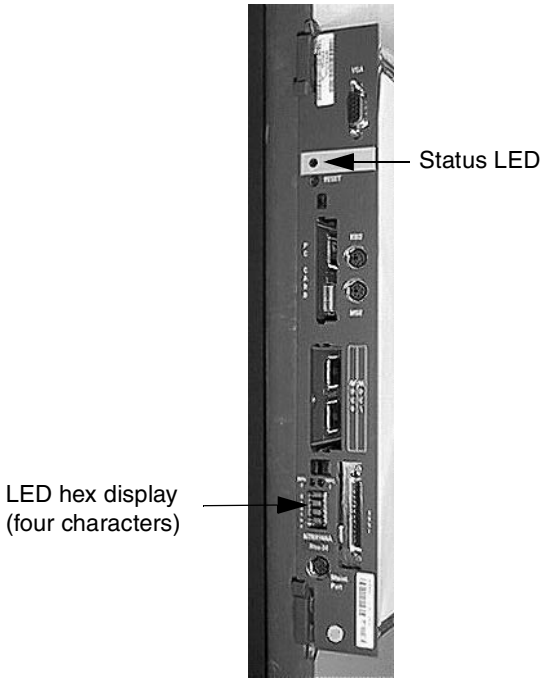
Section A: LEDs and hex displays

In this section

Status LED and hex display location 22
Understanding the Status LED 23
Understanding the hex display 25
Diagnostic codes 28

Status LED and hex display location

The following picture shows the location of the status LED and LED hex display on the 200i server faceplate:



Understanding the Status LED

Introduction

The LED is located on the faceplate of the 200i server, immediately under the SVGA connector.

The server's LED is controlled exclusively by the server. The LED does not respond to any input commands from the switch console.

LED functions

The LED indicates two server states:

- the completion of self-test diagnostics
- when it is safe to remove the server from the switch

Server startup sequence indicators

When the server is inserted into an IPE shelf, the following sequence of LED indicator status occurs:

Activity	LED status
The 200i server is not locked in the IPE shelf.	Unlit
The 200i server is inserted into the switch and receives power.	Lights
Self-diagnostics complete with no critical errors.	Blinks three times
Startup sequence begins, and ends after Windows NT successfully loads.	Unlit

Server status after installation

After the server has been installed, the LED status indicators are as follows:

LED activity	Description
The Status LED is lit.	The 200i server is not in use and can be removed from the switch. The LED also lights during the initial 10–15 seconds of a warm startup.
The Status LED is unlit.	The 200i server is in use, or is starting.
The Status LED is unlit but the hex display is working.	One or more of the following apply: ■ The 200i server motherboard is faulty. ■ The LED is faulty.

Understanding the hex display

Introduction

The hex display is located on the faceplate of the 200i server, under the MPC slots.

The server's hex display is controlled exclusively by the server. This display does not respond to any input commands from the switch console.

Hex display functions

The hex display gives a visual indication of current server status:

- error code indication of startup fault conditions
- error code indication of the highest severity event being experienced by the server

Server startup sequence indicators

When the server is inserted into an IPE shelf, the hex display moves through the following sequence:

Note: XX represents a two-digit number.

Activity	Hex display status
The server is not locked into the IPE shelf.	Blank
The server is inserted into the switch and receives power.	Lights and begins T:XX
The startup sequence begins (diagnostics are run).	Continues to display T:XX

Server status after startup sequence

After the server is installed and the startup sequence is completed, the current status of the server is shown on the hex display.

Note: Some MIN, MAJ, and CRI events may appear because the server has not been configured, and may be resolved after running the Configuration Wizard, which is described in Part 3 of the *CallPilot Installation and Configuration* binder. The BOOT, PASS, WARN, and FAIL messages are system ready indicator messages, and do not appear if the Configuration Wizard has not been run.

Note: XX represents a two-digit number.

Hex display output	Description
T:XX	The 200i server is starting up and running diagnostics. These diagnostics are performed during a cold restart (when the server is powered up, or if you press the Reset button). See “Diagnostic codes” on page 28 for more details.
F:XX	At least one noncritical diagnostic failed (the error code represents the first failed diagnostic).
DOWN	The operating system is starting up or shutting down.
OK	The operating system startup sequence was successful.
BOOT	CallPilot is starting up and is not yet fully operational.
PASS	CallPilot is fully operational and ready to accept calls.

Hex display output	Description
WARN	CallPilot is ready to accept calls. However, some services failed the startup sequence. Check the event log for further information.
FAIL	CallPilot failed the startup sequence and cannot accept calls. Check the event log for further information.
MIN	A minor alarm occurred. Check the event log for further information.
MAJ	A major alarm occurred. Check the event log for further information.
CRI	A critical alarm occurred. Check the event log for further information.
???	This indicates that an alarm of unknown severity occurred. This error should not occur on a properly installed system. The severity of this event is treated as higher-than-critical.

Note: If anything else appears on the display, contact your Nortel Networks technical support organization.

Diagnostic codes

Introduction

The diagnostic tests described in this section are performed during a cold restart (when the server is powered up, or if you press the Reset button). Diagnostic codes are divided into the following three categories:

- critical startup diagnostics
- noncritical startup diagnostics
- noncritical operating system and switch diagnostics

Critical startup diagnostics

All critical startup diagnostics must pass before the 200i server can proceed with the startup sequence. If a critical diagnostic fails, the startup sequence indefinitely halts and an error code displays.

Critical startup diagnostic codes

The following table shows the critical startup diagnostic codes with their corresponding failure codes. Failure of these diagnostics means that there has been a server failure. The startup cycle is halted.

Note: The tests for T:00 to T:05 occur instantaneously, so you may not see these test codes.

Test code	Test description	Failure code
T:00	Initialization	F:00
T:01	Internal RAM	F:01
T:02	ALU	F:02
T:03	Address modes	F:03

Test code	Test description	Failure code
T:04	Boot ROM	F:04
T:05	Timers	F:05

Noncritical startup diagnostics

If a noncritical diagnostic fails, the server continues to start up. The failure code corresponding to the first failed test appears on the hex display for three seconds, after all noncritical startup diagnostics have completed (up to T:17). If more than one diagnostic fails, only the error code of the first failed test appears.

Noncritical startup diagnostic codes

The following table shows the noncritical startup diagnostic codes with their corresponding failure codes. Diagnostic failures in this case do not affect completion of server startup.

Note: When a test is successfully completed, the next test code appears.

Test code	Test description	Failure code
T:06	Watchdog	F:06
T:07	External RAM	F:07
T:08	Host DPRAM	F:08
T:09	DS30 DPRAM	F:09
T:10	Software feature key (dongle)	F:10
T:11	Flash memory	F:11
T:12	PCI FPGA programming	F:12
T:13	DS30 FPGA programming	F:13

Test code	Test description	Failure code
T:14	CEMUX FPGA programming	F:14
T:15	DSP FPGA programming	F:15
T:16	CEMUX interface	F:16
T:17	EEPROM	F:17

Noncritical operating system and switch diagnostics

ATTENTION

Until you program the switch (instructions are in Part 3 of the *CallPilot Installation and Configuration* binder), the hex display may stop between T:18 and T:21, which is when the handshaking with the switch begins. After you program the switch, press the Reset button on the 200i server faceplate to restart and to clear this fault code.

The 200i server Fault Management Test is an indicator for the highest severity minor, major, or critical event logged by the software. This is the only noncritical operating system and switch test that generates a failure message on the hex display.

If a noncritical operating and switch diagnostic test fails, the hex display stops at the failed test. Remaining diagnostics are not performed. The startup sequence continues, but server functionality can be compromised.

Noncritical operating system and switch diagnostic error codes

The following table shows the noncritical operating system and switch diagnostic codes with their corresponding failure codes. Diagnostic failures in this case do not affect completion of server startup:

Status code	Operation description	Failure code
T:18	OS startup	T:18
T:19	CEMUX bus and OS driver	T:19
T:20	OS driver application active	T:20
T:21	Switch and cardLAN config	T:21
T:22	Startup is complete. 200i server fault management takes over.	OK

As soon as the T:18 diagnostic test completes, look for OK. Tests after T:18 complete quickly, so you may not see them on the display. If OK does not appear but the display remains at a T:18 or higher code, then the corresponding test has failed. See “Server status after startup sequence” on page 26 for other messages that can appear on the hex display.

Section B: Troubleshooting startup problems

In this section

What to do when the 200i server fails to start 34

Power-On Self-Test (POST) diagnostics 35

What to do when the 200i server fails to start

To determine why the 200i server failed to start

1. Verify the modem DIP switches.

   For the settings, refer to Part 2 of the *CallPilot Installation and Configuration* binder for modem DIP switch settings.

   Note: DIP switch 4 is particularly important. If it is not set correctly, the 200i server fails to start.

2. Try restarting the server by pressing the reset button on the 200i server faceplate.
3. Allow 20 to 30 minutes for the startup cycle to complete.
4. Review the diagnostic codes on the hex display.

   See “Diagnostic codes” on page 28.

5. Review the BIOS POST diagnostic results for failures.

   See “Power-On Self-Test (POST) diagnostics” on page 35.

   Note: Use Console Redirection for this. See Section C: “Working with Console Redirection” on page 41.

6. Attach a local VGA monitor and determine where in the startup cycle the failure occurs.

   Note: Use Console Redirection for this.

7. If the server starts up, but the hex display shows MIN, MAJ, or CRI, check the event logs for more information.

   See “Viewing event logs” on page 58.

8. If you still cannot find the startup failure cause, call your Nortel Networks product support representative.

Power-On Self-Test (POST) diagnostics

Introduction

The Power-On Self-Test (POST) runs after T:18 completes. POST is a system diagnostic program (stored in the BIOS) that runs each time the 200i server restarts. POST tests system components, and then displays status messages on a locally connected monitor or through Console Redirection.

Viewing startup results

The BIOS startup screen, as well as POST code diagnostic failure text, can be viewed locally or remotely by using one of the following methods:

- Attach a local VGA monitor to the 200i server faceplate.
- Use Console Redirection to view text locally or remotely.

Successful startup example

The following is a typical successful 200i server BIOS startup screen. The exact phrases can vary based on

- the BIOS version being used
- whether mouse and keyboard devices are attached
- whether the flash recovery PC card is inserted

Some text is displayed only during cold startups. Cold startups are generated by

- removing or reinserting the 200i server from the switch
- manually pressing the reset button on the 200i server's faceplate

Therefore, extensive BIOS POST memory tests are performed only on cold startups.

```
Phoenix PicoBIOS Version 4.05.03
```

```
Copyright 1985-1998 Phoenix Technologies Ltd., All
Rights Reserved.

11/16/98 12:40:14


Northern Telecom Ltd., NTRH13BA-01

CPU = Pentium with MMX  166 MHz

0000640K System RAM Passed

0130048K Extended RAM Passed

0256K Cache SRAM Passed

System BIOS shadowed

Video BIOS shadowed

UMB upper limit segment address: F192

Fixed Disk 0: ST92130AG

Mouse Initialized


Phoenix PicoCard (tm) PC Card Boot

(C) Copyright Phoenix Technologies Ltd. , 1997, All
Rights Reserved


Initializing PicoCard BIOS Socket Services …

Found Cirrus Logic PD6730 PCI-PCMCIA Controller.

Read I/O Address as: 03E0

Initialization of PicoCard BIOS Socket Services
completed.

No bootable PCMCIA Card found in socket 0.
```

```
Press <F2> to enter SETUP, <ALT> to bypass PC Card
boot
```

Successful startup description

The following is a line-by-line description of successful startup results:

Line(s)	Description
1–3	Indicate the BIOS vendor, BIOS core version number, and date and time the BIOS was installed in the system.
5	Indicates the Nortel Networks product code for the product.
6	Indicates the CPU type and speed.
7	Indicates that memory tests on the first 640 bytes of dynamic RAM passed successfully.
8	Indicates that memory tests on the remaining 127 Mbytes of dynamic RAM passed successfully.
9	Indicates that memory tests on cache static RAM memory passed successfully.
10–12	Indicate that the BIOS was successfully copied into dynamic memory.
13	Indicates that the hard disk drive was successfully detected, and when queried, returned the ST92130AG version identifier string.
14	Indicates that a mouse was successfully detected and initialized.
17–23	Indicate that a BIOS extension initialized correctly. The BIOS extension successfully detected and initialized the onboard PCMCIA controller.

Line(s)	Description
24	Indicates that the Flash Recovery PC card was either not inserted properly or, if inserted, has been damaged. As a result, the BIOS attempts to start up from a hard disk drive.
27	Provides information on how to perform the following actions: ■ Enter the BIOS CMOS setup screens to change or verify BIOS settings and enable or disable BIOS features (for example, Console Redirection). ■ Allow starting up from the 200i server's hard drive despite having a flash recovery PC card inserted.

POST diagnostic failures

If there was a POST diagnostic failure, the BIOS displays additional messages if possible. The following are examples of typical error messages that may display:

- 0000640K System RAM Failed at offset: 0F3A
- 0000922K Shadow RAM failed at offset: 00BA
- Memory Testing Aborted
- System cache error - Cache disabled
- SMART Failure Predicted on Hard Disk 0
- Operating system not found
- Keyboard controller error
- Stuck Key

If the failure is noncritical, the BIOS displays failure information text but does not halt the startup cycle. The system may or may not start up, depending on the nature and severity of the underlying hardware failure.

If the failure is diagnosed to be a critical failure, failure information text appears and the startup cycle stops. The following message always appears as part of the failure information text:

```
POST error! Press <F1> to resume, <F2> to Setup
```

What to do if a POST diagnostic failure occurs

If a POST failure occurs, write down any failure messages and contact your Nortel Networks product support representative.

To see if the problem reoccurs, restart the 200i server by pressing the reset button on the 200i server's faceplate.

Section C: Working with Console Redirection

In this section

About Console Redirection 42
Console Redirection requirements 45
Setting up a direct serial connection 47
Setting up a modem connection 50
Using Console Redirection 53

About Console Redirection

Introduction

Console Redirection is a remote control feature provided by the Phoenix Technologies BIOS. With Console Redirection, you can be located anywhere provided you have a modem and can connect to the 200i server through a public switched telephone network (PSTN). By doing so, it appears as if you are sitting right next to the 200i server with a local monitor, keyboard, and mouse attached to the server's faceplate.

With Console Redirection, you can do the following:

- Enter BIOS CMOS Setup to query, alter, or restore BIOS settings.
- Watch BIOS POST Diagnostics execute, and see their completion status.
- Force warm startups, cold startups, and diagnostic startups.
- Run MS-DOS–based diagnostics and use MS-DOS utilities and features.

Difference between Console Redirection and pcANYWHERE32

Console Redirection provides MS-DOS–based remote control as well as pre-Windows NT startup remote control. pcANYWHERE32 provides post-Windows NT startup remote control.

The following table describes when Console Redirection and pcANYWHERE32 can be used during the startup cycle:

Startup phase	Remote control tool
BIOS and MS-DOS	During BIOS and MS-DOS startup, you can use Console Redirection to control the startup cycle.
Windows NT	While Windows NT is starting, you cannot see or control what the startup cycle is doing. This is called a blackout period.

Startup phase	Remote control tool
CallPilot server software	While the CallPilot server software is starting, you can use pcANYWHERE32 software to watch the startup cycle. When startup is completed, you can use pcANYWHERE32 to administer the 200i server.

When to use Console Redirection

Typically, you use Console Redirection when you want to

- investigate startup problems
- control startup behavior
- perform any of the actions listed under “Using Console Redirection” on page 53

Where Console Redirection can be used

Console Redirection can be used in the following scenarios:

- You are local to the 200i server, but a monitor and keyboard or mouse are not connected.
- You are not local to the 200i server but have a modem connected to a PSTN. (This requires that the 200i server also be equipped with a modem.)

Restrictions

With Console Redirection, the following restrictions apply:

- When the 200i server displays the Windows NT/DOS startup selection menu, this screen *cannot* be viewed, nor can all subsequent Windows NT screens. This means that the Windows NT startup cycle cannot be seen or controlled.
- Colors are not displayed.

- You cannot perform 200i server BIOS upgrades with Console Redirection. You must perform upgrades using a local mouse, monitor, and keyboard.
- 200i server operating system installation and hard disk recovery procedures must be performed using a local mouse, monitor, and keyboard.

Console Redirection requirements

Introduction

Console Redirection can be used from two connection scenarios:

- direct serial connection (total setup time is 5 minutes)
- modem connection (total setup time is 5 minutes)

This section describes the requirements of these scenarios.

Direct serial connection requirements

General requirements

You must be local to the 200i server and have access to its I/O breakout panel. All call processing must be stopped, and the 200i server must be restarted.

Hardware requirements

- PC or laptop computer with a free communication port (for example, COM1)

  Note: This PC is referred to as the administration PC in this chapter.
- RS-232 9-pin female to 9-pin female serial cable
- null modem device
- gender benders (if required)

Software requirements on the 200i server

The 200i server must have Console Redirection enabled in the BIOS CMOS setup. For instructions, see “About Console Redirection” on page 42.

Software requirements on the administration PC or laptop

The administration PC or laptop must be running Windows NT 4.0, Windows 95, or Windows 98. HyperTerminal must be installed.

Modem connection requirements

General requirements

- You must stop all call processing and restart the 200i server.
- You need the phone number of the 200i server modem.
- You need the passwords to log in though a remote pcANYWHERE32 session to perform a remote 200i server Windows NT shutdown and restart.

Hardware requirements

- The remote PC must have a modem capable of 19200 bps.

  Note: This PC is referred to as the administration PC in this chapter.
- The 200i server must have a modem capable of 19200 bps.
- The modem must be powered on and configured correctly.
- You need access to a PSTN.

Software requirements on the 200i server

Console Redirection must be enabled in 200i server BIOS CMOS Setup.

Software requirements on the administration PC or laptop

- The administration PC or laptop must be running Windows NT 4.0, Windows 95, or Windows 98.
- Dial-Up Networking must be configured.

Setting up a direct serial connection

Introduction

A direct serial connection is achieved by

- connecting the administration PC to the COM1 port of the 200i server's I/O breakout panel
- establishing connection with the 200i server using HyperTerminal

Before you can perform these tasks, you must

- ensure that a HyperTerminal connection profile is configured on the administration PC
- shut down the 200i server

To configure the administration PC

1. Determine which COM port is free on the administration PC (COM1 or COM2).
2. Start HyperTerminal by clicking Start → Programs → Accessories → HyperTerminal → HyperTerminal.

   Note: If HyperTerminal is not present, you must install it. Install HyperTerminal as follows:

   a. Click Start → Settings → Control Panel.

   b. Double-click Add/Remove Programs.

   c. Click the Windows NT or Windows 95 tab.

   d. Click Accessories.

   e. Click OK.

   Note: You may be prompted to insert your operating system CD.

   Result: The HyperTerminal window appears, asking you to enter a name.

3 Enter a name for the new connection profile, and then click OK.

Result: The Connect To dialog box appears.

4 Under Connect using, select the COM port that you previously identified as free from the drop-down list, and then click OK.

Result: The Properties window appears.

5 Select the following settings from the drop-down menus, and then click OK:

- Bits per second: 19200
- Data bits: 8
- Parity: N
- Stop bits: 1
- Flow Control: Xon/Xoff

6 Click OK.

Result: Your terminal session begins.

To shut down the 200i server

1 Courtesy stop or stop all 200i server DSP ports. See Part 1 of the *CallPilot Installation and Configuration* binder.

2 If a modem is connected to the 200i server, before shutting down, ensure that no one is currently using the modem to administer the 200i server.

3 Invoke a 200i server Windows NT shutdown, and restart.

To connect the serial cable

1 Temporarily disconnect the modem's serial cable from the I/O breakout panel's COM1 connector.

2 Connect one end of the RS-232 serial cable to the I/O breakout panel's COM1 connector.

3 Connect the other end of the cable to the null modem device.

4 Connect the null modem device to the administration PC's COM port that was set up in "To configure the administration PC" on page 47.

Note: You may need to use gender benders.

5 Restart the server by pressing the reset button on the 200i server faceplate.

6 Wait until the red status LED blinks three times.

Result: From the administration PC, you should now be able to view and take control of the server. See "Using Console Redirection" on page 53.

7 When you are finished, disconnect the serial cable from the I/O breakout panel's COM1 connector.

8 Reconnect the modem to the I/O breakout panel's COM1 connector.

9 Disconnect the serial cable from the administration PC.

10 Exit the administration PC's HyperTerminal session by choosing File → Exit.

Tip: Before exiting, you can save the HyperTerminal session settings for future use by selecting File → Save As. Restore the session by choosing File → Open and specifying the saved file name.

11 Ensure that the 200i server starts up and the hex display shows OK, MIN, MAJ, or CRI.

12 Restart the 200i server's DSP ports.

See "Working with the Multimedia Monitor" on page 112.

Setting up a modem connection

Introduction

A modem serial connection is achieved by

- ensuring that the administration PC is configured with Dial-Up Networking
- connecting to the 200i server and shutting it down
- hanging up, and then reconnecting to the 200i server with Dial-Up Networking (with a terminal window)

To configure the administration PC

Configure the administration PC to use Dial-Up Networking. Refer to the *CallPilot Administrator's Guide* for instructions.

To shut down the 200i server

1. Establish a RAS connection.

   Note: Refer to the *CallPilot Administrator's Guide* for instructions.

2. Remotely courtesy stop or stop all 200i server call processing using the RAS connection.

3. Force the 200i server to do a Windows NT shutdown and restart.

   Note: Refer to Part 1 of the *CallPilot Installation and Configuration* binder for instructions.

To configure the modem properties on the administration PC

1. Hang up the current Dial-Up Networking connection.

2. Click Start → Settings → Control Panel.

   Result: The Control Panel appears.

3 Double-click Modems.

4 Select the modem.

5 Click Properties.

6 Click Connection.

7 Reconfigure the administration PC's modem to use the following settings:

- Bits per second: 19200
- Data bits: 8
- Parity: N
- Stop bits: 1
- Flow Control: Xon/Xoff

8 Reestablish a RAS connection with the 200i server.

Note: The Dial-Up Networking connection profile properties should be configured to open a terminal window.To open a terminal window, do the following:

a. Right-click the Dial-Up Networking connection icon you are using.

b. Click Properties.

c. Under Connect using (on the General tab), click Configure.

Result: The connection profile's Modem Properties dialog box appears.

d. Click the Options tab.

e. Click one of the following:

- Bring up terminal window before dialing
- Bring up terminal window after dialing

f. Click OK.

Result: From the administration PC, you should now be able to view and take control of the server. See "Using Console Redirection" on page 53.

9 When you are finished, hang up and reset the modem properties back to their original settings.

10 Reestablish a RAS connection with the 200i server, and reenable call processing.

Using Console Redirection

Introduction

You can use Console Redirection to watch *and* control the 200i server startup cycle until Windows NT starts to load.

Types of startups

There are three types of startups:

- Warm startups are Ctrl-Alt-Del type startups.
- Cold startups are almost equivalent to a power down except that the startup diagnostics do not run. Cold startups perform many more POST diagnostic tests than warm startups.
- Diagnostic startups are similar to cold startups except that they are even more intensive, and try to get your system up and running regardless of how many POST diagnostics fail.

OA&M tasks

You can use Console Redirection to perform the following OA&M tasks:

Task	How to perform the task
Enter BIOS CMOS Setup to query, alter, or restore BIOS settings.	Press F2 to enter setup when the following message appears: `Press <F2> to enter setup or <ALT> to bypass PC Card boot`

Task	How to perform the task
Watch BIOS POST diagnostics execute and see their completion status.	BIOS POST diagnostics automatically appear when a connection is established early in the startup cycle. If the BIOS screen was missed, you can start up to DOS, and then type **coldboot.exe** at the C:\> prompt.

Force warm startups, cold startups, and diagnostic startups.
 	
Note: See "Types of startups" on page 53 for descriptions.
	Do one of the following:
	■ During the BIOS POST diagnostics, press one of the following key sequences:
	  ■ Ctrl-C: to perform a cold startup
	  ■ Ctrl-W: to perform a warm startup
	  ■ Ctrl-D: to perform a diagnostic startup
	■ Start up to DOS, and then type **coldboot.exe** at the C:\> prompt.

Run MS-DOS–based diagnostics, and use MS-DOS utilities and features (for example, ELAN and CLAN NIC diagnostics, network access, SCSI CD-ROM access, and utilities such as chkdsk.exe, edit.exe, sys.exe, and so on, while in MS-DOS).	During the startup sequence, you are asked to choose between starting to MS-DOS or Windows NT. Select MS-DOS.

Chapter 3

Using Windows NT online diagnostic tools

In this chapter

Overview 56

Viewing event logs 58

Checking hardware using Windows NT Diagnostics 63

Using TCP/IP diagnostic tools 66

Overview

Introduction

This section describes how to access the run-time online diagnostic tools provided by the Windows NT server software. Use these tools when a serious problem prevents the use of the CallPilot diagnostic tools that are available in CallPilot Manager.

CAUTION

Risk of software corruption

Do not run any utilities that are not documented in this guide.

Windows NT Event Viewer

The Windows NT 4.0 Event Viewer provides event logs to help you diagnose and debug system problems.

Windows NT Diagnostics

The Windows NT 4.0 Diagnostics window allows you to view details about the system and network components.

TCP/IP diagnostics

The following TCP/IP diagnostic tools are described in this chapter:

- ipconfig
- ping
- tracert
- arp

- nbtstat
- netstat

These utilities help you to verify network connectivity. They help you to thoroughly test the network interface and isolate any configuration problems. Network connectivity is essential to CallPilot operation.

Viewing event logs

Introduction

When the server startup cycle is complete, and if the CallPilot server has been configured (refer to Part 3 of the *CallPilot Installation and Configuration* binder), the hex display should show PASS, and messages in dialog boxes on the monitor indicate that CallPilot is ready to accept calls.

If the hex display shows FAIL, CRI, MAJ, MIN, or FAIL or one or more error messages appear on the monitor, a fault has occurred. To determine what happened, you can use the following:

- Windows NT Event Viewer on the 200i server (see "To use the Windows NT Event Viewer" on page 60)
- CallPilot Event Browser or Alarm Monitor in CallPilot Manager

  For more information, do one of the following:

  - See "Alarm Monitor" on page 82
  - Refer to the *CallPilot Administrator's Guide* (NTP 555-7101-301)

Note: The Event Browser and Alarm Monitor include online Help for events, which may help you to resolve the problem. If you cannot log on to the CallPilot system using a web browser due to server problems, then use the Windows NT Event Viewer.

Types of event logs

Three types of event logs are available from the Windows NT Event Viewer, as follows:

Log type	Description
System	Logs events by Windows NT 4.0 components, including RAS or other Windows NT services.
Security	Logs security events, such as logons, logoffs, illegal access, and so on. This option is available only to users with Administrative access.
Applications	Logs events by application, such as database file errors, and so on.

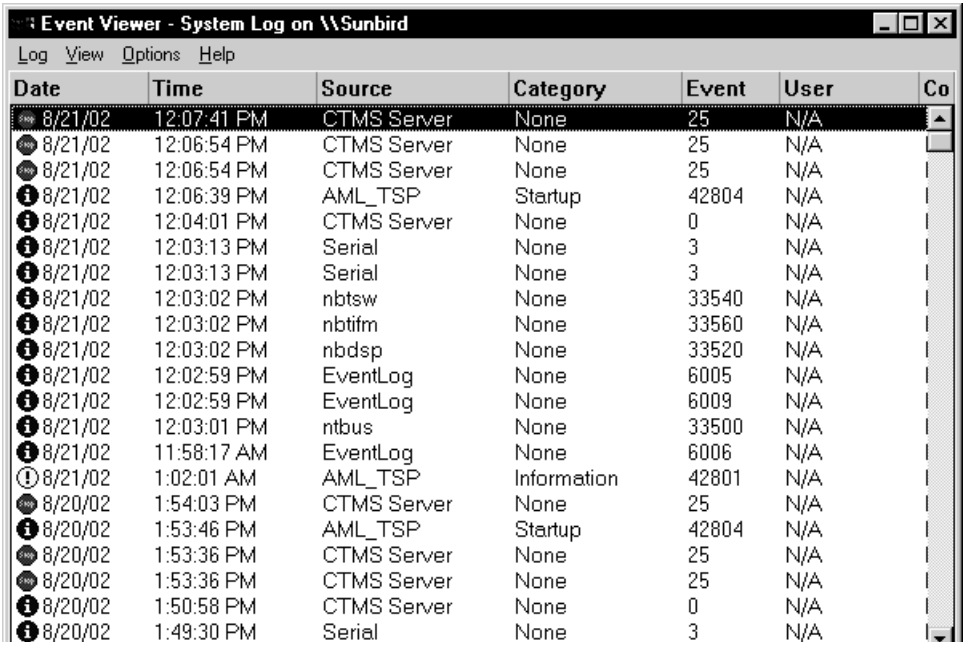
Where to get more information

For more information about using the Windows NT Event Viewer, click Help → Contents in the Event Viewer window. See also “To use the Windows NT Event Viewer” on page 60.

To use the Windows NT Event Viewer

1 Click Start → Programs → Administrative Tools → Event Viewer.

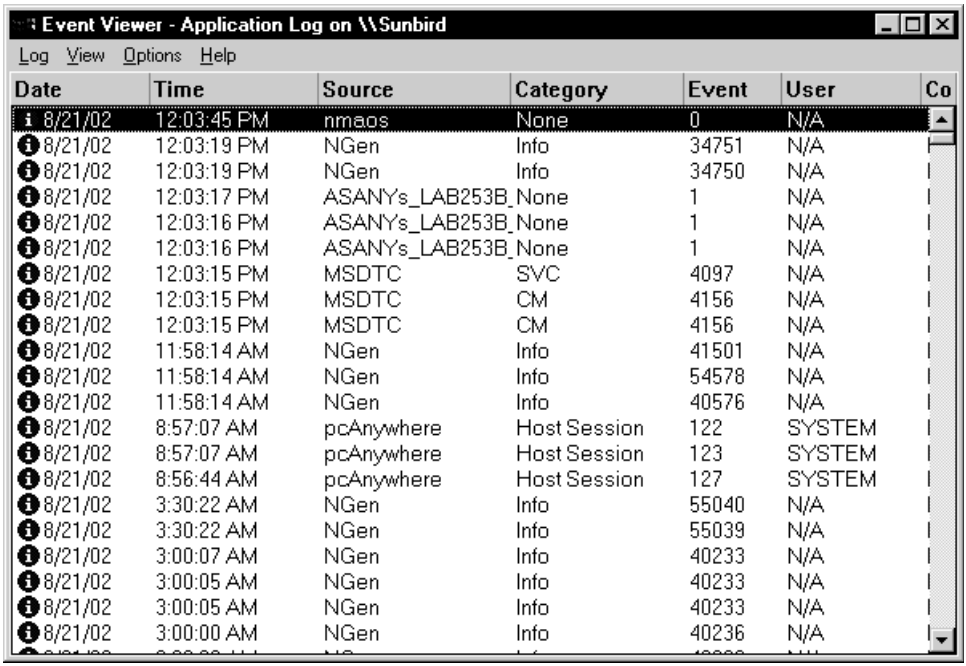
Result: The Event Viewer window appears.



Note: The System Log appears by default.

2 To view the Application Log, click Log → Application.

Result: The Application Log similar to the following window appears:



Date	Time	Source	Category	Event	User	Co
8/21/02	12:03:45 PM	nmaos	None	0	N/A	
8/21/02	12:03:19 PM	NGen	Info	34751	N/A	
8/21/02	12:03:19 PM	NGen	Info	34750	N/A	
8/21/02	12:03:17 PM	ASANYs_LAB253B_	None	1	N/A	
8/21/02	12:03:16 PM	ASANYs_LAB253B_	None	1	N/A	
8/21/02	12:03:16 PM	ASANYs_LAB253B_	None	1	N/A	
8/21/02	12:03:15 PM	MSDTC	SVC	4097	N/A	
8/21/02	12:03:15 PM	MSDTC	CM	4156	N/A	
8/21/02	12:03:15 PM	MSDTC	CM	4156	N/A	
8/21/02	11:58:14 AM	NGen	Info	41501	N/A	
8/21/02	11:58:14 AM	NGen	Info	54578	N/A	
8/21/02	11:58:14 AM	NGen	Info	40576	N/A	
8/21/02	8:57:07 AM	pcAnywhere	Host Session	122	SYSTEM	
8/21/02	8:57:07 AM	pcAnywhere	Host Session	123	SYSTEM	
8/21/02	8:56:44 AM	pcAnywhere	Host Session	127	SYSTEM	
8/21/02	3:30:22 AM	NGen	Info	55040	N/A	
8/21/02	3:30:22 AM	NGen	Info	55039	N/A	
8/21/02	3:00:07 AM	NGen	Info	40233	N/A	
8/21/02	3:00:05 AM	NGen	Info	40233	N/A	
8/21/02	3:00:05 AM	NGen	Info	40233	N/A	
8/21/02	3:00:00 AM	NGen	Info	40236	N/A	

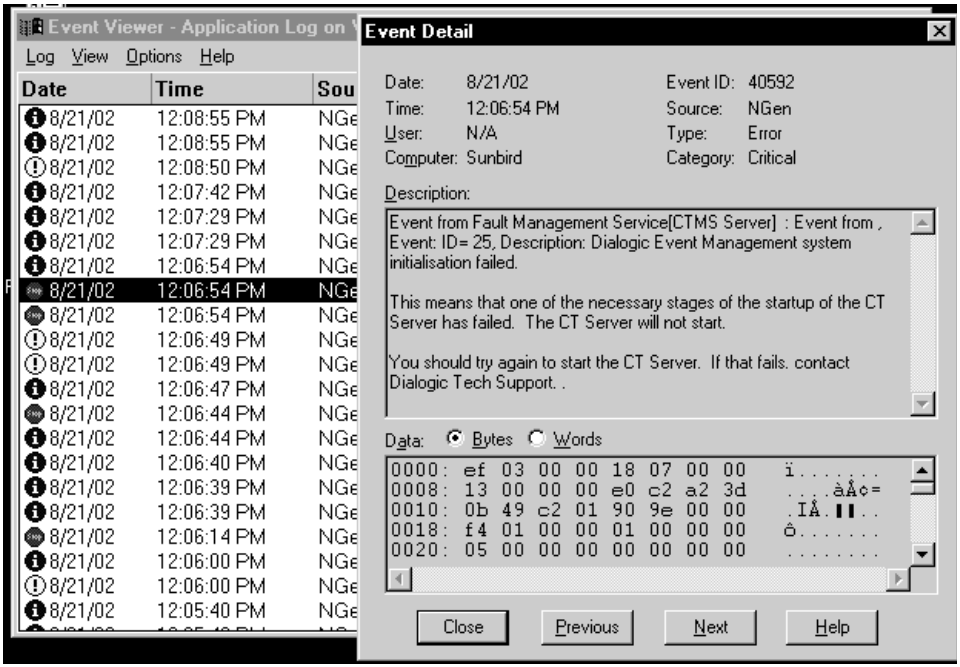
3 Look for error codes flagged with Stop or ! that have occurred since the last startup.

Note: Each error is date and time stamped. Stop indicates major or critical errors. ! indicates minor errors.

4 To determine the cause of the error, select and then double-click the error.

Result: A description of the error appears.

Note: The following Event Detail dialog box is an example of an error description from the Application Log:



5 Use the description to help determine how to resolve errors.

Note: If the error persists or does not suggest a solution, contact your Nortel Networks support representative.

6 Click Close.

Result: The event log reappears.

7 Click Log → Exit.

Result: The Event Viewer closes.

Checking hardware using Windows NT Diagnostics

Introduction

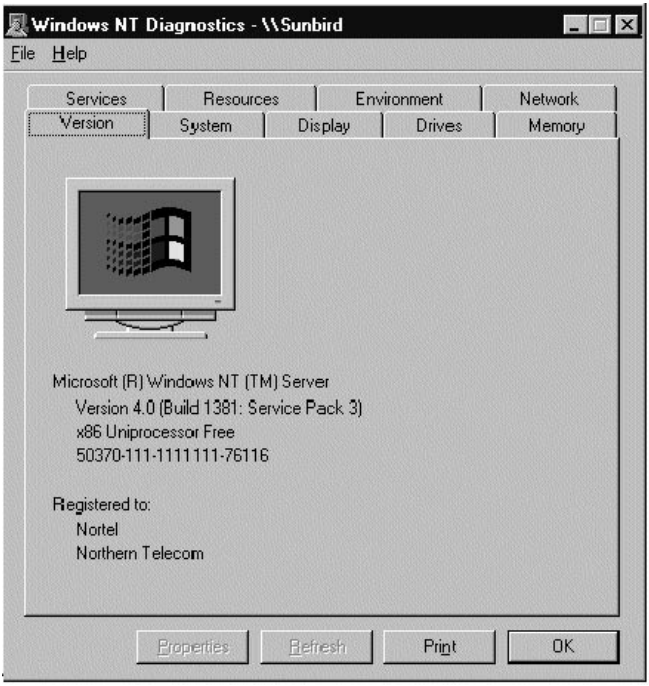
The Windows NT 4.0 Diagnostics window allows you to view details about the system and network components.

To use the Windows NT 4.0 Diagnostics tool

1 Log on to Windows NT.

2 Click Start → Programs → Administrative Tools (Common) → Windows NT Diagnostics.

Result: The Windows NT Diagnostics window appears.



3 Click the appropriate tab to view information concerning the system and network.

The following table identifies the types of details available on each tab:

Select	To display details about
Version	Version Registration
System	System identifier HAL BIOS information Processors
Display	BIOS information Adapter Driver
Drives	Drives by type or letter To view specific details, select a drive, and then click Properties to view details for the drive, including size, labels, and so on.
Memory	Memory, including totals, physical and kernel memory, commit charge, kernel
Services	Service and state for both services and devices To view specific details, select a service, and then click Properties to view details, including pathname, dependencies, service flags, and so on.

Select	To display details about
Resources	Click one of the following buttons to display information about the resources available on the system: ■ IRQ ■ I/O Port ■ DMA ■ Memory ■ Devices To view specific details, select a resource, and then click Properties.
Environment	Variable and value for both system and local user
Network	Click one of the following buttons to display information about the network and components: ■ General ■ Transports ■ Settings ■ Statistics

Using TCP/IP diagnostic tools

Introduction

This section describes the following TCP/IP diagnostic tools available for the network adapter. These tools are useful for diagnosing LAN communication problems. The first three tools are the most useful:

- ipconfig (below)
- ping (page 68)
- tracert (page 69)
- arp (page 71)
- nbtstat (page 72)
- netstat (page 74)

These utilities help you to verify network connectivity. Network connectivity is essential to CallPilot operation. These utilities help you to thoroughly test the network interface and isolate any configuration problems.

The ipconfig command

The ipconfig command displays IP configuration information.

Ipconfig default

If you run the command without flags, it displays the IP address, subnet mask, and default gateway for each adapter bound to TCP/IP.

Ipconfig command syntax

```
ipconfig /[ ]
```

The following flags are available for the ipconfig command:

Flag	Description
/?	Displays Help information.
/all	Displays full configuration information.
/release	Releases the IP address for the specified adapter.
/renew	Renews the IP address for the specified adapter.

To run the ipconfig command from Windows NT 4.0

1. Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **ipconfig** ***<with appropriate parameters>***.

   Example: ipconfig /all

3. Press Enter.

   Result: The system runs the ipconfig utility.

4. Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

The ping command

The ping command sends an echo request to a specified host. Use this command to verify network connectivity to the remote device.

Ping command syntax

The ping command uses the following syntax:

```
ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL]
     [-v TOS] [-r count] [-s count]
     [[-j host-list] | [-k host-list]]
     [-w timeout] destination-list
```

Parameter	Description
-t	Pings the specified host until interrupted.
-a	Resolves addresses to host names.
-n count	Specifies the number of echo requests to send.
-l size	Sends buffer size.
-f	Set Don't Fragment flag in packet.
-i TTL	Time To Live
-v TOS	Type Of Service
-r count	Record route for count hops
-s count	Time stamp for count hops
-j host-list	Loose source route along host list
-k host-list	Strict source route along host list
-w timeout	Time-out in milliseconds to wait for each reply

To run the ping command from Windows NT 4.0

1. Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **ping *<destination IP address>*** (for example, ping 200.286.32.0), or **ping *<computer name>***.

3. Press Enter.

   Result: The system displays the ping results.

4. Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

The tracert command

This utility determines the route taken to a destination.

How tracert works

The tracert utility follows several steps to complete its task:

- Tracert sends Internet Control Message Protocol (ICMP) echo packets with varying Time-To-Live (TTL) values to the destination.
- Each router along the path must decrement the TTL on a packet by at least 1 before forwarding it, so the TTL is effectively a hop count.
- When the TTL on a packet reaches 0, the router sends back an ICMP Time Exceeded message to the source system.
- Tracert determines the route by sending the first echo packet with a TTL of 1, and incrementing the TTL by 1 on each subsequent transmission until the target responds, or the maximum TTL is reached.
- Tracert then examines the ICMP Time Exceeded messages sent back by intermediate routers.

Tracert syntax

```
tracert [-d] [-h maximum_hops] [-j host_list]
        [-w timeout] [target_name]
```

Tracert parameters

The tracert command uses the following parameters:

Parameter	Description
-d	Specifies not to resolve addresses to hostnames.
-h maximum_hops	Specifies the maximum number of hops to search for the target.
-j host-list	Specifies a loose source route along the host list.
-w timeout	Waits the number of milliseconds specified by the time-out for each reply.
target_name	The name of the target host.

To run the tracert command from Windows NT 4.0

1 Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

Result: The MS-DOS Command Prompt window appears.

2 At the MS-DOS prompt, type the following command:

tracert *[-d] [-h maximum_hops] [j host_list] [-w timeout] [target name]*

Example: tracert 200.286.0.32 210 200.236.0.04

3 Press Enter.

Result: The system runs the tracert utility.

4 Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

The arp command

The arp command displays and modifies the IP-to-physical address translation tables used by Address Resolution Protocol (arp).

Arp command syntax

The arp command uses the following syntax:

```
arp -s inet_addr eth_addr [if_addr]

arp -d inet_addr [if_addr]

arp -a [inet_addr] [-N if_addr]
```

Parameter	Description
-a	Displays current arp entries by interrogating the current protocol data. If inet_addr is specified, the IP and physical addresses for only the specified computer appear. If more than one network interface uses arp, entries for each arp table appear.
-g	Same as -a.
inet_addr	Specifies an Internet address.
if_addr	Specifies the Internet address of the interface whose address translation table should be modified. If not present, the first applicable interface is used.
eth_addr	Specifies a physical address.
-N if_addr	Displays the arp entries for the network interface specified by if_addr.
-d	Deletes the host specified by inet_addr.

Parameter	Description
-s	Adds the host and associates the Internet address inet_addr with the Physical address eth_addr. The physical address is given as six hexadecimal bytes separated by hyphens. The entry is permanent.

To run the arp command from Windows NT 4.0

1 Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

Result: The MS-DOS Command Prompt window appears.

2 At the MS-DOS prompt, type **arp** with the required parameters (for example, arp -g 200.286.0.32).

3 Press Enter.

Result: The system runs the arp command.

4 Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

The nbtstat command

The nbtstat command displays protocol statistics and current TCP/IP connections using NBT.

Nbtstat command syntax

The nbtstat command uses the following syntax:

```
nbtstat [-a remotename] [-A IP address] [-c] [-n]
        [-R] [-r] [-S] [-s] [interval]
```

Parameter	Description
-a remotename	Lists the remote computer's name table using its name.
-A IP address	Lists the remote computer's name table using its IP address.

Parameter	Description
-c	Lists the contents of the NetBIOS name cache giving the IP address of each name.
-n	Lists local NetBIOS names. Registered indicates that the name is registered by broadcast (Bnode) or WINS (other node types).
-R	Reloads the LMHOSTS file after purging all names from the NetBIOS name cache.
-r	Lists name resolution statistics for Windows networking name resolution. On a Windows NT computer configured to use WINS, this option returns the number of names resolved and registered through broadcast or through WINS.
-S	Displays both client and server sessions, listing the remote hosts by IP address only.
-s	Displays both client and server sessions, and attempts to convert the remote host IP address to a name using the HOSTS file.
interval	Displays selected statistics, pausing interval seconds between each display. Press Ctrl+C to stop displaying statistics. Without this parameter, nbtstat prints the current configuration information once.

To run the nbtstat command from Windows NT 4.0

1. Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **nbtstat** with the required parameters.

3 Press Enter.

Result: The system runs the nbtstat utility.

4 Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

The netstat command

The netstat command displays current TCP/IP network connections and protocol statistics.

Netstat command syntax

The netstat command uses the following syntax:

```
netstat [-a] [-e] [-n] [-s] [-p proto] [-r] [interval]
```

Parameter	Description
-a	Displays all connections and listening ports.
-e	Displays Ethernet statistics. This can be combined with the -s option.
-n	Displays addresses and port numbers in numerical form.
-s	Displays per-protocol statistics.
-p proto	Shows connections for the protocol specified by proto. Proto can be tcp or udp. If used with the -s option, proto can be tcp, udp, or ip.
-r	Displays the contents of the routing table.
interval	Redisplays selected statistics, pausing between each display. Press Ctrl+C to stop redisplaying.

To run the netstat command from Windows NT 4.0

1. Click Start → Programs → Command Prompt to display the MS-DOS command prompt window.

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **netstat** with the required parameters.
3. Press Enter.

   Result: The system runs the netstat utility.

4. Type **Exit** to exit MS-DOS and return to Windows NT 4.0.

Chapter 4

Using CallPilot Manager to monitor hardware

In this chapter

Understanding fault management 78

Section A: Tools for isolating and fixing hardware problems 79

Overview 80

Alarm Monitor 82

Event Browser 85

Maintenance page 88

Channel and Multimedia Monitors 89

Section B: Working with the Maintenance page 91

Introducing the Maintenance page 92

Viewing component states 96

Starting and stopping components 99

Running integrated diagnostics 103

Viewing the last diagnostic results 108

Section C:Working with the Multimedia and Channel Monitors 111

Working with the Multimedia Monitor 112

Working with the Channel Monitor 114

Understanding fault management

Introduction

Fault management is a term that describes how the CallPilot server detects and notifies you of potential or real hardware problems (faults).

The server processes events to detect hardware problems and raises alarms to notify you when these problems occur.

Event processing

An event is any change in system configuration or operational state. An event is also any action taken by the system that requires user notification. Events can be as insignificant as a user logon attempt or as serious as a faulty MPC-8 card switching to disabled status.

All events are reported to the fault management server, a subsystem within the CallPilot server. The fault management server enables the server to listen and respond to its clients. The interaction is called event processing and is the means by which the server detects hardware faults.

Alarm notification

Alarms are warnings generated by events. Alarms communicate the same information as events. However, alarms are reported in the Alarm Monitor instead of the Event Browser, and are managed differently than events.

When an alarm appears in the Alarm Monitor, you must investigate the problem, isolate it, and then fix the cause of the problem. When you fix the problem, the alarm is cleared from the Alarm Monitor.

Section A: Tools for isolating and fixing hardware problems

In this section

Overview 80
Alarm Monitor 82
Event Browser 85
Maintenance page 88
Channel and Multimedia Monitors 89

Overview

Introduction

This section provides guidelines on how to use the CallPilot Manager tools to detect, isolate, and fix potential or real hardware problems.

Component dependencies

The status of some components are dependent on the operational status of other components. If a component fails or is stopped, the dependent components go out of service.

Note: Based on the CallPilot server type, and the type of switch connected to CallPilot, some of these components may not appear on your system.

Component	Dependent components
Motherboard (IPE server)	All MPCs, and all multimedia and call channels associated with the IPE server.
Time Switch	All multimedia and call channels associated with the same MPB as the timeswitch.
MPCs	All multimedia (DSP) channels on the MPC-8 card.
DS30X	All DS30X channels associated with the DS30X link.

Detecting hardware problems

Typically, you first become aware of a hardware problem when an alarm is raised. All hardware faults produce an alarm (or series of alarms, depending on the problem) in the Alarm Monitor.

Other indications of a hardware problem include the following:

- user complaints
- call processing difficulties, such as busy signals, static, dropped calls, connection problems, and cross talk (hearing other conversations)
- system administrator logon difficulties
- alert icons on the Maintenance page

Alarm Monitor

Introduction

Use the Alarm Monitor to investigate one or more raised alarms.

About alarms

Alarms are warnings generated by events. Alarms communicate the same information as events. However, alarms are reported in the Alarm Monitor instead of the Event Browser, and are managed differently than events:

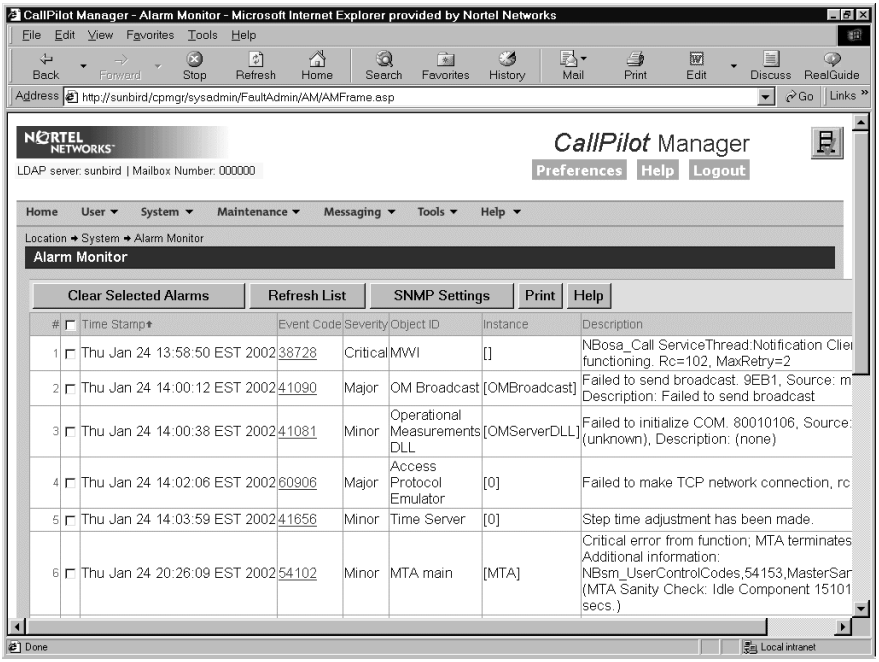
- Alarms appear in the Alarm Monitor only for Minor, Major, and Critical events (not Information events). All events can be reported in the Event Browser (depending on filtering criteria defined in the Event Browser).
- The first time an event occurs, it generates an alarm that appears in the Alarm Monitor. If the same event continues to occur, a new alarm is not generated. Instead, the time and date assigned to the original generated alarm is updated.
- Alarms can be cleared from the Alarm Monitor, but the event that generated the alarm is not cleared from the event log or the Event Browser.

Each alarm in the Alarm Monitor has Help text that often provides a solution to the problem. If the solution is not apparent, use the Event Browser or the Maintenance page to further investigate the problem.

To investigate using the Alarm Monitor

1 In CallPilot Manager, click System→ Alarm Monitor.

Result: The Alarm Monitor page appears.



2 Click the Event Code for the first critical or major alarm.

Result: A description of the event appears in a new web browser window.

3 Review the description and recovery action.

4 Repeat steps 2 and 3 for a few more alarms, if necessary.

5 If the solution to the problem is not apparent, obtain the return code of the first event and continue the investigation by using the Event Browser (see “Event Browser” on page 85).

See also

For detailed information on how to use the Alarm Monitor, refer to the *CallPilot Administrator's Guide* (NTP 555-7101-301), or the CallPilot Manager online Help.

Event Browser

Introduction

Use the Event Browser to investigate a series of events that occurred around the time an alarm was raised. The event listing can help you determine the root cause of a problem.

About events

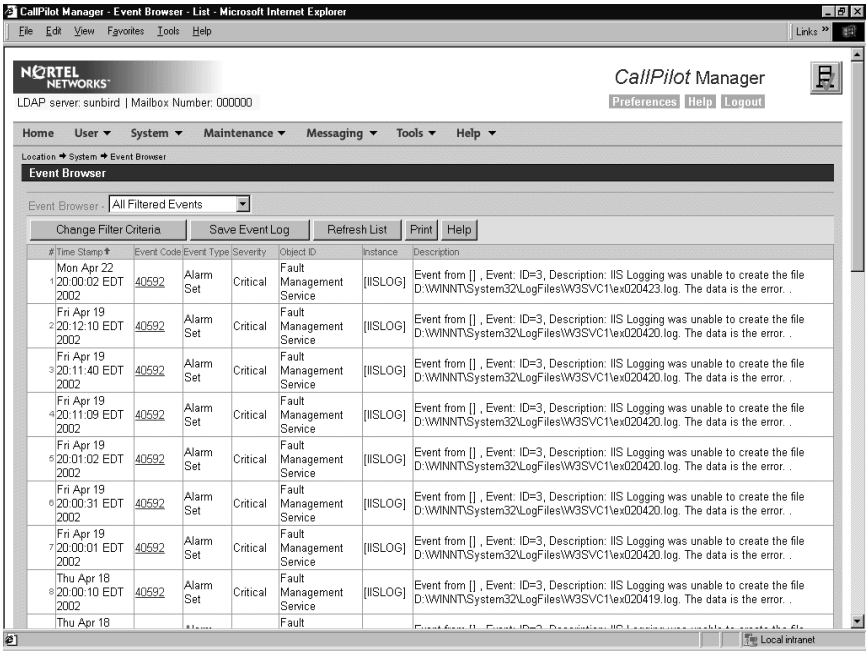
The Event Browser displays events that have been recorded in the server log. Each event identifies the time the event occurred, the object that generated the event, and the cause of the event.

Events are classified as Information, Minor, Major, or Critical. By default, the Event Browser displays only the latest 100 critical events.

To investigate using the Event Browser

1 In CallPilot Manager, click System → Event Browser.

Result: The Event Browser page appears.



2 Click an event that appears to be related to the problem, or an event that occurred near the time the alarm was raised.

Result: A description of the event appears in a new web browser window.

3 View the description and recovery action.

4 Repeat steps 2 and 3 for a few more events, if necessary.

5 If the solution to the problem is not apparent, contact your Nortel Networks technical support representative.

See also

For detailed information on how to use the Event Browser (for example, how to set preferences), refer to the *CallPilot Administrator's Guide* (NTP 555-7101-301), or the CallPilot Manager online Help.

Maintenance page

Introduction

Use the Maintenance page to get status information for any suspect components.

If you suspect or discover a problem with hardware such as an MPC-8 card, or the DS30X link, you can use the Diagnostic section on the Maintenance page. You can run a new diagnostic for the component, or review the results of the last diagnostic that was run.

More information

For information on all aspects of the Maintenance page, see Section B: “Working with the Maintenance page” on page 91, or the CallPilot Manager online Help.

Channel and Multimedia Monitors

Introduction

The Channel Monitor shows the status of call channels. The call channels are the connections between the server and the switch that carry the call signals to CallPilot.

The Multimedia Monitor shows the status of multimedia channels. The multimedia channels are the DSP ports that process the calls. They are the voice, fax, and speech recognition channels.

Disabling call channels

If you must take the CallPilot system out of service to perform software or hardware maintenance, Nortel Networks recommends that you disable all call channels first. There are two ways to disable the call channels:

- Courtesy stop the channels (preferred method).

  When you courtesy stop call channels, CallPilot waits until the channels are no longer active before disabling them, instead of suddenly terminating active calls.

- Stop the channels.

  When you stop channels, you suddenly disable them and terminate all active calls.

For information about using the Channel and Multimedia Monitors, see Section C: “Working with the Multimedia and Channel Monitors” on page 111.

Running diagnostics on call channels

If you must run diagnostics for one or more channels, use the Diagnostics section on the Maintenance page. For more information, see “Working with the Maintenance page” on page 91.

Section B: Working with the Maintenance page

In this section

Introducing the Maintenance page 92
Viewing component states 96
Starting and stopping components 99
Running integrated diagnostics 103
Viewing the last diagnostic results 108

Introducing the Maintenance page

Introduction

Use the Maintenance page in CallPilot Manager to do the following:

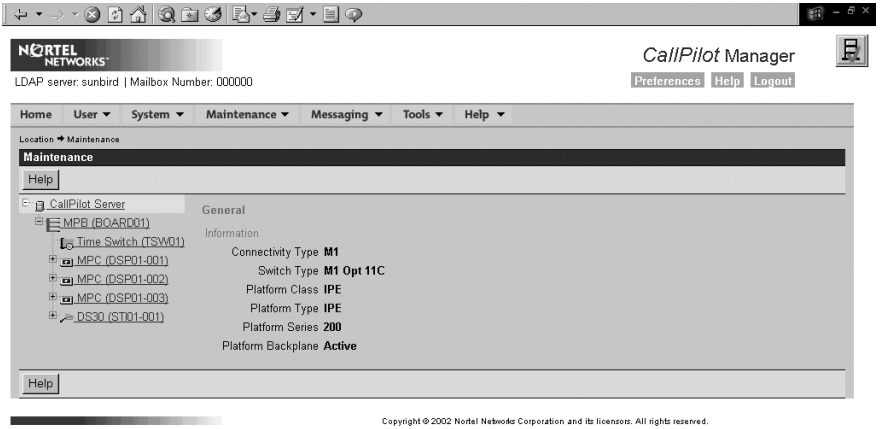
- Obtain general information about components.
- View component states.
- Start and stop components.
- Run integrated diagnostic tests.
- View the results of the last diagnostic test run against a component.

What the Maintenance page provides

The Maintenance page identifies the server platform and switch connectivity type. It also provides a tree that, when expanded, lists the physical and logical hardware components down the left side of the page. To list the server's hardware components, click the plus sign (+) at the top of the tree. To list the subcomponents for each component, click the plus sign (+) beside the component.

Note: The components that are listed on the Maintenance page are based on the CallPilot server type and the switch that is connected to CallPilot. The examples in this chapter are for illustration purposes and may not appear exactly the same on your system.

The following is an example of a partially expanded tree for the 200i server:



When you click a component, the page refreshes to show the details about that component. Details are divided into the sections described in the following table:

Section	Description
General	This section shows general technical information about the selected component. This typically includes the following details: ■ the name, class, type, series, or version of a component ■ various capabilities of a component (for example, whether a component is removable) **Note:** This section does not appear for all components.

Section	Description
Maintenance	This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test. This section appears only for components on which you are allowed to perform maintenance administration. For more information about working with component states, see the following sections: ■ "Viewing component states" on page 96 ■ "Starting and stopping components" on page 99
Diagnostics	Use the Diagnostics section to run one or more diagnostic tests, or to view the results of the last diagnostic tests that were run on the selected component. This section appears only for components on which you are allowed to run diagnostics. For more information about running diagnostics, see the following sections: ■ "Running integrated diagnostics" on page 103 ■ "Viewing the last diagnostic results" on page 108

Maintenance activities for each component

The following table identifies the maintenance activities you can perform for each component that is listed in the component tree:

Component	Start, stop, or courtesy stop?	Diagnostics available?	Replaceable?
Motherboard (IPE server)	Yes	Yes	Yes
Time Switch	No	No	No

Component	Start, stop, or courtesy stop?	Diagnostics available?	Replaceable?
MPCs (embedded on the IPE server or on MPC-8 cards)	Yes	Yes	embedded: No MPC-8 cards: Yes
DSPs	Yes	Yes	No
Channels	Yes	No	No
DS30X link	Yes	No	No

Note: The MGate card and DS30X cable are replaceable. If you are having problems with the DS30X link, determine if either one or both of those items are causing the problem and need to be replaced.

Viewing component states

Introduction

View a component's state to determine the general condition of the component, including whether the component is disabled or off duty. The component's state is shown in the Maintenance section of the Maintenance page.

Component states

You can determine the state of a component by looking at the State box in the Maintenance section.

State	Description
Active	The component is working and currently involved in processing a call.
Disabled	The diagnostic failed.
Idle	The component is working but not currently involved in processing a call.
InTest	A diagnostic is running on the resource or device.
Loading	The component has been started, which takes it out of the Off Duty state. This state occurs quickly and is immediately followed by Idle.
No resources	The hardware required for the component to operate is not installed or is not operating properly.

State	Description
Not Configured	The device is not configured in CallPilot. For example, a DSP is not being used because it was not allocated in the Configuration Wizard.
Off Duty	The component has been stopped.
Remote Off Duty	The component has been taken out of service at the switch.
Shutting Down	The component is in the process of stopping. This state occurs quickly and is immediately followed by Off Duty.
Uninitiated	The call processing component has not initialized the resource.

Alert icons

If one of the following icons appears next to a component in the tree, then the component or one of its subcomponents is experiencing a problem:

Icon	Description
	A problem exists with a subcomponent of the selected component. Expand the tree to locate the subcomponent with the problem.
	A problem exists with the selected component.

To view the state of a hardware component

1. In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance page appears.

2. Click the plus sign (+) beside the CallPilot server to expand the component tree.

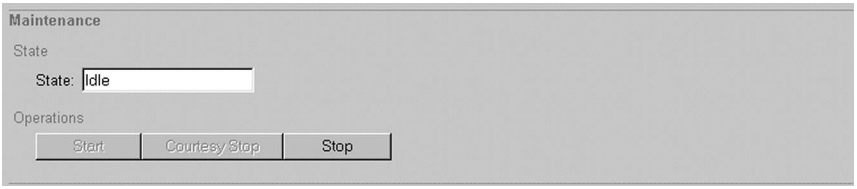
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.

4. Click the hardware component with which you want to work.

   Result: The Maintenance page refreshes to show details about the component.

5. Scroll down to the Maintenance section.

   The following is an example of the Maintenance section for an MPC-8 card:



6. View the state of the selected component in the State box.

Starting and stopping components

Introduction

When you stop a component, you take it out of service and prevent it from operating. You must stop a component before you can replace it (if the component is replaceable) or run a diagnostic test on it.

To bring an out-of-service component back into service, you must start it.

Start and stop components from the Maintenance section on the Maintenance page.

ATTENTION

Nortel Networks recommends that, if possible, you courtesy stop a component. Courtesy stop is available only at the individual channel level.

To courtesy stop CallPilot, use the following:

- Multimedia Monitor: to courtesy stop a range of multimedia (DSP) channels
- Channel Monitor: to courtesy stop a range of call (DS30X, also known as DS0) channels

For instructions, see Section C: “Working with the Multimedia and Channel Monitors” on page 111.

Stop versus Courtesy stop

The following two methods of taking a component out of service allow you to choose how active calls are affected:

Courtesy stop

A Courtesy stop takes the component out of service only after the component has finished processing the active call.

- If the component is currently processing a call, the call is not dropped; the component remains active until the call is finished.
- If the component is not currently in use, it is taken out of service immediately.

Courtesy stop is preferred over a regular Stop.

Stop

A Stop takes the component out of service immediately, regardless of whether the component is currently processing calls. All active calls are dropped. Typically, you perform a Stop only when severe problems that are affecting a large number of incoming calls occur or if your organization determines a special need for it.

Components that can be started and stopped

Only the following components can be started and stopped:

Note: If you want to start or stop more than one or two multimedia (DSP) or call (DS30X) channels, use the Multimedia Monitor or Channel Monitor. For instructions, see Section C: "Working with the Multimedia and Channel Monitors" on page 111.

Component	Effect of stopping
Motherboard (IPE server)	Takes all call processing resources on the selected board out of service.

Component	Effect of stopping
Time Switch	You cannot perform maintenance administration on the timeswitch.
MPCs (embedded on the IPE server or on MPC-8 cards)	Takes the selected MPC out of service.
DSPs	Takes the selected DSP out of service.
Channels	Takes the selected DS30X channel out of service.
DS30X link	Takes the selected DS30X link out of service.

To start or stop a component

1. In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance page appears.

2. Click the plus sign (+) beside the CallPilot server to expand the component tree.

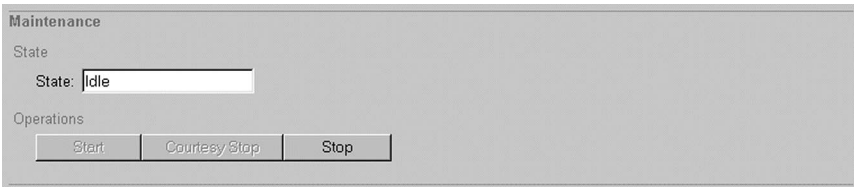
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.

4. Click the hardware component that you want to start or stop.

   Result: The Maintenance page refreshes to show details about the component.

5. Scroll down to the Maintenance section.

   The following is an example of the Maintenance section for an MPC-8 card:



6 Click Courtesy Stop, Stop, or Start, as required.

Button	Description
Start	If the selected component is out of service, click this button to put it into service.
Courtesy Stop	Click this button to take the selected component out of service. CallPilot waits for the call to be completed before disabling the component. **ATTENTION** If you are courtesy stopping all components (that is, you are taking the entire system down), ensure that you inform all administrators, desktop messaging users, and web messaging users so that they can log off their sessions before you proceed. The system asks you to confirm the Courtesy stop. If you click OK, the component is put out of service after all calls are finished.
Stop	Click this button to take the selected component out of service immediately. All calls that are in progress are disconnected immediately. **ATTENTION** If you are stopping all components (that is, you are taking the entire system down), ensure that you inform all administrators, desktop messaging users, and web messaging users so that they can log off their sessions before you proceed.

Running integrated diagnostics

Introduction

You should run diagnostic tests from the Diagnostics section on the Maintenance page in the following circumstances:

- You want to ensure that a component is operating properly after installing or reinstalling it.
- The CallPilot server is having trouble processing incoming calls and you are hoping that diagnostic results can tell you why.

  Problems include static, dropped calls, and cross talk (hearing another conversation).

Before you begin

ATTENTION

Take the component out of service before you run the diagnostic test. See "Starting and stopping components" on page 99.

Components that have diagnostic tests available

The following table identifies the components on which you can run diagnostics:

Component	Diagnostics available?	Replaceable?
Motherboard (IPE server)	Yes	Yes
Time Switch	No	No

Component	Diagnostics available?	Replaceable?
MPCs (embedded on the IPE server or on MPC-8 cards)	Yes	Embedded: No MPC-8 cards: Yes
DSPs	Yes	No
Channels	No	No
DS30X link	No	No

Diagnostic tests available for each component

The diagnostic tests that are available for each component are listed in the Diagnostic section of the Maintenance page. To view the list of diagnostic tests for a particular component, click the component in the component tree.

If a diagnostic test fails or cannot be run

If a warning message appears, the diagnostic test cannot be run because a prerequisite condition has not been met. If a diagnostic test fails, a message appears in a new browser window (see the example on page 107).

In both cases, check the Alarm Monitor to determine the reason and the appropriate action to take. (See "Tools for isolating and fixing hardware problems" on page 79.)

If the Alarm Monitor and Event Browser do not provide a solution to a hardware problem, you may need to replace or service a component. If the problem is with a component that is not replaceable because it is not a physical entity (such as the Time Switch), you must either replace its parent component or contact your Nortel Networks technical support representative, depending on the component.

To run a diagnostic test

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see "Starting and stopping components" on page 99.

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

Result: The Maintenance page appears.

2 Click the plus sign (+) beside the CallPilot server to expand the component tree.

3 Continue clicking the plus sign (+) until the component with which you want to work is visible.

4 Click the hardware component for which you want to run diagnostics.

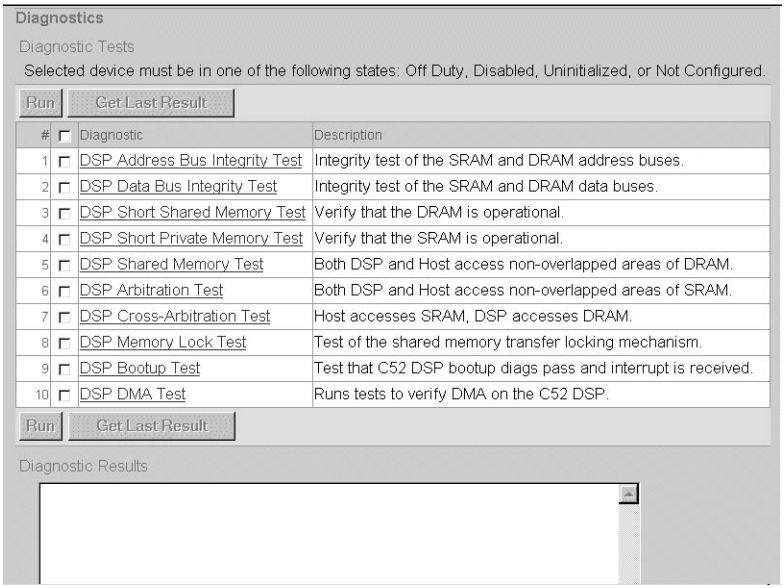
Result: The Maintenance page refreshes to show details about the component.

5 Scroll down to the Maintenance section, and ensure that the component is out of service.

Note: For instructions on taking the component out of service, see "To start or stop a component" on page 101.

6 Scroll down to the Diagnostics section.

Result: The following is an example of the Diagnostics section for an MPC-8 card (removable MPC):

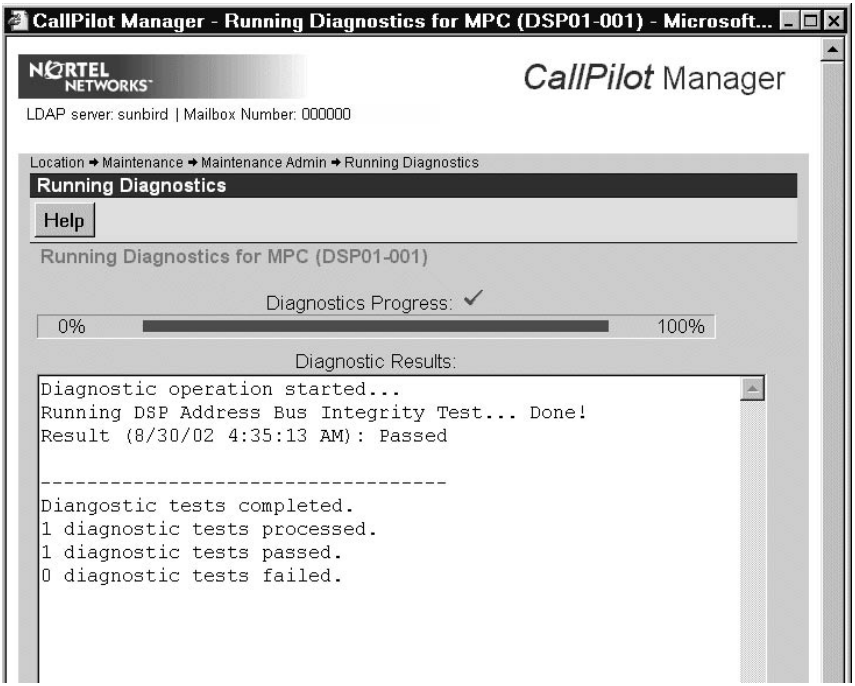


7 Check the check box for each diagnostic that you want to run.

Note: If you want to run all of the diagnostics, check the Diagnostic Description check box at the top of the list.

8 Click Run.

Result: A new web browser window opens to display the progress and results of the diagnostics:



Note: The Diagnostic Results box in the Diagnostics section displays diagnostic results when you click Get Last Result.

Viewing the last diagnostic results

Introduction

You can review the results of previously-run diagnostics by clicking the Get Last Results button for a component.

To view the last diagnostics result

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see "Starting and stopping components" on page 99.

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

Result: The Maintenance page appears.

2 Click the plus sign (+) beside the CallPilot server to expand the component tree.

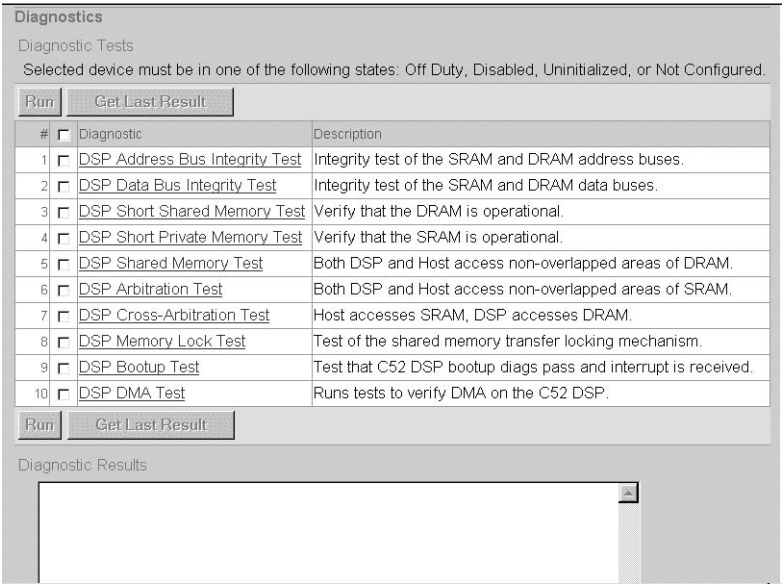
3 Continue clicking the plus sign (+) until the component with which you want to work is visible.

4 Click the hardware component for which you want to run diagnostics.

Result: The Maintenance page refreshes to show details about the component.

5 Scroll down to the Diagnostics section.

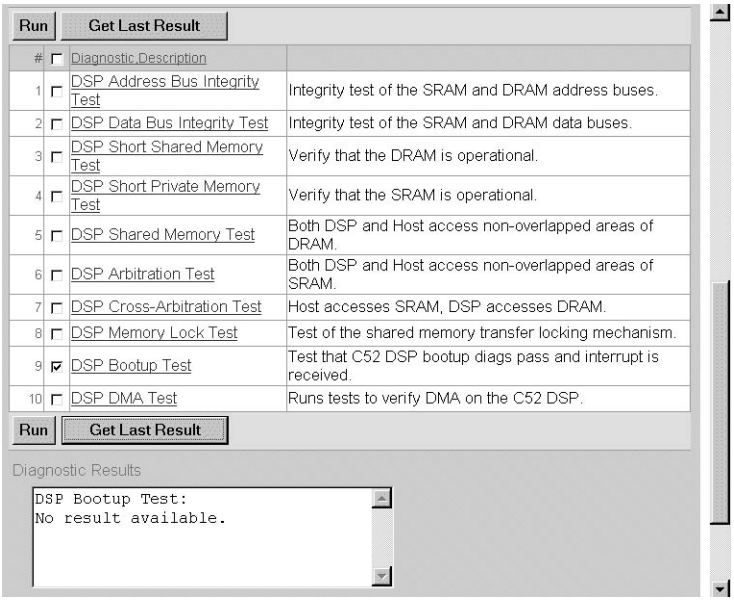
Result: The following is an example of the Diagnostics section for an MPC-8 card (removable MPC):



6 Check the check box for each diagnostic for which you want to review results.

7 Click Get Last Result.

Result: The results appear in the Diagnostic Results box.



Last diagnostic results

The results of the last diagnostic test display the following information in the Diagnostic Results box:

- diagnostic title
- diagnostic result: pass or fail
- the date and time the test was completed

Section C: Working with the Multimedia and Channel Monitors

In this section

Working with the Multimedia Monitor 112

Working with the Channel Monitor 114

Working with the Multimedia Monitor

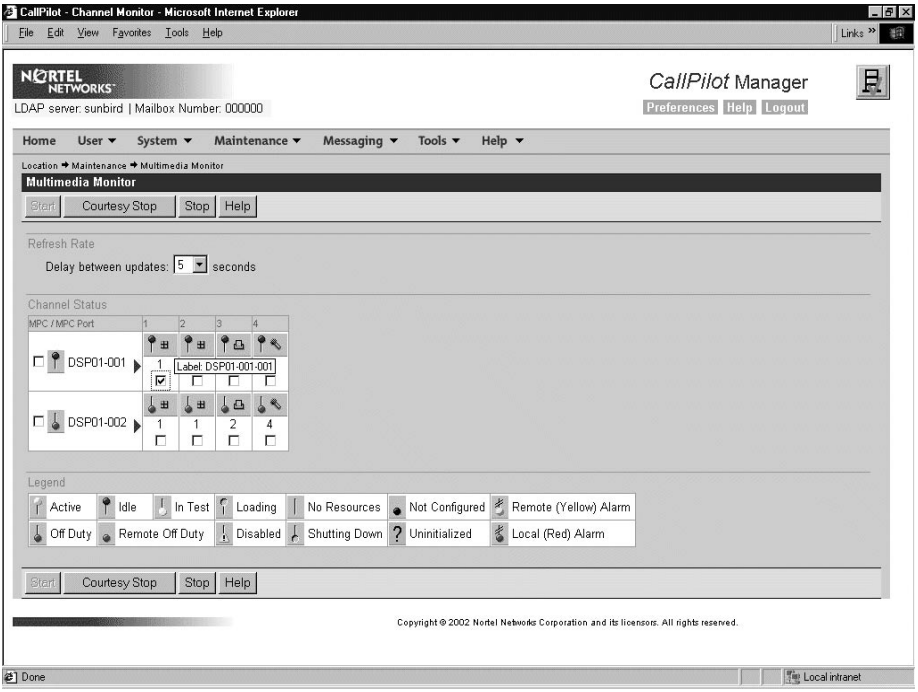
Introduction

The Multimedia Monitor shows the status of multimedia channels. The multimedia channels are the DSP ports that process the calls. They are the voice, fax, and speech recognition channels.

To view or work with multimedia channel states

1 In CallPilot Manager, click Maintenance → Multimedia Monitor.

Result: The Multimedia Monitor page appears, showing the channels associated with each DSP.



Note: For an explanation of the channel states, refer to the CallPilot Manager online Help.

2 Do one of the following:

IF you want to stop or start	THEN
all of the channels associated with a DSP	check the check box to the left of the DSP that you want to stop or start. Repeat this step for each DSP.
only one or several channels that are associated with a DSP	check the check box for each channel that you want to stop or start.

3 Click Courtesy Stop, Stop, or Start as required.

Result: If you clicked Courtesy Stop or Stop, you are asked to confirm the Courtesy Stop or Stop. Click OK.

The selected channels change to off-duty or on-duty status, according to the action you chose.

Note: If the buttons are not available, wait a few seconds for the page to refresh.

Working with the Channel Monitor

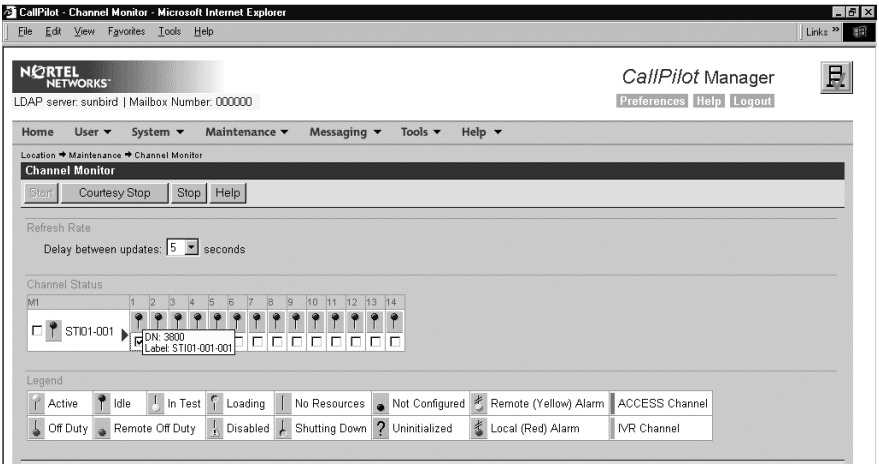
Introduction

The Channel Monitor shows the status of call channels. The call channels are the connections between the server and the switch that carry the call signals to CallPilot.

To view or work with call channel states

1 In CallPilot Manager, click Maintenance → Channel Monitor.

Result: The Channel Monitor page appears, showing the DS30X (also known as DS0) channels associated with each DS30X link.



Note: For an explanation of the channel states, refer to the CallPilot Manager online Help.

2 Do one of the following:

IF you want to stop or start	THEN
all of the channels associated with a DS30X link	check the check box to the left of the DS30X link that you want to stop or start. Repeat this step for each DS30X link.
only one or several channels that are associated with a DS30X link	check the check box for each channel that you want to stop or start.

3 Click Courtesy Stop, Stop, or Start, as required.

Result: If you clicked Courtesy Stop or Stop, you are asked to confirm the Courtesy Stop or Stop. Click OK.

The selected channels change to off-duty or on-duty status, according to the action you chose.

Note: If the buttons are not available, wait a few seconds for the page to refresh.

Chapter 5

Using CallPilot system utilities

In this chapter

Overview 118

Diagnostics Tool 119

PEP Maintenance utility 122

System Monitor 124

Overview

Introduction

The following table lists the CallPilot system utilities:

Utility	Description
Diagnostics Tool	Allows CallPilot startup diagnostics to be enabled or disabled (turned on or off).
PEP Maintenance	Displays a list of installed PEPs and enables PEP uninstall.
System Monitor	Displays the following information: ■ the status of all CallPilot channels ■ the status of all CallPilot services **Note:** This status is more accurate than the status that Windows NT provides in the Services control panel ■ particulars about the CallPilot System, such as names, keycodes, serial numbers, IP addresses, and system numbers

Accessing the system utilities

All CallPilot utilities are accessible from the CallPilot server in the Start → Programs → CallPilot → System Utilities menu.

Diagnostics Tool

Introduction

The Diagnostics Tool allows you to enable or disable CallPilot startup diagnostics.

CallPilot startup diagnostics automatically identify hardware problems that may exist when the system and its services are started (DSP, TimeSwitch, MediaBus).

When you disable startup diagnostics, you can save time during system maintenance operations where restarts or Call Processing services restarts are required.

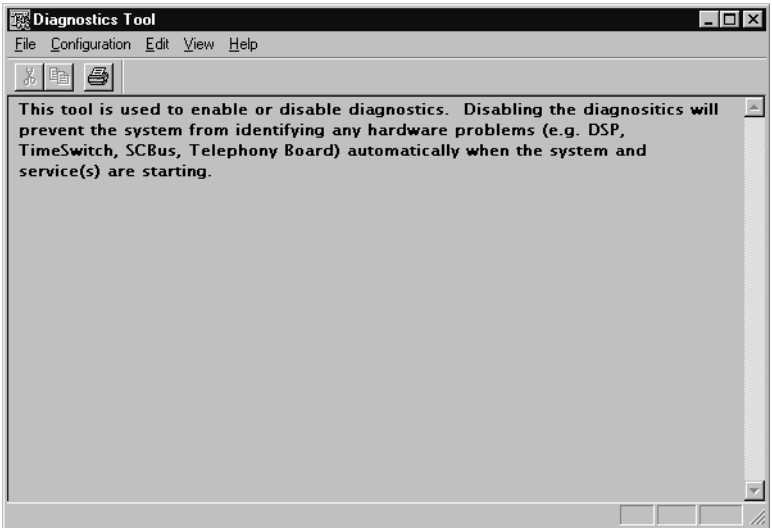
There are three recommended steps:

- Use the Diagnostics tool to turn off CallPilot startup diagnostics.
- Perform system maintenance.
- Use the Diagnostics tool to turn on CallPilot startup diagnostics.

To access the Diagnostics Tool

On the Windows desktop, click Start → Programs → CallPilot → System Utilities → Diagnostic Tool.

Result: The Diagnostics Tool window appears.



To enable startup diagnostics

From the Diagnostics Tool window, select Configuration → Maintenance Startup Diag → Enable.

To disable startup diagnostics

ATTENTION

Nortel Networks recommends that you leave the startup diagnostics turned on.

When you disable CallPilot startup diagnostics, you prevent CallPilot from automatically identifying hardware problems that may exist when the system and its services are started (DSP, TimeSwitch, MediaBus).

On the Diagnostics Tool window, select Configuration → Maintenance Startup Diag → Disable.

PEP Maintenance utility

Introduction

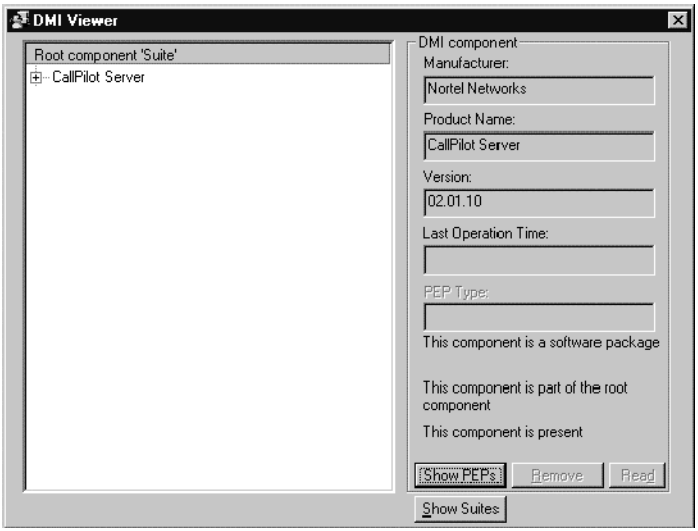
The PEP Maintenance utility displays a list of all installed PEPs on the server and enables you to uninstall PEPS.

For information on installing or uninstalling PEPs, refer to Part 4 of the *CallPilot Installation and Configuration* binder.

To access the PEP Maintenance utility

From the Windows desktop, click Start → Programs → CallPilot → System Utilities → PEP Maintenance Utility.

Result: The DMI Viewer window appears.

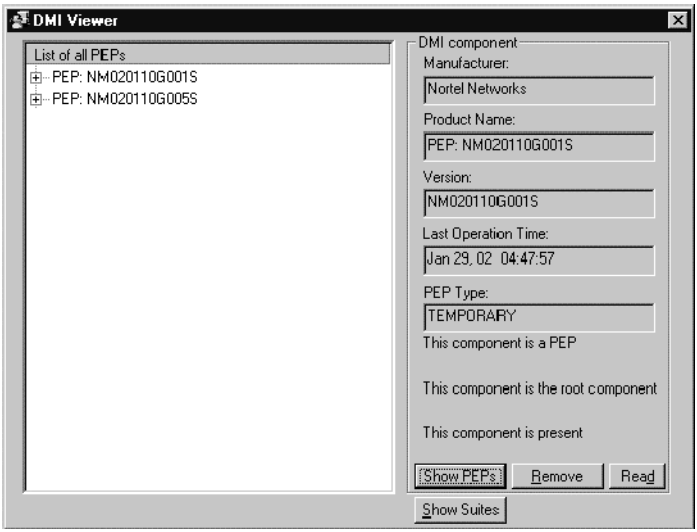


To view a list of all installed PEPs

1. Click the component for which you want to display the PEP list.
2. Click **Show PEPs**.

   Result: A list of all installed PEPs appears in the left pane.
3. If you want to review the readme file associated with a PEP, click the PEP, and then click **Read**.

   Result: The readme file opens in Notepad.



System Monitor

Introduction

The System Monitor consists of three tabs, as described in the table below:

Tab	Description
Channel Monitor	Shows the status of all CallPilot services, multimedia channels (DSP channels), and call channels (DS30X channels).
System Info	Displays particulars about the CallPilot System, such as features purchased, keycode, serial number, and CallPilot server IP addresses.
Legend/Help	Provides a description of icons and terminology displayed in the System Monitor window.

System Monitor is a nondestructive tool that does not alter the behavior of any CallPilot components.

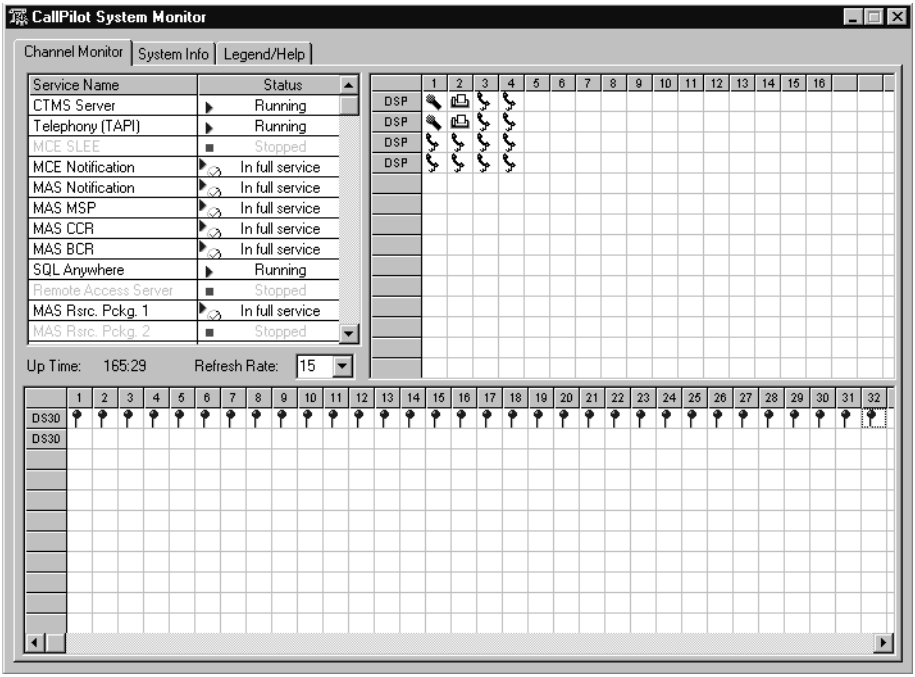
To access the System Monitor

On the Windows desktop, click Start → Programs → CallPilot → System Utilities → System Monitor.

Result: The CallPilot System Monitor window appears. By default, the Channel Monitor tab appears on top. Click the other tabs to view the information on those tabs.

About the Channel Monitor tab

The following is an example of the Channel Monitor tab, followed by a description of its contents:



CallPilot services

The Service Name pane shows the status of services from a CallPilot perspective. The status shown in the Windows NT Services control panel may state that a service is running, but it may not actually be fully running or in service from a CallPilot perspective. Refer to the System Monitor tool Channel Monitor tab for the true status.

The services listed under Service Name should be either running or in full service when CallPilot is functioning optimally. If any CallPilot services are stopped, investigate the cause of this. Call Nortel Networks technical support for assistance.

Note: While any stopped services should be investigated, some services are not critical. CallPilot may continue to handle call processing even with some services stopped.

Critical Services needed for CallPilot Call Processing include the following:

- CT Media Server Service
- Telephony Server (TAPI) Service
- MAS EMCI Service
- MAS Notification Service
- MCE SLEE Service
- MCE Notification Service
- SQL Anywhere Service
- VBPC Load Service (useful in a DSE system)
- Dialogic CT Media Server Core Service
- Dialogic CT Media Server ISE Service
- Call Channel Resource Service
- Blue Call Router Service
- Media Resource Service
- Maintenance Service Provider Service

DSPs

In the DSP pane, each DSP is represented in a separate row. Each box in the row is one DSP channel or multimedia channel. Click the Legend/Help tab to view descriptions of the multimedia channel icons.

For 200i servers, DSPs reside on the motherboard and on MPC-8 cards. DSPs are distributed as follows:

- The 200i server contains one embedded DSP with up to two MPC-8 cards.
- Each MPC-8 card contains a single DSP.

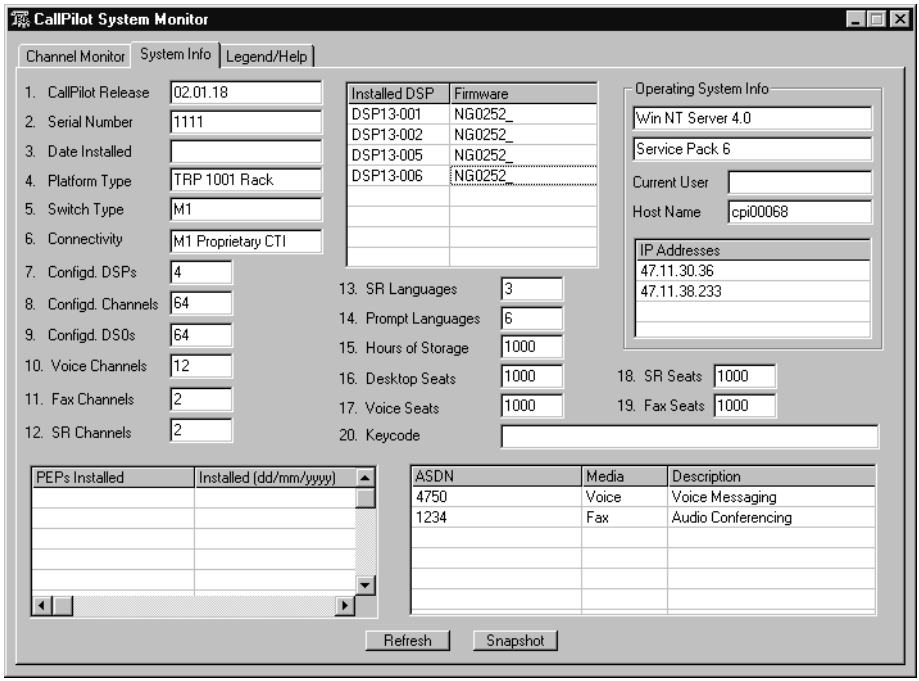
DS30X links

In the DS30X link pane, each DS30 row represents a separate DS30X link (also referred to as a DS30 link). Each box in the row represents one DS30X channel.

For the 200i server, the DS30X link to the switch is supported by the connection of the server to the switch backplane.

About the System Info tab

The following is an example of the System Info tab, followed by a description of its contents.

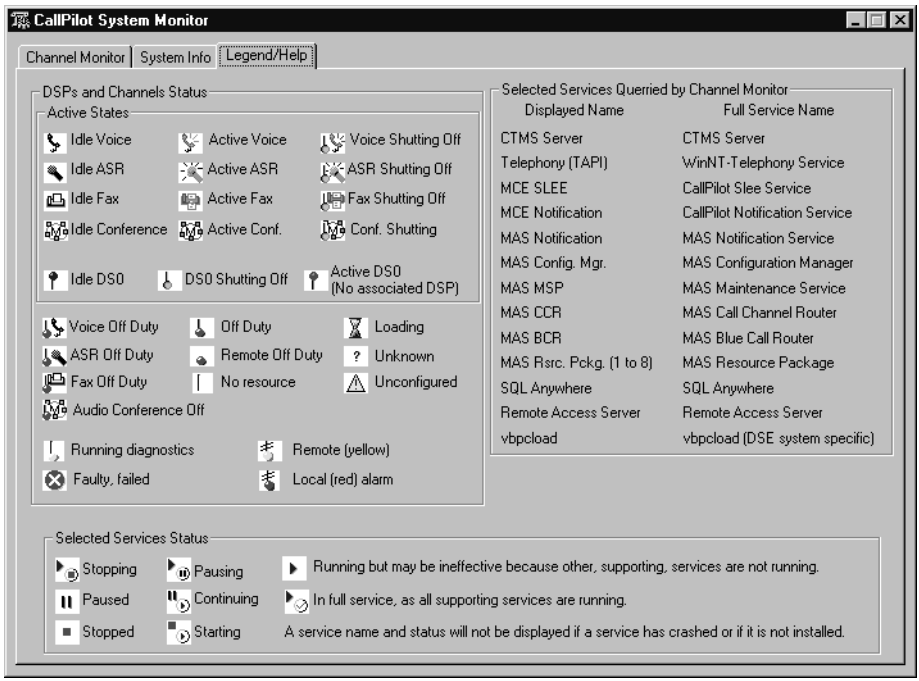


The numbered items provide information about the features purchased. Information about the underlying operating system is provided in the top right corner, including the server IP addresses.

PEP information and configured Service DNs are listed in the bottom part of the window.

About the Legend/Help tab

The following is an example of the Legend/Help tab. Consult this window for descriptions of the icons found in the Channel Monitor tab:



Chapter 6

Performing hardware maintenance

In this chapter

Overview 130

About PC cards 131

Section A: Preparing for server maintenance 133

Shutting down the server 134

Removing the server from the switch 135

Section B: Removing components 137

Replacing the server 138

Replacing or adding Multimedia Processing Cards 140

Removing the daughterboard 145

Replacing the Nortel Networks software feature key 149

Replacing the EIDE hard drive 151

Installing network interface cards 156

Replacing the DIMM 158

Overview

Introduction

This chapter describes how to perform hardware maintenance and upgrade procedures. The chapter is organized into the following sections.

Preparing for server maintenance

Section A: “Preparing for server maintenance” on page 133 provides procedures usually followed whenever you must replace a component or perform an upgrade activity. These are the first steps in working with the server.

Removing components

Section B: “Removing components” on page 137 provides procedures associated with field service.

About PC cards

Introduction

PC cards are small, versatile devices used on the 200i server. PC cards are about the same size as credit cards, but thicker.

Supported PC cards

PC cards supported on the 200i server include an Ethernet interface and a Nortel Networks-issued flash card used for system recovery. Check with your Nortel Networks representative for the most recent list of supported PC card types.

Section A: Preparing for server maintenance

In this section

Shutting down the server 134

Removing the server from the switch 135

Shutting down the server

Introduction

You prepare the 200i server for removal from the switch by shutting down the server.

Peripherals connected through the I/O breakout panel do not need to be disconnected before shutdown. The switch automatically powers the server when the server is locked into position on an IPE shelf. The server, therefore, powers off when it is removed from the switch.

Equipment required

You need the following equipment:

- keyboard, monitor, and mouse

or

- laptop computer

To perform a server shutdown

Follow the instructions in Part 1 of the *CallPilot Installation and Configuration* binder to courtesy down the server and then power down the server.

Removing the server from the switch

Introduction

You must remove the server from the switch before replacing the following components:

- daughterboard
- motherboard
- hard drive
- PCB interconnect strip
- in-board PC card
- DIMM
- SCSI paddleboard

Equipment required

You need the following equipment:

- antistatic mat
- antistatic wrist strap

To remove the server from the switch

1. Shut down the server.

   See “Shutting down the server” on page 134.
2. Turn off the monitor.
3. Disconnect the monitor, keyboard, and mouse.
4. Power down the peripheral SCSI devices.
5. Disconnect the SCSI cable (if connected).
6. Open the lock latches at the top and bottom of the server.

7 Grip the faceplate and pull the server out of the IPE shelf.

8 Place the server on a clean, static-resistant surface.

What's next?

When you have removed the server from the switch, you can replace and upgrade components.

Section B: Removing components

In this section

Replacing the server 138
Replacing or adding Multimedia Processing Cards 140
Removing the daughterboard 145
Replacing the Nortel Networks software feature key 149
Replacing the EIDE hard drive 151
Installing network interface cards 156
Replacing the DIMM 158

Replacing the server

Introduction

For activities that are not supported as field procedures, you must return the server to Nortel Networks for service.

This section provides an overview of how to replace the server.

The following steps make up the overall procedure for replacing the server. References are made to specific component replacement procedures where applicable.

To replace the server

1. If the installed server is functional, then perform a full backup of the hard disk as a precautionary measure.
2. Use CallPilot Manager to take the MPC cards out of service. Then remove the MPC cards from the faceplate of the server (see page 144).
3. Shut down the installed server (see page134).
4. Disconnect all peripherals from the server.
5. Remove the server from the switch (see page 135).
6. Separate the daughterboard from the motherboard, as shown on page 146.
7. Remove the software feature key (dongle) from the defective server and install it in the replacement server, as shown on pa ge150.
8. Remove the hard drive from the defective server and install it in the replacement server as shown on page152.
9. If a network interface card is installed in the in-board slot, remove it and install it in the replacement server (see pa ge156).

10. Remove the DIMM from the defective server and install it in the replacement server, as shown on page158.
11. Install the replacement server on the switch and connect all applicable peripherals, as described in Part 2 of the *CallPilot Installation and Configuration* binder.
12. If a PC card was removed from the faceplate of the defective server, install it in the replacement server, as shown on pa ge143.
13. Install and configure any MPC cards removed from the defective server, as shown on page143.

What's next?

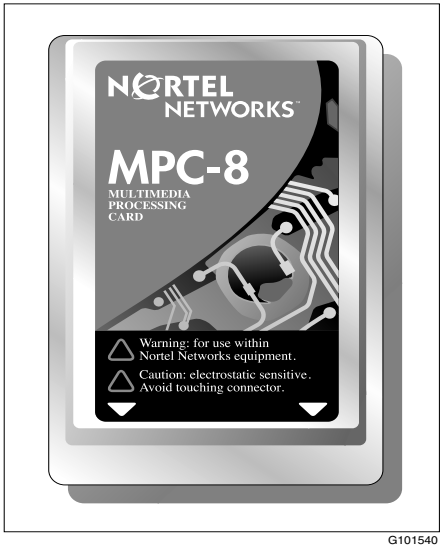
- Ensure that the 200i server is able to start up and that the Windows NT logon window appears.
- Test the CallPilot channels as described in Part 3 of the *CallPilot Installation and Configuration* binder.

Replacing or adding Multimedia Processing Cards

Introduction

The Nortel Networks MPC-8 card supports multimedia telephony services on the 200i server. Two specially designed card slots are available for the MPC-8. Both are located on the 200i server faceplate.

Note: The MPC-8 card looks like a Type II PC card, but it uses different technology and is not compatible with standard PC card slots.



G101540

CAUTION

Risk of equipment damage

Any attempt to install an MPC card into a standard PC card slot results in equipment damage.

Correct card insertion

The MPC-8 card is keyed so that it fits only one way into the slot on the 200i server faceplate. If the card is inserted incorrectly, the card does not go all the way into the slot.

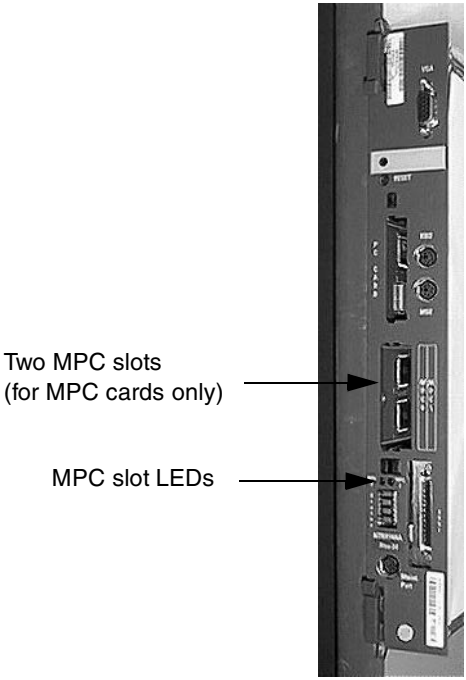
CAUTION

Risk of equipment damage

If you force the card into the slot incorrectly, this can result in damage to the MPC-8 card and the 200i server.

MPC card slot LEDs

There is an LED for each MPC card slot. The following picture shows where these slots and LEDs are located on the 200i server:



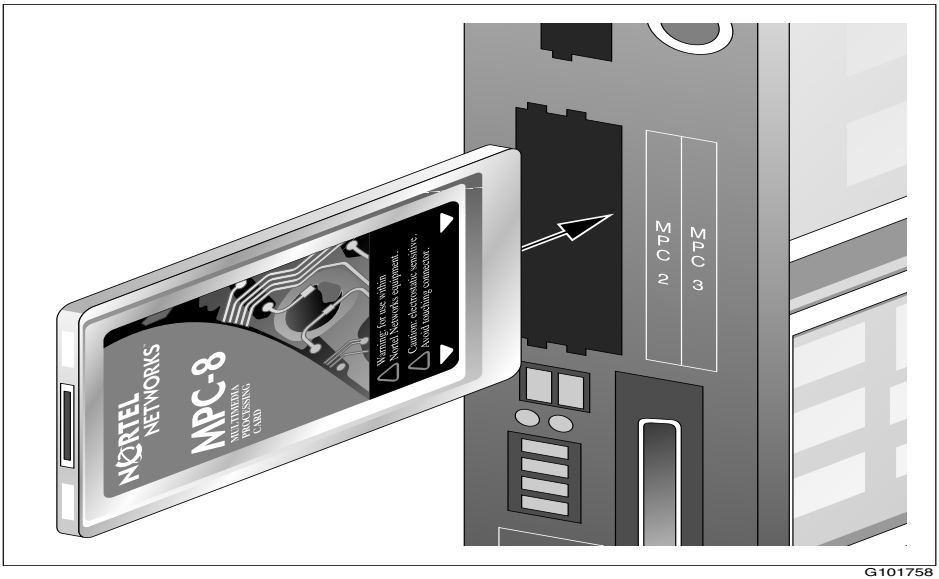
The following table describes each LED status:

Status	Description
Off	The MPC card is not receiving power. It is safe to remove the card.
On	The MPC card is in use. In this case, it is *not* safe to remove the card.
Off, then on	The MPC card has been recognized by the 200i server software and has been powered up.
On, then off	The MPC card has been successfully powered down. It is safe to remove the card.

To add an MPC-8 card

1 Ensure that the MPC-8 card label is facing one of the following ways:

- facing to the right if the 200i server is inserted into the IPE shelf (see the picture below)
- facing up if the faceplate is lying horizontally on a flat surface



2 Insert the card into the slot, and gently push it until it is firmly in place and the ejector button pops back out.

3 Access CallPilot Manager and run the Configuration Wizard to initialize the new hardware. For instructions, refer to the Configuration Wizard online Help in CallPilot Manager.

If you are adding channels, configure the additional channels.

Note: If this is part of a feature or channel expansion, have the new keycode ready.

4 Enable the card and its channels.

For instructions, refer to the Multimedia Monitor online Help in CallPilot Manager.

To replace MPC cards

Note: This procedure assumes that the 200i server is locked into position on the IPE shelf. If it is not, perform steps 3 to 6 only.

1 Log on to CallPilot Manager.

2 Disable (stop) the DSP (multimedia) channels associated with the MPC-8 card that you need to replace.

For instructions, refer to the Multimedia Monitor online Help in CallPilot Manage.

3 Ensure that the MPC's LED on the 200i server faceplate is not lit, which indicates that the MPC is no longer receiving power.

CAUTION

Risk of equipment damage

If you remove an MPC while it is receiving power, this can damage the MPC or the 200i server.

4 Press the MPC's ejector button to dislodge the MPC from its slot.

The ejector button is on the 200i faceplate underneath the MPC slot. There is one ejector button for each MPC slot.

5 Pull the MPC out of its slot.

6 Insert the new MPC into the slot, and gently push it until it is firmly in place and the ejector button pops back out.

7 Start the MPC-8 card in CallPilot Manager.

See "Starting and stopping components" on page 99.

8 Ensure that the MPC's LED lights up green.

Removing the daughterboard

Introduction

The daughterboard is secured by four screws to the stiffener and the motherboard of the 200i server.

Equipment required

You need the following equipment:

- antistatic wrist strap
- Phillips No. 1 screwdriver

Before you begin

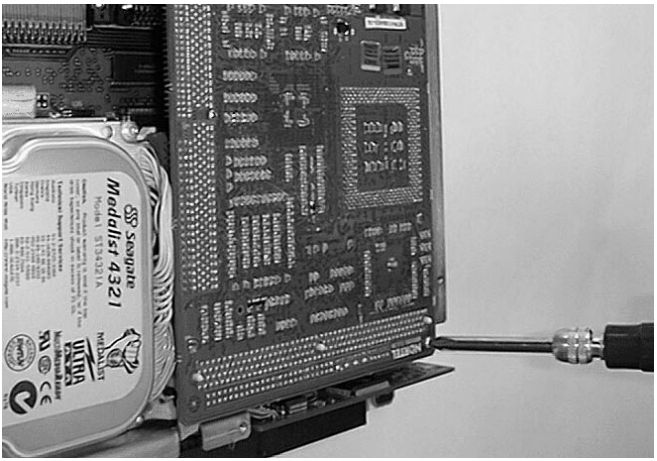
Before replacing the daughterboard, review these procedures:

- “Removing the server from the switch” on page 135
- “Replacing the DIMM” on page 158

To remove the daughterboard

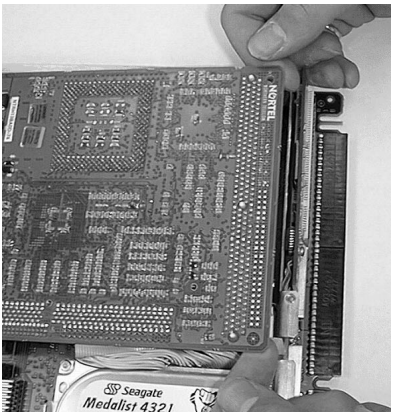
1 Remove the server from the switch and lay it on a static-resistant surface, with the daughterboard facing up.

2 Loosen and remove the four screws, one from each corner of the daughterboard.



3 Put your fingers under the daughterboard on the backplane side of the server, and carefully lift that side of the board out of the PCB connector slot.

Note: Lift the daughterboard only slightly from the motherboard because the daughterboard is still secured to the hard drive data cable.



4 Slide the daughterboard toward the backplane, freeing the VGA connector from the faceplate.

5 Tilt the board to the left, and remove the hard drive data cable from the daughterboard.

Note: Take note of the pin 1 location (red pin stripe) of the hard drive data cable for later reconnection.

6 Set the board down with the component side facing up.

To replace the daughterboard components

1 Unpack the replacement daughterboard, and set it component-side up near the defective board.

2 Remove the PCB interconnect board from its slot on the defective daughterboard.

Note: If the PCB interconnect board is not attached to the defective daughterboard, then it may have detached from the daughterboard when the daughterboard was removed from the 200i server. In this case, the PCB interconnect board may still be attached to the motherboard.

3 Install the PCB interconnect board on the replacement daughterboard.

4 Remove the DIMM from the defective daughterboard, as described in the procedure on page158.

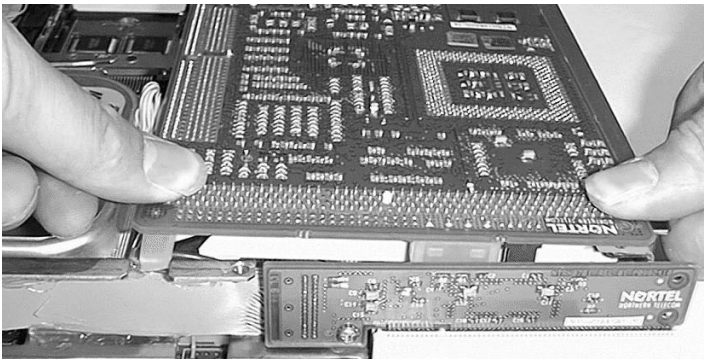
5 Install the DIMM on the replacement daughterboard.

6 Attach the hard drive data cable connector to the replacement daughterboard.

7 Insert the replacement daughterboard into the stiffener so that the VGA connector goes through the slot in the server faceplate.

8 On the backplane side of the board, align the PCB interconnect board with its slot on the motherboard.

9 Apply downward pressure evenly across the connector until it is securely seated.



ATTENTION

Ensure that the hard drive DC power connector and 40-pin ribbon connector are not pinched when inserting the daughterboard.

10 Insert and tighten the four screws removed in step 2 on page146 into each corner of the replacement board.

What's next?

If you are finished with the required maintenance, then install the server into the switch, as described in Part 2 of the *CallPilot Installation and Configuration* binder.

Replacing the Nortel Networks software feature key

Introduction

The software feature key is a software security device (sometimes called a dongle). This key stores the unique serial number of the server.

Equipment required

You need the following equipment:

- Phillips No. 1 screwdriver
- tweezers

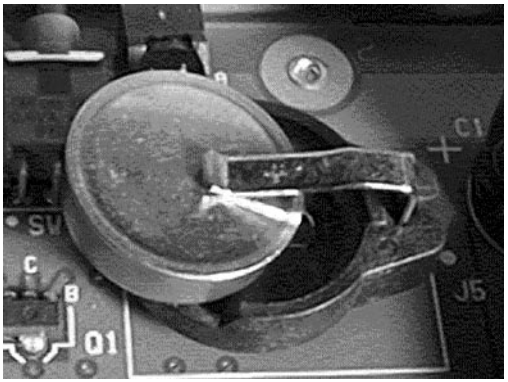
Before you begin

Remove the daughterboard. See page 145.

To replace the software feature key

1. Remove the daughterboard from the motherboard.
2. Pull the software feature key out from under the clip.

   Note: Apply a slight upward pressure on the clip, but ensure the clip is not strained to such a degree that it can no longer apply enough downward pressure to hold the new software feature key in place.



3. Insert the software feature key into the socket on the replacement motherboard, lip-side up.
4. Reattach the daughterboard to the motherboard.

Replacing the EIDE hard drive

Introduction

The hard drive is located beside the daughterboard and rests lengthwise along the backplane side of the server. Four screws secure the hard drive in place—two on the backplane edge of the stiffener, one through the motherboard, and one through the bottom edge of the stiffener.

Equipment required

You need the following equipment:

- antistatic wrist strap
- Phillips No. 1 screwdriver
- flat-blade screwdriver

Before you begin

Before you replace the hard drive on a new 200i server, remove the server from the switch. See “Removing the server from the switch” on page 135.

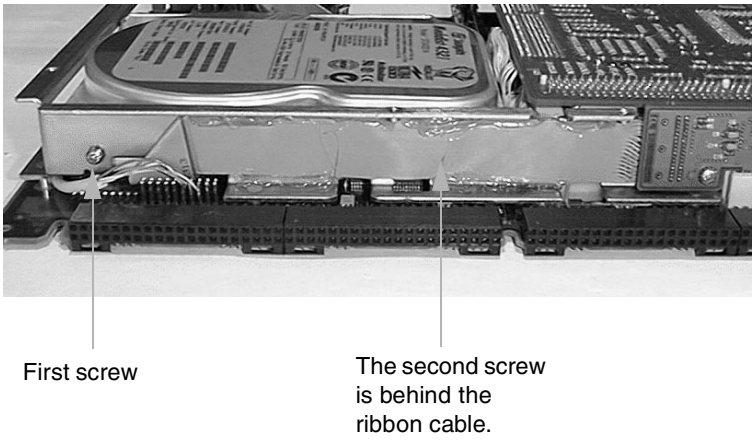
To remove the EIDE hard drive

1 Loosen and remove the following four screws:

- one screw on the bottom of the motherboard stiffener

Note: On some versions of the 200i server, the SCSI cable is routed around the outside edge of the stiffener. In this situation, lift the SCSI cable over the top of the stiffener so that you can access the screws that secure the hard drive.

- two screws on the side of the motherboard stiffener



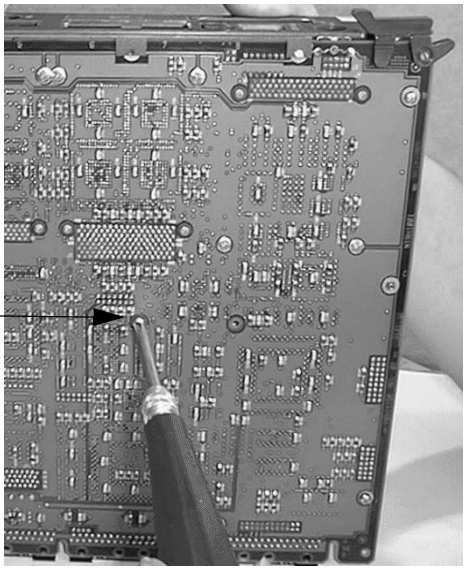
- one screw underneath the motherboard

CAUTION

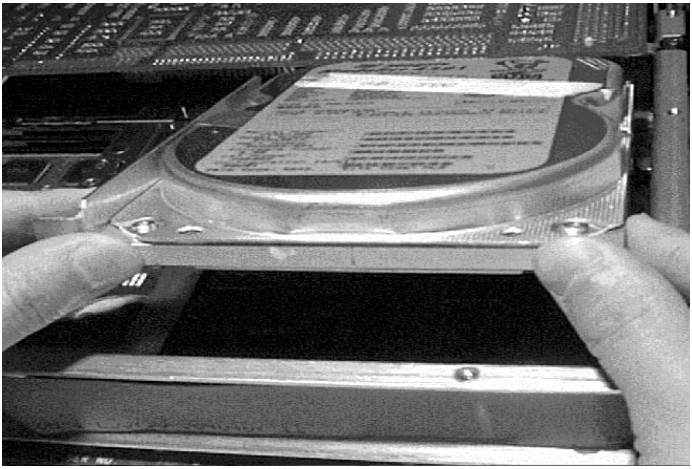
Risk of damage to the hard drive

Grip the hard drive with one hand as you remove this last screw.

Location of screw underneath motherboard



2 Push the hard drive slightly toward the daughterboard so that the hard drive is free of the bottom edge of the motherboard stiffener.



3 Lift the hard drive out of the stiffener, and disconnect the hard drive power and data cables.

4 Verify with the manufacturer's documentation that the jumpers are set correctly.

Note: The drive must be configured as the primary drive.

5 Position the drive in the new server.

6 Attach the hard drive power and data cables.

Note: Ensure that the red stripe on the data cable is next to the red stripe on the power cable.

7 Angle the drive slightly downward and toward the daughterboard until you can lower the replacement drive into the motherboard stiffener.

8 Align the drive with the screw holes, and tighten the screws.

What's next?

If you are finished with the required maintenance, then install the server into the switch, as described in Part 2 of the *CallPilot Installation and Configuration* binder.

Installing network interface cards

Introduction

Network interface cards allow you to connect your 200i server to an existing network (CLAN) for connectivity to desktop computers or for LAN-based server administration.

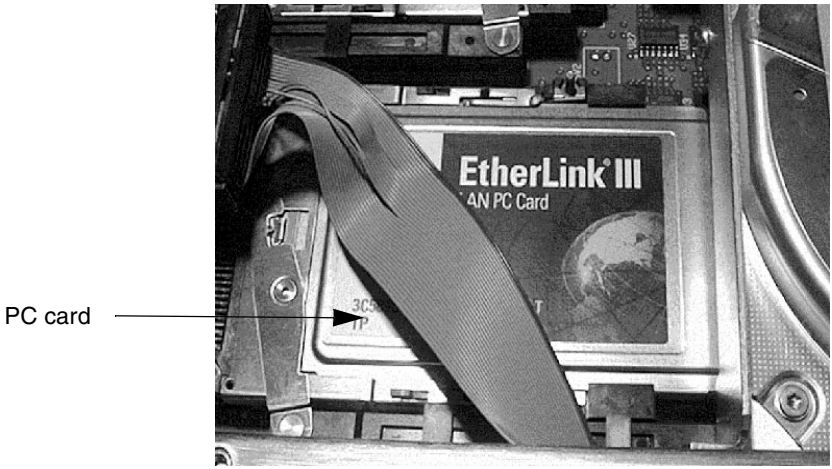
The 200i has an internal slot on the motherboard where a single network card can be added.

To install a network interface card

1 Remove the hard drive as described on page152.

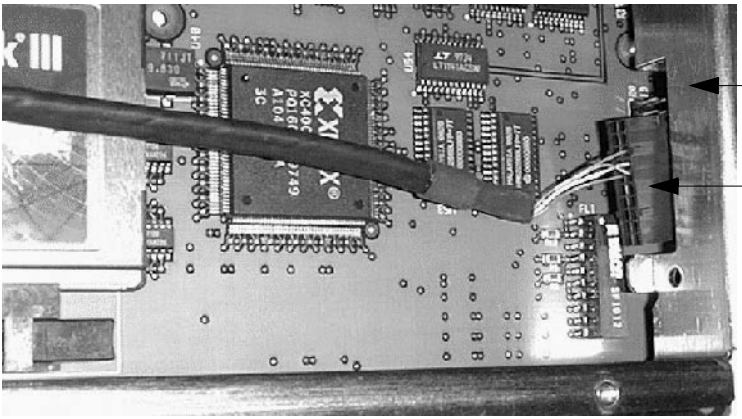
2 Insert the PC card into the internal PC card slot, label-side up.

Note: The following picture shows a correctly inserted Ethernet card:



3 Remove the jumper block from the motherboard stiffener.

4 Thread the pigtail end of the card cable under the motherboard stiffener.



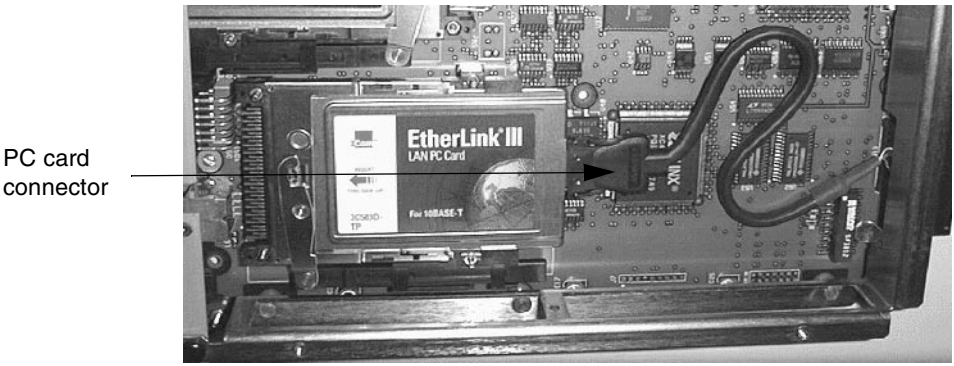
5 Connect the card cable jumper block to the pin header.

Note: The pin header is located to the right of the motherboard stiffener.

6 Connect the other end of the cable to the PC card.

Note: Bend the cable so that it can be connected to the PC card and it lies flat.

Result: The following picture shows a connected Ethernet card:



7 Replace the hard drive.

Note: You must also add and configure the correct driver software. Refer to the operating system installation instructions in Part 4 of the *CallPilot Installation and Configuration* binder.

Replacing the DIMM

Introduction

The DIMM resides in a slot on the daughterboard and is secured by a lock latch. The lock latch rotates freely to an open position so the DIMM can be removed, and closes to secure the DIMM in the proper position.

The DIMM is keyed so that it can only be fully seated and secured by the lock latch when it is inserted correctly.

Equipment required

You need the following equipment:

- antistatic wrist strap
- Phillips No. 1 screwdriver

Before you begin

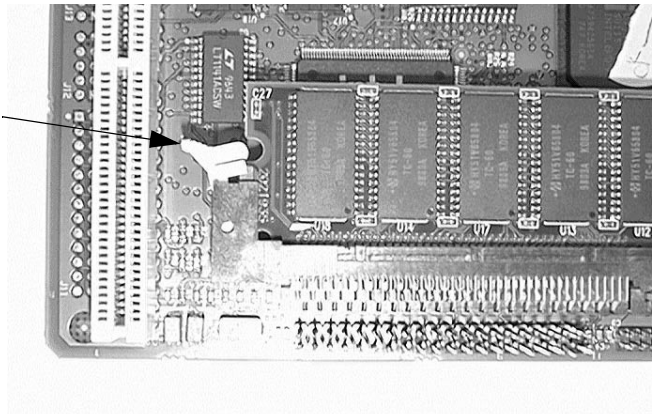
Perform the following tasks to replace the DIMM:

- “Removing the server from the switch” on page 135
- “Removing the daughterboard” on page 145

To replace the DIMM

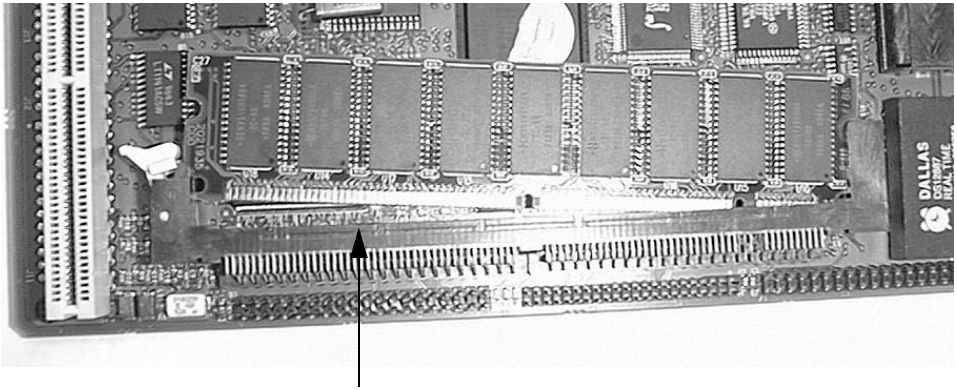
1. Remove the daughterboard from the motherboard and stiffener, as shown on page 146.
2. Set the daughterboard on an antistatic surface with the component side facing up.

3 Move the lock latch to its open position.



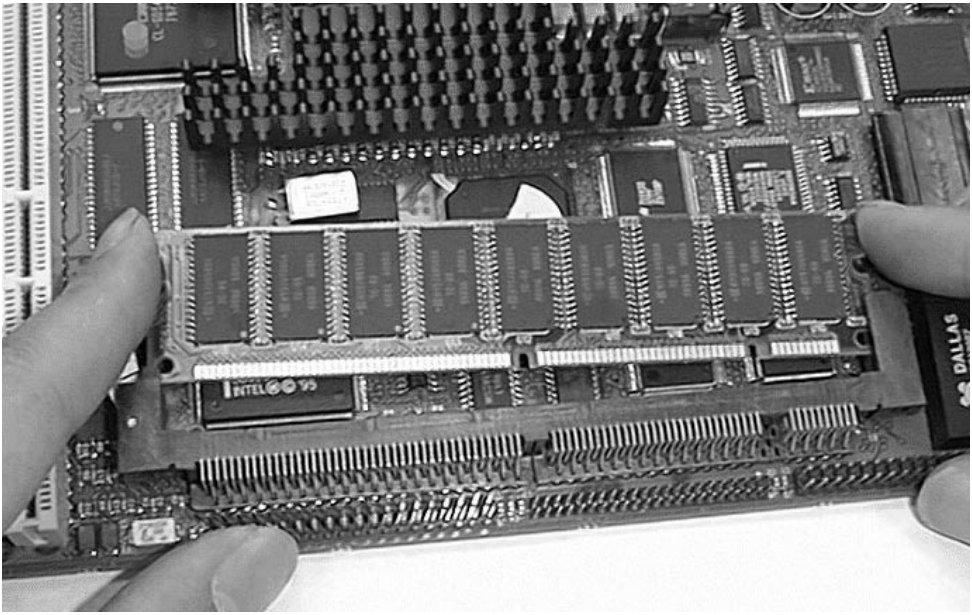
4 Slide the DIMM out of its slot until it clears the slot socket. Then lift out the DIMM.

Note: You may need to use a slot-head screwdriver to extract the non-lock-latch side of the DIMM from the socket.



5 Push the DIMM into the slot on the replacement server.

Result: The lock latch snaps into place when the DIMM is inserted completely.



Note: The DIMM is keyed to line up with the DIMM socket (the socket has blanks that line up with the notches on the DIMM). If the DIMM is inserted upside-down, then the lock latch will not close.

What's next?

If you are finished with the required maintenance, then install the server into the switch, as described in Part 2 of the *CallPilot Installation and Configuration* binder.

Index

Numerics

200i server
  boot failure, what to do 34
  boot sequence indicators
    hex display 25
    LED 23
  daughterboard
    equipment needed for removal 145
    removing 146
    replacing 147
  DIMM
    replacing 158
  EIDE hard drive
    equipment needed for replacement 151
    replacing 152
  removing from switch 135
    what you need 135
  replacing 138
  shutting down 134
    what you need 134
  software feature key
    equipment needed for replacement 149
    picture 150
    replacing 150
  status indicators
    hex display 26
    LED 24

A

Alarm Monitor, using 82–84
alarms
  about 78, 82
    investigating 83
alert icons, component states 97
application event log
  definition 59
Application Log 61
arp command 71
  parameters and descriptions 71
  running from Windows NT 4.0 72
  syntax 71

B

BIOS boot screen
  successful
    description 37
    example 35
  viewing 35
BIOS POST diagnostics, watching 54
BIOS settings, working with 53
boot failure, what to do 34
bootup
  diagnostics, critical
    codes 28
    description 28
  diagnostics, noncritical
    codes 29
    description 29
  results, viewing 35
  successful
    description 37
    example 35

C

call channels
  diagnostics, running 89
  disabling 89
  working with 114–115
CallPilot
  software, reinstalling 13
  utilities
    Diagnostics Tool 118
    PEP Maintenance 118, 122
    System Monitor 118
CallPilot Manager
  Alarm Monitor, using 82–84
  alarms
    about 78, 82
    investigating 83
  alert icons, component states 97
  Channel Monitor, using 89, 114–115
  Event Browser, using 85–87
  events
    about 78, 85
    investigating 86
  fault management
    alarm notification 78
    event processing 78
  Maintenance page
    Diagnostics section 94
    General section 93
    Maintenance section 94
    purpose 92
    using 88
  Multimedia Monitor, using 89, 112–113
CallPilot services
  Channel Monitor tab 125
card slots
  LEDs
    description 142
    picture 141
cards
  MPC-8
    illustration 140
    inserting correctly 141
    installing 143
  network interface
    installing 156
  supported PC 131
cautions
  MPC card 140, 141, 144
Channel Monitor tab 125
  CallPilot services 125
    critical 126
  DS30X links pane in 127
  DSP pane in 126
Channel Monitor, using 89, 114–115
channels
  call, working with 114–115
  diagnostics, running 89
  disabling 89
  multimedia, working with 112–113
cold boot, forcing with Console Redirection 54
commands, TCP/IP
  arp 71
  ipconfig 66
  nbtstat 72
  netstat 74
  ping 68
  tracert 69
components
  CallPilot Manager maintenance activities 94
  dependencies 80
  diagnostics that can be run 104
  diagnostics-eligible 103
  list 93
  replacing 17
  start, about 99–101
  starting 101–102
  states
    Alert icons 97
    description 96–97
    viewing 98
  stop, about 99–101
  stopping 101–102
Console Redirection

BIOS POST diagnostics, watching 54
BIOS settings, working with 53
cold boot, forcing 54
diagnostic boot, forcing 54
difference from pcANYWHERE32 42
direct serial connection
200i server, shutting down 48
client PC, configuring 47
requirements 45
serial cable, connecting 48
modem connection
200i server, shutting down 50
client PC, configuring 50
modem properties, configuring 50
requirements 46
MS-DOS
diagnostics, running 54
utilities, using 54
restrictions 43
warm boot, forcing 54
what you can do 53
when to use 43
where it can be used 43
Courtesy stop, description 100
critical bootup diagnostics
codes 28
description 28
Critical Services
CallPilot services 126

D

daughterboard
equipment needed for removal 145
removing 146
replacing 147
diagnostic boot, forcing with Console Redirection 54
diagnostics
critical bootup
codes 28
description 28
integrated
running 103, 105–107
troubleshooting failures 104
when to run 103
last results
description 110
viewing 108–110
noncritical bootup
codes 29
description 29
noncritical OS and switch
codes 31
description 30
POST 35
failure 38, 39
successful 35, 37
viewing 35
TCP/IP 56, 66
arp 71
ipconfig 66
nbtstat 72
netstat 74
ping 68
tracert 69
Diagnostics section, Maintenance page 94
Diagnostics Tool 118
system utility 119
diagnostics tool
descriptions 64
TCP/IP 66
Windows NT 4.0 63
DIMM
picture 159
replacing 158
direct serial connection
Console Redirection
200i server, shutting down 48
client PC configuring 47
requirements 45
serial cable, connecting 48
display, hex
functions 25
location 22
dongle

equipment needed for replacement 149
picture 150
replacing 150

E

EIDE hard drive
equipment needed for replacement 151
picture 154
replacing 152
Event Browser, using 85–87
Event Detail dialog box 62
event log
application 59
security 59
system 59
event logs
types, description 59
viewing 60
events
about 78, 85
investigating 86

F

fault management
alarm notification 78
event processing 78

G

General section, Maintenance page 93

H

hardware maintenance
components, replacing 17
performing 13
preparing for 13
hardware problems, detecting 80
hex display
boot sequence indicators 25
functions 25
location on 200i server 22
server status indicators 26

I

illustrations
MPC-8 card 140
correct installation 143
indicators, boot sequence
hex display 25
LED 23
installing
MPC-8 cards 143
the correct way 141
network interface card 156
integrated diagnostics
running 105–107
troubleshooting failures 104
when to run 103
ipconfig command 66
flags and descriptions 67
running from Windows NT 4.0 67
syntax 66
ipconfig default 66

L

LED
boot sequence indicators 23
functions 23
location on 200i server 22
MPC card slots
description 142
server status indicators 24
LEDs
MPC card slots
picture 141
Legend/Help tab 128
logs

event
viewing 60
event types
viewing 59

M

maintenance
activities by component 94
preparing for 13, 18
Maintenance page, CallPilot Manager
Diagnostics section 94
General section 93
Maintenance section 94
purpose 92
using 88
modem
connection, Console Redirection
200i server, shutting down 50
client PC, configuring 50
modem properties, configuring 50
requirements 46
motherboard components
stiffener, picture 152
MPC card slots
LEDs
description 142
picture 141
MPC cards
caution 140, 141, 144
MPC-8 cards
illustration 140
inserting correctly 141
illustration 143
installing 143
MS-DOS
diagnostics, running with Console Redirection 54
utilities, using with Console Redirection 54
multimedia channels, working with 112–113
Multimedia Monitor, using 89, 112–113

N

nbtstat command 72
parameters and descriptions 72
running from Windows NT 4.0 73
syntax 72
netstat command 74
parameters and descriptions 74
running from Windows NT 4.0 75
syntax 74
network interface card
installing 156
picture 156
noncritical bootup diagnostics
codes 29
description 29
noncritical OS and switch diagnostics
codes 31
description 30

O

OS and switch diagnostics, noncritical
codes 31
description 30

P

parts, obtaining replacement 17
PC cards
supported 131
pcANYWHERE32
difference from Console Redirection 42
PEP Maintenance utility 118, 122
pictures
200i server
hex display, location 22
LED, location 22
DIMM 159
EIDE hard drive 154
motherboard stiffener 152
MPC card slot LEDs 141

network interface card 156
software feature key 150
ping command 68
parameters and descriptions 68
running from Windows NT 4.0 69
syntax 68
POST diagnostics
failure 38, 39
results, viewing 35
successful 35, 37
Power-On Self-Test (POST)
definition 35
diagnostics 35

R

removing the 200i server 135
replacement parts, obtaining 17
replacing
the 200i server 138
resources, troubleshooting
CallPilot Administrator's Guide 15
CallPilot Troubleshooting Reference 15
restrictions, Console Redirection 43

S

security event log
definition 59
server
replacing 138
shutting down the 200i server 134
software
maintenance, preparing for 13
reinstalling 13
software feature key
equipment needed for replacement 149
picture 150
replacing 150
Stop, description 100
supported PC cards 131
switch
removing the server from 135
system
event log, viewing 60
problems, resolving 12, 14
rebuild, performing 13
system event log
definition 59
system event log, viewing 60
System Info tab 127
System Monitor 118
Channel Monitor tab 125
Legend/Help tab 128
System Info tab 127
System Monitor utility 124
system utilities
Diagnostics Tool 119
System Monitor 124

T

TCP/IP diagnostics 56, 66
arp 71
ipconfig 66
nbtstat 72
netstat 74
ping 68
tracert 69
testing
POST diagnostics 35
tracert command 69
parameters and descriptions 70
running from Windows NT 4.0 70
syntax 69
troubleshooting
overview 12, 14
resources
CallPilot Administrator's Guide 15
CallPilot Troubleshooting Reference 15
in this guide 14

U

utilities
Diagnostics Tool 118, 119
PEP Maintenance 118, 122
System Monitor 118, 124

W

warm boot, forcing with Console Redirection 54
Windows NT
Event Viewer 60
reinstalling 13
Windows NT 4.0 Diagnostics tool
descriptions 64
Windows NT Diagnostics tool 63

CallPilot

Installation and Configuration
Part 5: 200i Server Maintenance and Diagnostics

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