



Nortel CallPilot

# 202i Server Maintenance and Diagnostics

Document status: Standard  
Document version: 01.02  
Document date: 11 August 2009

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## Publication History

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**August 2009**

CallPilot 5.0 Standard 01.02 of the *CallPilot 202i Server Maintenance and Diagnostics* is updated to inform about tracking deleted read and unread messages in the Session Trace tool.

**January 2009**

CallPilot 5.0, Standard 01.01 of the *CallPilot 202i Server Maintenance and Diagnostics* guide is issued for general release.



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# Chapter 1

## How to get help

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This section explains how to get help for Nortel products and services.

### Getting help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

<http://www.nortel.com/support>

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. More specifically, the site enables you to:

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

### Getting help over the phone from a Nortel Solutions Center

If you don't find the information you require on the Nortel Technical Support Web site, and have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

<http://www.nortel.com/callus>

### **Getting help from a specialist by using an Express Routing Code**

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

<http://www.nortel.com/erc>

### **Getting help through a Nortel distributor or reseller**

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

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## Chapter 2

# About this guide

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### In this chapter

"Maintenance and diagnostics overview" (page 11)

"Resolving system problems" (page 12)

"Replacing hardware components" (page 14)

### Maintenance and diagnostics overview

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

For a list of CallPilot documentation, see the document map on page "Reference documents" (page 14).

### Who should read this guide

This guide is for administrators, technicians, and engineers who maintain a CallPilot server. It is intended to be a guide for the following purposes:

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

This guide is based on the assumption that you have basic computing skills and are familiar with necessary safety procedures. For more information about safety, see *CallPilot Fundamentals* NN44200-100.

### Resolving system problems

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

If you cannot resolve your problem with the resources described in this guide, see the following documents:

- *CallPilot Administrator's Guide* NN44200-601
- *CallPilot Troubleshooting Guide* NN44200-700

**Note:** For more details, see ["Resolving system problems"](#) (page 12).

### Preparing for hardware or software maintenance

The *CallPilot Installation and Configuration Task List* NN44200-306 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 7 "Performing hardware maintenance and mechanical assembly"](#) (page 83) explains how to replace hardware components. For more details, see ["Replacing hardware components"](#) (page 14).

### Rebuilding the CallPilot system

When you purchase your CallPilot server, it is preinstalled with the 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, see the *CallPilot Software Administration and Maintenance Guide* .NN44200-600.

## Resolving system problems

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

If you cannot resolve your problem with the resources described in this guide, see the following documents:

- *CallPilot Administrator's Guide* NN44200-601
- *CallPilot Troubleshooting Guide* NN44200-700

### Using this guide

This guide provides instructions to use the resources provided by your 202i server, as follows.

To	See
Interpret the LEDs on the 202i server	Chapter 3 "Troubleshooting your CallPilot system" (page 17)
Interpret startup sequence and diagnostic codes	Chapter 3 "Troubleshooting your CallPilot system" (page 17)
Use the operating system diagnostic tools, including Event Viewer and TCP/IP diagnostic tools	Chapter 4 "Using the operating system online diagnostic tools" (page 33)
Use the Event Browser, Alarm Monitor, and Maintenance page in CallPilot Manager	Chapter 5 "Using CallPilot Manager to monitor hardware" (page 45)
Use the following CallPilot system utilities:	Chapter 6 "Using CallPilot system utilities" (page 69)
<ul style="list-style-type: none"> <li>• Diagnostics Tool</li> <li>• System Monitor</li> </ul>	

### Using the *CallPilot Administrator's Guide*

The *CallPilot Administrator's Guide* NTP NN44200-601 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 Guide*

The *CallPilot Troubleshooting Guide* NN44200-700 describes symptoms that can appear on all CallPilot server platforms, and how to resolve them.

Use the *CallPilot Troubleshooting Guide* 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

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

To replace or install	See
The 202i server (in the event of a complete system failure)	<a href="#">"Replacing the server" (page 85)</a>
The hard drive	<a href="#">"Replacing the hard drive" (page 86)</a>
The software feature key (dongle)	<a href="#">"Replacing the software feature key" (page 89)</a>

### Approved replacement parts

Before you replace any parts on your server, see the Nortel product catalog for the part codes.



#### CAUTION

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

### Preparing for maintenance activities

Before you proceed with hardware maintenance activities, review the *CallPilot Installation and Configuration Task List* NN44200-306 for the following information:

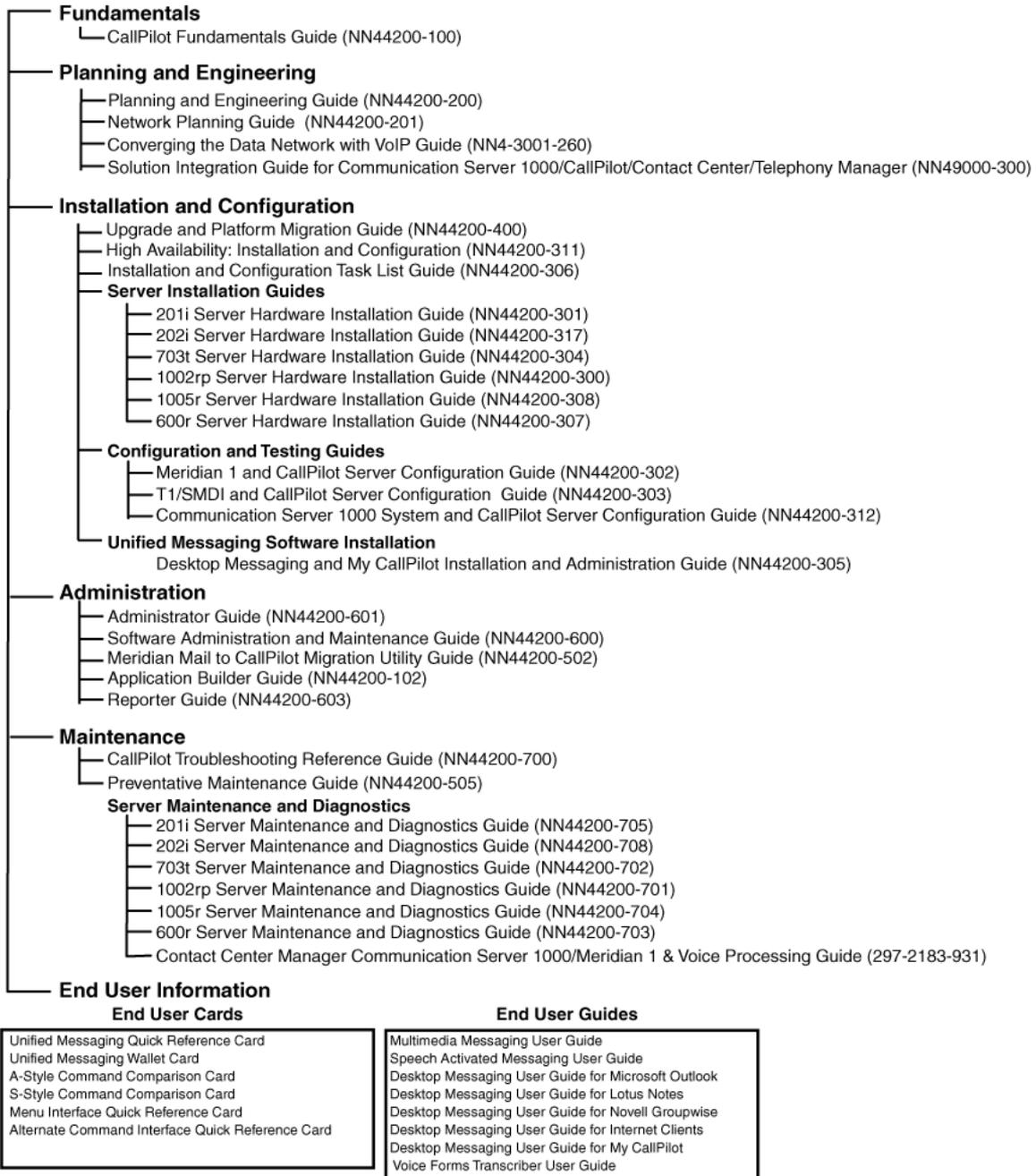
- required tools and equipment
- recommended safety precautions for electrostatic discharge, handling cards, and handling your server
- instructions to shut down your 202i server or for take it out of service

### Reference documents

For a list of all CallPilot documents see the following Customer Documentation Map.



## CallPilot Customer Documentation Map





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# Chapter 3

## Troubleshooting your CallPilot system

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### In this chapter

"Overview" (page 17)

"Section A: LED and HEX displays" (page 18)

"Status LEDs and HEX display location" (page 18)

"Interpreting the power status LED" (page 19)

"Interpreting the network and drive activity LEDs" (page 20)

"Interpreting the HEX display" (page 22)

"Section B: Startup diagnostics" (page 25)

"Startup diagnostic codes" (page 25)

"Startup sequence description" (page 28)

"Troubleshooting startup problems" (page 30)

### Overview

This guide provides instructions to use the resources provided by your 202i system. Use these resources to determine the cause of system problems, and then resolve them.

### LEDs and HEX display on the 202i server faceplate

The LEDs indicate when

- the 202i server is in use
- it is safe to remove the server from the switch

- network activity is occurring

The HEX display displays messages that appear during startup or normal 202i server operation.

For more information, see ["Section A: LED and HEX displays" \(page 18\)](#).

### **Startup sequence and diagnostic codes**

To help you determine if the 202i server started successfully (or if it failed), watch the startup sequence and the diagnostic codes that appear. The entire sequence occurs when you perform one of the following:

- Lock the 202i server against the switch backplane. When locked against the backplane, the 202i server begins receiving power.
- Restart the operating system.
- Press Reset on the 202i server faceplate to restart the hardware.

For more information, see ["Section B: Startup diagnostics" \(page 25\)](#).

## **Section A: LED and HEX displays**

### **In this section**

["Status LEDs and HEX display location" \(page 18\)](#)

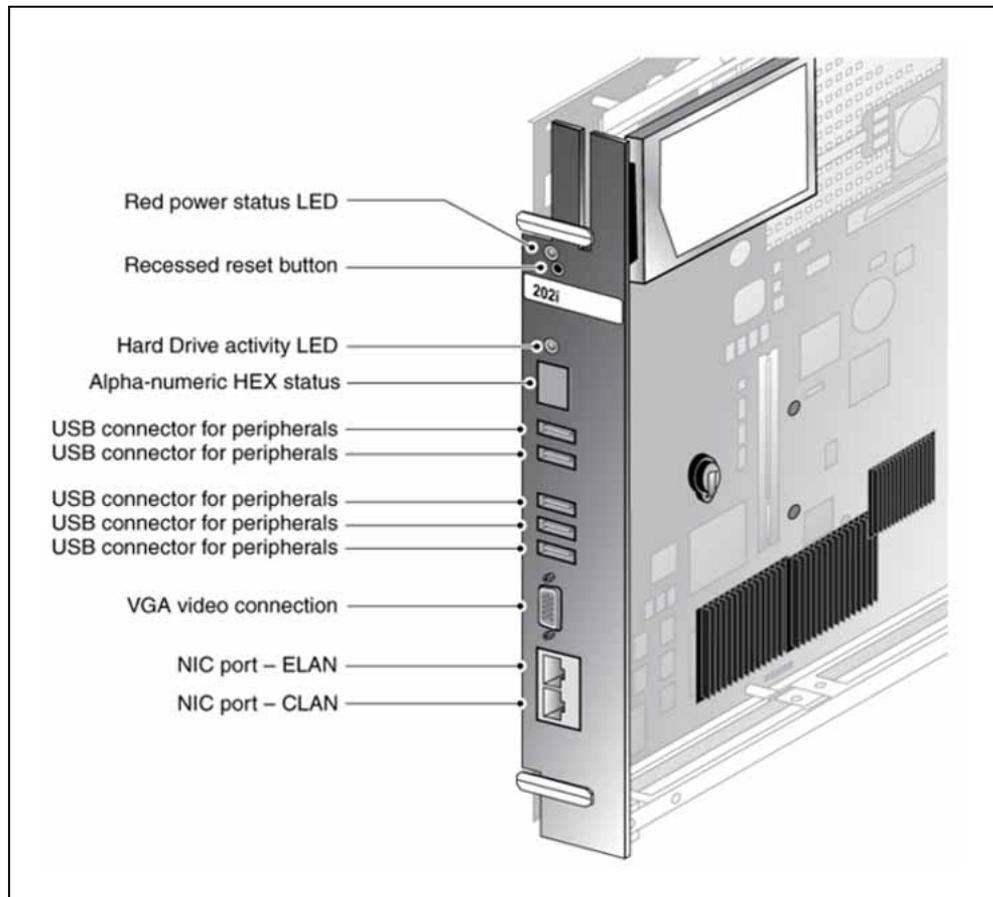
["Interpreting the power status LED" \(page 19\)](#)

["Interpreting the network and drive activity LEDs" \(page 20\)](#)

["Interpreting the HEX display" \(page 22\)](#)

## **Status LEDs and HEX display location**

The following diagram shows the location of the status LEDs and HEX display on the 202i server faceplate.



## Interpreting the power status LED

The power status LED is the upper LED on the 202i server faceplate, directly below the lock latch. The LED indicates whether it is safe to remove the server from the switch (which results in a server power down).



### CAUTION

Do not remove the 202i server during normal operation or certain phases of the startup sequence, as this can damage the operating system files on the hard disk.

To determine if it is safe to remove the 202i server from the switch, see "[Power status LED indications](#)" (page 20).

## Power status LED functions

The LED indicates two server states:

- The 202i server is in use.
- It is safe to remove the 202i server from the switch.

## Power status LED indications

**IF the power status LED is**

**THEN**

On

the server is receiving power from the shelf. It is safe to remove it from the switch.

**Note:** When the LED is lit, the HEX display may display one of the following: T:XX, F:XX, HOST, or DOWN.

Off



**CAUTION**

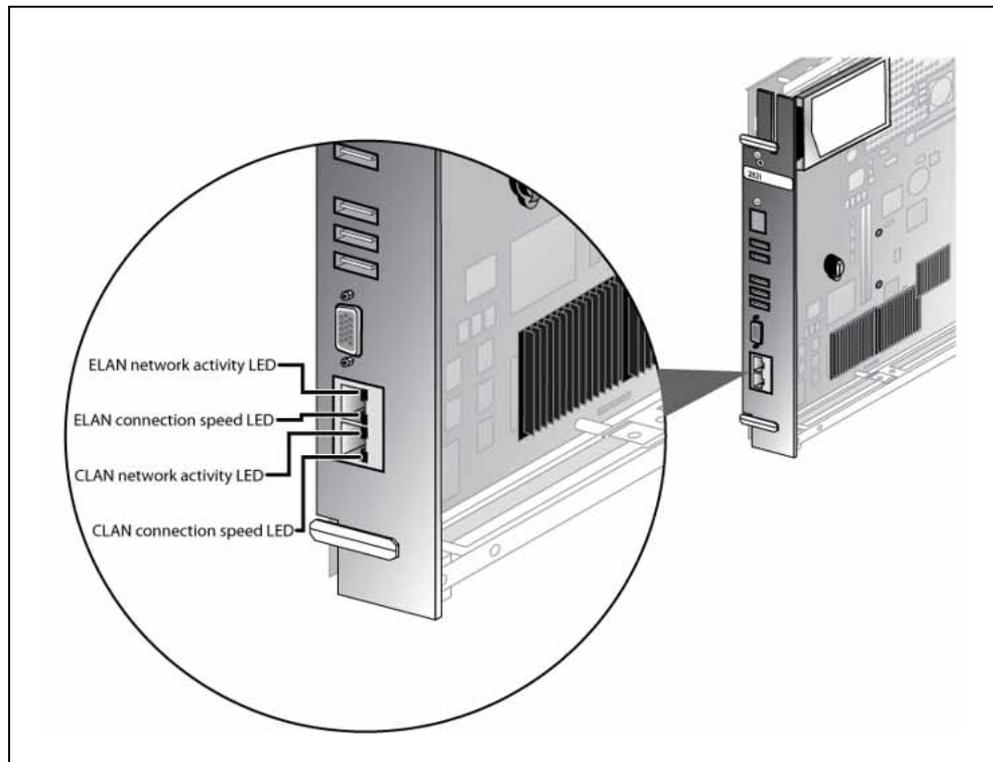
It is not safe to remove the server from the switch. The server is in one of the following states:

- The server is in the operating system startup sequence.
- The server has completed the startup sequence and is running.

**Note:** You must courtesy down CallPilot, and then shut down the operating system before you can remove the 202i server from the switch. For instructions, see "Powering down the server" in the *CallPilot Installation and Configuration Task List*. NN44200-306.

## Interpreting the network and drive activity LEDs

The 202i server provides two LEDs for each RJ45 Ethernet connector to indicate ELAN Subnet, and Nortel server subnet CLAN activity. The following diagram shows a close up view of the two RJ45 Ethernet connectors and the two LEDs for each connector.



## Network LED states

**IF the ELAN or CLAN network activity LEDs are**

**THEN**

Off

a valid hardware connection with the network is not established.

Ensure that the cable is connected to the respective network switch or hub. If the cable is connected, ensure that the cable is not damaged.

On or blinking rapidly

a valid hardware connection with the network is established and network activity is occurring.

**Note:** Before the 202i server can receive or transmit data, you must configure valid IP settings on the 202i server by running the Configuration Wizard. For instructions, see the CallPilot Manager online Help.

IF the ELAN or CLAN connection speed LEDs are	THEN
Off	a valid hardware connection with the network is not established, or if the upper network activity LED is on, there is 10Mb network activity.  Ensure that the cable is connected to the respective network switch or hub. If the cable is connected, ensure that the cable is not damaged.
On	a valid hardware connection with the network is established and 100Mb network activity is occurring.

### Hard drive LED states

IF the I LED is	THEN
Off	the hard drive is idle.
On	the hard drive is being accessed.

## Interpreting the HEX display

This section describes the codes that can appear on the HEX display during startup or normal 202i server operation.

**Note:** For a description of the codes that appear during startup diagnostics, see ["Startup diagnostic codes" \(page 25\)](#). For a description of the startup sequence, see ["Startup sequence description" \(page 28\)](#).

### HEX display codes

During startup and normal 202i server operation, the HEX display on the server faceplate displays one of the codes in the following table.

HEX display output	Description
<b>Startup codes</b>	
T:XX	The 8051 controller is starting and running diagnostics. These diagnostics occur during a cold restart (when the server is powered up, or if you press Reset on the 202i server faceplate).  For more details, see <a href="#">"Startup diagnostic codes" (page 25)</a> .

HEX display output	Description
<b>Startup codes</b>	
F:XX	At least one diagnostic failed. The displayed error code represents the first failed diagnostic.  For more details, see " <a href="#">Startup diagnostic codes</a> " (page 25).
P:XX	An Extended POST error occurred, where XX represents a two-character code. If the error is a critical error, the start cycle may halt. If the error is a non critical error, the error code is logged in the operating system event log after the operating system starts and the CallPilot 8051 device driver starts.
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;"><b>ATTENTION</b></p> <p>POST Terminal errors that result in a system halt do not appear on the HEX display. If you cannot use the HEX display to determine the cause of a system halt, contact your Nortel technical support representative.</p> </div>	
HOST	This code appears during the startup sequence and means that BIOS diagnostics started.
NT	The operating system start sequence has started.
OK	The operating system start sequence was successful and the 8051 controller is operating normally.
<b>CallPilot and 202i server operation codes</b>	
BOOT	CallPilot is starting and is not yet fully operational.
PASS	CallPilot is fully operational and ready to accept calls.
WARN	CallPilot is ready to accept calls. However, some services failed the start sequence. Review the event log for further information.

HEX display output	Description
<b>Startup codes</b>	
FAIL	CallPilot failed the start sequence and cannot accept calls. Review the event log for further information.
MIN	A minor alarm occurred. Review the event log for further information.
MAJ	A major alarm occurred. Review the event log for further information.
CRI	A critical alarm occurred. Review the event log for further information.
???	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, contact your Nortel technical support representative.
DOWN	<p>The operating system shut down. When the power status LED is on, it is safe to remove the 202i server from the switch.</p> <p>If you perform a cold restart by pressing Reset on the 202i server faceplate, or by removing and then reinserting the 202i server in the switch, the start sequence starts at stage 1, described in "<a href="#">Startup sequence description</a>" (page 28).</p> <p>If you perform a warm restart by selecting Restart on the operating system shutdown menu, the start sequence begins at stage 9, described in "<a href="#">Startup sequence description</a>" (page 28). However, the HEX display behaves as follows:</p> <ul style="list-style-type: none"> <li>• The DOWN message remains displayed until the operating system start sequence begins.</li> <li>• The DOWN message does not scroll.</li> </ul>

## Section B: Startup diagnostics

### In this section

"Startup diagnostic codes" (page 25)

"Startup sequence description" (page 28)

"Troubleshooting startup problems" (page 30)

## Startup diagnostic codes

HEX display diagnostic codes are divided into the following two categories:

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

### Critical startup diagnostic codes

All critical startup diagnostics must pass before the 202i can proceed with the start sequence. If a critical diagnostic fails, the start sequence indefinitely halts, an error code displays, and you here a continuous beep.

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 start cycle halts.

**Note:** When a test succeeds, the next test code appears.

Test code	Test description	Failure code
T:01	Internal RAM self-test	F:01
T:02	ALU self-test	F:02
T:03	Address mode self-test	F:03
T:04	Boot ROM self-test	F:04
T:05	Timer self-test	F:05
T:06	Watchdog self-test	F:06
T:07	EEPROM self-test	F:07

Test code	Test description	Failure code
T:08	End of system controller self-tests  The power status LED blinks three times.	not applicable
HOST	Start of BIOS diagnostics  The monitor displays the BIOS start screen.  If a critical error occurs, the start cycle halts. Examples of critical errors are memory failure or another type of error resulting in no display on the monitor.	HOST continues to scroll across the HEX display

### Non critical operating system and switch diagnostic codes

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

The following table shows the noncritical operating system and switch diagnostic codes with the corresponding failure codes.

**Note:** While the test is in progress, the following codes may appear for a short period. If these messages display temporarily (that is, no longer than 1 second), a problem does not exist.

Status code	Operation description	Failure code
HOST	Continuation of BIOS diagnostics.  The monitor displays the BIOS start screen.  If a noncritical error occurs, the server continues the start sequence.	P:XX

Status code	Operation description	Failure code
NT	The operating system start sequence started.  <b>Note:</b> If the CallPilot server software is not installed, the HEX display remains at NT. (This can occur if you are rebuilding a system.) During CallPilot software installation, the 8051 device driver is copied to the operating system, at which point the HEX display shows CDLN.	P:XX  <b>Note:</b> For a description, see "P:XX failure codes" (page 27).
CDLN	8051 device driver on the operating system has started; beginning of Cardlan interface communication (DS30x interface initialization)  The system controller communicates with the switch, indicating that two cards are installed, and waits for switch acknowledgement.	CDLN  Neither DS30x interface was initialized (both failed).
C:01	Initialization of the first DS30x interface	C:01  Initialization of the first DS30x interface failed.
OK	Switch acknowledgement complete  The operating system startup is complete, and CallPilot Fault Management takes over.	CRI, FAIL, MAJ, MIN, or WARN

### P:XX failure codes

P:XX indicates a BIOS diagnostic error, where XX represents a two-character code. If the error is a critical error, the start cycle may halt. If the error is a noncritical error, the error code is reported in the operating system system event log after the operating system start sequence completes and the CallPilot 8051 device driver starts.

**Note:** If CallPilot is not installed, no event is logged.

**ATTENTION**

POST Terminal errors that result in a system halt do not appear on the HEX display. If you cannot use the HEX display to determine the cause of a system halt, contact your Nortel technical support representative.

**Startup sequence description**

The following table describes the startup sequence and the diagnostic stages that occur. The entire sequence occurs when you perform one of the following activities:

- You lock the 202i against the switch backplane, and the 202i powers up.
- You press Reset on the 202i server faceplate to perform a hardware restart.

**Note:** If you restart the operating system by clicking the Shut Down and Restart options, the start sequence starts at stage 9. However, the HEX displayed in the status LED behaves as follows:

- The DOWN message remains displayed until the operating system start sequence begins.
- The DOWN message does not scroll.

Stage	Description	Status LED HEX display	Status LED state
1	Internal RAM self-test  This is the start of critical startup diagnostics for the 8051 system controller. If any test fails, the startup cycle halts.  Approximate duration: less than 1 second	T:01	ON
2	ALU self-test  Approximate duration: less than 1 second	T:02	ON
3	Address mode self-test  Approximate duration: less than 1 second	T:03	ON

Stage	Description	Status LED HEX display	Status LED state
4	Boot ROM self-test  Approximate duration: less than 1 second	T:04	ON
5	Timer self-test  Approximate duration: less than 1 second	T:05	ON
6	Watchdog self-test  Approximate duration: less than 1 second	T:06	ON
7	EEPROM self-test  This is a noncritical diagnostic. If it fails, this is a noncritical error, and the start cycle continues.  Approximate duration: less than 1 second	T:07	ON
8	End of system controller self-tests. No errors were found.  Approximate duration: less than 3 seconds	T:08	blinks three times
9	Beginning of BIOS diagnostics  <b>Note:</b> The BIOS splash screen appears, and HOST scrolls across the HEX display.  Approximate duration: 7 seconds	HOST	ON

Stage	Description	Status LED HEX display	Status LED state
10	<p>Beginning of the operating system start sequence</p> <p>The monitor displays the operating system logon prompt.</p> <p>You are prompted for an operating system user name and password. If the system needs to be configured, a pop-up box for Maintenance Configuration Detection Information may appear to remind you.</p> <p>If the Maintenance Configuration Detection Information box appears, click OK unless you want a reminder to configure the server.</p>	NT	OFF
11	Completion of operating system start sequence. The 8051 system controller is running normally.	OK	OFF
12	<p>The 202i CallPilot software loads.</p> <p>OK means that CallPilot loaded. CallPilot Fault Management takes over.</p> <p>If FAIL, WARN, CRI, MAJ, or MIN appears instead of OK, a fault occurred. Use the system and CallPilot Manager event logs and Alarm Monitor to determine what happened.</p> <p>Approximate duration: 5 minutes</p>	<p>One of the following, as applicable:</p> <ul style="list-style-type: none"> <li>• BOOT</li> <li>• PASS</li> <li>• FAIL</li> <li>• WARN</li> <li>• CRI</li> <li>• MAJ</li> <li>• MIN</li> </ul>	OFF

## Troubleshooting startup problems

This section suggests tasks you can perform to determine why the 202i server fails the startup cycle.

### To determine why the 202i server failed the 8051 startup

Step	Action
------	--------

1	Note any diagnostic codes.
---	----------------------------

- 2 Try restarting the server by pressing Reset on the 202i server faceplate.
- 3 During the restart sequence, view the diagnostic codes on the HEX display for failures.  
For a description, see "[Startup sequence description](#)" (page 28).  
**Note:** Allow 5 minutes for the start cycle to complete.
- 4 For other suggestions, see the *CallPilot Troubleshooting Guide*.
- 5 If you still cannot find the cause of the failure, call your Nortel technical support representative.

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—End—

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### To determine why the 202i server failed to start CallPilot

Step	Action
1	Note any diagnostic codes.
2	Try restarting the server by pressing Reset on the 202i server faceplate.
3	During the start sequence, view the diagnostic codes on the HEX display for failures. For a description, see " <a href="#">Startup sequence description</a> " (page 28). <b>Note:</b> Allow 5 minutes for the start cycle to complete.
4	View the event logs. For instructions, see " <a href="#">Viewing event logs</a> " (page 34).
5	For other suggestions, see the <i>CallPilot Troubleshooting Guide</i> for other suggestions.
6	If you still cannot find the cause of the failure, call your Nortel technical support representative.

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—End—

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## Chapter 4

# Using the operating system online diagnostic tools

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### In this chapter

"Overview" (page 33)

"Viewing event logs" (page 34)

"Using TCP/IP diagnostic tools" (page 37)

### Overview

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



#### CAUTION

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

### Operating system Event Viewer

The operating system Event Viewer provides event logs to help you diagnose and debug system problems.

### Operating system Diagnostics

The operating system Diagnostics window allows you to view details about the system and network components.

### TCP/IP diagnostics

This chapter describes the following TCP/IP diagnostic tools:

- 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

When the server startup cycle is complete, and if you configured the CallPilot server see the CallPilot <switch model> and CallPilot Server Configuration guide for your switch and server), 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 appears on the monitor, an event (such as a warning, error, or information display) occurred. To determine what happened, you can use the following tools:

- operating system Event Viewer on the 202i server (see ["To use the operating system Event Viewer"](#) (page 35))
- CallPilot Event Browser or Alarm Monitor in CallPilot Manager

For more information, perform one of the following:

- See ["Alarm Monitor"](#) (page 47).
- See the *CallPilot Administrator's Guide* NN44200-601.

**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 operating system Event Viewer.

### Types of event logs

Three types of event logs are available from the operating system Event Viewer, as follows.

Log type	Description
System	Logs events by the operating system components, including Routing and Remote Access Server (RRAS) or other operating system services.
Security	Logs security events, such as logons, logoffs, illegal access. This option is available only to users with Administrative access.
Applications	Logs events by application, such as database file errors.

### Where to seek more information

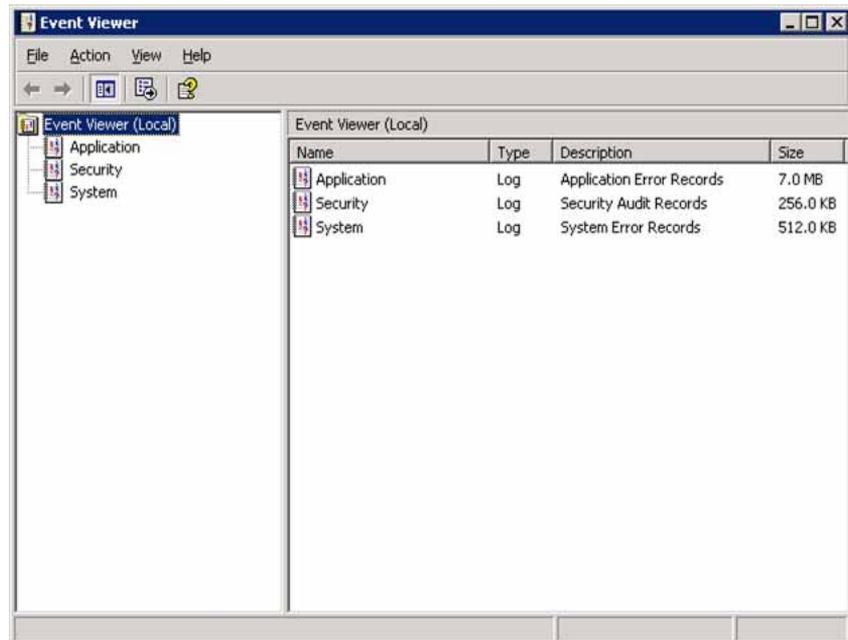
For more information about using the operating system Event Viewer, click Help, Contents in the Event Viewer window. See also ["To use the operating system Event Viewer" \(page 35\)](#).

### To use the operating system Event Viewer

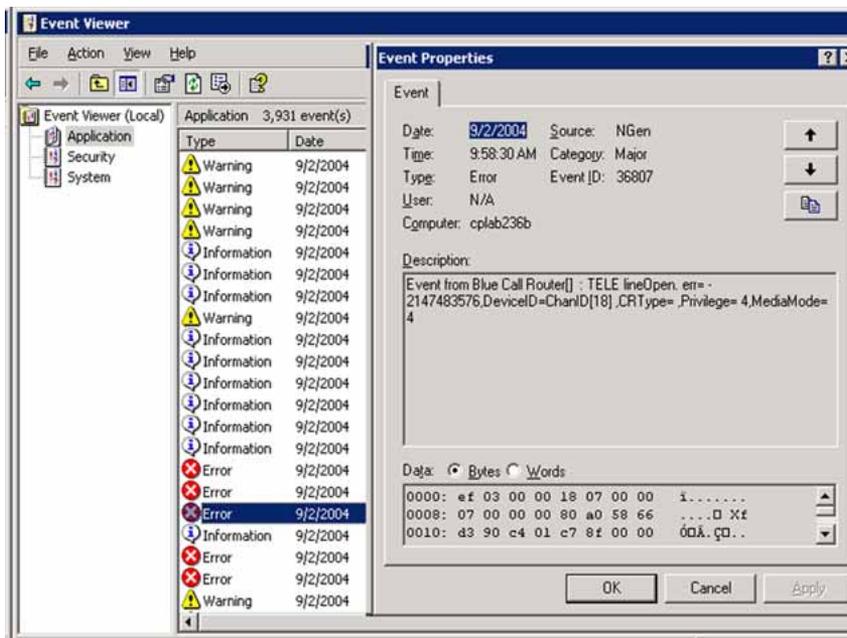
Step	Action
------	--------

- 1 Click **Start, Programs, Administrative Tools, Event Viewer**.

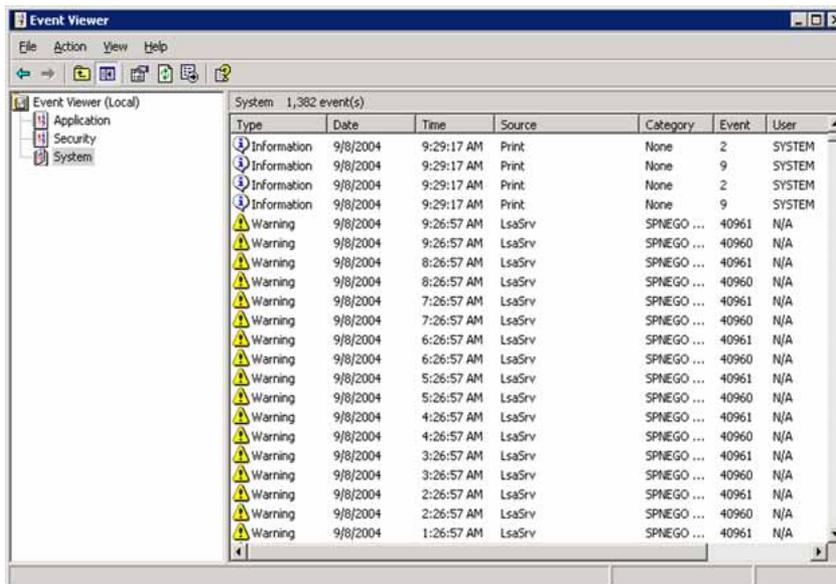
The Event Viewer window appears.



- 2 To view a log, click the name of the log in the left pane.  
The illustration shows an example of the Application log.



An example of a System log appears in the following illustration.



**Note:** The Security log available only to administrators is not shown.

- 3 Look for error codes flagged that occurred since the last startup. Each error is date and time stamped.



major or critical errors



warnings



information

- 4 To determine the cause of the error, select and double-click the error. A description of the error appears in an Event Detail dialog box. An example of an error description is shown in the Event Detail dialog box in the Application log illustration on [Step 2](#).
- 5 Use the error description to help determine how to resolve errors.  
**Note:** If the error persists or does not suggest a solution, contact your Nortel support representative.
- 6 Click Close.  
The event log reappears.
- 7 Click **Log, Exit**.  
The Event Viewer closes.

---

—End—

---

## Using TCP/IP diagnostic tools

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

- ipconfig ("The ipconfig command" (page 38))
- ping ("The ping command" (page 39))
- tracert ("The tracert command" (page 40))

- arp ("The arp command" (page 41))
- nbtstat ("The nbtstat command" (page 42))
- netstat ("The netstat command" (page 43))

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 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 the operating system

Step	Action
1	Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. The Command Prompt window appears.
2	At the prompt, type <b>ipconfig &lt;with appropriate parameters&gt;</b> . <b>Example:</b> ipconfig /all
3	Press Enter. The system runs the ipconfig utility.
4	Type <b>Exit</b> to close the Command Prompt window.

—End—

## 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 the operating system

Step	Action
1	Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. The Command Prompt window appears.
2	At the prompt, type <b>ping &lt;destination IP address&gt;</b> (for example, ping 200.286.32.0), or <b>ping &lt;computer name&gt;</b> .
3	Press Enter. The system displays the ping results.
4	Type <b>Exit</b> to exit the Command Prompt window.

---

—End—

---

## The tracert command

This utility determines the route to a destination.

### How tracert works

The tracert utility follows several steps:

- 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 timeout for each reply.
target_name	The name of the target host.

### To run the tracert command from the operating system

Step	Action
------	--------

- |   |   |
|---|---|
| 1 | Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. |
|---|---|

The Command Prompt window appears.

- 2 At the 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.

The system runs the tracert utility.

- 4 Type **Exit** to exit the Command Prompt window.

---

—End—

---

## 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 you need to modify. 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.

Parameter	Description
-d	Deletes the host specified by inet_addr.
-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 the operating system

Step	Action
1	Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. The Command Prompt window appears.
2	At the prompt, type <b>arp</b> with the required parameters (for example, arp -g 200.286.0.32).
3	Press Enter. The system runs the arp command.
4	Type <b>Exit</b> to exit the Command Prompt window.

—End—

### 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 name table using its name.
-A IP address	Lists the remote computer name table using its IP address.
-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).

Parameter	Description
-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 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 the operating system

Step	Action
1	Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. The Command Prompt window appears.
2	At the prompt, type <b>nbtstat</b> with the required parameters.
3	Press Enter. The system runs the nbtstat utility.
4	Type <b>Exit</b> to exit the Command Prompt window.

—End—

### 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.

Parameter	Description
-e	Displays Ethernet statistics. This can be combined with the -s option.
-n	Displays addresses and port numbers in numerical form.
-s	Displays the statistics for each protocol.
-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 statistics.

### To run the netstat command from the operating system

Step	Action
1	Click <b>Start, Programs, Accessories, Command Prompt</b> to display the command prompt window. The Command Prompt window appears.
2	At the prompt, type <code>netstat</code> with the required parameters.
3	Press Enter. The system runs the netstat utility.
4	Type <code>Exit</code> to close the Command Prompt window.

—End—

---

## Chapter 5

# Using CallPilot Manager to monitor hardware

---

### **In this chapter**

- "Understanding fault management" (page 46)
- "Section A: Tools for isolating and fixing hardware problems" (page 46)
- "Overview" (page 46)
- "Alarm Monitor" (page 47)
- "Event Browser" (page 49)
- "Maintenance page" (page 50)
- "Channel and Multimedia Monitors" (page 50)
- "Section B: Working with the Maintenance page" (page 51)
- "Introducing the Maintenance page" (page 51)
- "Viewing component states" (page 54)
- "Starting and stopping components" (page 55)
- "Running integrated diagnostics" (page 59)
- "Viewing the last diagnostic results" (page 62)
- "Section C: Working with the Multimedia and Channel Monitors" (page 64)
- "Working with the Multimedia Monitor" (page 65)

["Working with the Channel Monitor" \(page 66\)](#)

## Understanding fault management

Fault management 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 the system takes that requires user notification. Events can be as insignificant as a user logon attempt or as serious as a faulty DSP 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 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, Nortel recommends that you investigate the problem, isolate it, and then fix the problem. When you fix the problem, you can then clear the alarm from the Alarm Monitor.

## Section A: Tools for isolating and fixing hardware problems

### In this section

["Overview" \(page 46\)](#)

["Alarm Monitor" \(page 47\)](#)

["Event Browser" \(page 49\)](#)

["Maintenance page" \(page 50\)](#)

["Channel and Multimedia Monitors" \(page 50\)](#)

## Overview

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

## Component dependencies

The status of some components depend on the operational status of other components. If a component fails or stops, 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 DSPs, 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 time switch.
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

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.

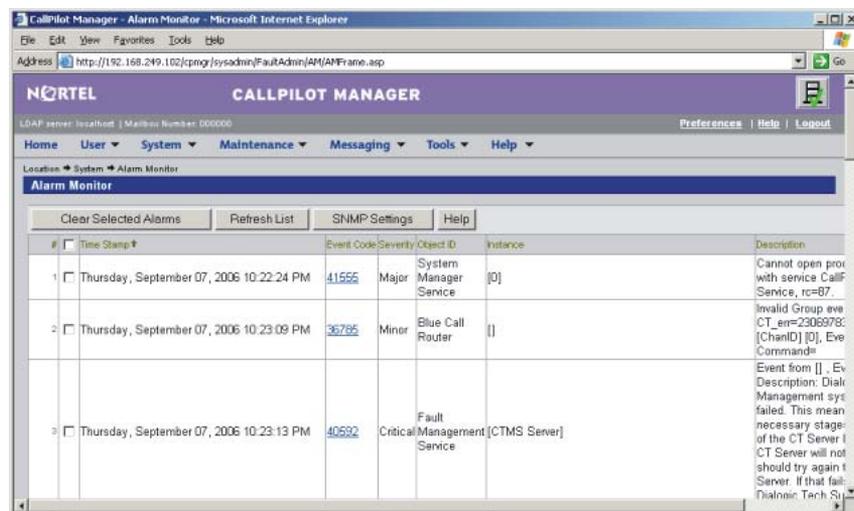
For detailed information about how to use the Alarm Monitor, see the *CallPilot Administrator's Guide* NN44200-601, or the CallPilot Manager online Help.

## To investigate using the Alarm Monitor

### Step Action

- Run CallPilot Manager and log on.
- In CallPilot Manager, click **System, Alarm Monitor**.

The Alarm Monitor page appears.



- Click the Event Code for the first critical or major alarm.  
A description of the event appears in a new Web browser window.
- Review the description and recovery action.
- Repeat steps 3 and 4 to view more alarms, if necessary.
- 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" (page 49)).

---

—End—

---

## Event Browser

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

### About events

The Event Browser displays events 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 most recent 100 critical events.

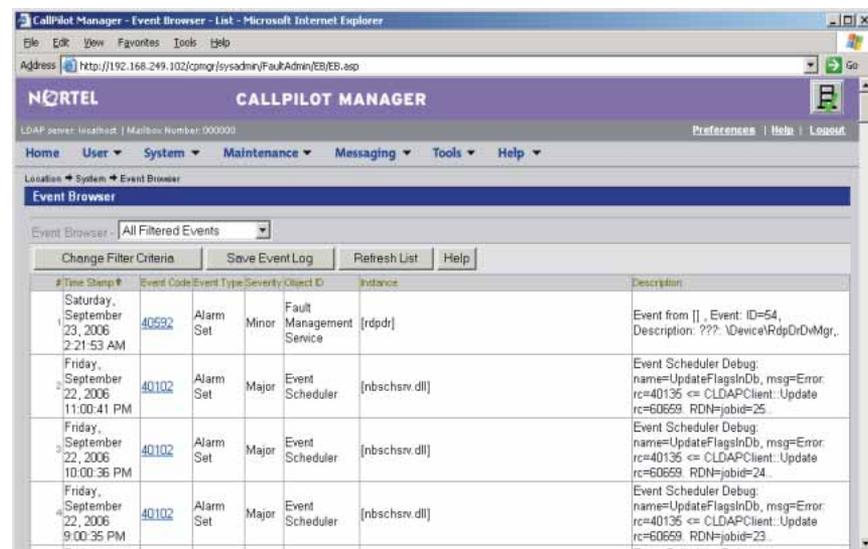
For detailed information about how to use the Event Browser (for example, how to configure preferences), see the *CallPilot Administrator's Guide* NN44200-601 or the CallPilot Manager online Help.

### To investigate using the Event Browser

#### Step Action

- 1 Run CallPilot Manager and log on.
- 2 In CallPilot Manager, click **System, Event Browser**.

The Event Browser page appears.



The screenshot shows the CallPilot Manager Event Browser interface. The browser window title is 'CallPilot Manager - Event Browser - List - Microsoft Internet Explorer'. The address bar shows 'http://192.168.249.102/cmgr/sysoadmin/FaultAdmin/EB.asp'. The page header includes the Nortel logo and 'CALLPILOT MANAGER'. Below the header, there are navigation tabs: Home, User, System, Maintenance, Messaging, Tools, and Help. The 'System' tab is selected, and the 'Event Browser' sub-tab is active. The main content area shows a table of events with columns for Time Stamp, Event Code, Event Type, Severity, Object ID, Instance, and Description. The table contains four rows of event data.

#	Time Stamp	Event Code	Event Type	Severity	Object ID	Instance	Description
1	Saturday, September 23, 2006 2:21:53 AM	40592	Alarm Set	Minor	Fault Management Service	[rdpdr]	Event from [], Event: ID=54, Description: ???; \Device\RdpDrDmMgr.
2	Friday, September 22, 2006 11:00:41 PM	40102	Alarm Set	Major	Event Scheduler	[nbschsvr.dll]	Event Scheduler Debug name=UpdateFlagsInDb, msg=Error rc=40136 =<= CLDAPClient.Update rc=60659. RDN=jobid=25.
3	Friday, September 22, 2006 10:00:36 PM	40102	Alarm Set	Major	Event Scheduler	[nbschsvr.dll]	Event Scheduler Debug name=UpdateFlagsInDb, msg=Error rc=40136 =<= CLDAPClient.Update rc=60659. RDN=jobid=24.
4	Friday, September 22, 2006 9:00:35 PM	40102	Alarm Set	Major	Event Scheduler	[nbschsvr.dll]	Event Scheduler Debug name=UpdateFlagsInDb, msg=Error rc=40136 =<= CLDAPClient.Update rc=60659. RDN=jobid=23.

- 3 Click an event that appears to be related to the problem, or an event that occurred near the time the alarm was raised.  
A description of the event appears in a new Web browser window.
- 4 View the description and recovery action.
- 5 Repeat steps 3 and 4 to view more events, if necessary.
- 6 If the solution to the problem is not apparent, contact your Nortel technical support representative.

---

—End—

---

## Maintenance page

Use the Maintenance page to obtain status information for suspect components.

If you suspect or discover a problem with hardware such as 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 about all aspects of the Maintenance page, see "[Section B: Working with the Maintenance page](#)" (page 51) or the CallPilot Manager online Help.

## Channel and Multimedia Monitors

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 recommends that you disable all call channels first. Two ways are available 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 instantly terminating active calls.

- Stop the channels.

When you stop channels, you instantly 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"](#) (page 64).

### **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 ["Section B: Working with the Maintenance page"](#) (page 51).

## **Section B: Working with the Maintenance page**

### **In this section**

["Introducing the Maintenance page"](#) (page 51)

["Viewing component states"](#) (page 54)

["Starting and stopping components"](#) (page 55)

["Running integrated diagnostics"](#) (page 59)

["Viewing the last diagnostic results"](#) (page 62)

## **Introducing the Maintenance page**

Use the Maintenance page in CallPilot Manager to perform the following tasks:

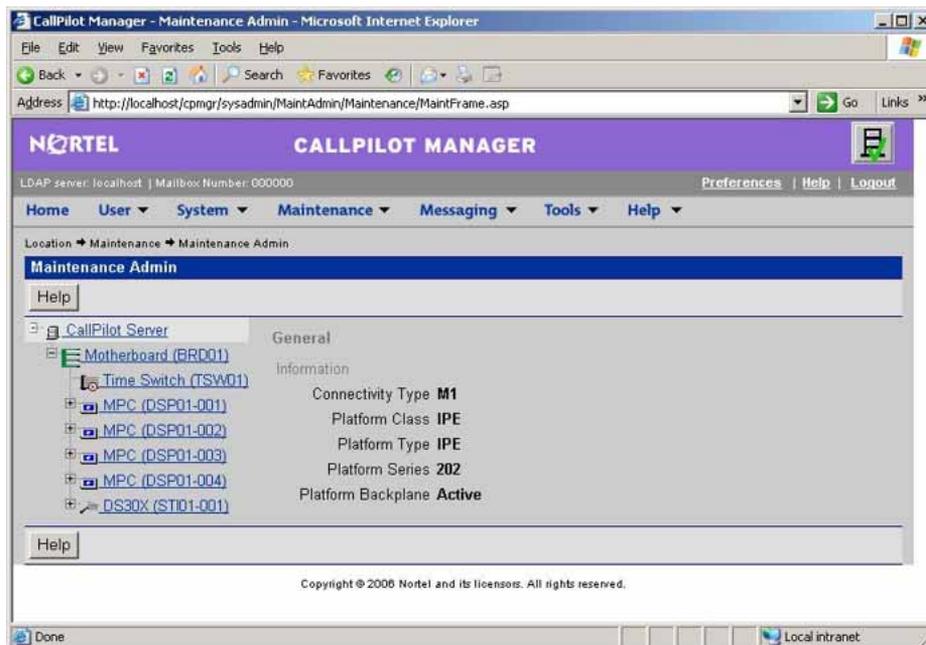
- Obtain general information about components.
- View component states.
- Start and stop components.
- Run integrated diagnostic tests.
- View the results of the last diagnostic test run against a component.

### **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 on the left side of the page. To list the server 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 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 only and may not appear exactly the same on your system.

The following illustration shows a partially expanded tree for the 202i 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	<p>This section shows general technical information about the selected component. This information typically includes the following details:</p> <ul style="list-style-type: none"> <li>the name, class, type, series, or version of a component</li> <li>various capabilities of a component (for example, whether a component is removable)</li> </ul>

**Note:** This section does not appear for all components.

Section	Description
Maintenance	<p>This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test.</p> <p>This section appears only for components on which you can perform maintenance administration.</p> <p>For more information about working with component states, see the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">"Viewing component states" (page 54)</a></li> <li>• <a href="#">"Starting and stopping components" (page 55)</a></li> </ul>
Diagnostics	<p>Use the Diagnostics section to run one or more diagnostic tests or to view the results of the last diagnostic tests that ran on the selected component.</p> <p>This section appears only for components on which you can run diagnostics.</p> <p>For more information about running diagnostics, see the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">"Running integrated diagnostics" (page 59)</a></li> <li>• <a href="#">"Viewing the last diagnostic results" (page 62)</a></li> </ul>

### Maintenance activities for each component

The following table identifies the maintenance activities you can perform for each component in the component tree.

Component	Start, stop?	Courtesy stop?	Diagnostics available?	Replaceable?
Motherboard	Yes	No	Yes	Yes (IPE server)
Media Bus	Yes	No	Yes	No
Time Switch	No	No	No	No
DSPs	Yes	No	Yes	No
Multimedia channels	Yes	Yes	Yes	No

Component	Start, stop?	Courtesy stop?	Diagnostics available?	Replaceable?
Call channels	Yes	Yes	No	No
DS30X link	Yes	No	No	No

## Viewing component states

View the state of a component to determine the general condition of the component, including whether the component is disabled or off duty. The state of a component appears 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 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.
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 stopped.
Remote Off Duty	The component was taken out of service at the switch.
Shutting Down	The component is 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 the 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

Step	Action
1	Run CallPilot Manager and log on.
2	In CallPilot Manager, click <b>Maintenance, Maintenance Admin</b> . The Maintenance page appears.
3	Click the plus sign (+) beside the CallPilot server to expand the component tree.
4	Continue clicking the plus sign (+) until the component with which you want to work is visible.
5	Click the hardware component with which you want to work. The Maintenance page refreshes to show details about the component.
6	Scroll down to the Maintenance section.
7	View the state of the selected component in the State box.

—End—

## Starting and stopping components

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

To courtesy down CallPilot, use the following tools:

- Multimedia Monitor: to courtesy stop a range of multimedia 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](#)" (page 64).

### Stop versus courtesy stop

By using either one of the following two methods of removing a component from service, you can choose how active calls are affected.

#### Courtesy stop

A courtesy removes the component from service only after the component finishes 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 removed from service immediately.

Courtesy stop is preferred over a regular stop.

#### Stop

A stop removes the component from 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 affect a large number of incoming calls occur or if your organization determines a special need for it.

### Components that can be started and stopped

You can start and stop only the following components.

**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](#)" (page 64).

Component	Effect of stopping
Motherboard (IPE server)	Removes all call processing resources on the selected board from service.
Time Switch	You cannot perform maintenance administration on the time switch.
Multimedia channels	Removes the selected DSP from service.
Channels	Removes the selected DS30X channel from service.
DS30X link	Removes the selected DS30X link from service.

### To start or stop a component

Step	Action
1	Run CallPilot Manager and log on.
2	In CallPilot Manager, click <b>Maintenance, Maintenance Admin</b> . The Maintenance page appears.
3	Click the plus sign (+) beside the CallPilot server to expand the component tree.
4	Continue clicking the plus sign (+) until the component with which you want to work is visible.
5	Click the hardware component that you want to start or stop. The Maintenance page refreshes to show details about the component.
6	Scroll down to the Maintenance section.
7	Click Courtesy Stop, Stop, or Start, as required.
Button	Description
Start	If the selected component is out of service, click this button to return it to service.

Button	Description
Courtesy Stop	Click this button to remove the selected component from service. CallPilot waits for the call to be completed before disabling the component.

**ATTENTION**

If you courtesy stop all components (that is, you take 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 removed from service after all calls finish.

---

Stop	Click this button to remove the selected component from service immediately. All calls that are in progress are disconnected immediately.
------	---

**ATTENTION**

If you stop all components (that is, you take 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.

---

—End—

---

## Running integrated diagnostics

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 you install or reinstall it.
- The CallPilot server cannot process incoming calls, and you hope that diagnostic results explain why.

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

### Before you begin

#### ATTENTION

Remove the component from service before you run the diagnostic test. See ["Starting and stopping components" \(page 55\)](#).

### Components that have diagnostic tests available

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

Component	Diagnostics available?	Replaceable?
Motherboard	Yes	Yes (IPE server)
Time Switch	No	No
Media channels	No	No
Call 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, you cannot run the diagnostic test because a prerequisite condition is not met. If a diagnostic test fails, a message appears in a new browser window (see the example on page [Step 9](#)).

In both cases, check the Alarm Monitor to determine the reason and the appropriate action to take. (See ["Section A: Tools for isolating and fixing hardware problems" \(page 46\)](#).)

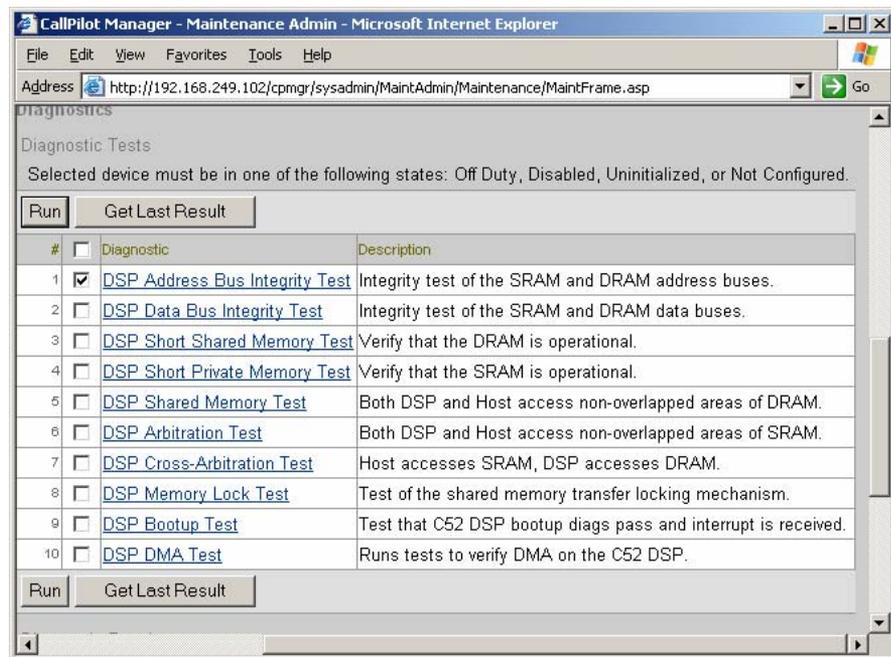
If the Alarm Monitor and Event Browser do not provide a solution to a hardware problem, you may need to replace or service a component. If the problem is with a component that is not replaceable because it is not a physical entity (such as the Time Switch), you must either replace its parent component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

### ATTENTION

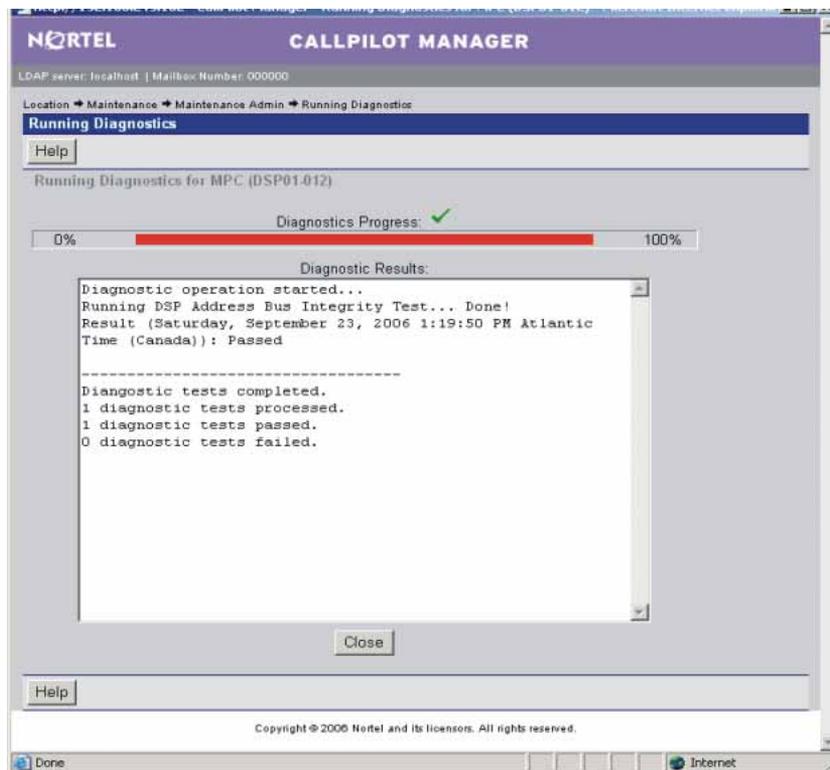
Nortel recommends that you courtesy stop rather than stop a component if possible. For instructions, see "[Starting and stopping components](#)" (page 55)

### To run a diagnostic test

Step	Action
1	Run CallPilot Manager and log on.
2	In CallPilot Manager, click <b>Maintenance, Maintenance Admin</b> . The Maintenance page appears.
3	Click the plus sign (+) beside the CallPilot server to expand the component tree.
4	Continue clicking the plus sign (+) until the component with which you want to work is visible.
5	Click the hardware component for which you want to run diagnostics. The Maintenance page refreshes to show details about the component.
6	Scroll down to the Maintenance section, and ensure that the component is out of service.  <b>Note:</b> For instructions about removing the component from service, see " <a href="#">To start or stop a component</a> " (page 57).
7	Scroll down to the Diagnostics section. The following illustration shows the Diagnostics section for a DSP.



- 8 Check the check box for each diagnostic that you want to run.  
**Note:** If you want to run all diagnostics, check the Diagnostic Description check box at the top of the list.
- 9 Click Run.  
 A new Web browser window displays 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.

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—End—

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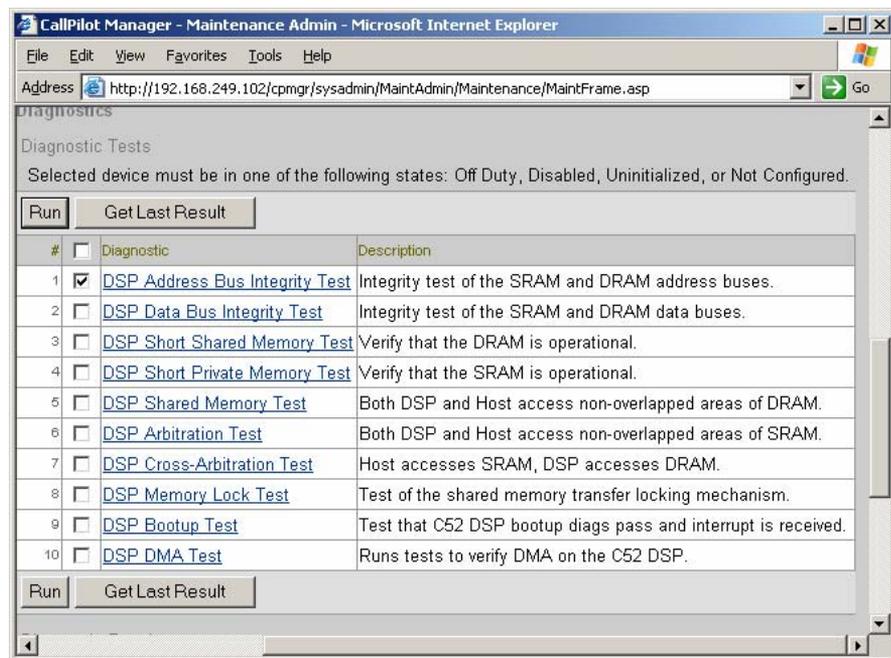
## Viewing the last diagnostic results

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

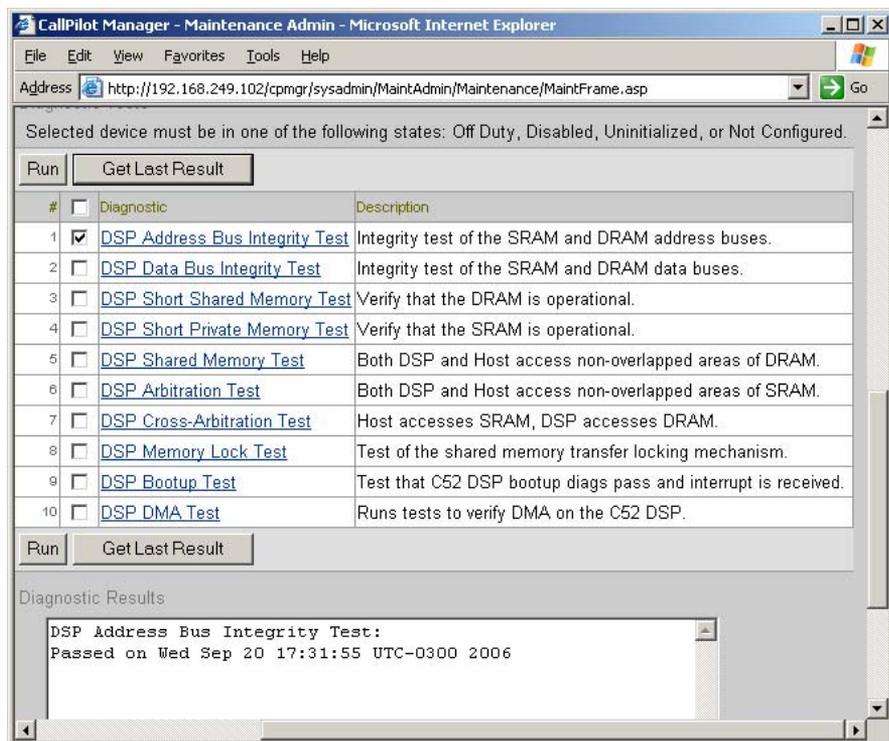
### To view the last diagnostics result

Step	Action
<p><b>ATTENTION</b></p> <p>Nortel recommends that you courtesy stop rather than stop a component if possible. For instructions, see "<a href="#">Starting and stopping components</a>" (page 55).</p>	
1	Run CallPilot Manager and log on.

- 2 In CallPilot Manager, click **Maintenance, Maintenance Admin**.  
The Maintenance page appears.
- 3 Click the plus sign (+) beside the CallPilot server to expand the component tree.
- 4 Continue clicking the plus sign (+) until the component with which you want to work is visible.
- 5 Click the hardware component for which you want to run diagnostics.  
The Maintenance page refreshes to show details about the component.
- 6 Scroll down to the Diagnostics section.  
The following figure shows the Diagnostics section for a DSP.



- 7 Check the check box for each diagnostic for which you want to review results.
- 8 Click Get Last Result.  
The results appear in the Diagnostic Results box.




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—End—

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### 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" (page 65)

"Working with the Channel Monitor" (page 66)

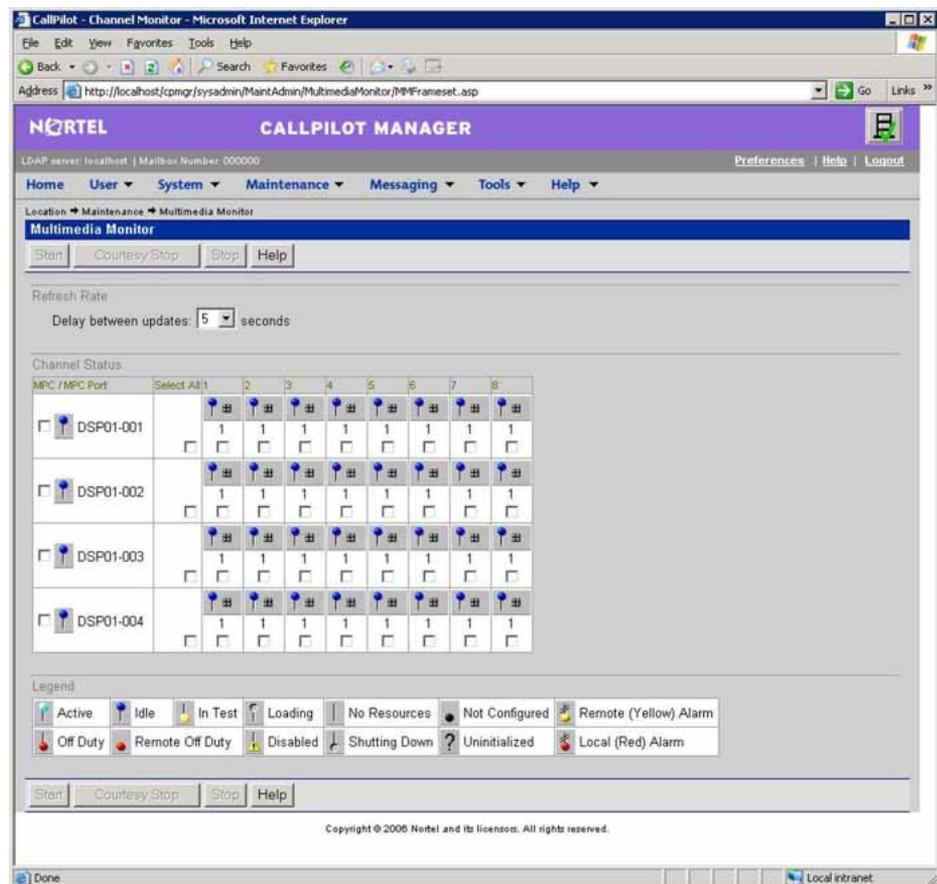
## Working with the Multimedia Monitor

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

Step	Action
------	--------

- |   |   |
|---|---|
| 1 | Run CallPilot Manager and log on.   |
| 2 | In CallPilot Manager, click <b>Maintenance</b> , <b>Multimedia Monitor</b> .<br>The Multimedia Monitor page appears, showing the channels associated with each DSP. |



**Note:** For an explanation of the channel states, see the CallPilot Manager online Help.

- |   |                               |
|---|-------------------------------|
| 3 | Perform 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.

**4** Click Courtesy Stop, Stop, or Start as required.

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.

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—End—

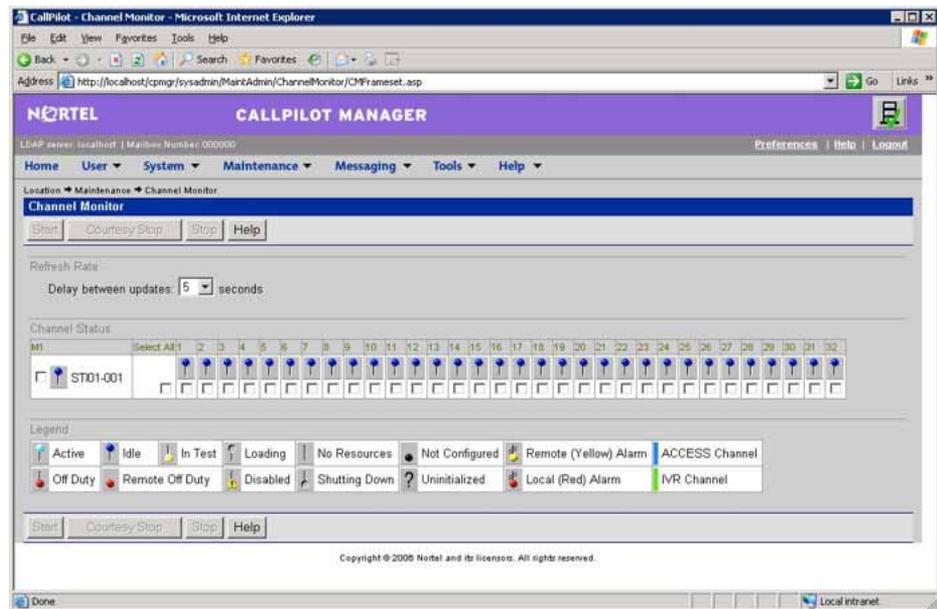
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## Working with the Channel Monitor

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

Step	Action
1	Run CallPilot Manager and log on.
2	In CallPilot Manager, click <b>Maintenance, Channel Monitor</b> .  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, see the CallPilot Manager online Help.

**3** Perform one of the following:

**IF you want to stop or start**

All channels associated with a DS30X link.

**THEN**

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.

**4** Click Courtesy Stop, Stop, or Start, as required.

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.

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—End—

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## Chapter 6

# Using CallPilot system utilities

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### In this chapter

"Overview" (page 69)

"Diagnostics Tool" (page 70)

"PEP Maintenance utility" (page 71)

"Session Trace" (page 73)

"System Monitor" (page 77)

### Overview

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.
Session Trace	Provides detailed information about the activity in a user's mailbox and the state of the message waiting indicator (MWI).
System Monitor	Displays the following information: <ul style="list-style-type: none"> <li>• the status of all CallPilot channels</li> <li>• the status of all CallPilot services</li> </ul> <p><b>Note:</b> This status is more accurate than the status the operating system provides in the Services control panel.</p>

Utility	Description
	<ul style="list-style-type: none"><li>particulars about the CallPilot System, such as names, keycodes, serial numbers, IP addresses, and system numbers</li></ul>

---

### Accessing the system utilities

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

### Diagnostics Tool

Use the Diagnostics Tool to enable or disable CallPilot startup diagnostics.

CallPilot startup diagnostics automatically identify hardware problems that may exist when the system and services start (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.

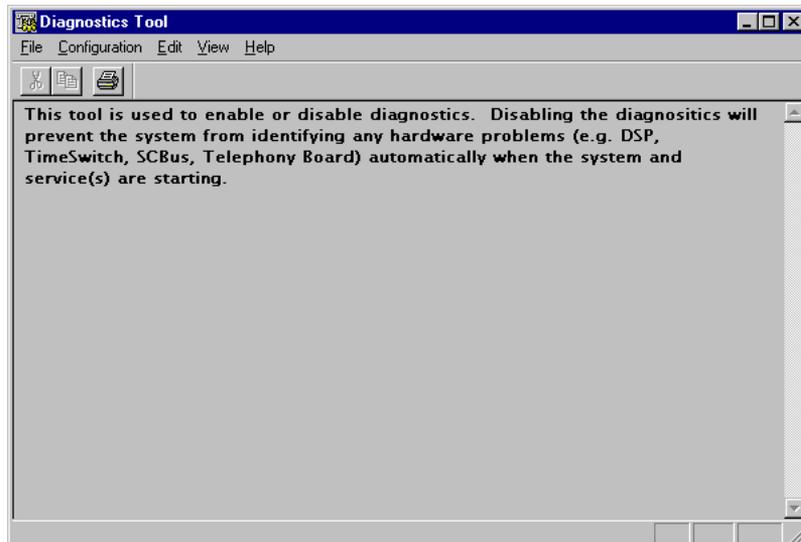
Nortel recommends that you perform the following three steps:

- 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**.

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 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 the services start (DSP, TimeSwitch, MediaBus).

#### **ATTENTION**

SU04 (Service Update 4) for CallPilot 5.0 changes the default diagnostic settings. With SU04 installed, diagnostics do not run on a scheduled soft reboot, but run on an unscheduled hard reboot or shutdown. Consult Nortel Technology for details.

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

## PEP Maintenance utility

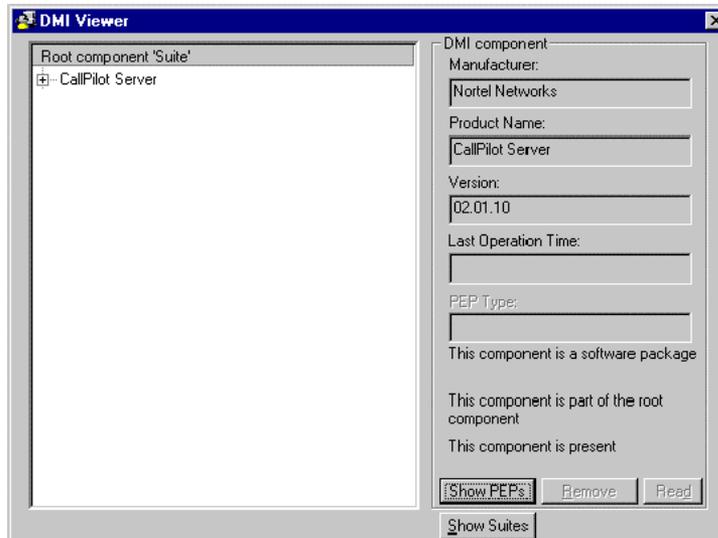
The PEP Maintenance utility displays a list of all installed PEPs on the server. You can also uninstall PEPs.

For information about installing or uninstalling PEPs, see the *CallPilot Software Administration and Maintenance* guide.

### To access the PEP Maintenance utility

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

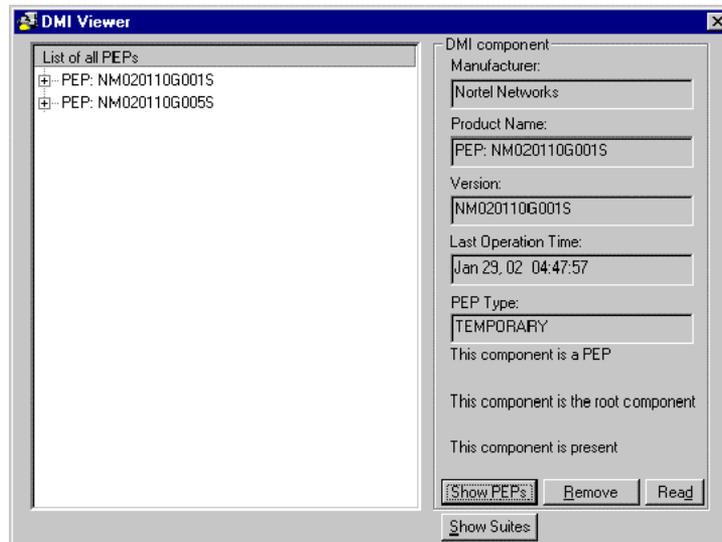
The DMI Viewer window appears.



### To view a list of all installed PEPs

Step	Action
------	--------

- |   |   |
|---|---|
| 1 | Click the component for which you want to display the PEP list.   |
| 2 | Click Show PEPs.<br>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.<br>The readme file opens in Notepad. |




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—End—

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## Session Trace

The Session Trace tool displays detailed information about the activity in a user's mailbox and the state of the message waiting indicator (MWI). The session information includes the following items:

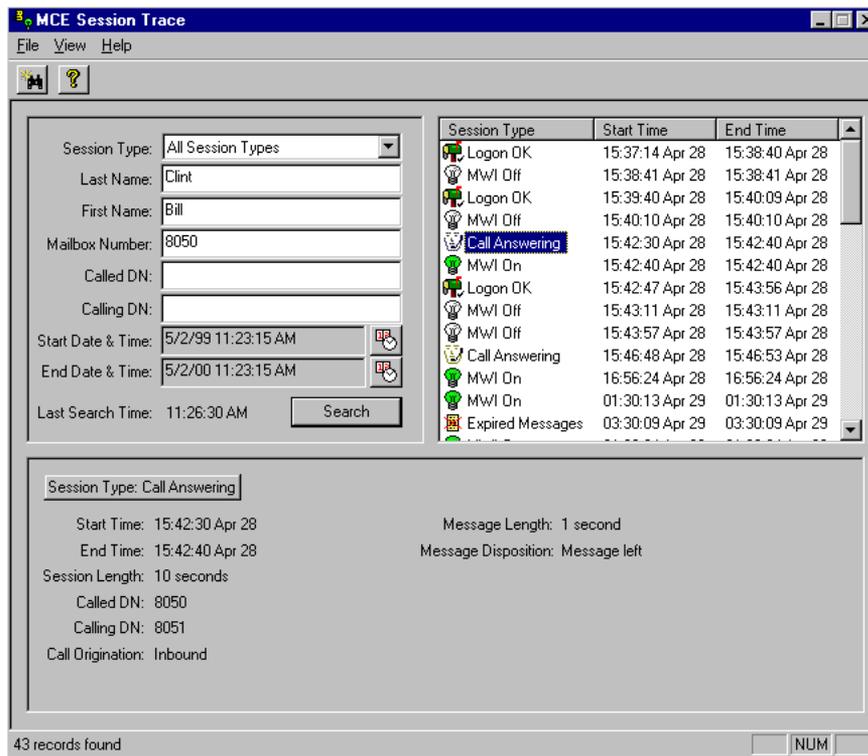
- voice messaging
- call answering
- express messaging activity (messages composed and sent, or left in a mailbox)
- the number of messages played or not played at the beginning, middle, and end of a session
- the number of deleted read messages
- the number of deleted unread messages
- messages and personal distribution lists restored into a mailbox
- the last change to the MWI (turned on or off, or untouched)

An administrator or technician use this session information to study the state of a user's mailbox and the MWI, and to use that information to follow up on user complaints. For example, a user might complain that the MWI was on, but no voice messages were in the mailbox when the user logged on. The session information might tell the administrator why the MWI was turned on.

### To access the session trace tool

From the Windows desktop, click **Start, Programs, CallPilot, System Utilities, Session Trace Tool**.

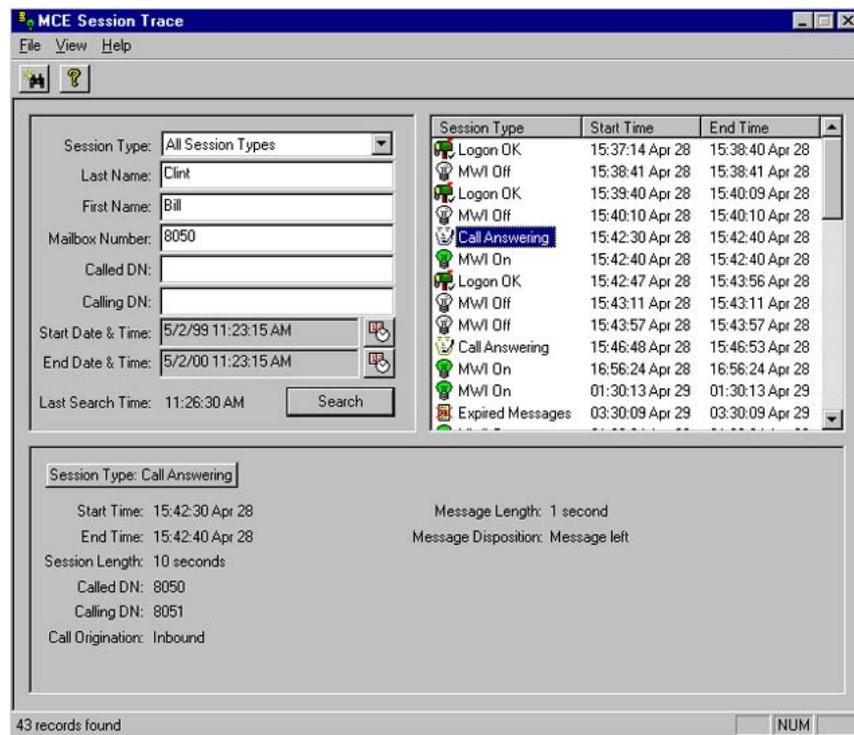
The MCE Session Trace window appears.



### To find a session

Step	Action
------	--------

- |   |   |
|---|---|
| 1 | From the Session Type list, select the type of session. |
|---|---|



To display a list of all session types, select All Session Types.

- 2 Enter as much information in the search criteria boxes to identify the session you want to view.

To display a list of all users for the selected Session Type, leave the search criteria boxes blank.

- 3 Click Search to initiate the search.
  - a. If you did not enter any user information, a list of users matching the Session Type appears at the bottom of the window.

To select a user from the list, double-click the user name to display session type information.

- b. If you selected All Session Types for a user, the session type information appears to the right of the window.

- 4 Double-click the session type to display the session information. The Session Type information appears at the bottom of the window.

---

—End—

---

## Session type information

### Call Answering session type information

The screenshot shows the 'MCE Session Trace' application window. The window title is 'MCE Session Trace' and it has a menu bar with 'File', 'View', and 'Help'. Below the menu bar are icons for home and help. The main area is divided into several sections:

- Search Criteria:**
  - Session Type: All Session Types (dropdown)
  - Last Name: Clint
  - First Name: Bill
  - Mailbox Number: 8050
  - Called DN: (empty)
  - Calling DN: (empty)
  - Start Date & Time: 5/2/99 11:23:15 AM
  - End Date & Time: 5/2/00 11:23:15 AM
  - Last Search Time: 11:26:30 AM
  - Search button
- Session List Table:**

Session Type	Start Time	End Time
Logon OK	15:37:14 Apr 28	15:38:40 Apr 28
MWI Off	15:38:41 Apr 28	15:38:41 Apr 28
Logon OK	15:39:40 Apr 28	15:40:09 Apr 28
MWI Off	15:40:10 Apr 28	15:40:10 Apr 28
Call Answering	15:42:30 Apr 28	15:42:40 Apr 28
MWI On	15:42:40 Apr 28	15:42:40 Apr 28
Logon OK	15:42:47 Apr 28	15:43:56 Apr 28
MWI Off	15:43:11 Apr 28	15:43:11 Apr 28
MWI Off	15:43:57 Apr 28	15:43:57 Apr 28
Call Answering	15:46:48 Apr 28	15:46:53 Apr 28
MWI On	16:56:24 Apr 28	16:56:24 Apr 28
MWI On	01:30:13 Apr 29	01:30:13 Apr 29
Expired Messages	03:30:09 Apr 29	03:30:09 Apr 29
- Session Details:**
  - Session Type: Call Answering
  - Start Time: 15:42:30 Apr 28
  - End Time: 15:42:40 Apr 28
  - Session Length: 10 seconds
  - Called DN: 8050
  - Calling DN: 8051
  - Call Origination: Inbound
  - Message Length: 1 second
  - Message Disposition: Message left
- Status:** 43 records found

### Logon OK session type information

The screenshot shows the 'MCE Session Trace' application window. The window title is 'MCE Session Trace' and it has a menu bar with 'File', 'View', and 'Help'. Below the menu bar are icons for home and help. The main area is divided into two sections. The left section contains search filters: 'Session Type' (All Session Types), 'Last Name' (Clint), 'First Name' (Bill), 'Mailbox Number' (8050), 'Called DN', 'Calling DN', 'Start Date & Time' (5/2/99 11:23:15 AM), 'End Date & Time' (5/2/00 11:23:15 AM), and 'Last Search Time' (11:26:30 AM) with a 'Search' button. The right section is a table with columns 'Session Type', 'Start Time', and 'End Time'. The table lists various session types including Logon OK, MWI Off, Call Answering, MWI On, and Expired Messages. The 'Call Answering' session is highlighted. Below the table, a detailed view of the selected session is shown: 'Session Type: Call Answering', 'Start Time: 15:42:30 Apr 28', 'End Time: 15:42:40 Apr 28', 'Session Length: 10 seconds', 'Called DN: 8050', 'Calling DN: 8051', and 'Call Origination: Inbound'. At the bottom left, it says '43 records found' and at the bottom right, there is a 'NUM' button.

Session Type	Start Time	End Time
Logon OK	15:37:14 Apr 28	15:38:40 Apr 28
MWI Off	15:38:41 Apr 28	15:38:41 Apr 28
Logon OK	15:39:40 Apr 28	15:40:09 Apr 28
MWI Off	15:40:10 Apr 28	15:40:10 Apr 28
Call Answering	15:42:30 Apr 28	15:42:40 Apr 28
MWI On	15:42:40 Apr 28	15:42:40 Apr 28
Logon OK	15:42:47 Apr 28	15:43:56 Apr 28
MWI Off	15:43:11 Apr 28	15:43:11 Apr 28
MWI Off	15:43:57 Apr 28	15:43:57 Apr 28
Call Answering	15:46:48 Apr 28	15:46:53 Apr 28
MWI On	16:56:24 Apr 28	16:56:24 Apr 28
MWI On	01:30:13 Apr 29	01:30:13 Apr 29
Expired Messages	03:30:09 Apr 29	03:30:09 Apr 29

## System Monitor

The System Monitor consists of three tabs, as described in the following table.

Tab	Description
Channel Monitor	Shows the status of all CallPilot services, multimedia channels (DSP channels), and call channels (DS30X channels).
System Info	Displays details 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 non destructive tool that does not alter the behavior of any CallPilot components.

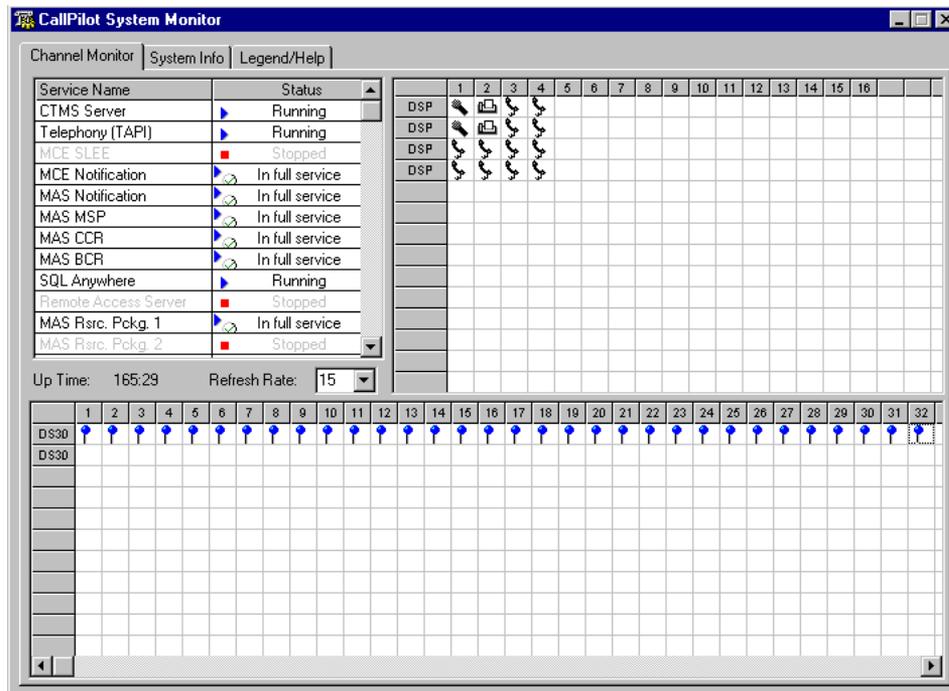
### To access the System Monitor

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

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 illustration shows the Channel Monitor tab, followed by a description of the contents.



### CallPilot services

The Service Name pane shows the status of services from a CallPilot perspective. The status in the operating system 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. See 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 functions optimally. If any CallPilot services are stopped, investigate the cause. Call Nortel technical support for assistance.

**Note:** While you need to investigate stopped services, some services are not critical. CallPilot may continue to handle call processing even with some services stopped.

The critical services that are needed for basic CallPilot call answering are listed in the following table. For your reference, the equivalent names as they appear in the Windows Control Panel are also listed.

<b>CallPilot SystemMonitor</b>	<b>Windows Control Panelequivalent</b>
CTMS Service	CTMS Server
Telephony (TAPI)	Telephony Service
MCE SLEE	CallPilot SLEE Service
MCE Notification	CallPilot MWI Service
MAS Notification	CallPilot Notification Service
MAS CCR	CallPilot Call Channel Router
MAS BCR	CallPilot Blue Call Router
SQL Anywhere	Adaptive Server Anywhere - %ComputerName %_SQLANY
MAS MltmediaCache	CallPilot Multimedia Cache
MAS MltmediaVol1	CallPilot Multimedia Volume 1
MAS MltmediaVol102(TRP only)	CallPilot Multimedia Volume 102 (TRP only)
MAS MltmediaVol103 (TRP only)	CallPilot Multimedia Volume 103 (TRP only)
MAS Rsrc. Pckg. 1	CallPilot Resource Package1

### **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 202i servers, DSPs reside on the motherboard.

DSPs are distributed as follows. The 202i server contains four DSPs located on the motherboard.

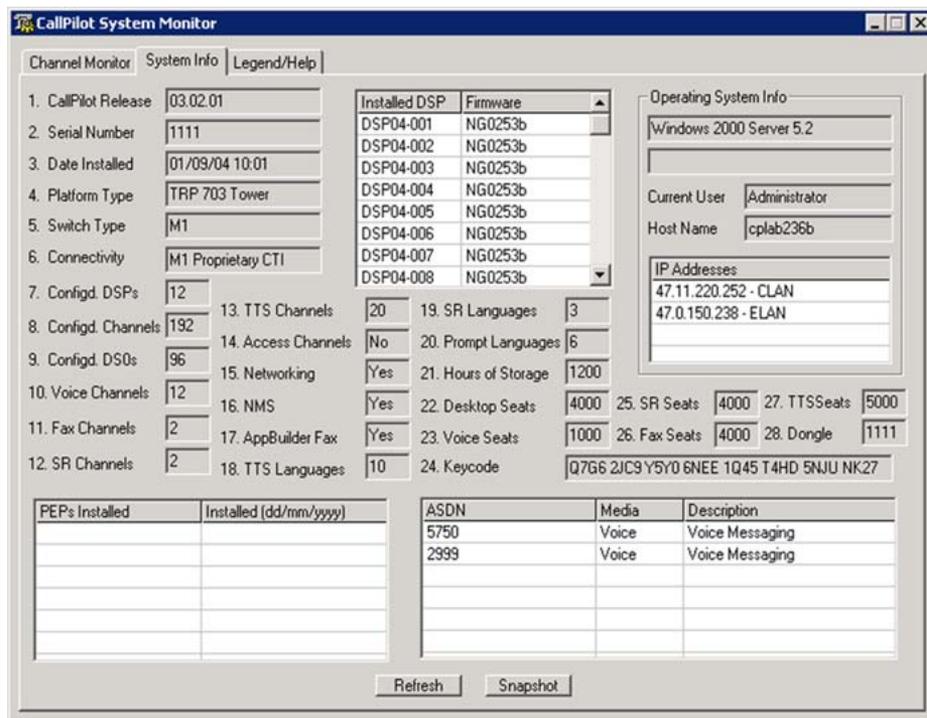
### **DS30X links**

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 202i server, the DS30X link to the switch is supported by the server connection to the switch backplane.

### **About the System Info tab**

The following illustration shows the System Info tab.



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

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

### About the Legend/Help tab

The following illustration shows the Legend/Help tab. Consult this tab for descriptions of the icons on the Channel Monitor tab.

**CallPilot System Monitor**

Channel Monitor | System Info | Legend/Help

---

**DSPs and Channels Status**

**Active States**

Idle Voice	Active Voice	Voice Shutting Off
Idle ASR	Active ASR	ASR Shutting Off
Idle Fax	Active Fax	Fax Shutting Off
Idle Conference	Active Conf.	Conf. Shutting
Idle DSO	DSO Shutting Off	Active DSO (No associated DSP)

Voice Off Duty	Off Duty	Loading
ASR Off Duty	Remote Off Duty	Unknown
Fax Off Duty	No resource	Unconfigured
Audio Conference Off		

Running diagnostics	Remote (yellow)
Faulty, failed	Local (red) alarm

**Selected Services Queried by Channel Monitor**

Displayed Name	Full Service Name
CTMS Server	CTMS Server
Telephony (TAPI)	WinNT-Telephony Service
MCE SLEE	CallPilot Slee Service
MCE Notification	CallPilot Notification Service
MAS Notification	MAS Notification Service
MAS Config. Mgr.	MAS Configuration Manager
MAS MSP	MAS Maintenance Service
MAS CCR	MAS Call Channel Router
MAS BCR	MAS Blue Call Router
MAS Rsrc. Pckg. (1 to 8)	MAS Resource Package
SQL Anywhere	SQL Anywhere
Remote Access Server	Remote Access Server
vbpcload	vbpcload (DSE system specific)

**Selected Services Status**

Stopping	Pausing	Running but may be ineffective because other, supporting, services are not running.
Paused	Continuing	In full service, as all supporting services are running.
Stopped	Starting	A service name and status will not be displayed if a service has crashed or if it is not installed.



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# Chapter 7

## Performing hardware maintenance and mechanical assembly

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### In this chapter

"Overview" (page 83)

"Removing the server from the switch" (page 84)

"Replacing the server" (page 85)

"Replacing the hard drive" (page 86)

"Replacing the software feature key" (page 89)

### Overview

Before you can replace components, you must perform the following tasks:

- Gather the tools you need.
- Remove the 202i server from the switch.
- Become familiar with component layout on the 202i server.

### Equipment required

You need the following tools, based on the component you are replacing:

- antistatic wrist strap or antistatic mat
- Phillips No. 1 and No. 2 screwdrivers
- tweezers

### Before you begin

Shut down the server (Windows) software. Then remove the server from the switch and place it on a static-resistant surface, with the component side facing up.

If you need to replace the entire 202i server, review "[Replacing the server](#)" (page 85). Then review the procedures to install the server and conduct diagnostic tests.

### Removing the server from the switch

You must remove the server from the switch before you replace the following components:

- hard drive
- software feature key (dongle)

### Equipment required

The following equipment is required for this procedure:

- antistatic mat
- antistatic wrist strap

### To remove the server from the switch

---

Step	Action
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- |   |   |
|---|---|
| 1 | Power down the server by unseating it from the back plane. Wait 15 seconds to complete powering down, then remove the server.<br><br>For instructions, see the <i>CallPilot Installation and Configuration Task List</i> NN44200-306. |
| 2 | Turn off the monitor.   |
| 3 | Disconnect all the cables.  |
| 4 | Open the lock latches at the top and bottom of the server.  |
| 5 | Grip the faceplate, and then unseat the server from the switch. Wait 15 seconds, and then remove the server.  |
| 6 | Place the server on a clean, static-resistant surface.  |
- 

—End—

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### What is next?

Replace and upgrade components, as required.

## Replacing the server

Replace the server only if you are instructed to do so. For activities that are not supported as field procedures, you must return the server to Nortel for service.

This section summarizes the procedure to replace the server. References are made to specific component replacement procedures where applicable.

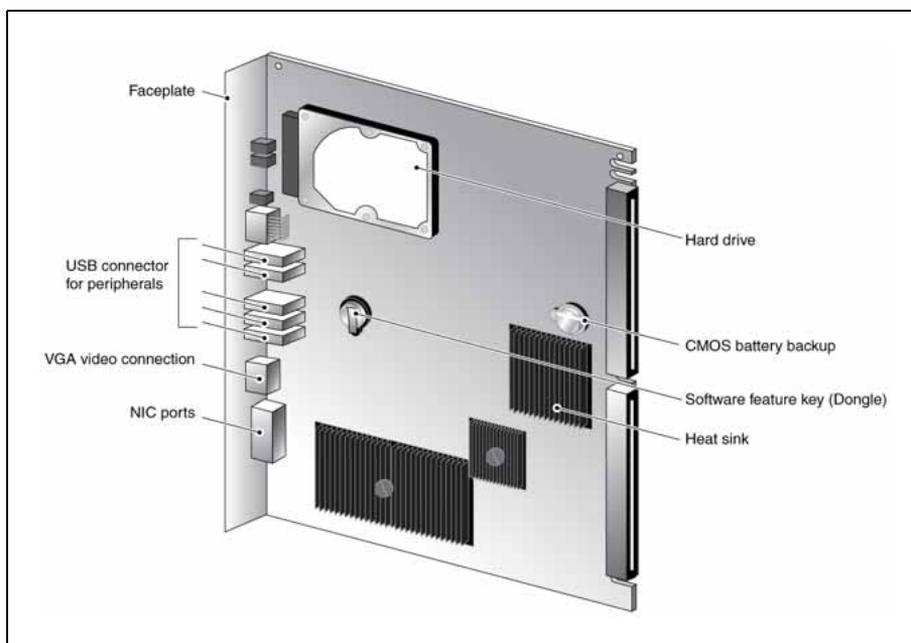
### To replace the server

Step	Action
1	If the installed server is functional, perform a full backup of the hard disk as a precautionary measure.
2	Shut down the installed server (see <i>"Starting up and shutting down the CallPilot server" in the CallPilot Installation and Configuration Task List</i> ).
3	Power down the server by unseating it from the back plane. Wait 15 seconds to complete powering down, and then remove the server.
4	Disconnect all peripherals from the server.
5	Remove the server from the switch (see <a href="#">"Removing the server from the switch" (page 84)</a> ).
6	Remove the software feature key (dongle) from the defective server, and then install it in the replacement server (see <a href="#">"Replacing the software feature key" (page 89)</a> ).
7	Remove the hard drive from the defective server, and then install it in the replacement server (see <a href="#">"To remove the hard drive" (page 86)</a> ).
8	Install the replacement server on the switch, and then reconnect the peripherals.
9	Boot the server to the operating system.
10	Run the Configuration Wizard to configure the new hardware. For instructions, see the <i>CallPilot &lt;switch model&gt; and CallPilot Server Configuration</i> guide for your switch and server.

—End—

### 202i server component diagram

The following diagram shows a completely assembled 202i server.



## Replacing the hard drive

The hard drive is secured in place by four screws through the motherboard.

### Equipment required

The following equipment is required for this procedure:

- antistatic wrist strap
- Phillips No. 1 screwdriver
- nonmetallic pencil

### Before you begin

Before you replace the hard drive, review the following:

- ["Removing the server from the switch" \(page 84\)](#)

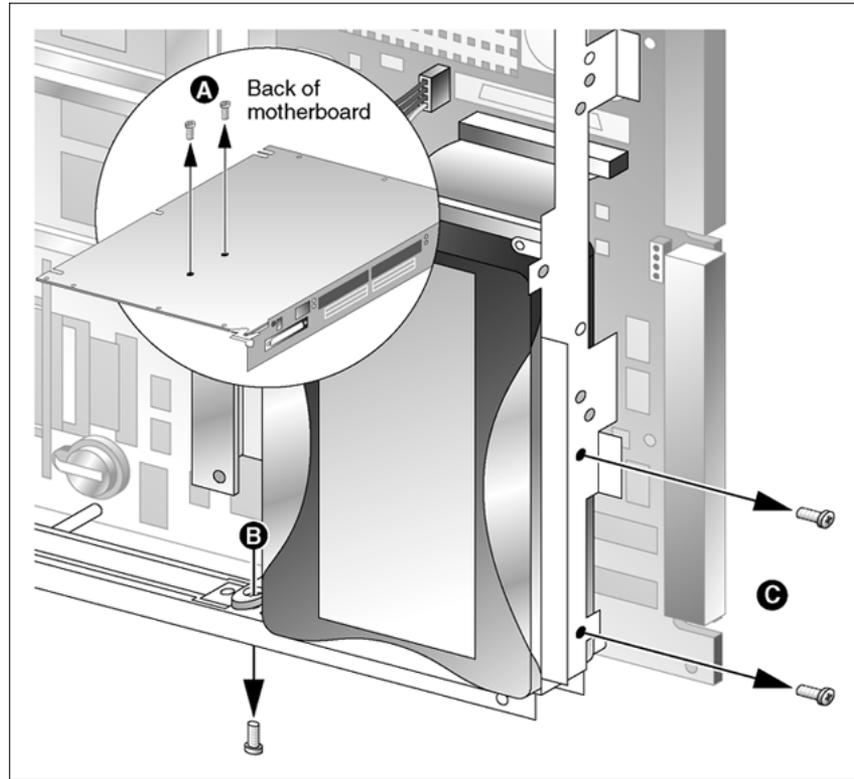
### Hard drive assembly diagram

Follow this procedure to assemble the hard drive.

### To remove the hard drive

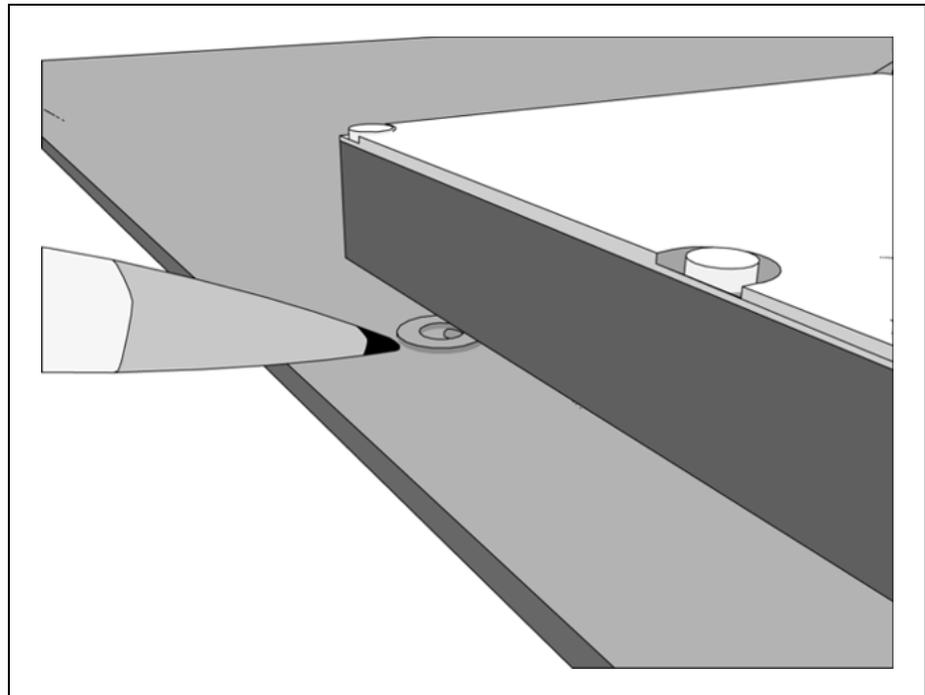
Step	Action
1	Ensure that the server is hard drive assembly side down on the antistatic mat.
2	Perform the following steps:

- a. Remove the four screws that fasten the hard drive to the motherboard and set aside the four fiber washers that are between the hard drive and the motherboard for reuse.
- b. Turn the server over and slide the hard drive toward the backplane connectors to remove it from the socket.

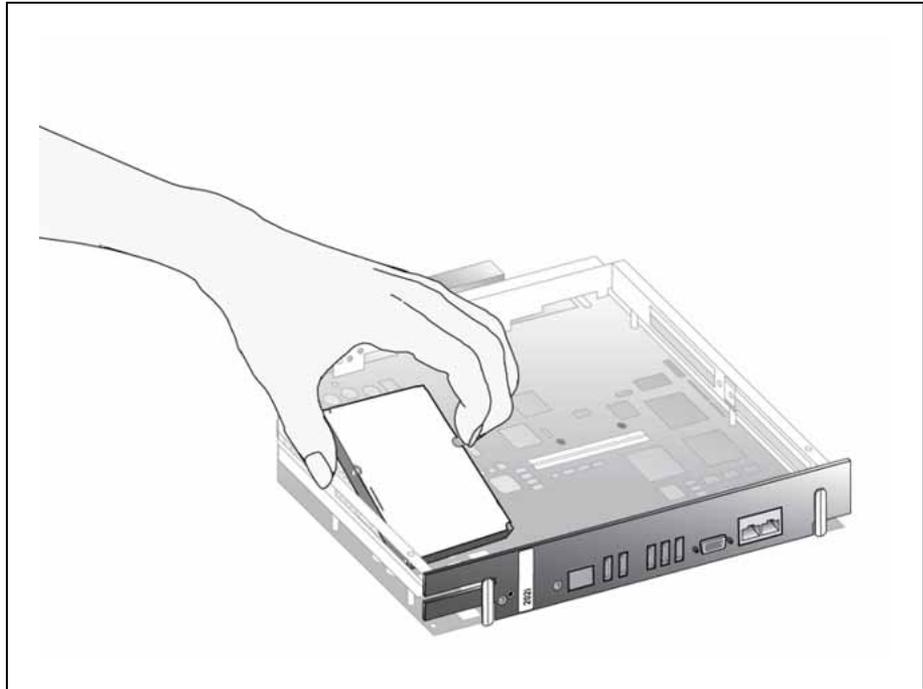


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- 3 Perform the following steps:
  - a. Remove the new hard drive from the antistatic bag and slide the hard drive part way into the drive socket.
  - b. Using a nonmetallic object, such as a pencil, slide a fiber washer between the drive and the motherboard roughly aligning it with one of the four mounting holes.
  - c. Hold the hard drive against the motherboard with one hand and turn the board over to access the mounting hole.
  - d. Use the nonmetallic object to align the fiber washer with the mounting hole.



- e. Insert one of the four screws and use the screw driver to turn the screw one or two rotations to partially tighten the screw,
  - f. Repeat steps c through e to place the remaining three fiber washers and partially tighten the three remaining screws in the remaining mounting holes.
- 4** Slide the hard drive the remainder of the way into the socket on the motherboard.



- 5 Fully tighten the four hard drive retaining screws.
- 6 Replace the server in the shelf.

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—End—

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### What is next?

Review the procedures for installing the server and conducting diagnostic tests.

## Replacing the software feature key

The software feature key (dongle) stores the unique serial number of the server. If you must replace the 202i server, use this procedure to move the software feature key from the faulty server to the replacement server.

### Equipment required

The following equipment is required for this procedure:

- flat blade screwdriver
- tweezers

### Before you begin

Before you replace the software feature key, review "[Removing the server from the switch](#)" (page 84).

### To replace the software feature key

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Step	Action
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- 1 Use the flat blade of the screwdriver to lift the clip that secures the software feature key to the motherboard.

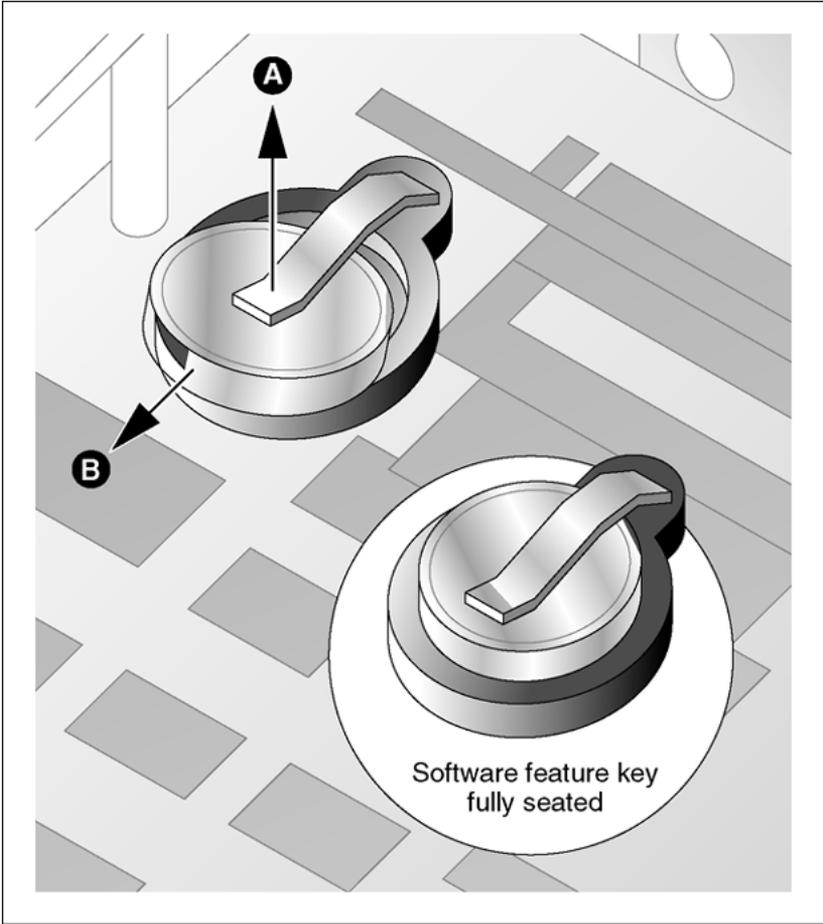


**CAUTION**

Ensure that you do not bend the clip so that it can no longer apply downward pressure.

- 2 Use the tweezers to pull the software feature key from the socket.
- 3 Insert the software feature key into the socket on the replacement server, lip side up.

When the software feature key (dongle) is correctly installed, it is firmly seated in the socket.



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—End—





Nortel CallPilot

## 202i Server Maintenance and Diagnostics

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Publication: NN44200-708  
Document status: Standard  
Document version: 01.02  
Document date: 11 August 2009

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