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CallPilot

Installation and Configuration

Part 5: 703t Server Maintenance and Diagnostics

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Chapter 1

About this guide

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Maintenance and diagnostics overview

Introduction

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

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

Who should read this guide

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

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

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

Resolving system problems

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

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

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

- *CallPilot Troubleshooting Reference*

  Note: Nortel Networks continually updates the *CallPilot Troubleshooting Reference* document. You can obtain the latest version from the Partner Information Center (PIC) at http://my.nortelnetworks.com.

For more details, see “Resolving system problems” on page 16.

Preparing for hardware or software maintenance

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

Performing hardware maintenance

Chapters 7 to 12 in this guide explain how to replace or maintain hardware components. For more details, see “Replacing hardware components” on page 19.

Rebuilding the CallPilot system

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

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

Resolving system problems

Introduction

Chapters 2 to 6 in this guide describe how to use a variety of CallPilot resources for resolving system problems.

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

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

Using this guide

This guide provides instructions for using the resources provided by your 703t server, as follows:

To	See
interpret the LEDs on the 703t server	Chapter 2, "Troubleshooting your CallPilot system"
interpret POST codes and troubleshoot startup problems	Chapter 2, "Troubleshooting your CallPilot system"
use the server's System Event Log (accessible from the System Setup Utility only)	Chapter 2, "Troubleshooting your CallPilot system"
use Windows NT 4.0 diagnostic tools, including Event Viewer and TCP/IP diagnostic tools	Chapter 3, "Using Windows NT online diagnostic tools"

To	See
run diagnostics on the serial ports	Chapter 4, “Using serial port diagnostic tools”
use the Event Browser, Alarm Monitor, and Maintenance page in CallPilot Manager	Chapter 5, “Using CallPilot Manager to monitor hardware”
use the following CallPilot system utilities: ■ Diagnostics Tool ■ System Monitor	Chapter 6, “Using CallPilot system utilities”

Using the *CallPilot Administrator’s Guide*

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

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

Using the *CallPilot Troubleshooting Reference*

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

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

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

- server boot cycle failures
- peripheral device problems
- monitor display problems
- server to network connection problems
- remote access connection problems
- CallPilot application problems

Replacing hardware components

Introduction

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

To replace or install	See
■ the server cover ■ upper fan holder foam ■ cooling fans	Chapter 7, “Replacing basic chassis components”
■ a hard drive ■ the tape drive ■ the CD-ROM drive ■ the floppy disk drive	Chapter 8, “Replacing media drives”
the RAID card	Chapter 9, “Maintaining the AMI MegaRAID Elite 1600 RAID system”
MPB96 boards	Chapter 10, “Replacing voice processing boards”
■ memory modules ■ the CPU	Chapter 11, “Working with DIMMs and the CPU”
the BIOS	Chapter 12, “Working with the CallPilot server BIOS”

Approved replacement parts

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



CAUTION

Risk of system damage

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

Preparing for maintenance activities

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

- required tools and equipment
- recommended safety precautions for electrostatic discharge, handling cards, and handling your server
- instructions for shutting down your 703t server or for taking it out of service

Chapter 2

Troubleshooting your CallPilot system

In this chapter

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Overview

Introduction

This section describes the startup diagnostics available on the 703t server, and the methods for troubleshooting startup problems. This includes the following:

- Hardware LED states
- Power-On Self-Test (POST) diagnostics
- SCSI controller diagnostics
- RAID controller diagnostics
- What to do when the server fails to boot into service
- Viewing the System Event Log

See also

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

- Chapters 3 to 6 of this guide, which describe additional diagnostic tools

  These diagnostic tools can only be used if you are able to start up the CallPilot server. See “Resolving system problems” on page 16 for more details.
- *CallPilot Administrator’s Guide* (NTP 555-7101-301)

  See “Using the CallPilot Administrator’s Guide” on page 17 for more details.
- *CallPilot Troubleshooting Reference*

  Nortel Networks continually updates the *CallPilot Troubleshooting Reference* document. You can obtain the latest version from the Nortel Networks Partner Information Center (PIC) at http://my.nortelnetworks.com.

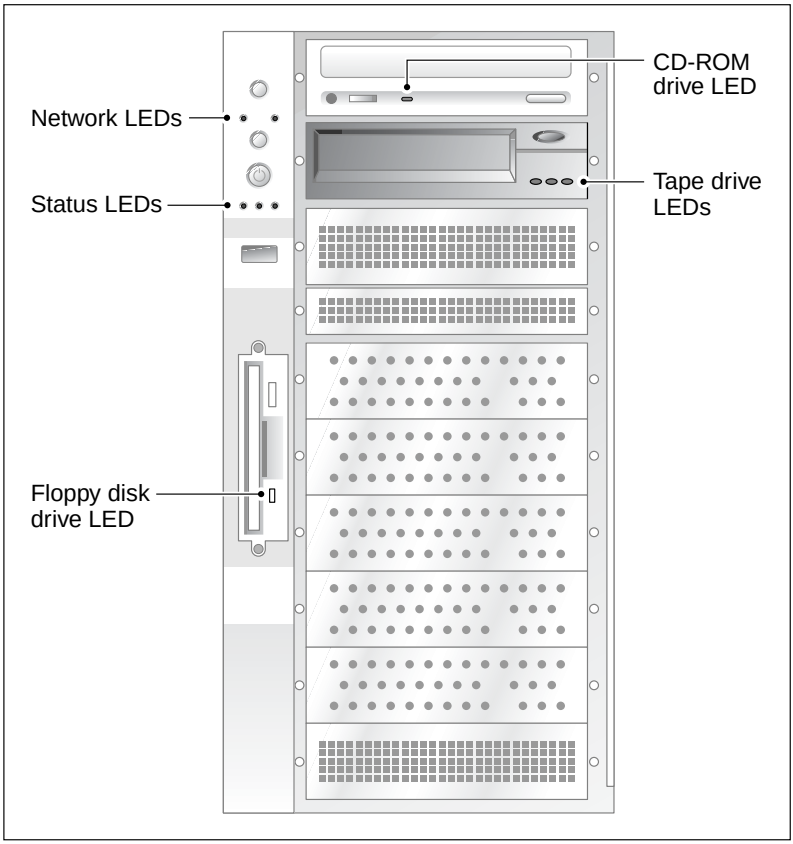
Interpreting front panel LEDs

Introduction

This section describes LED states visible on the 703t server front panel.

LED locations

The following diagram shows where the LEDs are located:



The server LEDs, from top to bottom and left to right, indicate the status of the following:

- the CLAN and ELAN network interfaces
- hard drive
- power/sleep
- system

LEDs are also provided on the SCSI tape drive faceplate, floppy disk drive faceplate, and the IDE CD-ROM drive faceplate.

Network LED states

The network LEDs are green and are located as follows:

LED position	Controller name	Controller type	LAN type
Left	NIC1	10/100Base-T	ELAN
Right	NIC2	10/100/1000Base-T	CLAN

IF the network interface LED is	THEN
off	a valid hardware connection with the network has not been established. Ensure that the Ethernet cable is connected to both the server's Ethernet connector and the respective network hub. If the cable is connected, ensure that the cable is good.

IF the network interface LED is	THEN
on	a valid hardware connection with the network has been established. **Note:** Before the 703t server can receive or transmit data, you must configure valid IP settings on the 703t server.
blinking rapidly	activity is occurring on the network. **Note:** This does not mean that the 703t server is actually transmitting or receiving packets.

Hard drive LED states

The hard drive LED (the first LED in the row of LEDs below the power button on the 703t server's front panel) is not used because the 703t server is actually equipped with two hard drives. There are no LEDs on the hard drives.

If hard drive faults occur on the 703t server, you can investigate them by reviewing events in the following:

- Windows NT Event Viewer (see "Viewing event logs" on page 52)
- CallPilot Event Browser (see "Event Browser" on page 93)

You can also view the status of each hard drive in the MegaRAID Client. For instructions on accessing and using this utility, see Chapter 9, "Maintaining the AMI MegaRAID Elite 1600 RAID system."

Power/sleep LED states

The power/sleep LED is the middle LED in the row of LEDs below the power button on the 703t server's front panel (see "Status LEDs" in the diagram on page 23). It is green.

IF the power/sleep status LED is	AND	THEN
green	steady	the server is powered on.
off	not applicable	the server is powered off.

Note: The CallPilot operating system (Windows NT) does not support sleep mode on the server.

System status LED

The system status LED is the right LED in the row of LEDs below the power button on the 703t server's front panel (see "Status LEDs" in the diagram on page 23).

Note: If the status LED indicates a problem, you can learn more about the problem by using the 703t server's System Event Log. For more information, see "Viewing the System Event Log" on page 43.

IF the system status LED is	AND	THEN
green	steady	the server is operating normally.
	blinking	the server's processor or memory is disabled.

IF the system status LED is	AND	THEN
amber	steady	■ a critical temperature or voltage fault has occurred ■ the CPU is not installed or is not functioning
	blinking	■ a power fault has occurred ■ a fan is faulty ■ a non-critical temperature or voltage fault has occurred
	off	a fatal error occurred during the power-on status test (POST)

Tape drive LED states

The 703t server is equipped with an SLR60 tape drive. Three LEDs are located on the drive's front panel. They are referred to as left, center, and right in the following table:

Left LED Ready Green	Center LED Activity Green	Right LED Error Amber	Description
On	On	On	LED test (2 seconds at power on)
Blinking	Off	Off	■ Power-up self-test ■ Diagnostic cartridge activity
Off	Off	Off	■ Cartridge is not inserted ■ Tape is not loaded
On	Off	Off	■ Cartridge is not inserted ■ Tape is loaded but is not moving

Left LED Ready Green	Center LED Activity Green	Right LED Error Amber	Description
On	Blinking	Off	■ Tape is loaded and moving ■ Tape is loading or unloading ■ Cartridge is ejecting
Off	Off	On	■ Cleaning is required ■ Cartridge/tape is not loaded
On	Off	On	■ Cleaning is required ■ Tape is loaded but not moving
On	Blinking	On	■ Cleaning is required ■ Tape is loaded and moving ■ Tape is loading or unloading ■ Cartridge is ejecting
Off	Blinking	On	Cleaning is in progress
Off	Off	Blinking	■ Unrecoverable tape drive failure ■ Cartridge failure ■ Microcode download failure

Note: If the LED states indicate an error, contact your Nortel Networks technical support representative.

CD-ROM drive LED states

The CD-ROM drive's status LED is located on the drive's front panel. Refer to the following table when interpreting the CD-ROM drive's status:

IF the CD-ROM drive LED is	THEN
off	the CD-ROM drive is idle.
on	the CD-ROM drive is being accessed.

Interpreting rear panel LEDs

Introduction

This section describes LED states visible at the back of the 703t server.

MPB96 DS30 connection link LED states

Refer to “Slot definition and numbering” on page 300 for the slot position of the MPB96 boards in your server.

The illustration of the MPB96 board on page 253 shows the location of three green LED's on the MPB96 card bracket.

When	THEN
all three are On	the cables are connected properly.
one or more are Off	■ there is no connection to the switch ■ the connection is to the switch is intermittent ■ the DS30 clock signal coming from the MGate card is not working correctly You should: ■ check each of the three individual branches of the DS30 cable for faults, or replace the cable ■ check for a faulty MGate card in the switch

Blue LED

The blue LED in the back of the 703t system is not used in CallPilot.

It comes on for only a moment during a server reboot.

Interpreting internal LEDs

Introduction

This section describes LED states visible inside of the 703t server cabinet.

MPB96 LED states

There are three LEDs on the top of the MPB96 board. They are visible even from outside the server cabinet, through the rear grill.

"PCI FPGA Done" LED (closest to the I/O card bracket):

This LED should go ON at power up and the OFF right away. This indicates that the board is working properly and was correctly detected by the system.

If the LED stays ON after power up, the card is faulty, and you must replace the board.

"DSP FPGA Done" LED:

This LED will come on at power up and will stay ON until the CallPilot drivers are loaded just before the diagnostic screen starts.

If this LED stays ON after the system has booted in Windows NT and the CallPilot diagnostic screen has started, either the board is faulty or there is a problem with the CallPilot DSP and Windows NT Bus drivers.

"CTbus FPGA Done" LED (furthest from the I/O card bracket):

This LED works in tandem with the "DSP FPGA Done" LED, and should go on and off at the same times.

RAID controller LED states

Refer to “Slot definition and numbering” on page 300 for the slot position of the RAID boards in your server.

There is one red LED and a row of eight small LED's at the back of the RAID board.

When the board is working properly:

1. The red LED comes on briefly at power up, then goes off. This indicates that the card was accessed for detection successfully.

   At the same time all eight LEDs at the back will light.

2. Four of the eight LEDs will then go off and stay that way.

In the end there should be four LEDs lit at the back of the card, indicating that the card is working properly.

If all eight LEDs stay on, after power up and boot, this means that the card was not detected or is faulty.

Interpreting POST diagnostics

Introduction

The Power-On-Self-Test (POST) is a system diagnostic program (stored in the BIOS) that runs each time the 703t server is started. POST's function is to test system components, and then to display status messages.

POST reports on the system status using POST beep codes. If an error occurs before video initialization, POST emits beep codes that indicate errors in hardware, software, or firmware.

A beep code is a series of separate tones, each equal in length. Record the beep codes that you hear before calling your Nortel Networks customer support representative.

ATTENTION

Some POST beep codes are critical and require you to replace your motherboard. Refer to the tables in this section for more information about beep codes.

Types of beep codes

There are three types of beep codes on the 703t server:

- BIOS recovery beep codes (during a BIOS recovery procedure)
- bootblock error beep codes (for normal operation)
- bootblock error 3-beep codes (for normal operation)

BIOS recovery beep codes

Beeps	Error message	Description
1	Recovery started	Start recovery process.
2	Recovery boot error	Unable to boot from floppy disk drive or CD-ROM drive. Recovery process will retry.
Series of low-pitched single beeps	Recovery failed	Unable to process valid BIOS recovery images. BIOS already passed control to the operating system and flash utility.
2 long high-pitched beeps	Recovery complete	BIOS recovery succeeded. Ready for power-down or restart.
3	Recovery failed	Recovery failed. Disk is not bootable or the disk is not inserted.

Bootblock error beep codes

Number of beeps	Error message	Error message and conditions
1	Refresh Timer Failure	The memory refresh circuitry on the motherboard is faulty.
2	Parity Error	Parity cannot be reset.
3	Boot Block Failure	See “Bootblock error 3-beep codes” on page 35.
4	System Timer	System timer not operational.

Number of beeps	Error message	Error message and conditions
5	Processor Failure	Processor faulty
6	Keyboard Gate A20 Failure	Keyboard may be bad
7	Processor Exception Int error	Processor generated an exception interrupt
8	Display Memory Read/Write Error	Video adapter is missing or faulty. This is not a fatal error.
9	ROM checksum error	BIOS checksum error
10	Shutdown register error	Shutdown register read/write error
11	Invalid BIOS	General BIOS error

Bootblock error 3-beep codes

Number of beeps	POST code	Expansion card/controller
3	00h	No memory was found in the system
3	01h	Memory of mixed types was detected
3	02h	EDO is not supported
3	03h	First row memory test failure

Number of beeps	POST code	Expansion card/controller
3	04h	Mismatched DIMMs in a row
3	05h	Base memory test failure
3	06h	Failure in decompressing post module
3	07-0Dh	Generic memory error
3	0Eh	SMBus protocol error
3	0Fh	Generic memory error
3	DDh	CPU microcode cannot be found for processor in slot 0
3	EEh	CPU microcode cannot be found for processor in slot 1

SCSI controller diagnostics

BIOS initialization

Most information about SCSI is displayed as part of the BIOS initialization screen.

During BIOS initialization you should check to make sure that the tape drive is listed correctly. If the tape drive is not listed correctly:

- Ensure that internal cable connections are made properly.
- Check that tape drive settings are correct.
- Check tape drive termination.

For more information refer to:

- "SCSI and IDE drive cabling" on page 178
- "Replacing the tape drive" on page 188

RAID controller diagnostics

Most diagnostic information about RAID is available through beep warnings and status LEDs when the server is rebooting.

For more information refer to:

- “Hard drive LED states” on page 25
- “RAID controller LED states” on page 32
- “When the 703t server does not boot and makes audible beeps” on page 41
- “When the 703t server boots to Windows NT and makes audible beeps” on page 42

What to do when the server fails to boot into service

Introduction

The following sections suggest tasks you can perform to determine why the 703t server fails the bootup cycle.

As you investigate boot problems:

1. Ensure that you accurately record any diagnostic codes and error messages that occur.
2. Try restarting the server by pressing the power button on the server.
3. During the boot sequence, view the diagnostic codes on the monitor for failures.

   Note: Allow 5 minutes for the boot cycle to complete.
4. If errors indicate a hardware problem with a failure to boot to Windows NT, use the System Setup Utility to display the 703t server's System Event Log.

   For more information, see "Viewing the System Event Log" on page 43.
5. If the server boots to Windows NT, but fails to boot into CallPilot, view the event logs. For instructions, see "Viewing event logs" on page 52.
6. Refer to the *CallPilot Troubleshooting Reference* for other suggestions.

   Nortel Networks continually updates this document and provides it on the Nortel Networks Partner Information Center web site at http://www.my.nortelnetworks.com.

   Note: If you are not a distributor, contact your Nortel Networks technical support representative for assistance.
7. If you still cannot find the cause of the boot failure after performing the tasks described in the following sections, call your Nortel Networks technical support representative.

When the 703t server does not boot and there are no audible beeps

If no fans are turning

1. Ensure that the power cord is properly connected into an electrical outlet.
2. If the problem continues, ensure that there is power to the electrical outlet.

If fans are turning

1. Ensure that the monitor is turned on.
2. If the problem continues, ensure that the internal power supply to the boards is connected correctly.

When the 703t server does not boot and the system board LED is red

If the right-most status LED on the front of the 703t server is red this is usually due to failure of the Board Management Controller.

The most likely cause is changing boards without completely powering down the 703t server and disconnecting the power cable.

1. Shut down the 703t server
2. Disconnect the power cable.
3. Wait one minute.
4. Reconnect the power cable and attempt to restart the 703t server.
5. If the problem continues, contact your Nortel Networks technical support representative for assistance.

When the 703t server does not boot and makes audible beeps

If beeps are short

If the beeps are short in length they are from the system board.

Typically, you will not see any video displayed on the monitor, and the right-most status LED on the front of the 703t server will show a blinking or steady amber.

1. Make a note of the number of beeps and any error messages or POST codes. Use the System Setup Utility to display the 703t server's System Event Log as described in "Viewing the System Event Log" on page 43.
2. Refer to "Bootblock error beep codes" on page 34 and "Bootblock error 3-beep codes" on page 35, and use the collected information to identify the cause of the failure.
3. Replace any component that is indicated as faulty.

If beeps are long

If the beeps are a series of high-pitched, long beeps, they are from the RAID system.

Typically, you will see messages displayed on the monitor indicating that the system is in a critical state.

1. Ensure that internal hard drive cables are properly connected.
2. If the problem continues, RAID BIOS may be corrupted.

   Attempt to recover RAID data as described in "Recovering from a corrupted RAID BIOS" on page 225.
3. If the problem continues, the drive is faulty. Replace the hard drive as described in "Replacing a hard drive" on page 179.

When the 703t server boots to Windows NT and makes audible beeps

If the 703t server boots to the Windows NT operating system but still makes audible beeps, one of the hard drives is in critical condition.

1. Rebuild the hard drive as soon as Windows NT has finished loading. Refer to "Rebuilding a hard drive in the RAID system pack" on page 238.

When the 703t server boots to Windows NT but does not boot to CallPilot

If the 703t server does not boot to CallPilot, it may be due to the failure of a multimedia board.

1. Check the diagnostic screen that is displayed immediately after you reboot the system, and view the event logs. For instructions, see "Viewing event logs" on page 52.
2. If the diagnostic or event log information indicates failure of a multimedia board, replace the card as described in "Replacing an MPB96 board" on page 254.
3. If the diagnostic or event log information does not indicate failure of a multimedia board, a software failure is the likely cause.

   Refer to the *CallPilot Installation and Configuration Part 4: Software Installation and Maintenance (555-7101-202)* for instructions on how to reinstall software.

Viewing the System Event Log

Introduction

The System Event Log is a utility on the 703t server that reports hardware-related errors. Use the System Event Log when the status LED on the server's front panel indicates a problem, or the server will not start Windows NT.

Events are reported in the System Event Log only if event logging is enabled in the 703t server's BIOS. (Logging is enabled by default at the factory.) For instructions on working with the BIOS, see Chapter 12, "Working with the CallPilot server BIOS."

To display the System Event Log

You access the System Event Log by launching the System Setup Utility (SSU) from the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM.

ATTENTION

Since mouse support is not available when using the SSU, it is difficult to navigate through the contents of the System Event Log. Nortel Networks recommends therefore, that you save the log to a file on floppy disk and then review it in a text editor, such as Notepad.

1. Insert the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM into the server's CD-ROM drive.
2. Start (or restart) the server and observe the startup diagnostics.
3. When the processor diagnostics screen appears, press Esc.

   Result: The following appears at the bottom of the screen:

   ```
   Entering the boot menu ....
   ```

The system continues with the SCSI and RAID startup diagnostics, and when done, the following menu appears:

```
Please select boot device:
ATAPI CD-ROM
Removable Devices
Hard Drive
IBA 4.1.0.4 Slot 0118
IBA GE Slot 0120 v1109
Use <arrow up> and <arrow down> to change selection,
Use ENTER to select and save,
Use ESC to Exit without save.
```

4 Choose ATAPI CD-ROM, and then press Enter.

Result: The following menu appears:

```
MS-DOS 6.2 Startup Menu


1.  Delete all partitions on first hard drive, reboot
2.  Create C partition for OS ...
3.  Format C Install Windows NT from CD-ROM ...
4.  Command Prompt with IDE CD-ROM as Z:
5.  Command Prompt with LAN access ...
6.  Make a Bootable Floppy Disk with IDE CD support
7.  Run PC Hardware Diagnostics
8.  Other Utilities (BIOS, Firmware, etc) ...
```

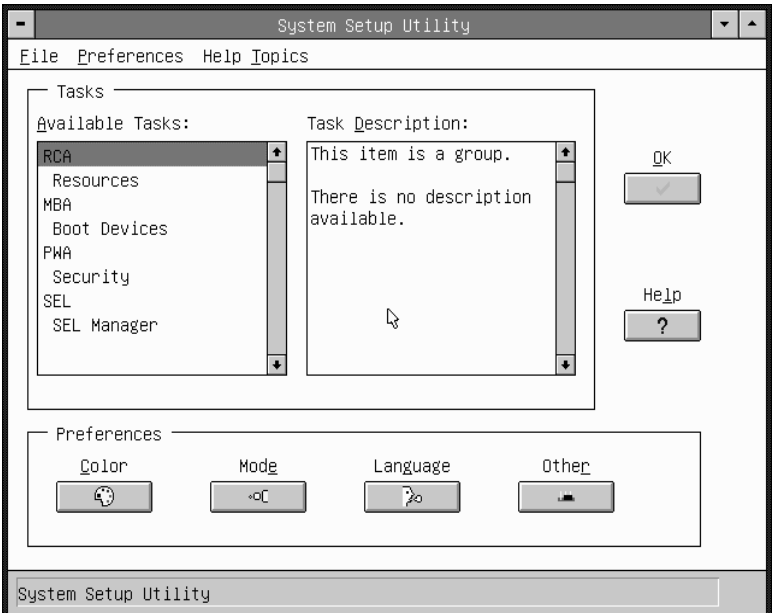
5 Choose option 8, Other Utilities (BIOS, Firmware, etc).

Result: The following menu appears:

```
*** Other Utilities ***
1.  1002rp BIOS update ...
2.  AMI Elite 1600 RAID card Firmware update
3.  Mylex DAC960 RAID Card Configuration utility
4.  Mylex DAC960 RAID Card Diagnostic
5.  Mylex DAC960 RAID Card Firmware update
6.  Mylex AR352 RAID Card Utility & Firmware update
   (needs 1 floppy)
7.  703t SSU
8.  703t BIOS update utility
```

6 Choose option 7, 703t SSU.

Result: The System Setup Utility window appears.



Notes:

- You may have a later version of the SSU. The menus can differ slightly, but the steps are the same.
- The left column describes the Available Tasks, and the right column provides help on the highlighted task. Indented items under the Available Tasks heading are configurable. The headings are not configurable.
- You must use the arrow keys on the keyboard to move around the SSU window. Mouse support is not available.

7 Press the down arrow to highlight the SEL Manager option

8 Press Tab twice to choose OK, and then press Enter.

Result: The list of hardware events appears.

9 Press Alt+F to display the File menu.

10 Press the down arrow to choose Save As.

11 In the dialog box that appears, type a name for the file.

Note: The file name should contain no more than 8 characters plus the 3 character extension.

12 Press Tab three times to move the cursor to the Drives list box (at the bottom of the screen).

13 Press the up arrow twice to choose the floppy disk drive (A:).

14 Insert a disk into the floppy disk drive (A:).

15 Press Tab to choose OK, and then press Enter.

Result: The file is saved to the floppy disk. When saving is finished, the following message appears:

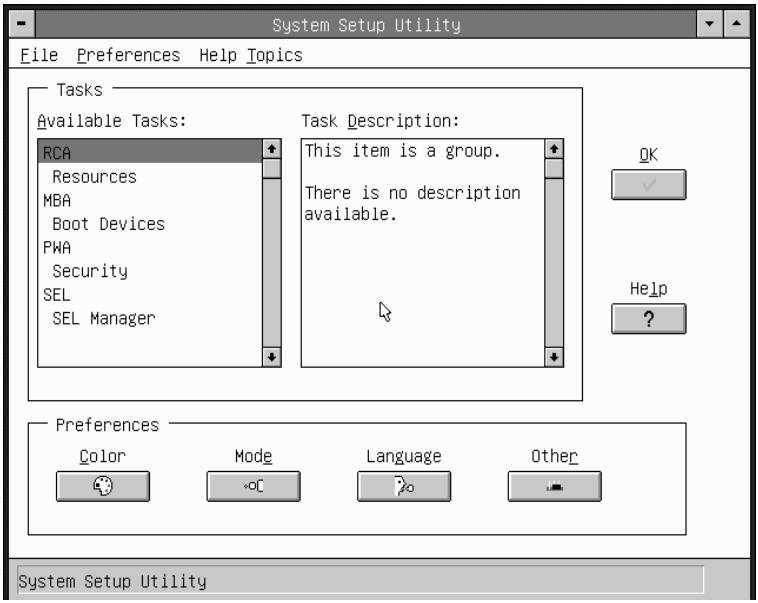
```
All SEL information has been saved.
```

16 Press Enter (to activate OK).

17 Press Alt+F to display the File menu.

18 Press the down arrow to choose Exit, and then press Enter.

Result: The System Setup Utility window appears.



19 Press Alt+F to display the File menu.

20 Press Enter to Exit.

Result: The following message appears:

```
Are you sure you want to exit the SSU?
```

21 Press Enter (to activate OK).

Result: The SSU closes.

22 Remove the CD-ROM and the diskette from their respective drives.

23 Press Ctrl+Alt+Delete to restart the server.

To view the contents of the system event log file

Open the system event log file in a text editor, such as Notepad.

Chapter 3

Using Windows NT online diagnostic tools

In this chapter

Overview 50

Viewing event logs 52

Checking hardware using Windows NT Diagnostics 57

Using TCP/IP diagnostic tools 60

Invoking the chkdsk utility 70

Overview

Introduction

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



CAUTION

Risk of software corruption

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

Windows NT Event Viewer

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

Windows NT Diagnostics

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

TCP/IP diagnostics

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

- ipconfig
- ping
- tracert
- arp

- nbtstat
- netstat

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

chkdsk utility

The chkdsk utility checks a specified disk on the server and displays a status report. It is an online utility, but it reduces system performance while it is running.

Viewing event logs

Introduction

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

If one or more error messages appear on the monitor, a fault has occurred. To determine what happened, you can use the following:

- Windows NT Event Viewer on the 703t server (see "To use the Windows NT Event Viewer" on page 54)
- CallPilot Event Browser or Alarm Monitor in CallPilot Manager

  For more information, do one of the following:

  - See "Alarm Monitor" on page 90.
  - Refer to the *CallPilot Administrator's Guide* (NTP 555-7101-301).

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

Types of event logs

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

Log type	Description
System	Logs events by Windows NT 4.0 components, including RAS or other Windows NT services.

Log type	Description
Security	Logs security events, such as logons, logoffs and illegal access. This option is available only to users with Administrative access.
Applications	Logs events by application, such as database file errors.

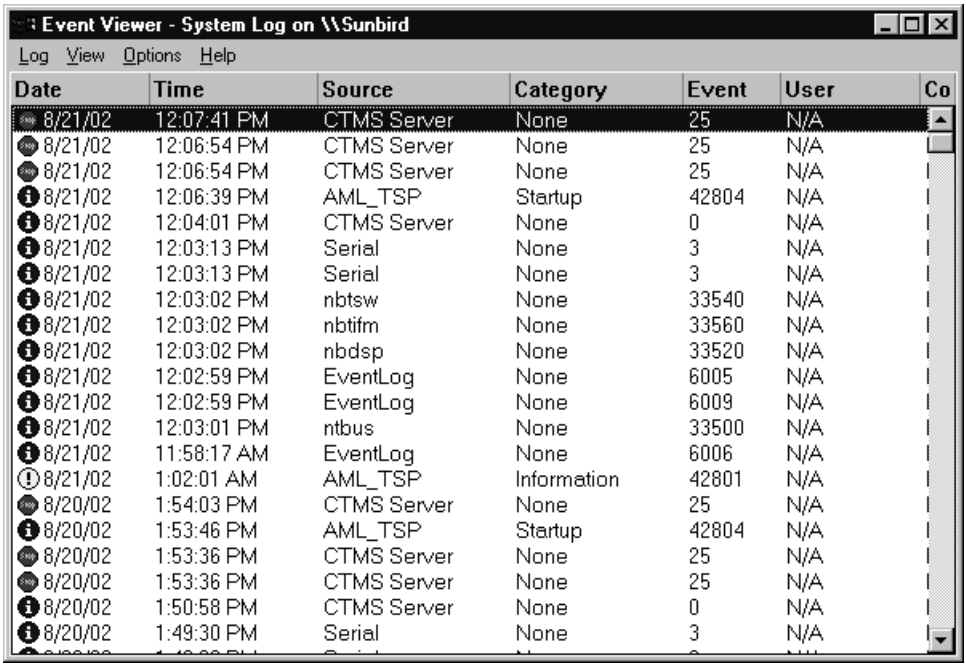
Where to get more information

For more information about using the Windows NT Event Viewer, click Help → Contents in the Event Viewer window. See also “To use the Windows NT Event Viewer” on page 54.

To use the Windows NT Event Viewer

1 Click Start → Programs → Administrative Tools (Common) → Event Viewer.

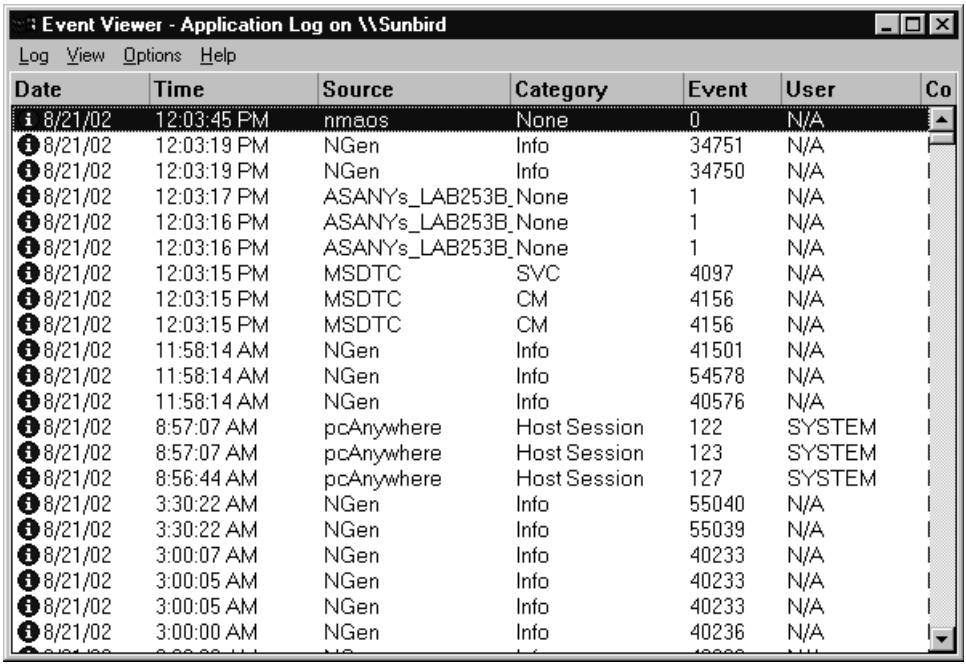
Result: The Event Viewer window appears.



Note: The System Log appears by default.

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

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



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

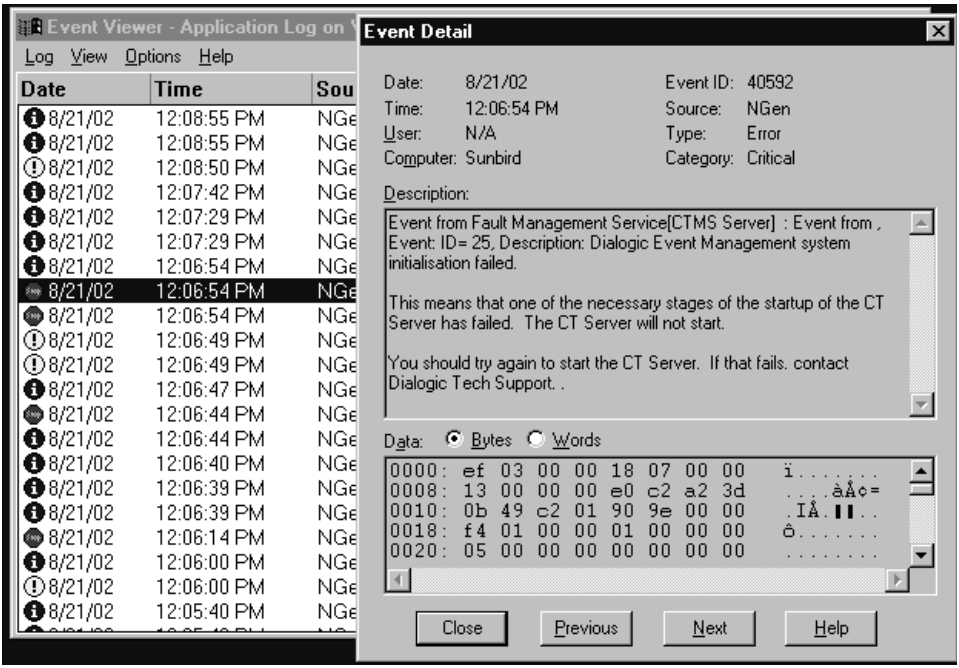
3 Look for error codes flagged with Stop or ! that have occurred since the last startup.

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

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

Result: A description of the error appears.

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



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

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

6 Click Close.

Result: The event log reappears.

7 Click Log → Exit.

Result: The Event Viewer closes.

Checking hardware using Windows NT Diagnostics

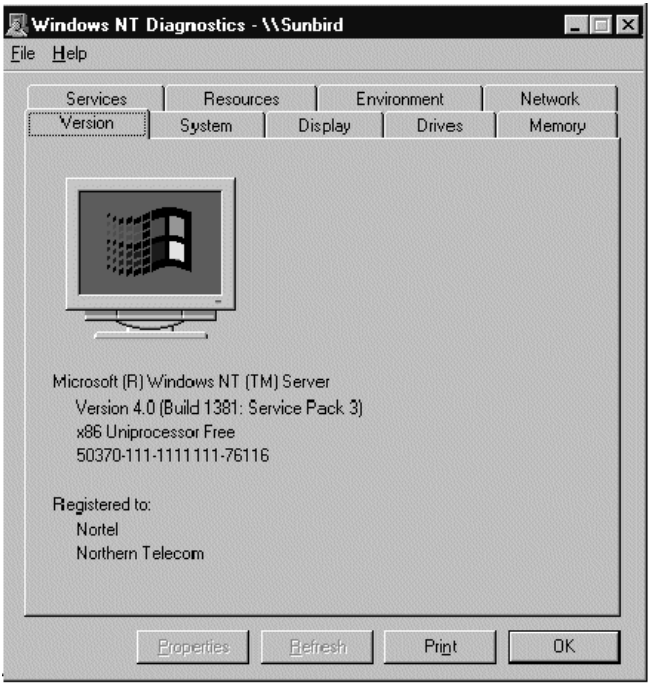
Introduction

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

To use the Windows NT 4.0 Diagnostics tool

1. Log on to Windows NT.
2. Click Start → Programs → Administrative Tools (Common) → Windows NT Diagnostics.

   Result: The Windows NT Diagnostics window appears.



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

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

Select	To display details about
Version	Windows NT version Registration information
System	System identifier HAL BIOS information Processors
Display	BIOS information Adapter Driver
Drives	Drives by type or letter To view specific details, select a drive, and then click Properties to view details for the drive, including size and labels.
Memory	Memory, including totals, physical and kernel memory, commit charge, and pagefile space
Services	Service and device states To view specific details, select a service, and then click Properties to view details, including pathname, dependencies and service flags.

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

Using TCP/IP diagnostic tools

Introduction

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

- ipconfig (below)
- ping (page 62)
- tracert (page 63)
- arp (page 65)
- nbtstat (page 66)
- netstat (page 68)

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

The ipconfig command

The ipconfig command displays IP configuration information.

Ipconfig default

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

Ipconfig command syntax

```
ipconfig /[ ]
```

The following flags are available for the ipconfig command:

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

To run the ipconfig command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

   Example: ipconfig /all

3. Press Enter.

   Result: The system runs the ipconfig utility.

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

The ping command

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

Ping command syntax

The ping command uses the following syntax:

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

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

To run the ping command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

3. Press Enter.

   Result: The system displays the ping results.

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

The tracert command

This utility determines the route taken to a destination.

How tracert works

The tracert utility follows several steps to complete its task:

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

Tracert syntax

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

Tracert parameters

The tracert command uses the following parameters:

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

To run the tracert command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

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

   Example: tracert 200.286.0.32

3. Press Enter.

   Result: The system runs the tracert utility.

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

The arp command

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

Arp command syntax

The arp command uses the following syntax:

```
arp -s inet_addr eth_addr [if_addr]

arp -d inet_addr [if_addr]

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

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

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

To run the arp command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

3. Press Enter.

   Result: The system runs the arp command.

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

The nbtstat command

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

Nbtstat command syntax

The nbtstat command uses the following syntax:

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

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

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

To run the nbtstat command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

   Result: The system runs the nbtstat utility.

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

The netstat command

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

Netstat command syntax

The netstat command uses the following syntax:

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

Parameter	Description
-a	Displays all connections and listening ports.
-e	Displays Ethernet statistics. This can be combined with the -s option.
-n	Displays addresses and port numbers in numerical form.
-s	Displays per-protocol statistics.

-p proto	Shows connections for the protocol specified by proto. Proto can be tcp or udp. If used with the -s option, proto can be tcp, udp, or ip.
-r	Displays the contents of the routing table.
interval	Redisplays selected statistics, pausing between each display. Press Ctrl+C to stop redisplaying.

To run the netstat command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

3. Press Enter.

   Result: The system runs the netstat utility.

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

Invoking the chkdsk utility

Introduction

The chkdsk utility checks a specified disk on the server and displays a status report. It can be run on drives C, D, E, or F. It is an online utility, but it reduces system performance while it is running.

The chkdsk utility checks for problems at the Windows NT file system level. Any problems existing at this level can cause problems for CallPilot. Even if there are no problems at the Windows NT file system level, CallPilot can still be affected by problems at the CallPilot file system level.

Note: A version of this utility, called autocheck, automatically runs during Windows NT startup. Output from this utility appears on the start-up blue screen.

Chkdsk utility syntax

The chkdsk utility uses the following syntax:

```
chkdsk [drive:][path]filename] [/F] [/V] [/R]
```

Parameter	Description
drive:	The drive letter of the drive that you want to check.
filename	The names of files to check for fragmentation.
/F	Add this parameter to fix errors on the disk.
/V	Add this parameter to display the full pathname of every file on the disk.
/R	Add this parameter to locate bad sectors and to recover readable information.

To run the chkdsk utility from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **chkdsk *<drive letter:>*** (for example, chkdsk c:).

3. Press Enter.

   Result: The system runs the chkdsk utility.

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

Chapter 4

Using serial port diagnostic tools

In this chapter

Overview 74

Shutting down services 75

Conducting TSTSERIO tests 77

Conducting TSTSERIO tests with the loopback plug 81

Restarting services 82

Overview

Introduction

You may want to test the serial ports when remote access does not work.

This chapter describes how to run serial port diagnostics on the CallPilot server using the TSTSERIO command. Direct the TSTSERIO command to serial ports on the server after services on these ports have been shut down manually, as described in this chapter.

Shutting down services

Introduction

This section describes how to shut down a service using a specific serial port. Use the procedures below before invoking the TSTSERIO local loopback tests.



CAUTION

Risk of communications loss

By stopping the services on COM 1 or COM 2, you lose the support access feature.



CAUTION

Risk of stopping call processing

By stopping the services on COM 2, you stop call processing on CallPilot.

Service to stop for COM 1 testing

- Remote Access Server

Services to stop for COM 2 testing

- CallPilot SLEE Service
- CallPilot MWI Service
- CallPilot Access Protocol Emulator
- CallPilot Blue Call Router

- CallPilot Call Channel Router
- CallPilot Time Service
- Remote Access Server

Net Stop command

Use the Net Stop command to stop a specified service on a serial port.

Net Stop command syntax

The Net Stop command uses the following syntax:

net stop "*service_name*"

ATTENTION

You must restart the services that you shut down through the Net Start command after running the diagnostic. For details, see "Restarting services" on page 82.

To invoke the Net Stop command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **net stop "*service_name*"**, and then press Enter.

   For example, type **net stop "Remote Access Server"**, and then press Enter.

   Note: The quotation marks are required, as in the example above.

   Result: The system runs the Net Stop command utility.

3. Type **Exit**, and then press Enter to exit MS-DOS.

Conducting TSTSERIO tests

Introduction

The TSTSERIO command performs local loopback tests of the serial communication ports from the server run-time environment.

Note: Before conducting these tests, shut down the appropriate services. See “Shutting down services” on page 75.



CAUTION

Risk of communications loss

By stopping the services on COM 1 or COM 2, you lose the support access feature.



CAUTION

Risk of stopping call processing

By stopping the services on COM 2, you stop call processing on CallPilot.

TSTSERIO command syntax

The syntax for the TSTSERIO command is as follows:

TSTSERIO [/?] /P:comport [/S:subtstname] [/L:loops]

Flag	Requirement	Description
?	n/a	Displays Help.
/P:comport	Required	Specifies the symbolic port name assigned to the port you want to test.

Flag	Requirement	Description
/S:subtstname	Optional	Specifies a TSTSERIO subtest. See the table below for a description of the available subtests.
/L:loops	Optional	Specifies the number of times (up to a maximum of 65 535) to execute the requested test. The default number of tests is 1. A value of 0 infinitely loops until you enter Ctrl+C.

TSTSERIO internal loopback diagnostic subtests

The following internal loopback subtests are available for the TSTSERIO command. For each of these tests, the communications resource must be available:

Subtest name	Description
idata	Internal data bus loopback
imsr	Internal modem status register
baud	Internal data bus loopback at various baud rates
word	Test 5-, 6-, 7-, and 8-bit data lengths
stop	Test 1, 1.5, and 2 stop bits
pari	Test odd/even parity
fifo	Test that device can operate in fifo mode

To invoke the TSTSERIO /P command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **tstserio** with the required parameters, and then press Enter.

   For example, type **TSTSERIO /P com1** or **TSTSERIO /P com 2**, and then press Enter.

3. Type **Exit**, and then press Enter to exit MS-DOS.

TSTSERIO external loopback plug subtests

The following external loopback subtests are available for the TSTSERIO command. For each of these tests, an external loopback connector must be used. For more information, see “Conducting TSTSERIO tests with the loopback plug” on page 81.

Subtest name	Description
edata	External data bus loopback. This test requires an external loopback connector.
emsr	External modem status register. This test requires an external loopback connector.
eint	Test ability of device to generate interrupts. This test requires an external loopback connector.

To invoke the TSTSERIO /S command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **tstserio** with the required parameters, and then press Enter.

   For example, type **TSTSERIO /P com1 /S extr**, and then press Enter.

3. Type **Exit**, and then press Enter to exit MS-DOS.

Conducting TSTSERIO tests with the loopback plug

Introduction

The TSTSERIO command requires an external loopback connector plug for its edata, emsr, and eint subtests.

9-pin connector plug

The standard serial loopback connector is a female 9-pin D-sub connector. This connector has the following pins wired together:

- CTS (pin 8) wired to (pin 7) RTS
- SIN (pin 2) wired to (pin 3) SOUT
- DTR (pin 4) wired to (pin 6) DSR

Once the plug is installed on the serial port, TSTSERIO can be invoked according to the procedure outlined in the previous section.

Restarting services

Introduction

This section describes how to restart the services for COM 1 or COM 2 after invoking the TSTSERIO local loopback tests.

Service to restart after COM 1 testing

- Remote Access Server

Services to restart after COM 2 testing

- CallPilot SLEE Service
- CallPilot MWI Service
- CallPilot Access Protocol Emulator
- CallPilot Blue Call Router
- CallPilot Call Channel Router
- CallPilot Time Service
- Remote Access Server

Net Start command

Use the NET START command to restart a specified service on a serial port. The syntax for the NET START command is as follows:

```
net start "[service-name]"
```

To invoke the Net Start command from Windows NT 4.0

1. Click Start → Programs → Command Prompt.

   Result: The MS-DOS Command Prompt window appears.

2. At the MS-DOS prompt, type **net start "*service_name*"**, and then press Enter.

   For example, type **net start "Remote Access Server"**, and then press Enter.

   Note: The quotation marks are required, as in the example above.

3. Type **Exit**, and then press Enter to exit MS-DOS.

Chapter 5

Using CallPilot Manager to monitor hardware

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Understanding fault management

Introduction

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

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

Event processing

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

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

Alarm notification

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

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

Note: You may be required to clear the alarm manually.

Section A: Tools for isolating and fixing hardware problems

In this section

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Overview

Introduction

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

Component dependencies

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

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

Component	Dependent components
Media Bus	All MPBs, MPCs, and all multimedia and call channels.
MPB board	All MPCs, and all multimedia and call channels associated with the MPB board.
Time Switch	All multimedia and call channels associated with the same MPB as the timeswitch.
MPCs	All multimedia (DSP) channels on the MPB boards.
DS30X	All DS30X channels associated with the DS30X link.

Detecting hardware problems

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

Other indications of a hardware problem include the following:

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

Alarm Monitor

Introduction

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

About alarms

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

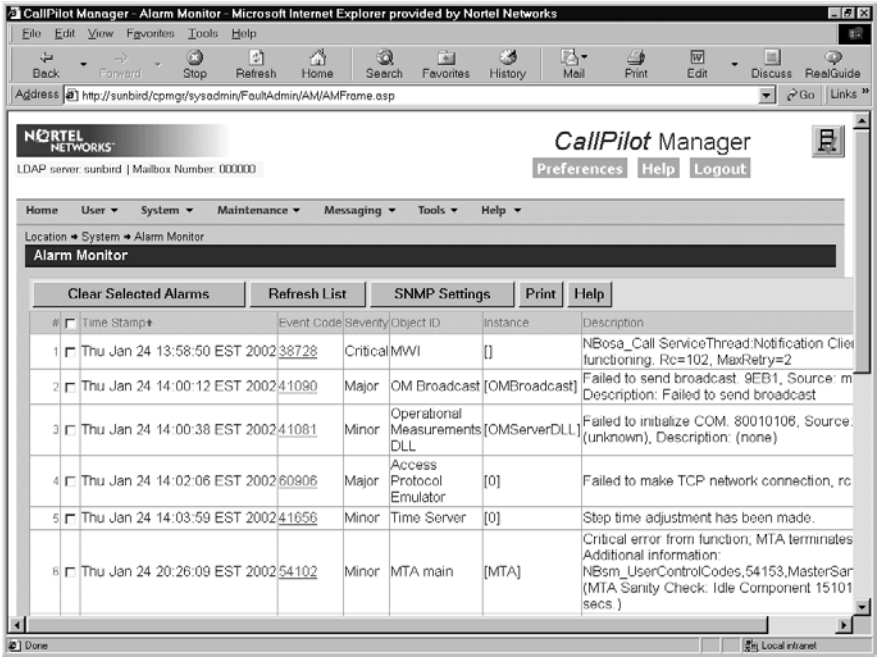
- Alarms appear in the Alarm Monitor only for Minor, Major, and Critical events (not Information events). All events can be reported in the Event Browser (depending on filtering criteria defined in the Event Browser).
- The first time an event occurs, it generates an alarm that appears in the Alarm Monitor.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

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

To investigate using the Alarm Monitor

1. In CallPilot Manager, click System → Alarm Monitor.

   Result: The Alarm Monitor window appears.



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

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

3. Review the description and recovery action.

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

5. If the solution to the problem is not apparent, obtain the return code of the first event and continue the investigation by using the Event Browser (see “Event Browser” on page 93).

See also

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

Event Browser

Introduction

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

About events

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

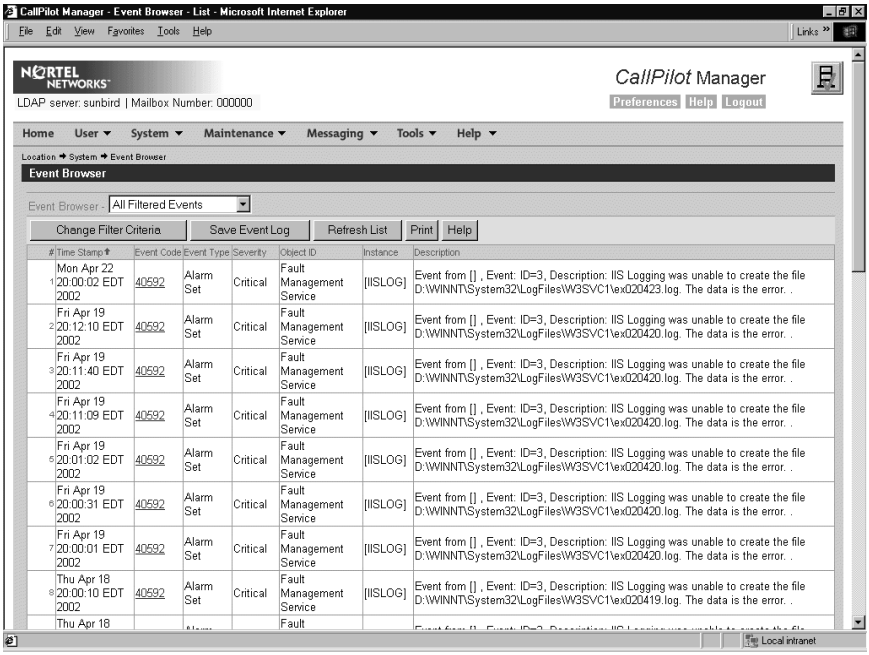
Events are classified as Information, Minor, Major, or Critical. By default, the Event Browser displays only the latest 100 critical events.

Note: Nortel Networks recommends that you change the Event Browser filter criteria to display Minor and Major events as well. Minor and Major events can indicate significant system problems.

To investigate using the Event Browser

1 In CallPilot Manager, click System → Event Browser.

Result: The Event Browser window appears.



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

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

3 View the description and recovery action.

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

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

See also

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

Maintenance page

Introduction

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

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

More information

For information on all aspects of the Maintenance page, see Section B: “Working with the Maintenance page” on page 99, or the CallPilot Manager online Help.

Channel and Multimedia Monitors

Introduction

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

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

Disabling call channels

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

- Courtesy stop the channels (preferred method).

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

- Stop the channels.

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

For information about using the Channel and Multimedia Monitors, see Section C: “Working with the Multimedia and Channel Monitors” on page 121.

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” on page 99.

Section B: Working with the Maintenance page

In this section

Introducing the Maintenance page 100
Viewing component states 105
Starting and stopping components 108
Running integrated diagnostics 112
Viewing the last diagnostic results 117

Introducing the Maintenance page

Introduction

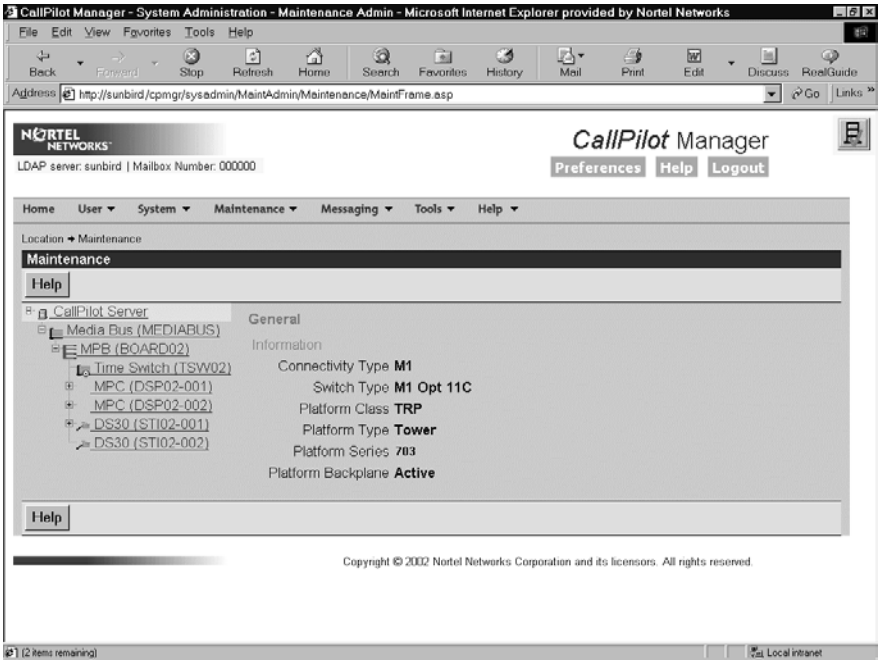
Use the Maintenance page in CallPilot Manager to do the following:

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

What the Maintenance page provides

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

The Maintenance page identifies the server platform and switch connectivity type. The following is an example of a partially expanded tree for the 703t server:



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

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

Section	Description
General	This section shows general technical information about the selected component. This typically includes the following details: ■ the name, class, type, series, or version of a CallPilot server ■ various capabilities of a component (for example, whether a component is removable) **Note:** This section does not appear for all components.
Maintenance	This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test. This section appears only for components on which you are allowed to perform maintenance administration. For more information about working with component states, see the following sections: ■ “Viewing component states” on page 105 ■ “Starting and stopping components” on page 108

Section	Description
Diagnostics	Use the Diagnostics section to run one or more diagnostic tests, or to view the results of the last diagnostic tests that were run on the selected component. This section appears only for components on which you are allowed to run diagnostics. For more information about running diagnostics, see the following sections: ■ "Running integrated diagnostics" on page 112 ■ "Viewing the last diagnostic results" on page 117

Maintenance activities for each component

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

Component	Start, stop, or courtesy stop?	Diagnostics available?	Replaceable?
Media Bus	Yes	Yes	No
MPB board	Yes	Yes	Yes
Time Switch	No	No	No
MPCs (embedded on MPB boards)	Yes	Yes	No
Media Channels	Yes	No	No
DS30X link	Yes	No	No
Channels	Yes	No	No

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

Viewing component states

Introduction

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

Component states

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

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

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

Alert icons

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

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

To view the state of a hardware component

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

   Result: The Maintenance page appears.

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

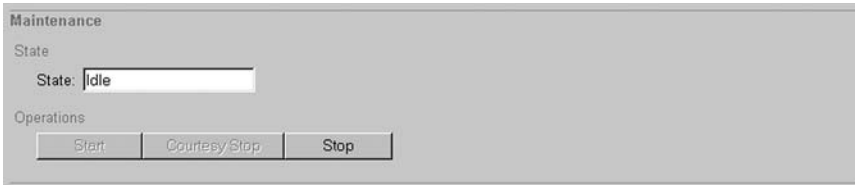
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.

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

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

5. Scroll down to the Maintenance section.

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



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

Starting and stopping components

Introduction

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

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

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

ATTENTION

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

To courtesy down CallPilot, use the following:

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

For instructions, see Section C: "Working with the Multimedia and Channel Monitors" on page 121.

Stop versus Courtesy stop

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

Courtesy stop

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

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

Courtesy stop is preferred over a regular Stop.

Stop

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

Components that can be started and stopped

Only the following components can be started and stopped:

Note: If you want to start or stop more than one or two multimedia (DSP) or call (DS30X) channels, use the Multimedia Monitor or Channel Monitor. For instructions, see Section C: “Working with the Multimedia and Channel Monitors” on page 121.

Component	Effect of stopping
Media Bus	Takes all call processing resources out of service.
MPB board	Takes all call processing resources on the selected board out of service.
Time Switch	You cannot perform maintenance administration on the timeswitch.
MPCs (embedded on MPB boards)	Takes the selected MPC and Media Channels on the MPC out of service.

Component	Effect of stopping
Media Channel	Takes the selected Media Channels out of service.
DS30X link	Takes the selected DS30X link and the channels that belong to that link out of service.
Channels	Takes the selected DS30X channel out of service.

To start or stop a component

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

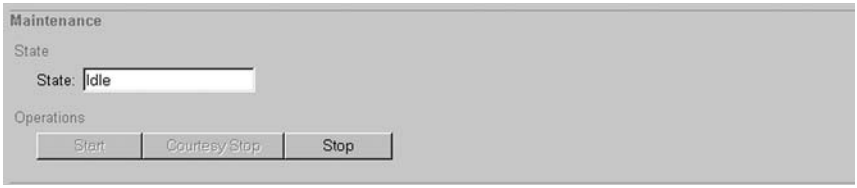
   Result: The Maintenance page appears.

2. Click the plus sign (+) beside the CallPilot server to expand the component tree.
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.
4. Click the hardware component that you want to start or stop.

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

5. Scroll down to the Maintenance section.

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



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

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

Running integrated diagnostics

Introduction

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

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

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

Before you begin

ATTENTION

Take the component out of service before you run the diagnostic test. See “Starting and stopping components” on page 108.

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.

Components that have diagnostic tests available

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

Component	Diagnostics available?	Replaceable?
Media Bus	Yes	No
MPB board	Yes	Yes
Time Switch	No	No
MPCs (embedded on MPB boards)	Yes	No
Media Channels	No	No
DS30X link	No	No
Channels	No	No

If a diagnostic test fails or cannot be run

If a warning message appears, the diagnostic test cannot be run because a prerequisite condition has not been met. If a diagnostic test fails, a message appears in a new browser window (see the example on page 116).

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” on page 87.)

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

To run a diagnostic test

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see “Starting and stopping components” on page 108.

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

   Result: The Maintenance page appears.

2. Click the plus sign (+) beside the CallPilot server to expand the component tree.
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.
4. Click the hardware component for which you want to run diagnostics.

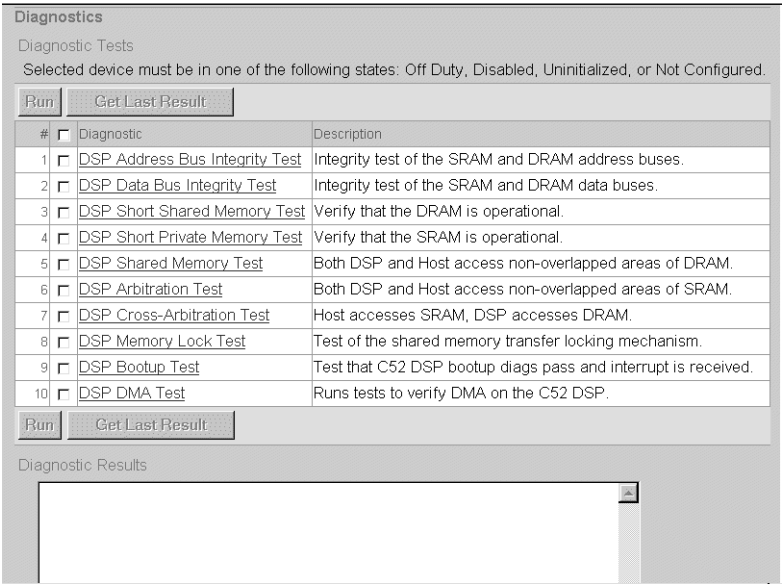
   Result: The Maintenance page refreshes to show details about the component.

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

   Note: For instructions on taking the component out of service, see “To start or stop a component” on page 110.

6 Scroll down to the Diagnostics section.

Result: The following is an example of the Diagnostics section for an MPC:

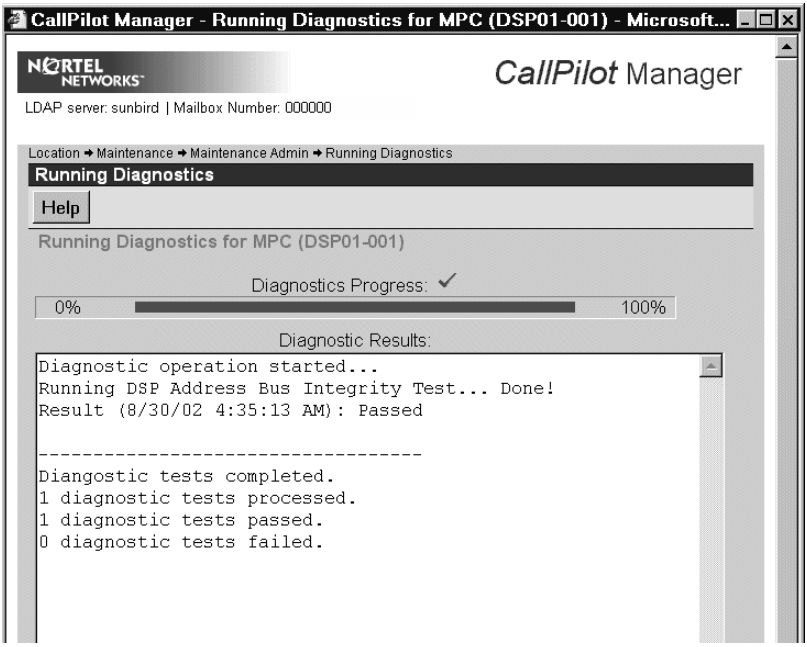


7 Check the check box for each diagnostic that you want to run.

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

8 Click Run.

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



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

Viewing the last diagnostic results

Introduction

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

To view the last diagnostics result

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see "Starting and stopping components" on page 108.

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

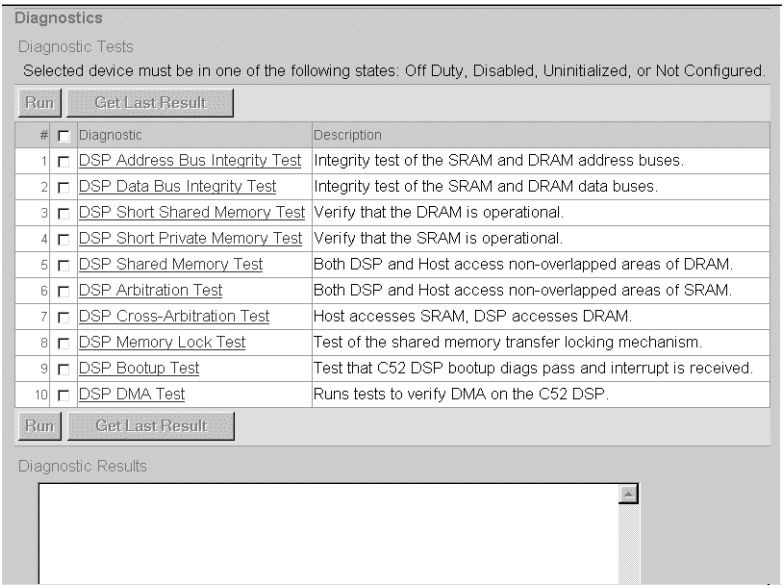
   Result: The Maintenance page appears.

2. Click the plus sign (+) beside the CallPilot server to expand the component tree.
3. Continue clicking the plus sign (+) until the component with which you want to work is visible.
4. Click the hardware component for which you want to run diagnostics.

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

5 Scroll down to the Diagnostics section.

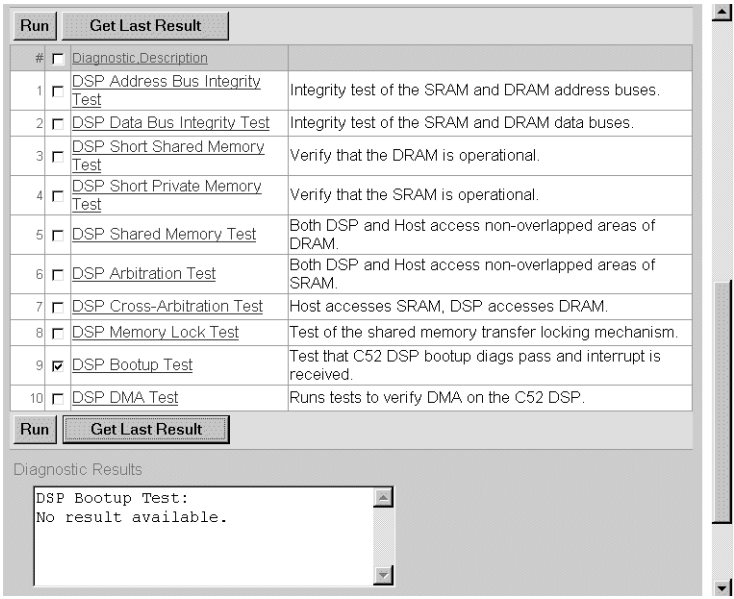
Result: The following is an example of the Diagnostics section for an MPC:



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

7 Click Get Last Result.

Result: The results appear in the Diagnostic Results box.



Last diagnostic results

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

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

Section C: Working with the Multimedia and Channel Monitors

In this section

Working with the Multimedia Monitor 122

Working with the Channel Monitor 124

Working with the Multimedia Monitor

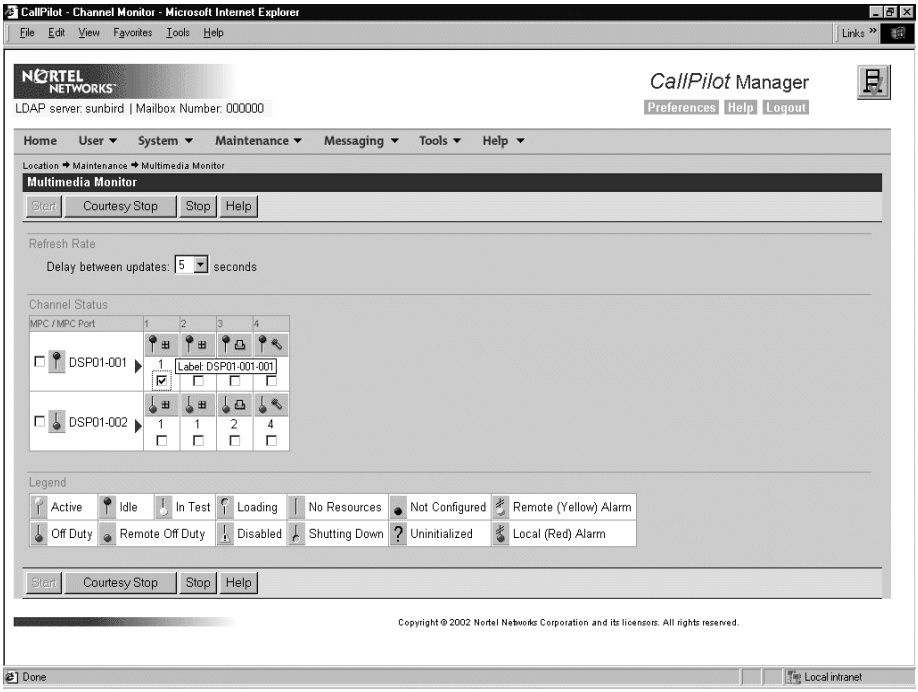
Introduction

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

To view or work with multimedia channel states

1 In CallPilot Manager, click Maintenance → Multimedia Monitor.

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



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

2 Do one of the following:

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

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

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

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

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

- The Start button is available only when a component is in the Idle state.
- The Courtesy Stop and Stop buttons are available only when a component is in one of the following states: Idle, Active, Remote Alarm, Local Alarm.

Working with the Channel Monitor

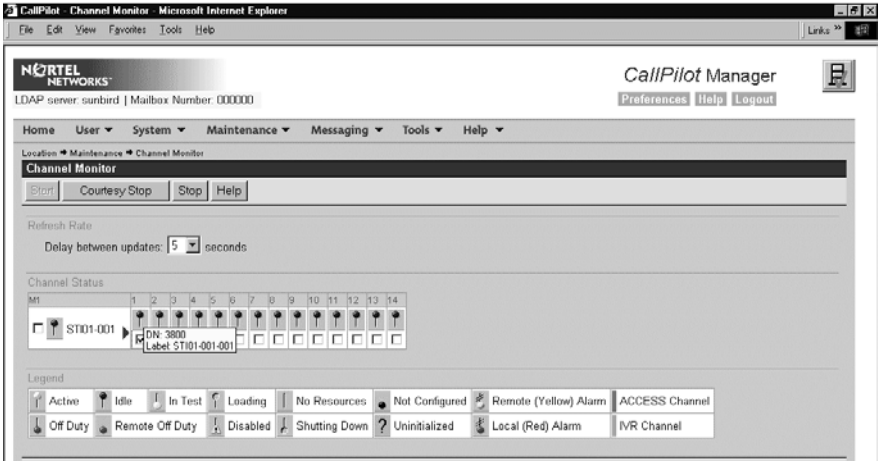
Introduction

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

To view or work with call channel states

1 In CallPilot Manager, click Maintenance → Channel Monitor.

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



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

2 Do one of the following:

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

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

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

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

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

- The Start button is available only when a component is in the Idle state.

4 The Courtesy Stop and Stop buttons are available only when a component is in one of the following states: Idle, Active, Remote Alarm, Local Alarms.

Chapter 6

Using CallPilot system utilities

In this chapter

Overview 128

Diagnostics Tool 129

PEP Maintenance utility 132

Session Trace 134

System Monitor 142

Overview

Introduction

The following table lists the CallPilot system utilities:

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

Accessing the system utilities

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

Diagnostics Tool

Introduction

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

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

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

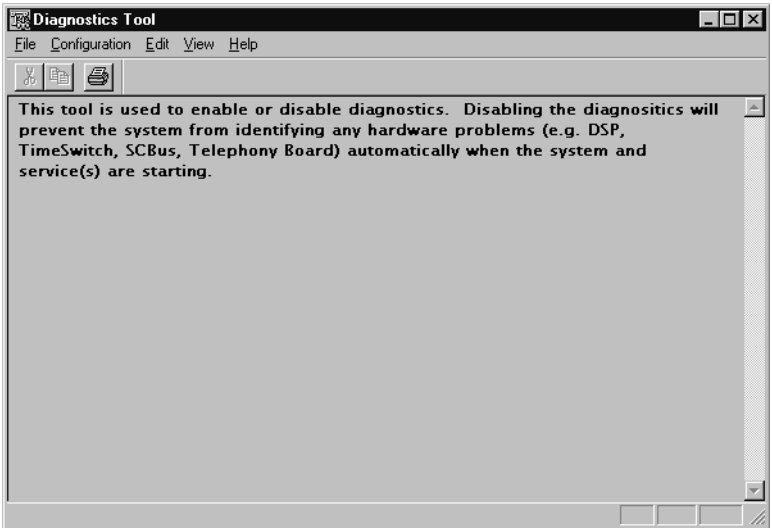
There are three recommended steps:

1. Use the Diagnostics tool to turn off CallPilot startup diagnostics.
2. Perform system maintenance.
3. Use the Diagnostics tool to turn on CallPilot startup diagnostics.

To access the Diagnostics Tool

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

Result: The Diagnostics Tool window appears.



To enable startup diagnostics

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

To disable startup diagnostics

ATTENTION

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

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

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

PEP Maintenance utility

Introduction

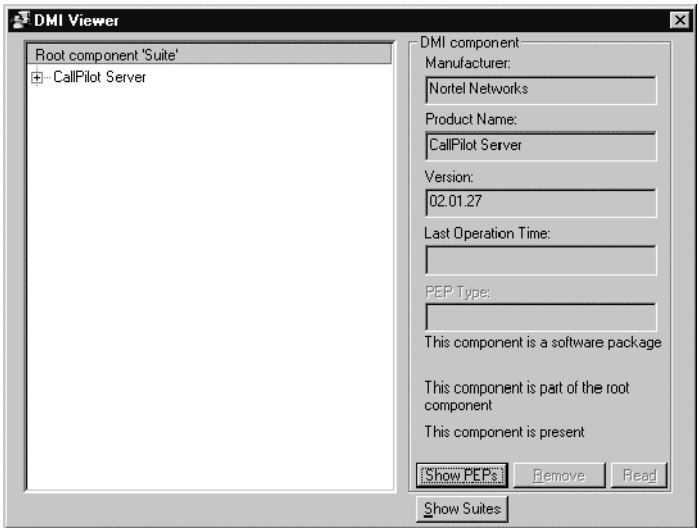
The PEP Maintenance utility displays a list of all installed PEPs on the server and enables you to uninstall PEPS.

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

To access the PEP Maintenance utility

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

Result: The DMI Viewer window appears.

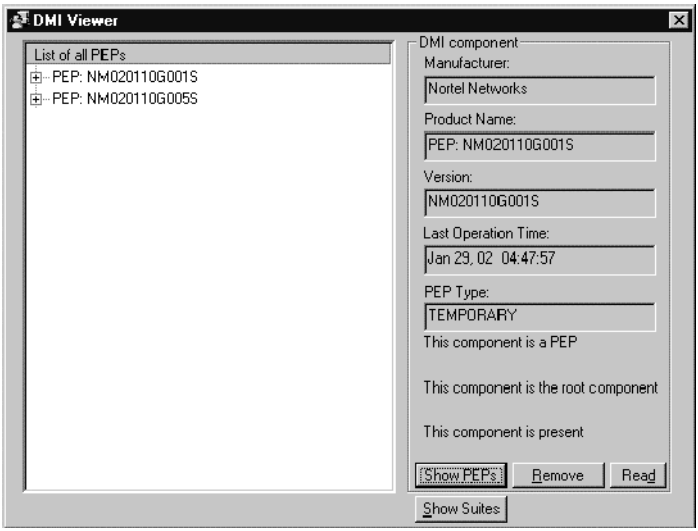


To view a list of all installed PEPs

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

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

   Result: The readme file opens in Notepad.



Session Trace

Introduction

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

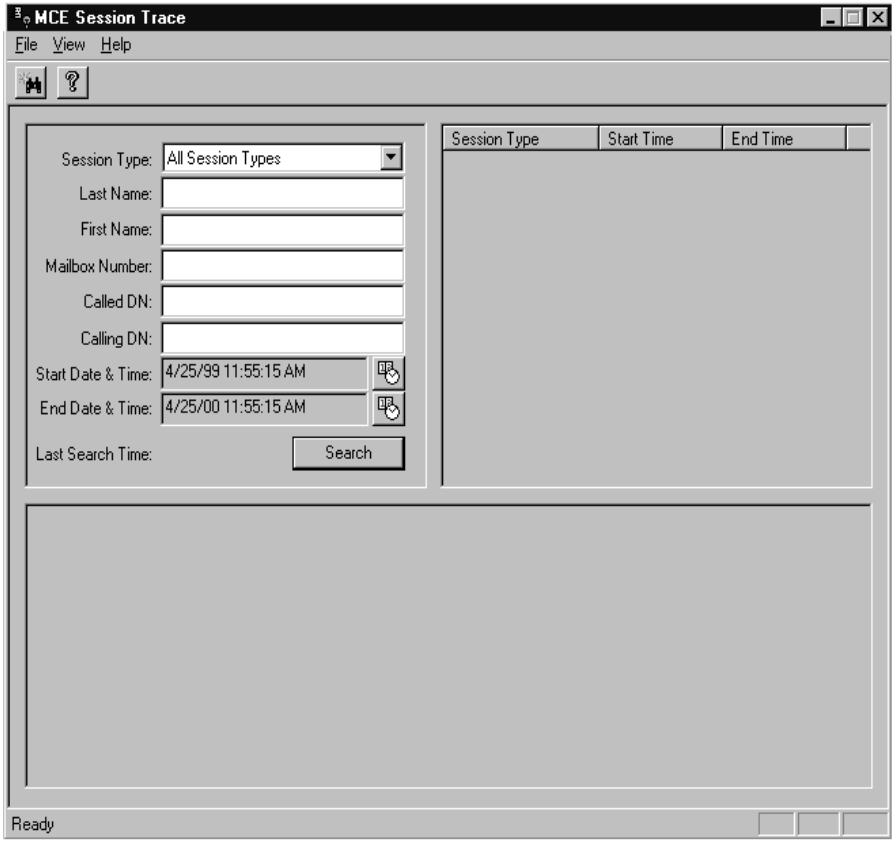
- voice messaging
- call answering
- express messaging activity (messages composed and sent, or left in a mailbox)
- the number of messages played or unplayed at the beginning, middle, and end of a session
- messages and personal distribution lists restored into a mailbox
- the last change to the MWI (turned on or off, or untouched)

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

To access the session trace tool

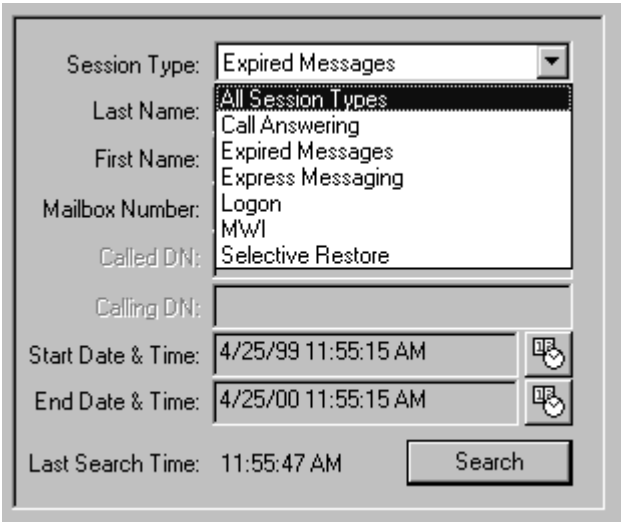
From the Windows desktop, click Start → Programs → CallPilot → System Utilities → Session Trace Tool.

Result: The MCE Session Trace window appears.



To find a session

1 From the Session Type drop-down menu, choose 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.

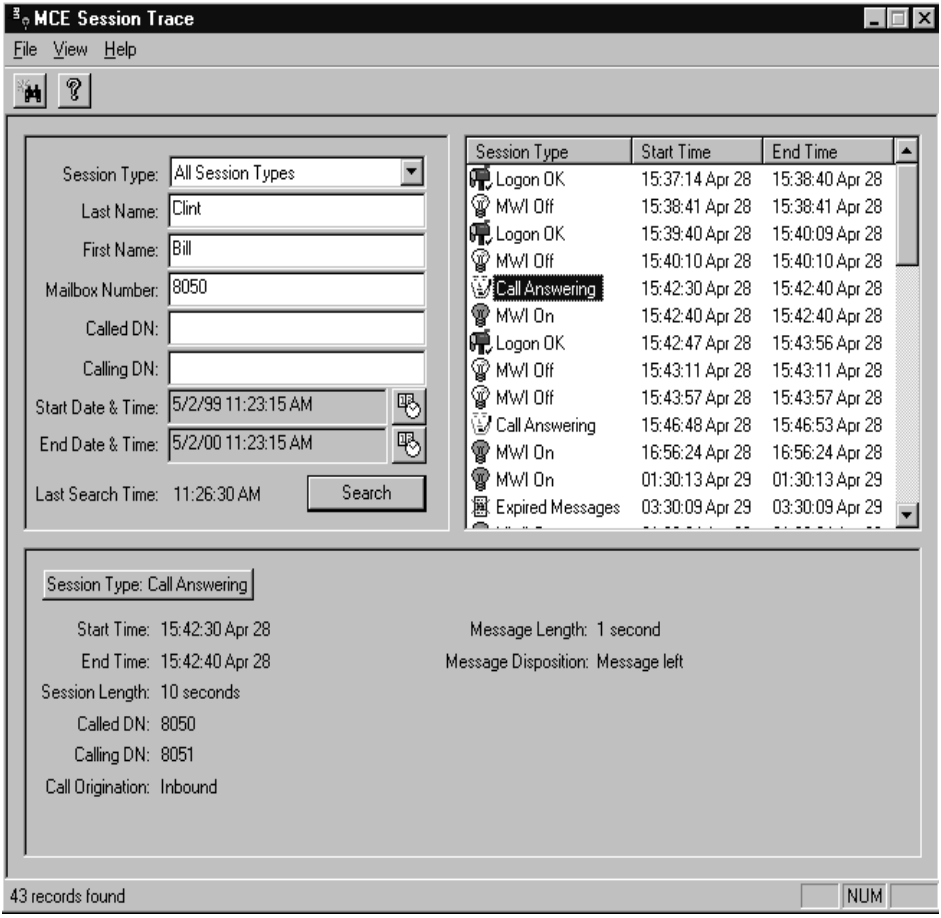
b. If you selected All Session Types for a user, the session type information appears to the right of the window.

4 Double-click the session type to display the session information.

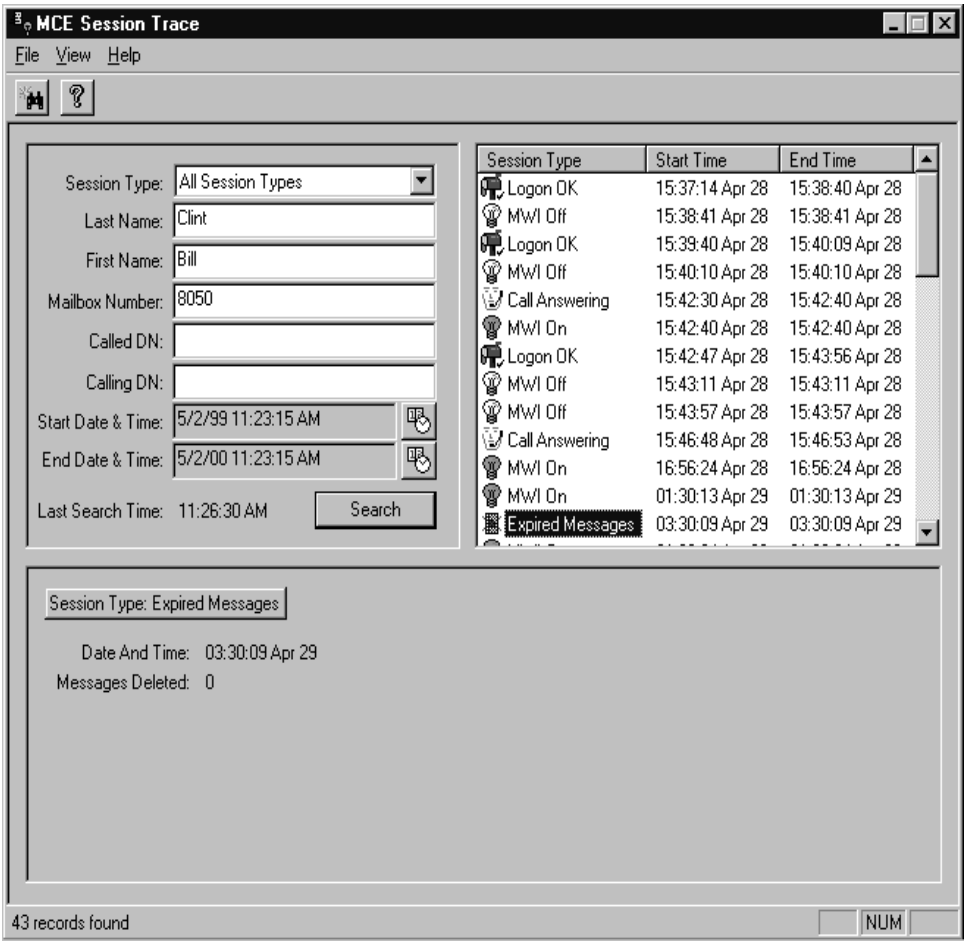
Result: The Session Type information appears at the bottom of the window.

Session type information

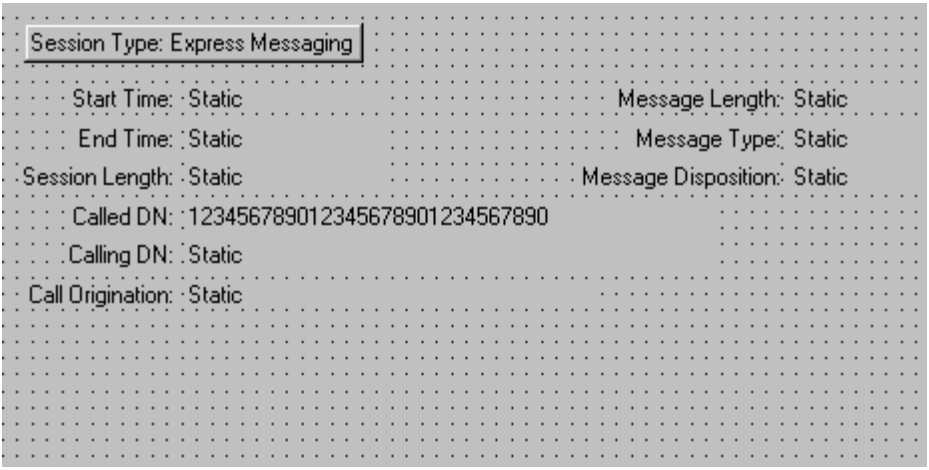
Call Answering session type information



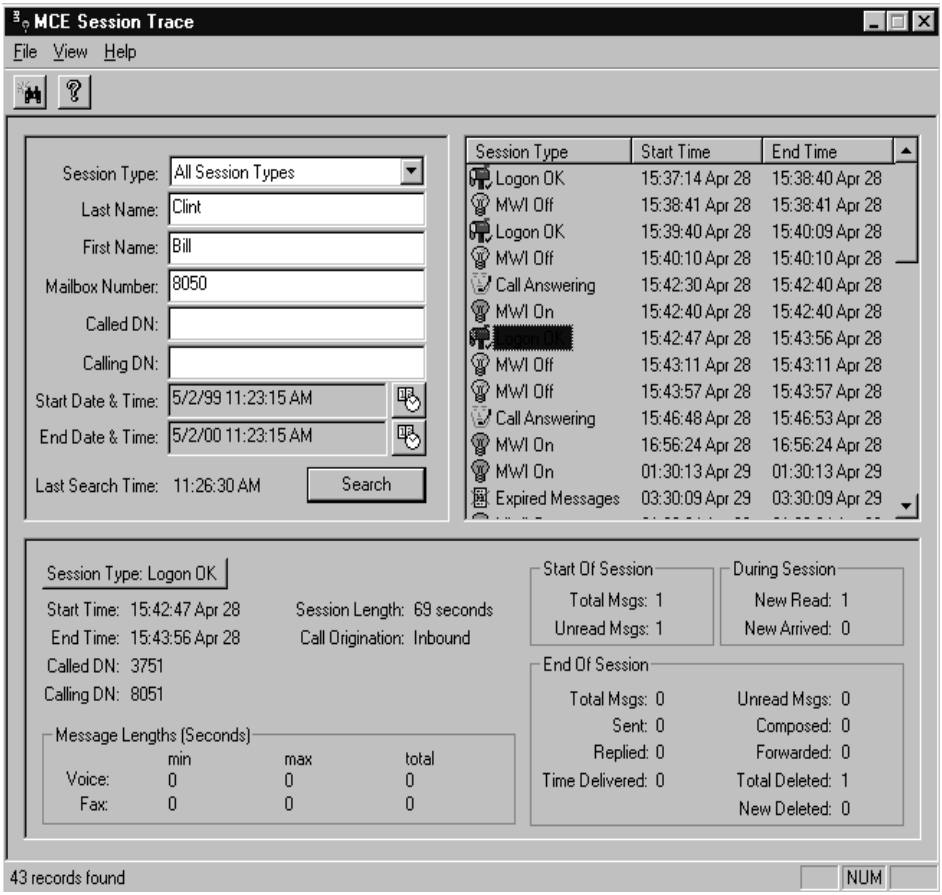
Expired messages session type information



Express Messaging session type information



Logon OK session type information



Selective Restore session type information



System Monitor

Introduction

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

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

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

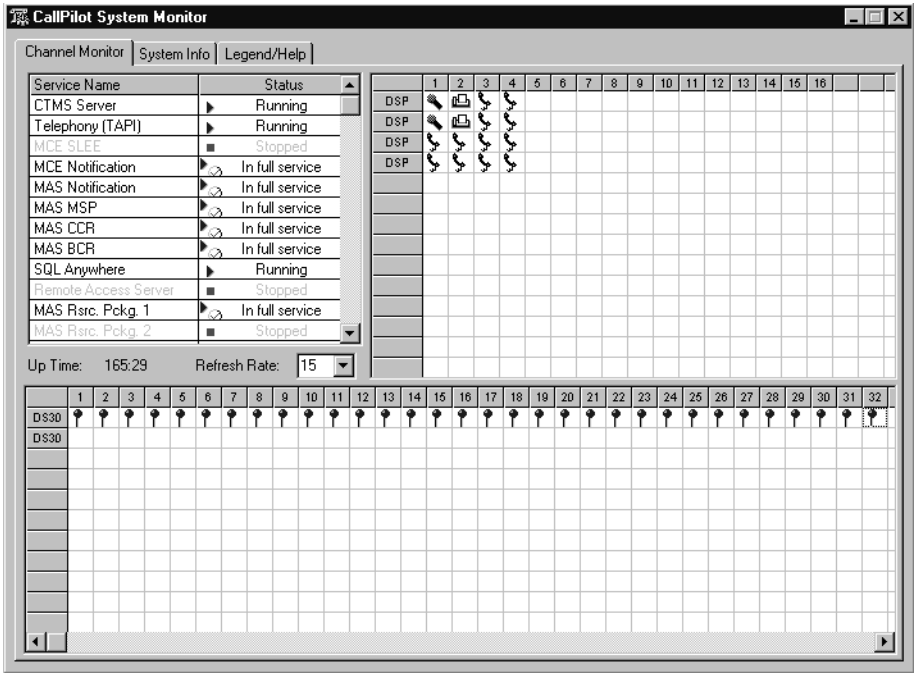
To access the System Monitor

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

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

About the Channel Monitor tab

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



CallPilot services

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

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

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

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 NT Control Panel are also listed.

CallPilot System Monitor	Windows NT Control Panel equivalent
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.

On the 703t server, 12 DSPs are embedded on each MPB96 board.

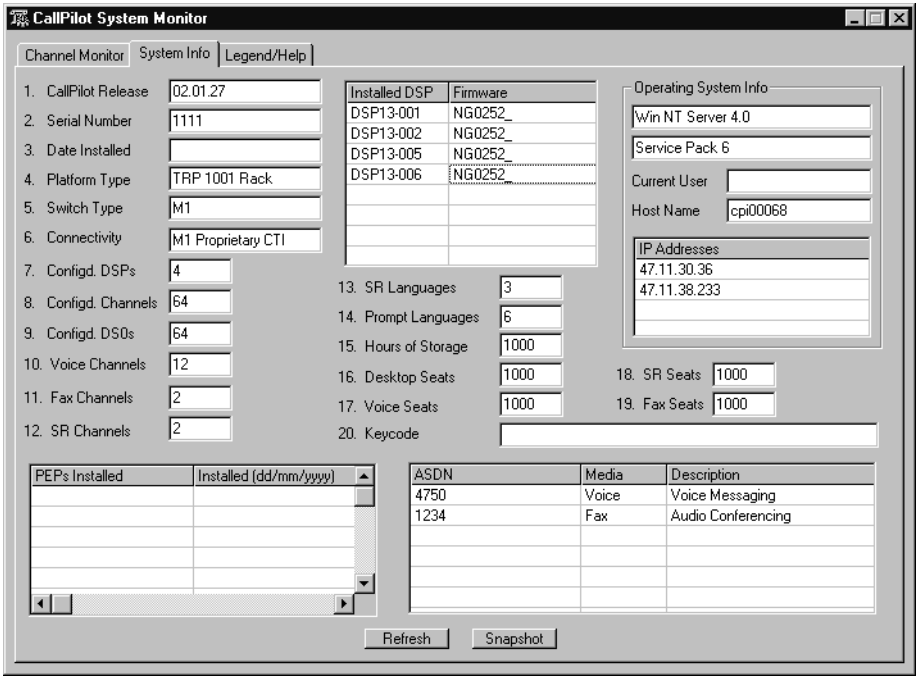
DS30X links

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.

The DS30X links connect the CallPilot server to the MGate card in the Meridian 1 switch or Succession 1000 system.

About the System Info tab

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



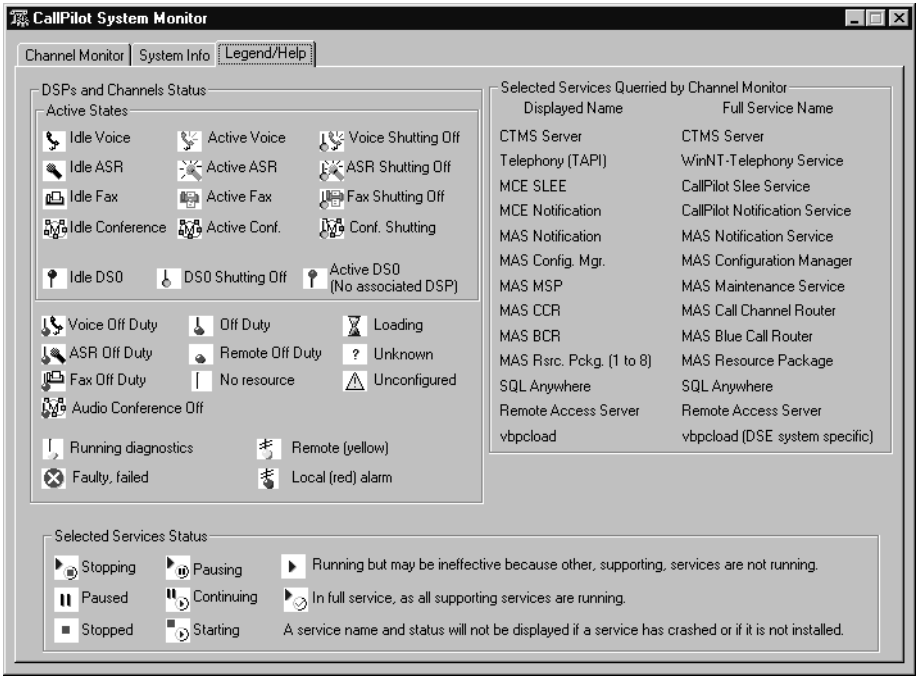
Note: The screen sample above was acquired from a 1001rp server, but provides the same type of information for any CallPilot server model.

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

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

About the Legend/Help tab

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



Chapter 7

Replacing basic chassis components

In this chapter

Section A: Preparing for hardware maintenance **151**

Preparing the server for hardware maintenance 152

Removing the side cover 156

Removing and replacing the upper fan holder foam 159

Replacing the side cover 161

Section B: Replacing fans **163**

Cooling fans description 164

Replacing a front system fan 167

Replacing a rear system fan 170

Replacing the processor fan 173

Section A: Preparing for hardware maintenance

In this section

Preparing the server for hardware maintenance 152
Removing the side cover 156
Removing and replacing the upper fan holder foam 159
Replacing the side cover 161

Preparing the server for hardware maintenance

Introduction



DANGER

Risk of electric shock

Before you begin working inside the server, do the following:

1 Power off and disconnect all peripheral devices that are connected to the CallPilot server.

2 Power off the server and disconnect the power cord.

For more information, see “To disconnect the power and peripheral device cables” on page 153.



CAUTION

Risk of electrical damage

- Wear an antistatic ESD wrist strap when handling cards or boards, or when working inside the server.
- Place hardware components on an antistatic surface until you are ready to install them.
- Do not touch the components or gold-edge connectors of cards or boards.



CAUTION

Risk of equipment damage

Place the server on its side to prevent the server from accidentally falling over. This provides greater stability. If you attempt to work with the server in its standing position, it may tip over when you remove or insert components.

If the server is equipped with chassis feet, do one of the following:

- Remove the feet so that the server lays flat on the working surface. For more information, see "To remove the chassis feet" on page 155.
- Place stable material beneath the server to raise the feet away from the working surface. This allows the server to lay flat on the working surface.
- Pull the server forward so that the feet hang over the edge of the working surface.

To disconnect the power and peripheral device cables

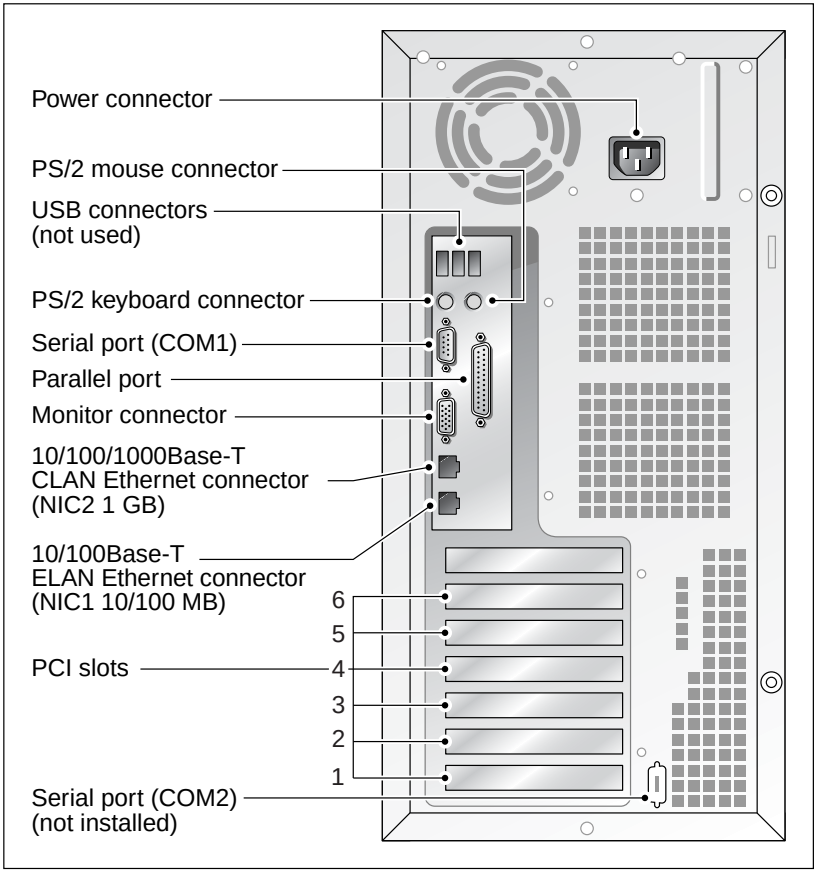
Before you access the server interior, do the following:

1 Courtesy stop and power off the server.

For instructions, see "Starting up and shutting down the CallPilot server" in Part 1 of the *CallPilot Installation and Configuration* binder.

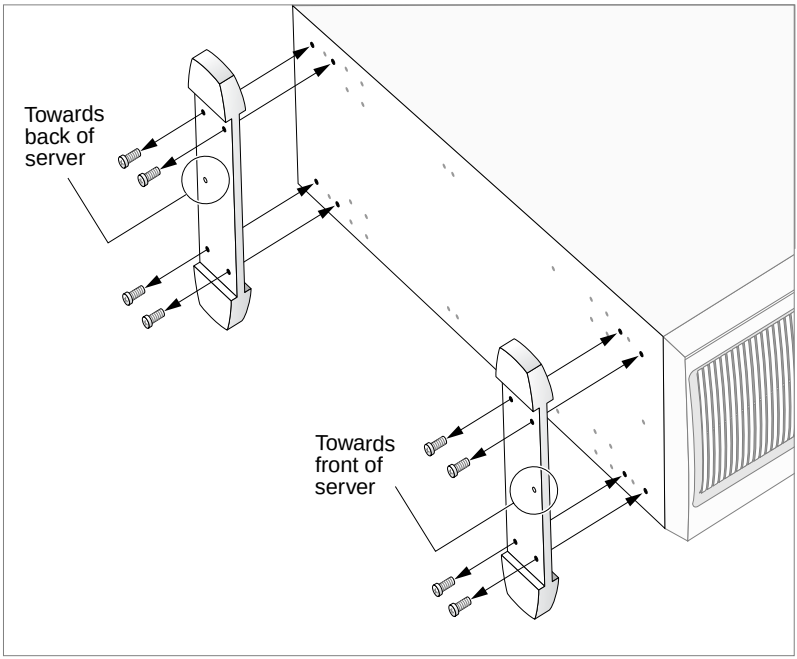
2 Label and disconnect the power cable and any other peripheral cables that may be in your way.

Refer to the diagram on the next page to identify the connectors on the server's back panel.



3 If desired, continue with “To remove the chassis feet” on page 155.

To remove the chassis feet



G101782

1. Place the server on its side.
2. Remove the feet as shown in the above diagram.
3. Continue with “Removing the side cover” on page 156.

Removing the side cover

Introduction

This section describes how to remove the server's side cover so that you can work with interior components. The side cover is on the left side of the server when the server's front panel is facing you.

To remove the side cover



WARNING

Risk of personal injury

To prevent personal injury, use caution when you handle the sharp edges of the side cover and chassis.

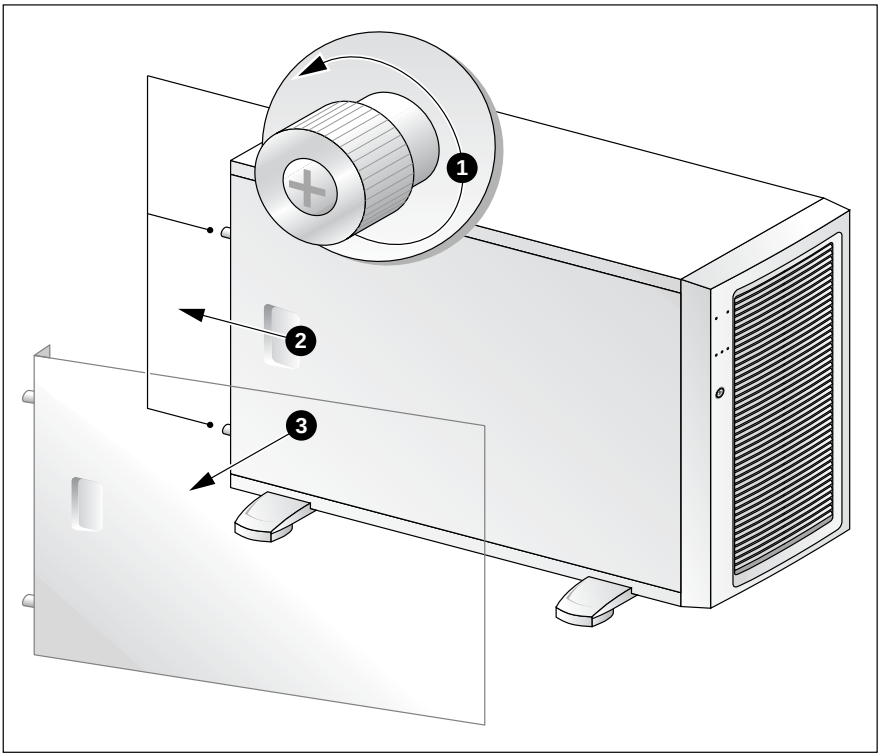


CAUTION

Risk of equipment damage

Use an ESD wrist strap to protect static-sensitive components.

The following diagram shows how to remove the side cover. See the instructions for removal below.



G101761

1 Turn the two thumbscrews on the back of the server counter-clockwise to loosen them.

Note: The thumbscrews are not removable.

If a removable screw is present, remove it. This screw secures the cover to the server during shipping.

2 Place your fingertips in the depression on the side cover, and then as you apply pressure, pull the cover approximately 2.5 cm (1 in.) away from the front of the server until it stops.

3 Use both hands to lift the cover away from the chassis.

4 Set the cover aside.

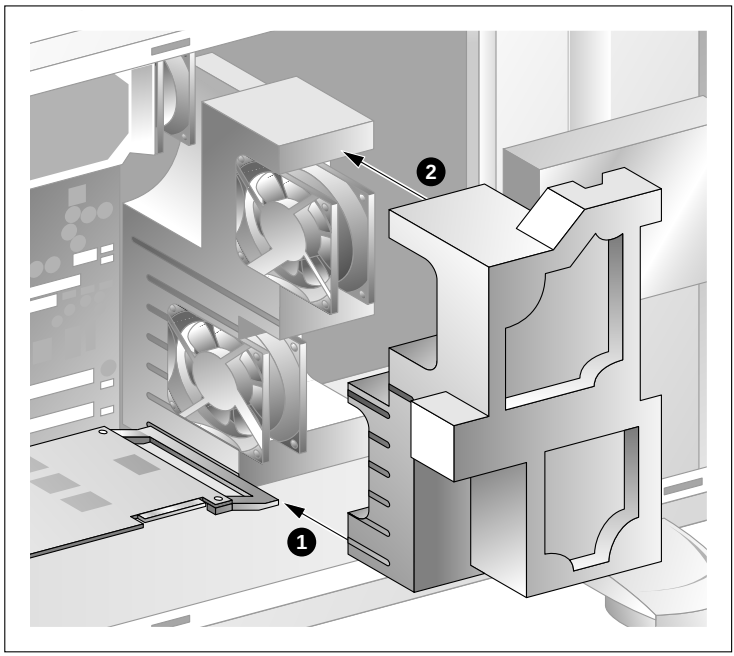
Removing and replacing the upper fan holder foam

Introduction

The interior of the server contains two layers of fan holder foam, which secures and stabilizes the cooling fans and add-in boards. The fan holder foam also maintains the space that is required between the boards for cooling.

You may be required to remove the upper fan holder foam to access and work with some components.

Installing the fan holder foam



G101783

To remove the upper fan holder foam

1. Remove the server's side cover.
2. Lift the upper fan holder foam out of the server.

To replace the upper fan holder foam

1. Ensure that the fan cables are in the slots in the lower fan holder foam.
2. Place the bottom end of the upper fan holder foam beneath the edge of the server chassis.
3. Align the slots on the underside of the foam with the fans and add-in boards.

   Use your fingers on the underside of the upper fan holder foam to determine correct placement of the fans. The fans must sit straight inside the foam sockets. They must not align with the left side of the foam.
4. Press the foam into place.

   You may need to wiggle the fans so that the upper fan holder foam sits flush with the bottom fan holder foam.
5. Ensure that the upper fan holder foam engages with the lip on the media drives cage and is securely seated.

Replacing the side cover

Introduction

After you complete your work with the server's interior components, replace the side cover and, if you removed them, reinstall the chassis feet on the bottom of the server.

To replace the side cover

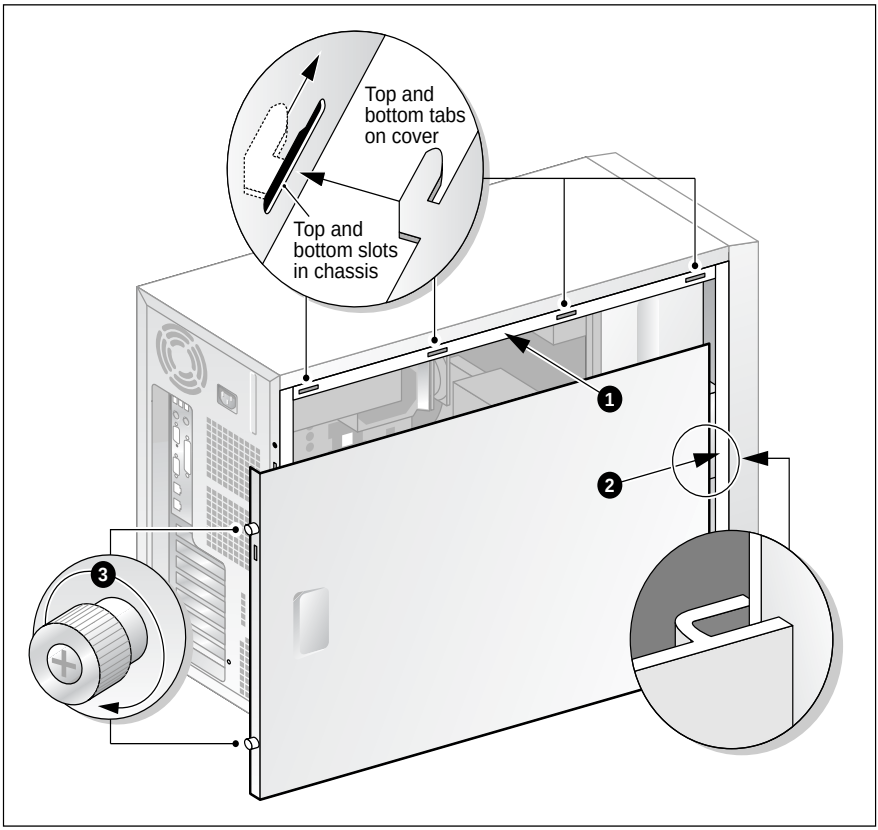


CAUTION

Risk of equipment damage

Before you replace the side cover, ensure that there are no tools or loose parts inside the server chassis.

1. Hold the cover flat against the chassis.
2. Slide the cover toward the front of the server until it locks into place.
3. Tighten the two thumbscrews on the back of the server.
4. If you removed the chassis feet, reinstall them.
5. Connect all external peripheral device cables and the power cord to the back panel.
6. Power up the server.


Top and
bottom tabs
on cover
Top and
bottom slots
in chassis
1
2
3

G101762

Section B: Replacing fans

In this section

Cooling fans description 164
Replacing a front system fan 167
Replacing a rear system fan 170
Replacing the processor fan 173

Cooling fans description

Introduction

For cooling and airflow, the system contains five fans that cool the server's interior.



WARNING

Risk of equipment damage

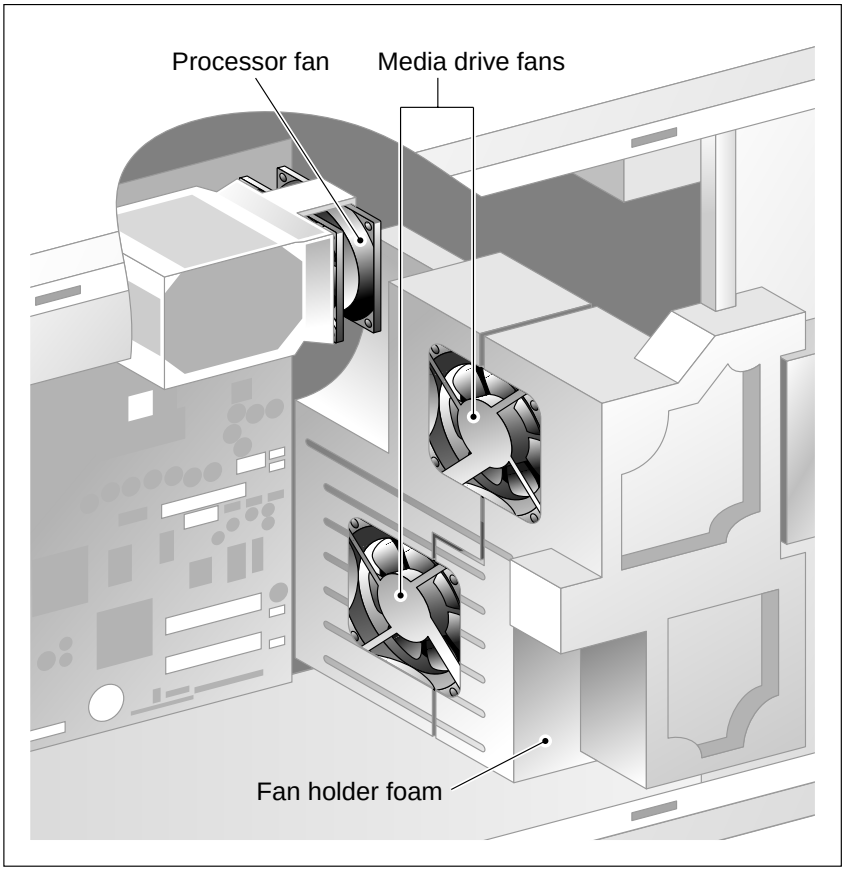
Ensure that any cables in the proximity of the fans are kept away from the fans. If a cable is caught in a fan, the fan will break.

Replaceable fan locations

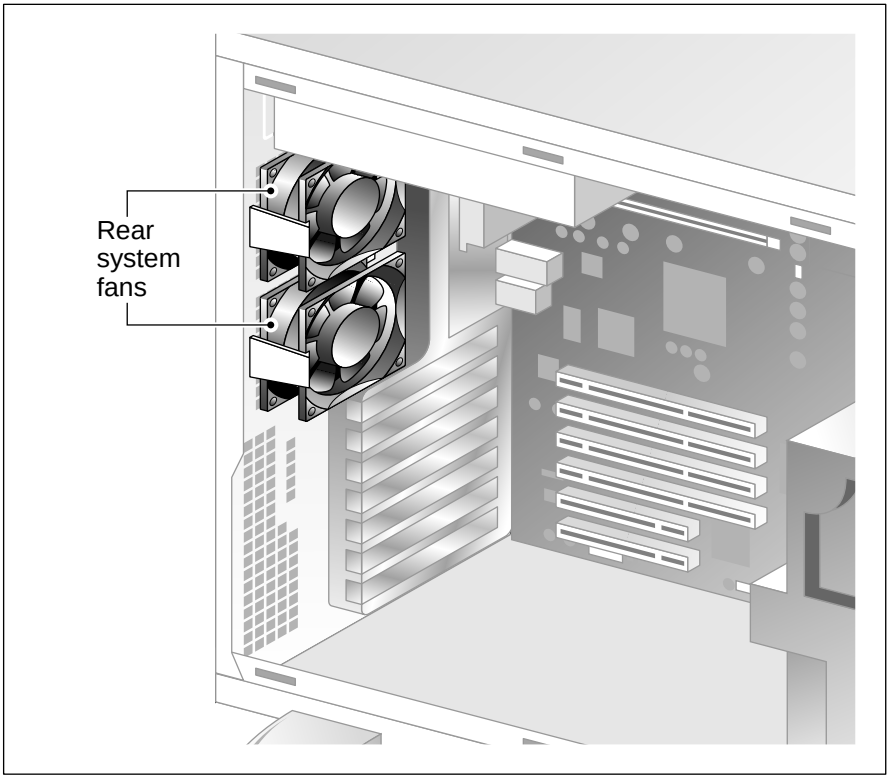
The server contains five replaceable fans:

- Three fans are located near the front of the server. Two fans draw air through the lower media drive bays and provide cooling to the add-in boards. The third fan provides cooling for the system's processor. See "Front system fans" on page 165.
- Two fans are located at the back of the server. These fans draw air through the upper media drive bays, cool the server's interior, and assist in evacuating hot air through the back of the server. See "Rear system fans" on page 166.

Front system fans



Rear system fans



G101763

Fan labels

The following conditions indicate when fans are installed correctly:

- The fan's printed label faces the back of the server.
- The arrows embossed on the fan casing face as follows: ⬅⬇.

Replacing a front system fan

Introduction

Replace a malfunctioning fan with the same type as the one removed. For more information about replacing a fan, contact your Nortel Networks customer service representative.

Note: The fan replacement kit contains four fans: two front fans and two rear fans.

To remove a front system fan

1 Prepare the server for front system fan replacement as follows:

a. Shut down the server, and then disconnect the power and peripheral device cables.

b. Place the server on its side.

c. Remove the side cover.

d. Remove the upper fan holder foam.

For instructions, see Section A: “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in Section A: “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Label and disconnect any cables that are attached to the voice processing boards.

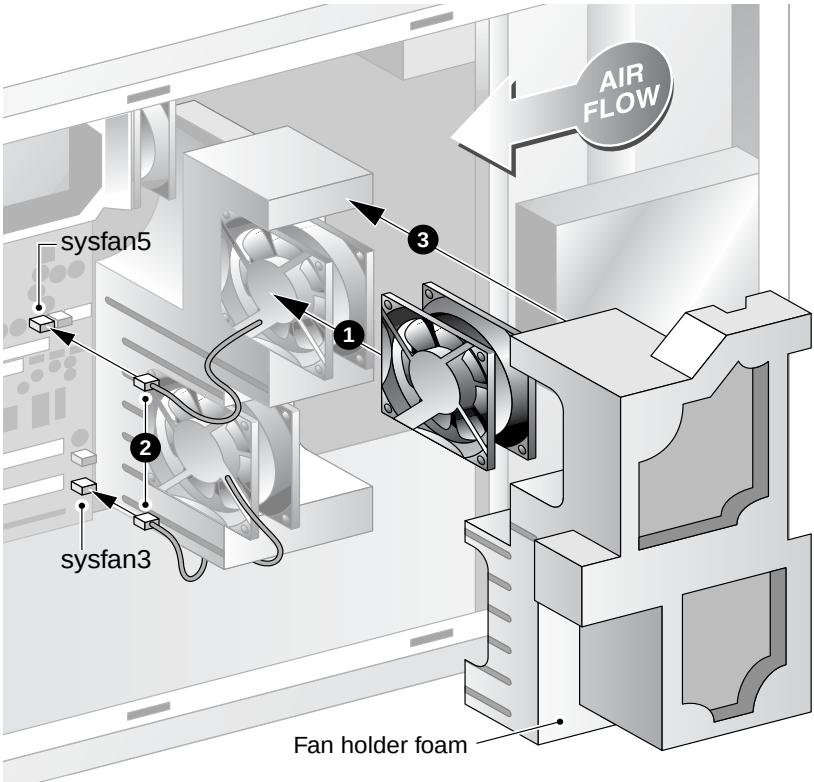
3 Remove any add-in boards that block your access to the fan connectors on the motherboard.

Note: As you remove each board, label it with its slot number so that you can reinstall the board in the same slot.

4 Lift the fan out of its slot in the fan holder foam.

5 Disconnect the fan's power cable connector from the server's motherboard.

To install a front system fan



Note: Before you replace the fan holder foam, reinstall and connect the add-in boards.

G101765

1 Insert the fan into its slot in the bottom fan holder foam.

ATTENTION

To ensure proper cooling operation, ensure that the fan's printed label is facing the back of the server, and the arrows embossed on the fan casing are facing as follows: ⬅⬇.

2 Connect the fan's power cable as follows:

   a. Insert the fan's power cable into its slot on the bottom fan holder foam, and route the cable as shown in the preceding diagram.

   b. Connect the fan's power cable to its connector on the motherboard.

   The connector is keyed so that it can be attached only one way.

   Note: The fan closest to the top of the server connects to the connector labeled **sysfan5**. The fan closest to the bottom of the server connects to the connector that is labeled **sysfan3**.

3 Reinstall the add-in boards.

4 Reconnect any cables you disconnected to the add-in boards.

5 Ensure that any cables located near the fans are kept well away from the fans.



CAUTION

Risk of equipment damage

If a cable is caught in a fan, the fan will break.

6 Replace the upper fan holder foam.

For instructions, see "To replace the upper fan holder foam" on page 160.

7 Replace the server's side cover.

8 Reconnect all peripheral device cables and power cord.

9 Power up the server.

Replacing a rear system fan

Introduction

Replace a malfunctioning fan with the same type as the one removed. For more information about replacing a fan, contact your Nortel Networks customer service representative.

Note: The fan replacement kit contains four fans: two front fans and two rear fans.

To remove a rear system fan

1 Prepare the server for rear system fan replacement as follows:

a. Shut down the server, and then disconnect the power and peripheral device cables.

b. Place the server on its side.

c. Remove the side cover.

For instructions, see Section A: “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

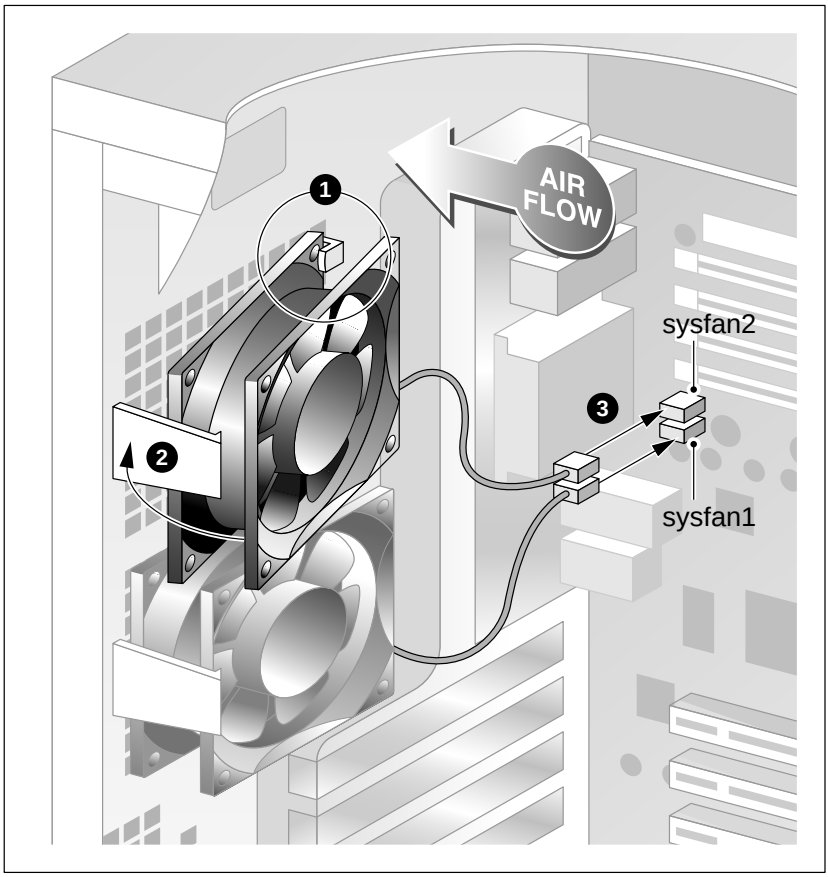
Failure to follow the procedures in Section A: “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Lift the tab on the bracket that holds the fan in place.

3 Angle the fan towards the server’s interior, and then lift it away from its slot.

4 Disconnect the fan’s power cable connector from the server’s motherboard.

To install a rear system fan



G101764

1 Place the bottom edge of the fan on the support bracket at the back of the server.

ATTENTION

To ensure proper cooling operation, ensure that the fan's printed label is facing the back of the server, and the arrows embossed on the fan casing are facing as follows: ⬅⬇ .

2 Lift the bracket's tab, align the fan with the server's back wall, and then release the tab.

Ensure that the tab engages with the edge of the fan casing.

3 Connect the fan's power cable to the motherboard.

Note: The fan closest to the top of the server connects to the connector labeled **sysfan1**. The fan closest to the bottom of the server connects to the connector that is labeled **sysfan2**.

4 Wrap excess cable length with a twist tie or cable wrap, and ensure that it is placed away from the fans.



CAUTION

Risk of equipment damage

If a cable is caught in a fan, the fan will break.

5 Replace the server's side cover.

6 Reconnect all peripheral device cables and power cord.

7 Power up the server.

Replacing the processor fan

Introduction

Replace a malfunctioning fan with the same type as the one removed. For more information about replacing a fan, contact your Nortel Networks customer service representative.

To remove the processor fan

1 Prepare the server for processor fan replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Place the server on its side.

   c. Remove the side cover.

   d. Remove the upper fan holder foam.

   For instructions, see Section A: “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in Section A: “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

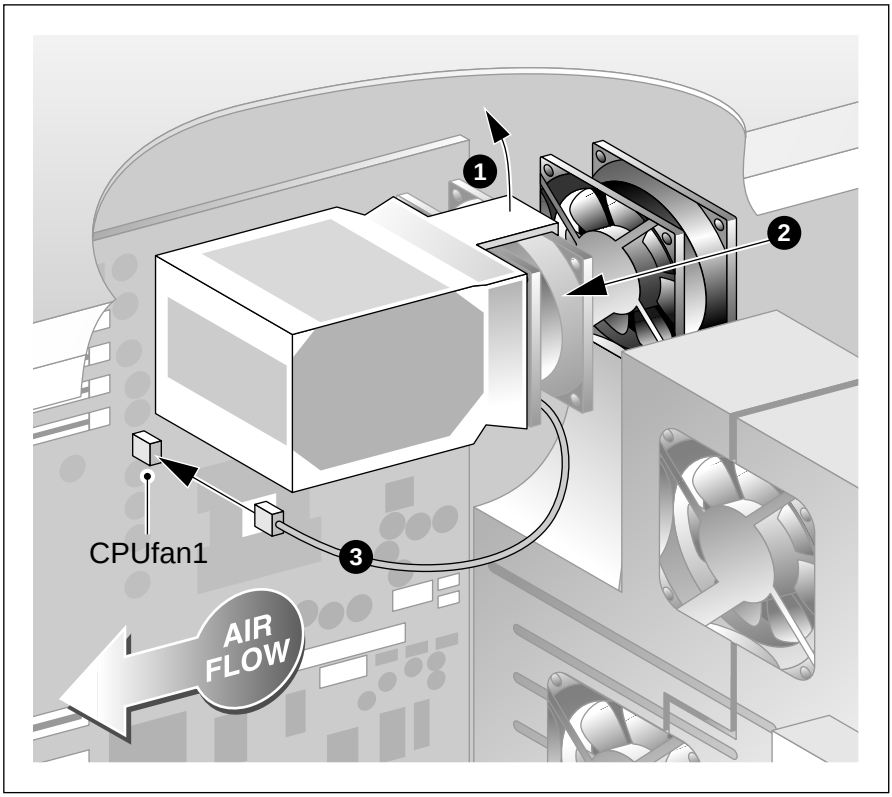
2 Disconnect the fan’s power cable connector from the server’s motherboard.

3 Use both hands to spread the fan’s bracket tabs apart, and then move the fan away from the posts that hold it in place.

   Tip: You may need to lift the bottom fan holder foam slightly to create more space.

4 Lift the fan up and out of the server.

To install the processor fan



G101766

1 Use both hands to spread the fan's bracket tabs apart.

Tip: You may need to lift the bottom fan holder foam slightly to create more space.

2 At the same time, slide the fan onto the supporting posts.

ATTENTION

To ensure proper cooling operation, ensure that the fan's printed label is facing the back of the server, and the arrows embossed on the fan casing are facing as follows: ⬅⬇ .

- Ensure that the fan's cable is inside the bracket tab. This secures the cable to prevent damage.
- Ensure that the bracket tabs engage with the edges of the fan casing.

3 Connect the fan's power cable to the connector labeled **CPUfan1** on the motherboard.

Secure the power cable by routing it between the heat sink housing and the capacitors.

4 Ensure that any cables located near the fan are kept well away from the fan.



CAUTION

Risk of equipment damage

If a cable is caught in a fan, the fan will break.

5 Reseat the bottom fan holder foam.

6 Replace the upper fan holder foam.

For instructions, see "To replace the upper fan holder foam" on page 160.

7 Replace the server's side cover.

8 Reconnect all peripheral device cables and power cord.

9 Power up the server.

Chapter 8

Replacing media drives

In this chapter

SCSI and IDE drive cabling 178

Replacing a hard drive 179

Replacing the tape drive 188

Replacing the CD-ROM drive 193

Replacing the floppy disk drive 197

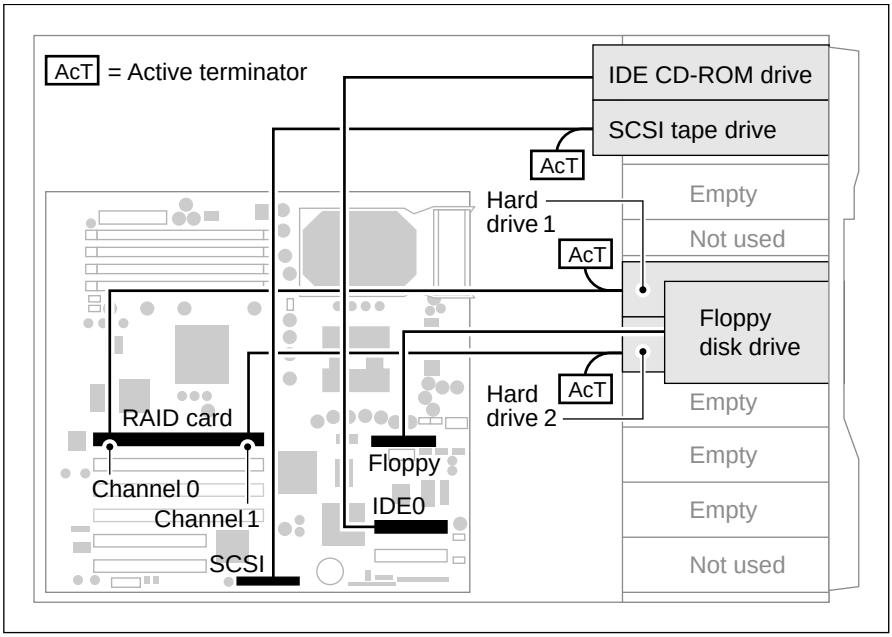
SCSI and IDE drive cabling

Cabling diagram

This following diagram shows the following:

- cabling for and termination of SCSI devices (hard drives and tape drives)
- cabling for an IDE CD-ROM drive

Use the information in this section to assist you with the procedures for replacing a hard drive, tape drive, or CD-ROM drive.



G101768

Replacing a hard drive

Introduction

If you need to replace a faulty hard drive, then do the following:

1. Review this entire section before proceeding to become familiar with the requirements and process.
2. Prepare the server for hard drive replacement as described in “Preparing for hardware maintenance” on page 151.

ATTENTION

Due to the confined space for media drive cabling inside the server, hard drive replacement is easiest when the server is laying on its side. Laying the server on its side helps to prevent damage to the server and internal components.

3. Remove the faulty drive as described in “To remove a hard drive from the server” on page 183.
4. Install the new hard drive in the drive carrier as described in “To install a new hard drive in the drive carrier” on page 184.
5. Install the drive carrier assembly in the server as described in “To install the hard drive” on page 185.

Hard drive description

The server is equipped with two 36 Gbyte wide SCSI hard drives, each one inch high. The last bay must remain empty to ensure proper system cooling.



CAUTION

Risk of equipment damage

The internal SCSI interface in this system supports only single-ended SCSI devices. Use Nortel Networks-authorized drives only.

SCSI drive cabling

The hard drive assembly package includes a standard 68-pin, 68 conductor, twisted-pair wide (16-bit) SCSI ribbon cable, with terminator. This cable has three connectors: the first one is for the terminator, the second one is for the hard drive, and the last one is for connection to the RAID card.

Hard drive configuration

Ensure that the hard drives are configured as follows (for instructions, refer to the original equipment manufacturer documentation):

- termination: Set the hard drive on each SCSI bus to provide termination power to the bus.
- active termination (Term Enable): disabled on both drives

ATTENTION

If there is a termination enable jumper on the drive it must NOT be set.

Termination must be provided by a SCSI terminator attached at the end of the cable.

- parity checking: enabled on both drives
- all other settings: factory default

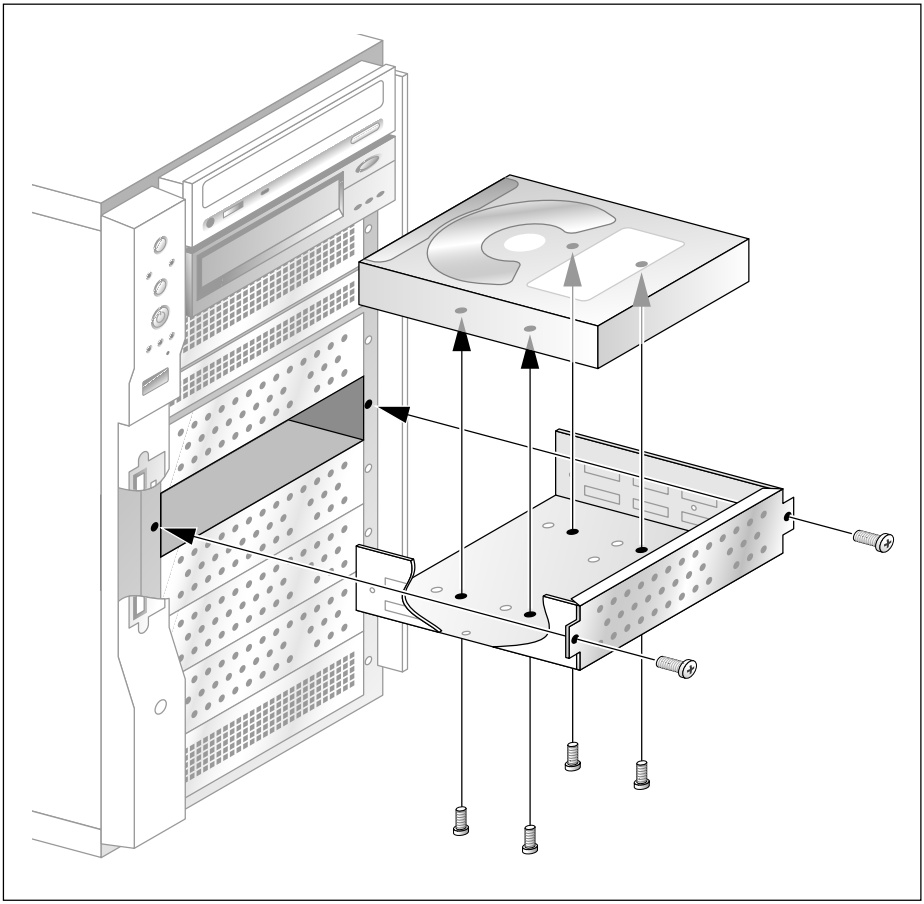
The following table identifies RAID and SCSI settings:

Location of hard drives in internal drive bays (from the top down)	RAID channel	SCSI ID	Hard drive label in the RAID software
Drive bay 4 (empty - used for airflow)	Not applicable	Not applicable	Not applicable
Drive bay 5 (Hard drive 1)	0	0	A0-0
Drive bay 6 (Hard drive 2)	1	0	A0-1
Drive bay 7 (empty)	Not applicable	Not applicable	Not applicable
Drive bay 8 (empty)	Not applicable	Not applicable	Not applicable
Drive bay 9 (bottom slot)	This slot must remain empty to ensure proper system cooling.		

Filler panels and EMI shields

System EMI integrity and cooling are both protected by drives that are installed in the bays or by filler panels and EMI shields that cover the bays. When installing drives, save the panel and shield to reinstall later, in case you remove the drive and do not reinstall one in the same bay.

Hard drive installation overview



G101771

To remove a hard drive from the server

1. Prepare the server for hard drive replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Remove the side cover.

   c. Remove the upper fan holder foam.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2. Open the front panel on the server.
3. Remove and save the two screws that secure the drive’s carrier to the front of the chassis.
4. Pull the drive out slightly—about 1 cm (0.5 in.).

   This will create more space between the front system fans and the drives inside the server so that you can disconnect the cables.
5. If required (to provide more space), temporarily remove the front system fans from their slots in the bottom fan holder foam. (Do not disconnect the fans’ power cables.)
6. Reach your fingers between the fan holder foam inside the server and the hard drives and carefully disconnect the power and signal cables for both hard drives.

   Note: If you are able to disconnect the cables for only the hard drive you want to remove, that is acceptable. You may find it easier however, to disconnect the cables for both hard drives.

7 Pull the drive carrier out of the chassis, and then place it cage-side-up on an antistatic surface.

8 Continue with “To install a new hard drive in the drive carrier” below.

To install a new hard drive in the drive carrier

1 Remove the new drive from its protective wrapper, and place it on an antistatic surface.

2 Record the drive model and serial numbers in your equipment log.

3 Set the hard drive settings as described in “Hard drive configuration” on page 180.

For instructions on changing the hard drive’s settings, refer to the drive manufacturer’s documentation.

4 If you are replacing an existing hard drive, remove the old drive from the drive carrier as follows:

a. Remove the four screws that attach the drive to the carrier.

b. Lift the carrier off of the hard drive.

c. Place the drive in an antistatic protective wrapper.

5 Position the new drive component-side down inside the drive carrier, and then attach the four screws that you removed earlier.

Ensure that the connectors on the back of the drive are flush with the rear of the drive carrier.

6 Continue with “To install the hard drive” below.

To install the hard drive

ATTENTION

The last bay must remain empty to ensure proper system cooling.

1 Slide the hard drive and drive carrier assembly (with the exposed drive facing up) into the server bay.

ATTENTION

To provide more space inside the server so that you can connect the cables, *do not* push the drive all the way in (that is, until it clicks into place).

2 *If not already done:* Temporarily remove the front system fans from their slots in the bottom fan holder foam.

Do not disconnect the fans' power cables.

3 Connect the hard drive's SCSI cable as follows (the end of the cable with two connectors is the hard drive end):

a. Ensure that a terminator is connected to the last connector at the hard drive end of the cable.

b. Connect the second connector on the cable to the hard drive.

Place one hand on the front of the hard drive to hold it in place while you connect the cable with the other hand.



CAUTION

Risk of connector pin damage

To prevent damage to the connector pins, ensure that the cable connector aligns correctly with the hard drive connector before pushing it into place.

c. Route the cable above the CPU through the vacant space at the top of the server.

d. Connect the other end of the cable as follows:
— Connect hard drive 1 to channel 0 on the RAID controller.
— Connect hard drive 2 to channel 1 on the RAID controller.

e. For proper cooling and airflow, neatly fold and secure the excess signal cable above the CPU. Use a tie wrap or cable clip to secure the cable.



CAUTION

Risk of equipment damage

Ensure that any cables in the proximity of the fans are kept away from the fans. If a cable is caught in a fan, the fan will break.

If you need more information, see “SCSI and IDE drive cabling” on page 178.

4 Connect the hard drive’s power cable.

Note: The connector is keyed so that you cannot connect it upside down.

5 At the front of the server, slide the drive into the bay until it clicks into place.

6 Secure the drive carrier to the front of the server with the screws you removed earlier.

Tighten the screws firmly.

7 Ensure that all media drive cable connections are secure.

Note: Connectors could be dislodged when you slide the hard drive all the way inside the bay.



CAUTION

Risk of data loss, corruption, or system malfunction

If the hard drive cable connections are loose, data loss, data corruption, or system malfunction can occur.

8 Reinstall the fans (if removed) and upper fan holder foam.

- For instructions on reinstalling the fans, see “To install a front system fan” on page 168.
- For instructions on replacing the upper fan holder foam, see “To replace the upper fan holder foam” on page 160.

9 Reinstall the server’s side cover.

10 Reconnect the peripheral device and power cables.

11 Power up the server.

12 Rebuild the drive in the RAID system pack.

This copies the data from the operating hard drive to the new hard drive. For instructions, see Chapter 9, “Maintaining the AMI MegaRAID Elite 1600 RAID system.”

Result: Hard drive replacement is complete.

Replacing the tape drive

Introduction

The tape drive is preinstalled at the factory. However, if it becomes faulty, follow the procedure in this section to replace it.



CAUTION

Risk of electrical damage

Use only a tape drive that is approved by Nortel Networks.

Filler panels and EMI shields

System EMI integrity and cooling are both protected by drives installed in the bays or by filler panels and EMI shields covering the bays. When installing drives, save the panel and shield to reinstall later, in case you remove the drive and do not reinstall one in the same bay.

Tape drive configuration

Note: Some settings may already be properly configured. If it is not clear from the drive manufacturer's documentation how to set jumpers, contact your Nortel Networks technical support representative.

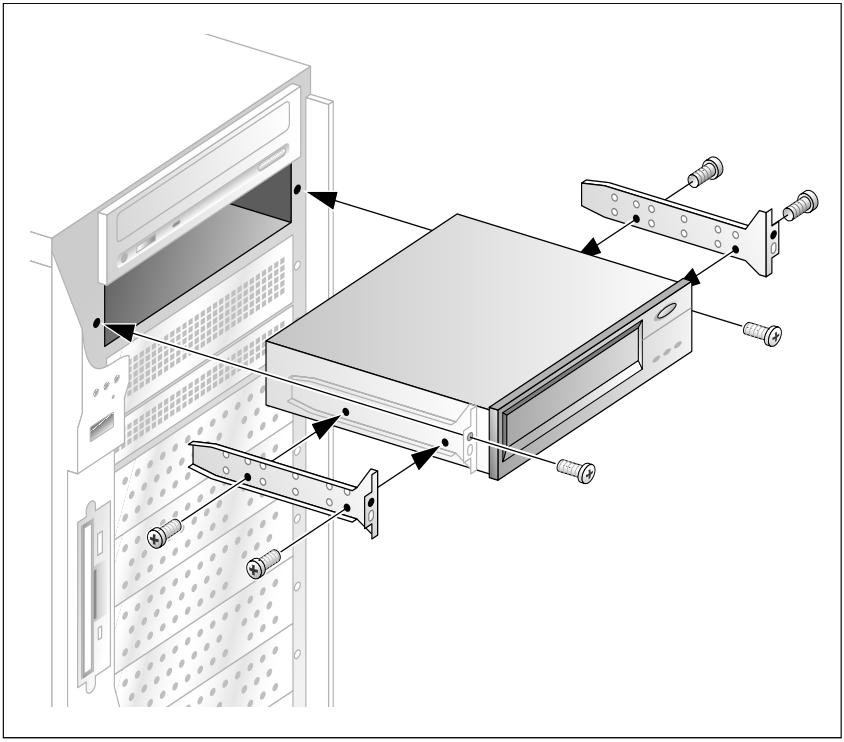
Ensure that the hard drives are configured as follows (for instructions, refer to the original equipment manufacturer documentation):

- SCSI ID: 2
- active terminators (Term Enable): disabled

  Note: Termination is provided by an Active SCSI terminator that you connect to the end of the SCSI cable (see "SCSI and IDE drive cabling" on page 178).

- parity checking: enabled
- termination power (TPWR): enabled
- all other settings: factory default

Tape drive installation overview



G101772

To remove the tape drive

Note: The tape drive is installed in the second bay from the top.

1 Prepare the server for tape drive replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Remove the side cover.

   c. Remove the upper fan holder foam.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Disconnect the faulty drive’s power and signal (SCSI) cables.

3 Open the front panel on the server.

4 Remove and save the two screws that secure the tape drive to the front of the chassis.

5 Pull the tape drive out of the chassis, and then place it on an antistatic surface.

   Note: If you plan to leave the bay empty, install a filler panel and stainless steel EMI shield on the bay.

6 Remove the four screws and two slide rails from the tape drive.

7 Place the drive in an antistatic protective wrapper.

8 Continue with “To install a replacement tape drive” below.

To install a replacement tape drive

1. Remove the new tape drive from its protective wrapper, and place it on an antistatic surface.
2. Record the drive model and serial numbers in your equipment log.
3. Set the tape drive's settings as described in "Tape drive configuration" on page 188.

   For instructions on changing the tape drive's settings, refer to the drive manufacturer's documentation.
4. Attach the slide rails to the replacement tape drive with the screws you removed earlier.
5. Slide the tape drive into the tape drive bay.
6. Secure the tape drive to the front of the server with the screws you removed earlier.

   Tighten the screws firmly.
7. Refer to the "Cabling diagram" on page 178, and then connect the tape drive's SCSI cable as follows:
   a. Connect one end of the SCSI cable to **LVD** (the server's wide SCSI controller) on the server's motherboard.
   b. If a terminator is not attached to the cable, attach a wide SCSI terminator to the other end of the SCSI cable.
   c. Connect the second connector on the SCSI cable to the tape drive.
   d. For proper cooling and air flow, neatly fold and secure the excess signal cable into the last bay (at the bottom of the server) so that the cable does not drape across the baseboard or add-in boards.



CAUTION

Risk of equipment damage

Ensure that any cables in the proximity of the fans are kept away from the fans. If a cable is caught in a fan, the fan will break.

8 Connect the tape drive's power cable.

Result: The tape drive is installed.

9 Replace the upper fan holder foam.

For instructions on replacing the upper fan holder foam, see "To replace the upper fan holder foam" on page 160.

10 Replace the side cover.

11 Reconnect the peripheral device and power cables.

12 Power up the server.

13 Test the tape drive.

Replacing the CD-ROM drive

Introduction

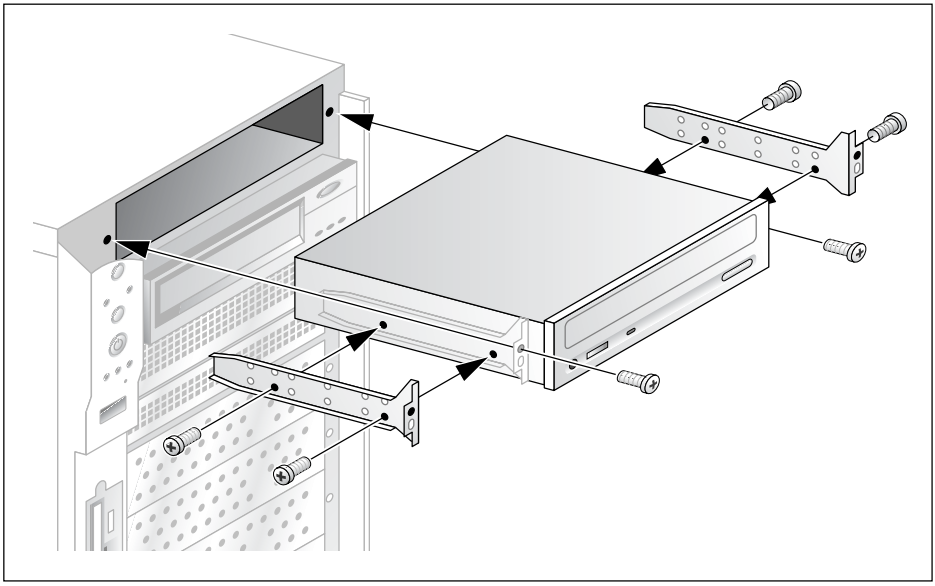
The CD-ROM drive is preinstalled at the factory. However, if it becomes faulty, follow the procedure in this section to replace it.

CAUTION

Risk of electrical damage

Use only a CD-ROM drive that is approved by Nortel Networks.

CD-ROM drive installation overview



G101773

To remove the CD-ROM drive

Note: The CD-ROM drive is installed in the top bay.

1 Prepare the server for CD-ROM drive replacement as follows:

a. Shut down the server, and then disconnect the power and peripheral device cables.

b. Remove the side cover.

c. Remove the upper fan holder foam.

For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Disconnect the faulty drive’s power and signal (IDE) cables.

3 Open the front panel on the server.

4 Remove and save the two screws that secure the CD-ROM drive to the front of the chassis.

5 Pull the drive out of the chassis, and then place it on an antistatic surface.

Note: If you plan to leave the bay empty, install a filler panel and stainless steel EMI shield on the bay.

6 Remove the four screws and two slide rails from the drive.

7 Place the drive in an antistatic protective wrapper.

8 Continue with “To install a replacement CD-ROM drive” below.

To install a replacement CD-ROM drive

1. Remove the new CD-ROM drive from its protective wrapper, and place it on an antistatic surface.
2. Record the drive model and serial numbers in your equipment log.
3. Set the new CD-ROM drive to IDE Master by changing the jumper settings at the back of the drive.

   Note: Refer to the CD-ROM drive manufacturer's documentation for specific jumper settings.
4. Install the slide rails on the new drive.

   Ensure that the first set of holes on the bracket are aligned with the screw holes closest to the front of the CD-ROM drive.
5. Slide the new CD-ROM drive into the drive bay and secure it to the front of the server with the screws you removed earlier.
6. Reconnect the CD-ROM drive's IDE cable to **IDE0** (blue connector) on the motherboard.

   Ensure that the blue stripe on the cable at the motherboard connector end faces towards the back of the server.

   ATTENTION
   The server will not start if the cable is connected backwards.

   For more information, see the "Cabling diagram" on page 178.
7. Reconnect the CD-ROM drive's power cable.

   Result: The CD-ROM drive is installed.
8. Replace the upper fan holder foam.

   For instructions on replacing the upper fan holder foam, see "To replace the upper fan holder foam" on page 160.
9. Replace the side cover.

10 Reconnect the peripheral device and power cables.

11 Power up the server.

12 Test the CD-ROM drive.

Replacing the floppy disk drive

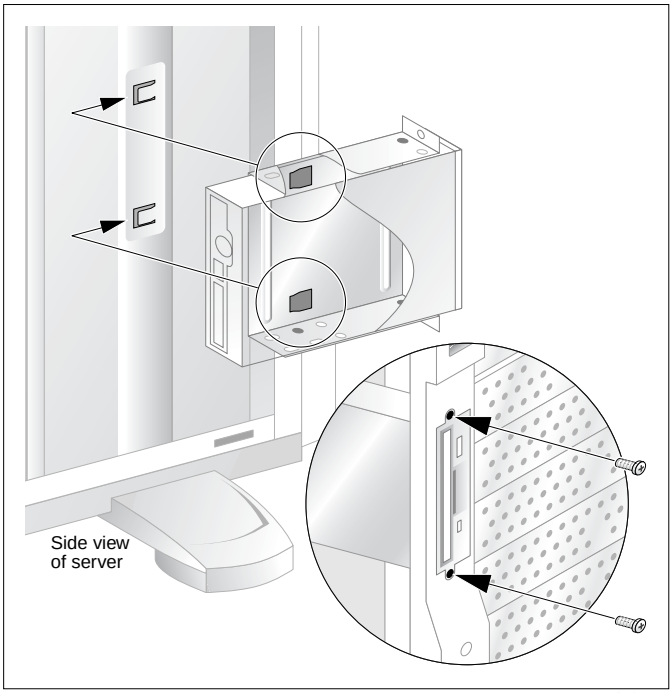
Introduction

The floppy disk drive is preinstalled at the factory. However, if it becomes faulty, follow the procedure in this section to replace it.

Risk of electrical damage

Use only a floppy disk drive that is approved by Nortel Networks.

Floppy disk drive installation overview



To remove the floppy disk drive

ATTENTION

Nortel Networks recommends that you use a magnetic screwdriver in this procedure. A nonmagnetic screwdriver can result in screws being lost between the chassis and plastic bezel.



CAUTION

Risk of data loss

Keep magnetic screwdrivers away from hard drives, floppy disks, and backup tapes to prevent data loss.

1 Prepare the server for floppy disk drive replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Remove the side cover.

   c. Remove the upper fan holder foam.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Disconnect the disk drive’s power and signal cables.

3 Open the front panel on the server.

4 Remove and save the two screws that secure the floppy disk drive to the front of the chassis.

5 Slide the assembly toward the back of the server to disengage it from the tabs that secure the carrier assembly to the server.

6 Remove the assembly from the chassis.

7 Remove the four screws that hold the bracket to the drive, and set them and the bracket aside.

8 Place the drive in an antistatic protective wrapper.

9 Continue with “To install a replacement floppy disk drive” on page 199.

To install a replacement floppy disk drive

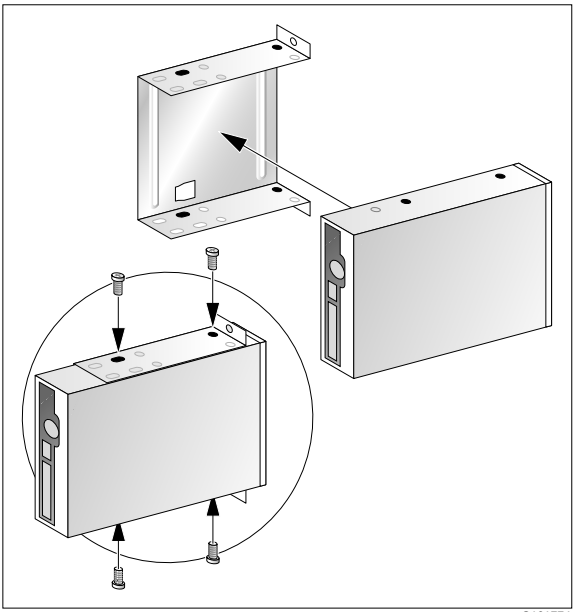
1 Remove the new floppy disk drive from its protective wrapper, and place it component-side up on an antistatic surface.

2 Record the drive model and serial numbers in your equipment log.

3 Set any jumpers or switches according to the drive manufacturer’s instructions.

4 Place the drive label-side up inside the carrier, and then attach the drive to the carrier with the four screws you removed earlier.

See the following diagram:



Ensure that the carrier is aligned with the two screw holes closest to the front of the floppy disk drive. Tighten the screws firmly.

5 Install the drive carrier inside the server.

Slide the assembly toward the front of the system, and engage it with the bracket tabs on the side of the drive bay.

Note: The bottom of the drive/bracket assembly must accept the tab that sticks out from the inside of the front panel. Ensure that the front of the drive fits flush in the front opening of the system. (See the “Floppy disk drive installation overview” on page 197.)

6 Secure the assembly to the server’s front panel with the screws you removed earlier. Tighten the screws firmly.

7 Connect the floppy disk drive’s signal cable to the drive.

Note: The connectors are usually keyed to allow you to easily reconnect them to the drive. If they are not keyed, insert both cables so that the red wires are closest to the center of the drive.



CAUTION

Risk of data loss

If the floppy disk drive contains a floppy disk and the signal cable is connected backwards, data loss can occur. The LED at the front of the drive will also remain lit after the server is powered up.

8 Connect the floppy disk drive’s power cable to the drive.

Result: The floppy disk drive is installed.

9 Replace the upper fan holder foam.

For instructions on replacing the upper fan holder foam, see “To replace the upper fan holder foam” on page 160.

10 Replace the side cover.

11 Reconnect the peripheral device and power cables.

12 Power up the server.

13 Test the floppy disk drive.

Chapter 9

Maintaining the AMI MegaRAID Elite 1600 RAID system

In this chapter

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RAID maintenance quick reference 207

Section B: Performing RAID card maintenance **211**

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Updating the RAID card's firmware 217

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Section A: RAID maintenance overview

In this section

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About RAID

Introduction

Redundant Array of Independent Disks (RAID) is a technology that can combine two or more drives for fault tolerance and continued system performance. The CallPilot RAID controller is a PCI RAID SCSI card that provides high-performance disk mirroring. CallPilot uses RAID Level 1.

With Level 1 mirroring, two equal-capacity disk drives mirror one another. One disk drive serves as the backup copy of the other disk drive. If one disk drive fails, the other continues to run. This level prevents loss of information and network time.

Note: The Windows NT operating system supports mirroring in software without a hardware RAID controller. This software-only approach is not supported by CallPilot.

Data redundancy using the RAID subsystem

If a hard drive fails, CallPilot continues to operate. However, the RAID subsystem reports a hard drive failure in the following ways:

- An audible alarm is sounded.
- The MegaRAID Client changes the status of the failed drive to FAILED, and the color of the icon corresponding to the drive from GREEN to RED.
- An event is recorded in the Windows NT Event Viewer.

When the failure event is acknowledged, the hard drive that failed should be replaced as soon as possible. The system will rebuild the new drive as soon as the rebuild procedure has been initiated manually. During the rebuild process, the alarm continues to sound, the status of the drive changes to REBUILD, and the icon changes to YELLOW in the MegaRAID Client.

The rebuild process usually takes between 30 to 60 minutes. Nortel Networks strongly recommends that you do not restart the server during this time. At the end of the rebuild process, the system notifies you about the completion and returns to the original status before the failure occurred. The alarm stops automatically.

MegaRAID software

The MegaRAID software is provided on the CallPilot server as follows:

- MegaRAID BIOS Configuration utility, which you launch during the server's power on self-test (POST) cycle
- MegaRAID Client, which you launch in Windows NT

Both versions are used in this section. The version you use for a task is based on the scenario in which you are performing RAID maintenance, and is identified in its associated procedure.

RAID and SCSI hard drive configuration

The following table identifies SCSI drive bay, channel, and ID configurations on the 703t server. The SCSI controller assigns the SCSI IDs.

Hard drive	SCSI ID	Channel numbers inside the server	Channel numbers in the software	Physical and logical drive labels in the software
Slot 5 from the top	0	0	1	A0-0
Slot 6 from the top	0	1	2	A0-1

System backups on RAID systems

You must perform regular full-system backups of the CallPilot server to tape. Although RAID provides a high level of data security through redundancy, you must restore from backup tape if the RAID card fails or if both hard drives in a RAID system pack fail. A restore from a backup tape may also be required to repair a software data corruption.

RAID maintenance quick reference

Introduction

This section identifies the scenarios in which you may be required to perform RAID maintenance. It also identifies which topics in this chapter pertain to the scenario in which you are working.

The following scenarios are discussed in this section:

- Scenario 1: The RAID card is faulty (below).
- Scenario 2: A hard drive is faulty (see page 208).
- Scenario 3: You want to perform a CallPilot server upgrade or install a significant PEP (see page 209).
- Scenario 4: The CallPilot server upgrade was not successful (see page 210).

Scenario 1: The RAID card is faulty

If the RAID card becomes faulty, you must do the following:

1. Replace the RAID card.

   For more information, see “Replacing the RAID card” on page 212.



CAUTION

Risk of data loss

If the existing RAID card has failed, the data on the hard drives may be corrupted. A procedure for replacing the AMI MegaRAID Elite 1600 card is provided in this section for reference purposes. However, you must contact Nortel Networks technical support for further instructions before you begin.



CAUTION

Risk of system failure

Replacement of a RAID card with one that is not identical causes a system failure. You must use Nortel Networks-approved components.

2. Ensure that the firmware on the RAID card is the correct version by performing a RAID firmware update from the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM.

   For more information, see "Updating the RAID card's firmware" on page 217.

Note: You do not have to configure the RAID card, because the RAID card's configuration is stored on the hard drive.

Scenario 2: A hard drive is faulty

If a hard drive in the RAID system pack becomes faulty, you must do the following:

1. Replace the faulty hard drive.

   For more information, see "Replacing a hard drive" on page 179.

2. Launch the MegaRAID Client in Windows NT, and then manually rebuild the hard drive in the RAID system pack.

   This copies the data from the good hard drive to the new hard drive. For more information, see "Rebuilding a hard drive in the RAID system pack" on page 238.

Scenario 3: You want to perform a CallPilot server upgrade or install a significant PEP

If you want to perform a CallPilot server upgrade, you must do the following:

1. Launch the MegaRAID Client in Windows NT, and then put one of the RAID channels (hard drives) into failed state.

   This prevents data from being written to the hard drive, thereby retaining the data on that hard drive as a backup.

   For more information, see “Splitting the RAID system pack” on page 234.

2. Perform the CallPilot server upgrade.

   For more information, refer to the *CallPilot 2.02 Upgrade Guide*.

3. Test the upgraded CallPilot system to ensure it is operational.

   For more information, refer to “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

4. Do one of the following:

IF the upgrade was	THEN
successful	launch the MegaRAID Client in Windows NT, and then manually rebuild the hard drive in the RAID system pack. This copies the data from the upgraded hard drive to the backup hard drive, thereby synchronizing both drives with the upgraded CallPilot data. For more information, see “Rebuilding a hard drive in the RAID system pack” on page 238.

IF the upgrade was	THEN
not successful	revert the system to the pre-upgrade version. For more information, see “Scenario 4: The CallPilot server upgrade was not successful” on page 210.

Scenario 4: The CallPilot server upgrade was not successful

If you want to revert the CallPilot system back to the previous CallPilot release because the server upgrade failed, you must do the following:

1. During the server’s startup cycle, launch the MegaRAID BIOS Configuration utility, and then put the backup drive into online state.
2. Put the upgraded drive into failed state.
3. Restart the server into Windows NT.
4. Launch the MegaRAID Client in Windows NT, and then manually rebuild the hard drive in the RAID system pack.

   This copies the data from the backup hard drive to the upgraded hard drive, thereby synchronizing both drives with the pre-upgraded CallPilot data.

For more information, see “Reverting to the pre-upgrade system (if the CallPilot upgrade failed)” on page 243.

Section B: Performing RAID card maintenance

In this section

Replacing the RAID card 212
Updating the RAID card's firmware 217
Configuring the AMI MegaRAID Elite 1600 card 221
Recovering from a corrupted RAID BIOS 225

Replacing the RAID card

Introduction

This section provides instructions for replacing the AMI MegaRAID Elite 1600 card.



CAUTION

Risk of data loss

If the existing RAID card has failed, the data on the hard drives may be corrupted. A procedure for replacing the AMI MegaRAID Elite 1600 card is provided in this section for reference purposes. However, you must contact Nortel Networks technical support for further instructions before you begin.



CAUTION

Risk of system failure

Replacement of a RAID card with one that is not identical causes a system failure. You must use Nortel Networks approved components.

Materials you need

Before you replace the RAID card, gather the following tools:

- a Phillips screwdriver
- an antistatic wrist strap
- the replacement RAID card (same model as the current card)

To replace the RAID card

1. Prepare the server for RAID card replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Place the server on its side.

   c. Remove the side cover.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2. Locate the installed RAID card and note its PCI slot.
3. Label the SCSI cables to identify to which channel they belong.
4. Disconnect all signal cabling from the RAID card.
5. Loosen the screw located at the top of the card’s faceplate.
6. Remove the card from the server chassis.
7. Remove the replacement RAID card from its protective packaging.

   Do not touch the components or gold edge connectors.

8. Hold the RAID card by its top edge or upper corners, and then align it with the following:

   - end-plate opening in the chassis
     Ensure that the tapered foot of the card’s retaining bracket fits into the slot in the expansion slot frame.
   - PCI connector

9 Apply pressure towards the server motherboard until the card is evenly and securely seated in the slot.



CAUTION

Risk of equipment damage

Ensure that the card is completely seated or it will short-circuit.

10 Align the rounded notch in the retaining bracket with the threaded hole in the frame.

11 Secure the card by tightening the screw at the top of the faceplate.

12 Reconnect the signal cables to the card.

The connectors are keyed so that they attach only one way.

Note: If you are replacing the cables as well, do the following (the end of the cable with two connectors is the hard drive end) for each cable:

a. Ensure that a terminator is connected to the last connector at the hard drive end of the cable.

b. Connect the second connector on the cable to the hard drive.

Tip: To establish the cable connections to the hard drives, you may need to do the following:

— Remove the two screws that secure the drive's carrier to the chassis at the front of the server, and then pull the hard drive carrier out of the server slightly (about 1 cm [0.5 in.]).

— Remove the upper fan holder foam.

— Temporarily remove the front system fans from their slots in the bottom fan holder foam. (Do not disconnect the fans' power cables.)

c. Route the cable above the CPU through the vacant space at the top of the server.

d. Connect the other end of the cable as follows:
— Connect hard drive 1 to channel 0 on the RAID card.
— Connect hard drive 2 to channel 1 on the RAID card.

e. For proper cooling and airflow, neatly fold and secure the excess signal cable length above the CPU. Use a tie wrap or cable clip to secure the cables.



CAUTION

Risk of equipment damage

Ensure that any cables in the proximity of the fans are kept away from the fans. If a cable is caught in a fan, the fan will break.

f. At the front of the server, slide the drive into the bay until it clicks into place.

g. Secure the drive carrier to the front of the server with the screws you removed earlier.

Tighten the screws firmly.

h. Ensure that the cable connections at the hard drive end are secure.

Note: Connectors could be dislodged when you slide the hard drive all the way inside the bay.



WARNING

Risk of data loss, corruption, or system malfunction

If the hard drive cable connections are loose, data loss, data corruption, or system malfunction can occur.

i. Reinstall the fans (if removed).

For instructions, see “To install a front system fan” on page 168.

j. Reinstall the upper fan holder foam (if removed).

For instructions, see “To replace the upper fan holder foam” on page 160.

13 Reinstall the server's side cover.

14 Reconnect the peripheral device and power cables.

15 Power up the server.

What's next?

Continue with "Updating the RAID card's firmware" on page 217.

Updating the RAID card's firmware

Introduction

The following identifies the minimum BIOS and firmware versions for the AMI RAID Elite 1600 card:

- BIOS: 3.13 or later
- firmware: D170

You may be required to update the RAID card's firmware in the following situations:

- Nortel Networks technical support instructs you to update the firmware.
- The RAID card became faulty and you replaced it.

The RAID card's BIOS is upgraded through a flash process. The flash process is initiated by running the RAID card firmware update utility that is provided on the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM.

To verify the RAID BIOS and firmware version

Use this procedure to determine what the current BIOS and firmware versions are on the RAID card. To actually update the firmware, see "To update the RAID firmware" on page 219.

1 Start (or restart) the server and observe the startup diagnostics.

For instructions on starting the server, refer to Part 1 of the *CallPilot Installation and Configuration* binder.

Result: The AMI MegaRAID startup diagnostics appear, followed by a prompt to `Press Ctrl+M to run the MegaRAID Configuration Utility`.

ATTENTION

This prompt appears for only a couple of seconds, along with the message `Press Ctrl+H for WebBIOS`, which appears in white flashing letters.

To avoid missing the prompt, press Ctrl+M after the AMI MegaRAID information begins displaying and before the prompt appears.

2 Press Ctrl+M.

When the AMI MegaRAID startup diagnostics are finished, the MegaRAID BIOS Configuration Utility launches, and the Management menu appears.

3 Press the arrow and Enter keys to choose Objects → Adapter → Other Adapter Information.

4 Review the information on the screen.

5 Do one of the following:

IF the BIOS and firmware	THEN
are the correct versions (3.13 or later and D170)	do the following: **a.** Press Esc four times until the Exit confirmation prompt appears. **b.** Choose Yes to exit. **c.** Press Ctrl+Alt+Delete to restart the server.
are not the correct versions (3.13 or later and D170)	do the following: **a.** Press Esc four times until the Exit confirmation prompt appears. **b.** Choose Yes to exit. **c.** Perform a BIOS and firmware update. For instructions, see “To update the RAID firmware” on page 219.

To update the RAID firmware

The RAID card's BIOS is upgraded through a flash process. The flash process is initiated by running a RAID card firmware update utility on the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM.

ATTENTION

Perform this procedure only if the BIOS and firmware versions are not the versions identified in this section.

1. Insert the CallPilot 2.02 OS Recovery or OS Upgrade CD-ROM into the server's CD-ROM drive.
2. Restart the server and observe the startup diagnostics.
3. When the processor diagnostics screen appears, press Esc.

   Result: The following message appears at the bottom of the screen:

   ```
   Entering the boot menu ....
   ```

   The system continues with the SCSI and RAID startup diagnostics, and when done, the following menu appears:

   ```
   Please select boot device:
   ATAPI CD-ROM
   Removable Devices
   Hard Drive
   IBA 4.1.0.4 Slot 0118
   IBA GE Slot 0120 v1109
   Use <arrow up> and <arrow down> to change selection,
   Use ENTER to select and save,
   Use ESC to Exit without save.
   ```

4. Choose ATAPI CD-ROM, and then press Enter.

   Result: The following menu appears:

   ```
   MS-DOS 6.2 Startup Menu

   1.  Delete all partitions on first hard drive, reboot
   2.  Create C partition for OS ...
   3.  Format C Install Windows NT from CD-ROM ...
   4.  Command Prompt with IDE CD-ROM as Z:
   ```

```
5.  Command Prompt with LAN access ...
6.  Make a Bootable Floppy Disk with IDE CD support
7.  Run PC Hardware Diagnostics
8.  Other Utilities (BIOS, Firmware, etc) ...
```

5 Choose option 8, Other Utilities (BIOS, Firmware, etc), and then press Enter.

Result: The following menu appears:

```
*** Other Utilities ***
1.  1002rp BIOS update ...
2.  AMI Elite 1600 RAID card Firmware update
3.  Mylex DAC960 RAID Card Configuration utility
4.  Mylex DAC960 RAID Card Diagnostic
5.  Mylex DAC960 RAID Card Firmware update
6.  Mylex AR352 RAID Card Utility & Firmware update
   (needs 1 floppy)
7.  703t SSU
8.  703t BIOS update utility
```

6 Choose option 2, AMI Elite 1600 RAID card Firmware update, and then press Enter.

7 Press Y for yes and then Enter to confirm that the 471gen.rom file is detected.

8 Respond to the remaining prompts to proceed with the update.

Result: The update proceeds. When it is finished, you are informed that the update completed successfully and are asked to restart the server.

9 Remove the CD-ROM from the CD-ROM drive.

10 Restart the server.

Configuring the AMI MegaRAID Elite 1600 card

Introduction

The RAID card's configuration is stored on both the card and on the hard drive, so typically you are not required to reconfigure RAID unless you are making a change to the RAID system (for example, if you upgrade the hard drives to higher-capacity hard drives).



CAUTION

Risk of data loss

This procedure requires that the logical drive be initialized. When you initialize the logical drive, all data on both hard drives is erased.

Do not perform this procedure unless you are replacing both hard drives, or you are rebuilding the CallPilot system (that is, reinstalling the Windows NT operating system and CallPilot software).

To configure an AMI MegaRAID Elite 1600 RAID system

Notes:

- RAID BIOS configuration can be slow in general and may cause the system to appear frozen. If this occurs, wait. The system will continue when configuration is completed.
- On the CallPilot server, only RAID 1 is supported.

ATTENTION

If the Adapter has already been reset to factory default according to step 3, begin at step 4.

1 Start (or restart) the server and observe the startup diagnostics.

For instructions on restarting the server, refer to Part 1 of the *CallPilot Installation and Configuration* binder.

Result: The AMI MegaRAID startup diagnostics appear, followed by a prompt to `Press Ctrl+M to run the MegaRAID Configuration Utility.`

ATTENTION

This prompt appears for only a couple of seconds, along with the message `Press Ctrl+H for WebBIOS`, which appears in white flashing letters.

To avoid missing the prompt, press Ctrl+M after the AMI MegaRAID information begins displaying and before the prompt appears.

2 Press Ctrl+M.

When the AMI MegaRAID startup diagnostics are finished, the MegaRAID BIOS Configuration Utility launches, and the Management Menu appears.

3 Press the arrow and Enter keys to choose Objects → Adapter → Factory Default, and then choose Yes to confirm the selection.

4 Press Ctrl+Alt+Delete when prompted to restart the system, and then observe the startup diagnostics.

5 At the appropriate moment, press Ctrl+M to launch the MegaRAID BIOS Configuration Utility.

6 Press the arrow and Enter keys to choose Objects → Adapter, and then ensure that the following values are set (make changes as required):

Flex RAID PowerFail: Enabled

Fast Initialization: On

Emulation: Mass Storage

Auto Rebuild: Disabled

Initiator ID: 7

Cluster Mode: Disabled

Multiple PCI Delayed Trans: Disabled

Force Boot: Off

Coercion Algorithm: GigaByte-way

7 Press Esc.

8 Press the arrow and Enter keys to choose Objects → Channel→ Channel 1, and then ensure that the following values are set:

Termination State: Enabled

SCSI Transfer Rate: 160M

9 Press Esc.

10 Repeat step 8 for Channel 2.

11 Press Esc twice.

12 Press the arrow and Enter keys to choose Configure → New Configuration, and then choose Yes to proceed.

Result: The Array Selection Menu appears. This menu shows two channels, each with one drive in READY state.

13 Press the space bar to select each drive.

Result: After each selection, the drive blinks and changes to ONLINE state.

14 Press Enter to create the logical drive.

Result: The drives stop blinking.

15 Press F10, and ensure that the logical drive's settings are as follows:

RAID level: 1

Size: accept the value that is displayed

Span: No.

16 Press the arrow and Enter keys to choose Accept.

17 Press Enter again.

18 Choose Yes to save the configuration.

Result: You are informed that the configuration is saved and to press any key.

19 Press Enter (or any key).

20 Press Esc to exit the submenu.

21 In the Management Menu, choose Initialize.

22 Press F2 to choose the logical drive (Logical Drive 1).

23 Press F10, and then choose YES, to initialize the drive pack.

24 When the initialization is complete, press any key to return to the Management Menu.

25 Press Esc to exit the utility, and then save the configuration when prompted.

26 Press Ctrl+Alt+Delete to restart the server.

Recovering from a corrupted RAID BIOS

Introduction

There are special situations when the RAID system seems to have failed and data is corrupted while backup drives are not available. Typically, the system may not even boot to the operating system. In such situations, in the attempt to bring the system back up, clear the RAID card's configuration, then reconfigure it.

Note: Data recovery is not guaranteed, but in most of the cases, this will enable the system to complete the operating system startup.

To recover the RAID card's startup data

1 Start (or restart) the server and observe the startup diagnostics.

For instructions on restarting the server, refer to Part 1 of the *CallPilot Installation and Configuration* binder.

Result: The AMI MegaRAID startup diagnostics appear, followed by a prompt to `Press Ctrl+M to run the MegaRAID Configuration Utility`.

ATTENTION

This prompt appears for only a couple of seconds, along with the message `Press Ctrl+H for WebBIOS`, which appears in white flashing letters.

To avoid missing the prompt, press Ctrl+M after the AMI MegaRAID information begins displaying and before the prompt appears.

2 Press Ctrl+M.

When the AMI MegaRAID startup diagnostics are finished, the MegaRAID BIOS Configuration Utility launches, and the Management Menu appears.

3 Press the arrow and Enter keys to choose Configure → Clear Configuration.

4 Choose Yes to confirm and then press Enter.

Result: This operation clears the RAID card's NVRAM but leaves the configuration data on the hard drives intact.

5 Wait until this operation is completed.

Note: Completion is confirmed when a the following message appears: `Existing configuration is cleared. Press any key to continue.`

6 Press the arrow and Enter keys to choose Configure → New Configuration, and then choose Yes to proceed.

Result: The Array Selection Menu appears. This menu shows two channels, each with one drive in READY state.

7 Press the space bar to select each drive.

Result: After each selection, the drive blinks and changes to ONLINE state.

8 Press Enter to create the logical drive.

Result: The drives stop blinking.

9 Press F10, and ensure that the logical drive's settings are as follows:

RAID level: 1

Size: accept the value that is displayed

Span: No.

10 Press the arrow and Enter keys to choose Accept.

11 Press Enter again.

12 Choose Yes to save the configuration.

Result: You are informed that the configuration is saved and to press any key.

13 Press Enter (or any key).

14 Press Esc to exit the submenu.

15 Press Esc to exit the utility, and then save the configuration when prompted.

16 Press Ctrl+Alt+Delete to restart the server.

Result: The server should start to Windows NT.

If the server will not start to Windows NT, you may need to reinstall the Windows NT operating system and CallPilot software. Contact your Nortel Networks technical support representative for advice before you proceed.

Section C: Performing RAID system pack maintenance

In this section

Verifying consistency on both drives 230
Splitting the RAID system pack 234
Rebuilding a hard drive in the RAID system pack 238
Reverting to the pre-upgrade system (if the CallPilot upgrade failed) 243

Verifying consistency on both drives

Introduction

The consistency check on the RAID system's logical drive ensures that the data on both drives is identical. If any errors are found, they are corrected automatically.

When to perform a consistency check

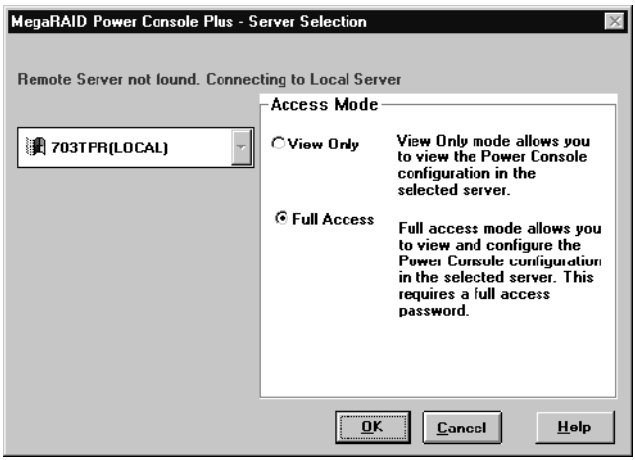
Perform a consistency check *before* you split the RAID system pack. A good data backup on an offline drive will be important if you need to revert the CallPilot system from an unsuccessful upgrade.

The consistency check takes up to 2 hours to complete.

To perform a consistency check

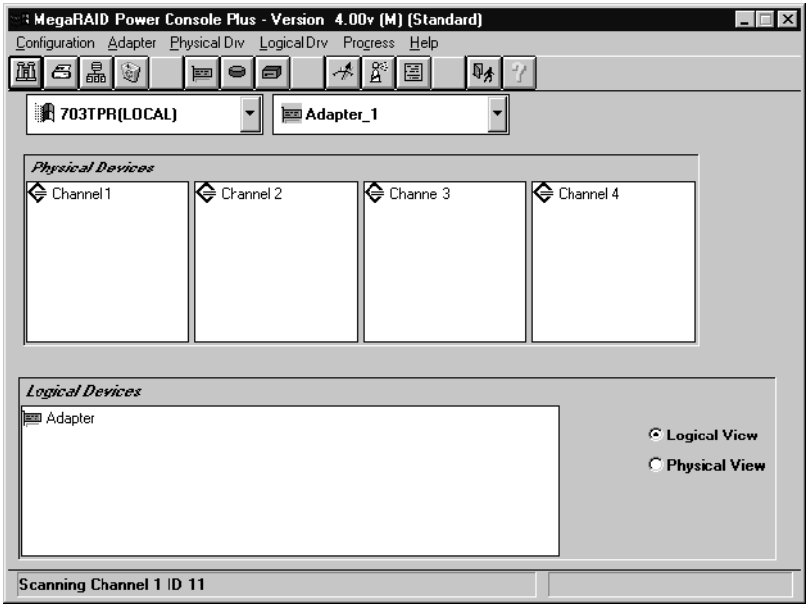
1 In Windows NT, click Start → Programs → MegaRAID Client.

The following window appears:

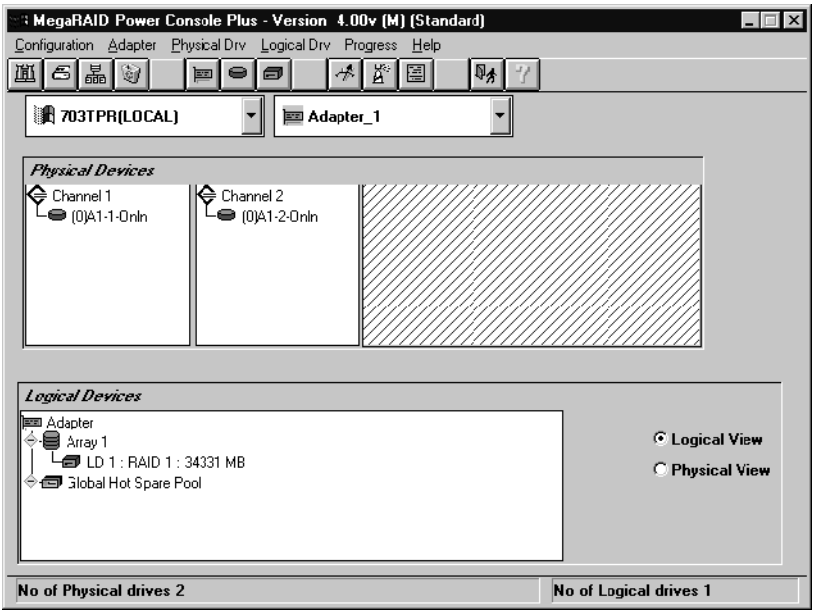


2 Ensure that Full Access is selected, and then click OK.

Result: The MegaRAID Power Console Plus window appears:

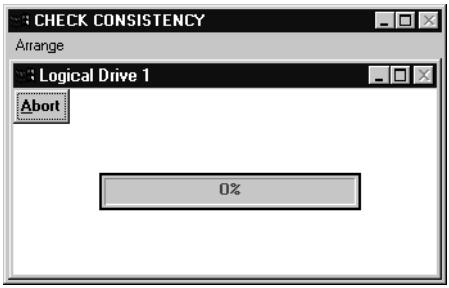


The status bar at the bottom of the window indicates that RAID channels are being scanned. When scanning is done, the screen refreshes as shown in the following screen example.

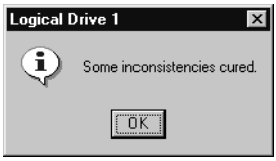


3 In the Logical Drives section, right-click the logical drive, and then choose Check Consistency from the pop-up menu that appears.

Result: The following status dialog appears;



The check takes up to 2 hours to complete. You are informed when it is finished. If any errors were found, you receive a message similar to the following:



4 If you will not be proceeding with splitting the RAID system pack at this time, click Configuration → Exit to close MegaRAID Client Power Console Plus.

Result: The following message appears:



5 Click OK.

What's next?

Continue with "Splitting the RAID system pack" on page 234.

Splitting the RAID system pack

Introduction

When you split a RAID system pack on the 703t server, you “fail” one of the hard drives to prevent data from being written to that hard drive. When you intentionally fail the hard drive (split the RAID system pack), you are basically creating a backup, which you can use to revert the CallPilot to a previous state, if required.

When to split the RAID system pack

For CallPilot, splitting the RAID system pack is required before you perform a CallPilot software upgrade or install a significant CallPilot PEP. If the CallPilot software upgrade is not successful, you can use the backup hard drive to revert to the pre-upgrade CallPilot version. (For more information, see “Rebuilding a hard drive in the RAID system pack” on page 238.)

Note: You can also split the RAID system pack and then physically remove and store the hard drive for emergency backup purposes. However, this is not recommended on the 703t server because hard drives are not hot-swappable, and hard drive cables can be prone to damage during hard drive removal and replacement. Nortel Networks recommends that you perform regular CallPilot full-system backups to tape instead.

To split the RAID system pack

ATTENTION

Before you split the RAID system pack, perform a consistency check on the logical drive. For instructions, see “Verifying consistency on both drives” on page 230.

1 Restart the server and observe the startup diagnostics.

For instructions on restarting the server, refer to “Restarting the server” in Part 1 of the *CallPilot Installation and Configuration* binder.

Result: The AMI MegaRAID startup diagnostics appear, followed by a prompt to `Press Ctrl+M to run the MegaRAID Configuration Utility.`

ATTENTION

This prompt appears for only a couple of seconds, along with the message `Press Ctrl+H for WebBIOS`, which appears in white flashing letters.

To avoid missing the prompt, press Ctrl+M after the AMI MegaRAID information begins displaying and before the prompt appears.

2 Press Ctrl+M.

When the AMI MegaRAID startup diagnostics are finished, the MegaRAID BIOS Configuration Utility launches, and the Management Menu appears.

3 Choose Objects and then press Enter.

4 Choose Physical Drive and then press Enter.

Result: The channels are scanned and when done, the Physical Drive Selection Menu appears.

5 Choose the drive that you wish to “fail” (Nortel Networks recommends you choose Channel 2), and then press Enter.

Note: The hardware labels inside the 703t server are different from the labels in the RAID software. See the following table:

Hard drive	Drive bay	Hardware label	Software label
1	5 (from the top)	Channel 0	Channel 1 (A0-0)
2	6 (from the top)	Channel 1	Channel 2 (A0-1)

6 Choose Fail Drive, and then press Enter.

Result: A warning message appears and the alarm starts to sound. The alarm will continue until the RAID is back to its original state.

Note: You can silence the alarm temporarily for the duration of the procedure by clicking Adapter → Alarm Control → Silence.



CAUTION

Risk of service loss

Do not Disable the alarm under any circumstances.

7 Choose Yes to ignore the warning and proceed, and then press Enter.

8 Press Esc three times to exit from the MegaRAID BIOS Configuration Utility.

9 Press Ctrl+Alt+Delete to restart the server.

10 Continue with "To rebuild the hard drive in the RAID system pack with pre-upgrade data" below.

What's next?

If you split the RAID system pack as preparation for performing a CallPilot upgrade, do the following:

1 Upgrade the CallPilot server software as described in the *CallPilot 2.02 Upgrade Guide*.

Only one hard drive in the RAID system pack is updated during the upgrade.

2 After the upgrade is completed, test the upgraded system to ensure that CallPilot is operating correctly.

For instructions, refer to "Testing the CallPilot installation" in Part 3 of the *CallPilot Installation and Configuration* binder.

3 Was the upgrade successful?

IF	THEN
yes	rebuild the hard drive in the RAID system pack. This copies the upgraded CallPilot data to the hard drive that you intentionally failed earlier. For instructions, see “Rebuilding a hard drive in the RAID system pack” on page 238. **CAUTION** **Risk of data loss** You can run CallPilot for any period of time before making the decision to rebuild the hard drives. However, during this time, there is no disk redundancy. Therefore, if a hard drive fails before the system pack is rebuilt, any new data is lost.
no	revert the system to the pre-upgrade CallPilot version. For instructions, see “Reverting to the pre-upgrade system (if the CallPilot upgrade failed)” on page 243.

Rebuilding a hard drive in the RAID system pack

Introduction

This section describes how to manually synchronize the server's hard drives in the following scenarios:

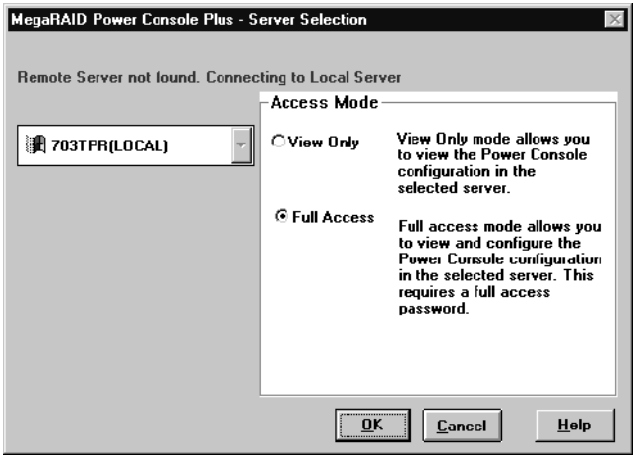
- You replaced a failed hard drive as described in "Replacing a hard drive" on page 179.
- You split the RAID system pack (to back up data on the server), and then performed a successful CallPilot server upgrade.

The rebuild process copies the data from the operating hard drive to the hard drive that is in failed state.

To rebuild a hard drive in the RAID system pack

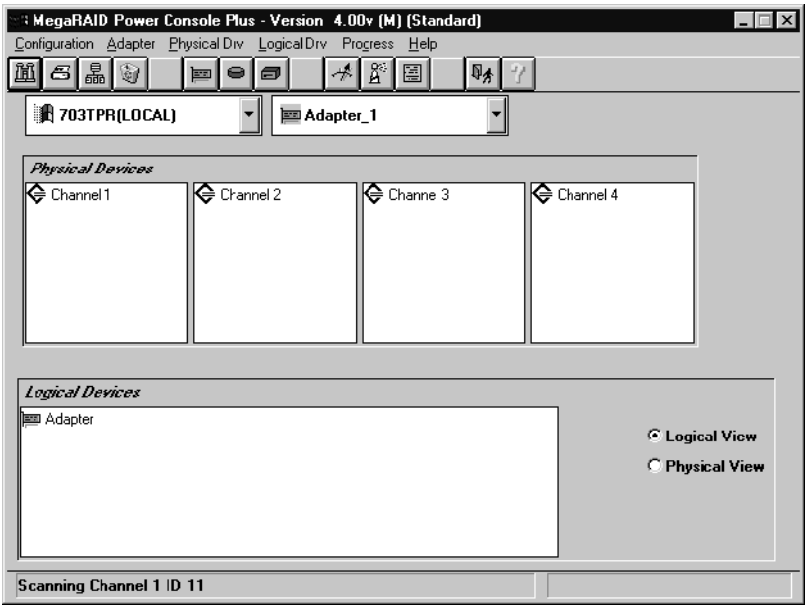
1 In Windows NT, click Start → Programs → MegaRAID Client.

The following window appears:

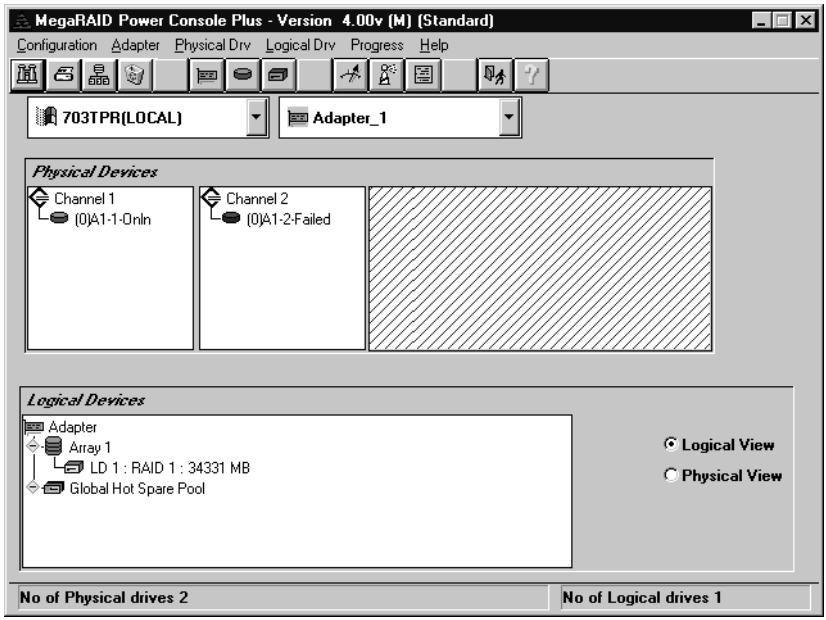


2 Ensure that Full Access is selected, and then click OK.

Result: The MegaRAID Power Console Plus window appears:



The status bar at the bottom of the window indicates that RAID channels are being scanned. When scanning is done, the screen refreshes as shown in the following screen example:

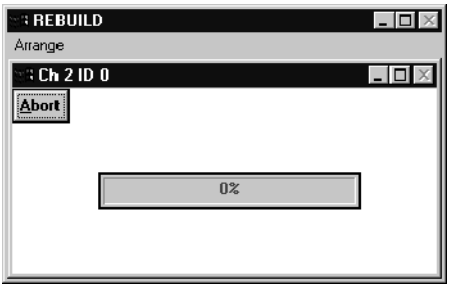


If the alarm is sounding, you can silence it temporarily by clicking Adapter → Alarm Control → Silence. *Do not disable the alarm under any circumstances*.

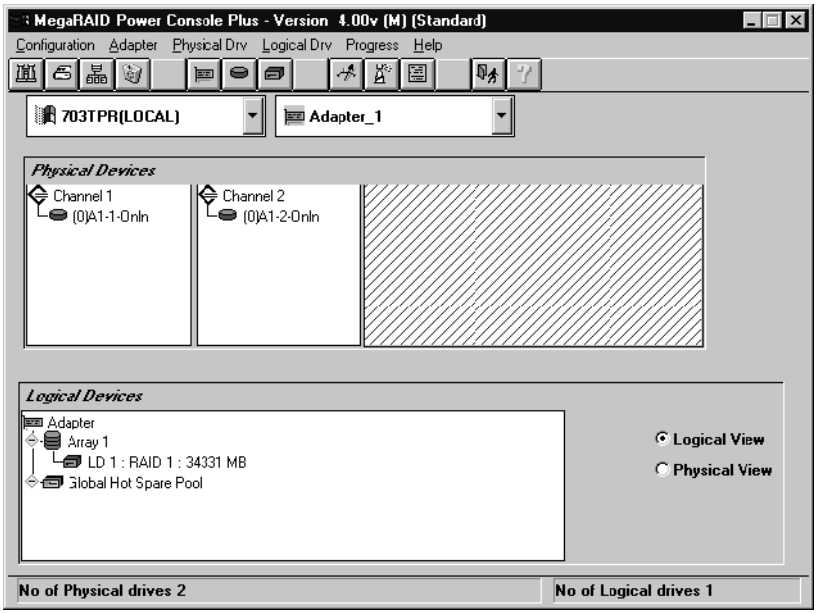
3 In the Physical Devices list, right-click the channel that is in failed state.

4 From the pop-up menu that appears, click Tools → Rebuild.

Result: The rebuild begins, and displays the progress as follows:



The rebuild takes approximately 30 to 60 minutes. When done, the rebuild status dialog closes, and the MegaRAID Power Console Plus window refreshes to show both channels as online.



5 Click Configuration → Exit to close MegaRAID Client Power Console Plus.

Result: The following message appears:



6 Click OK.

Result: You are finished with RAID system pack maintenance. A server restart is not required.

What's next?

Test the CallPilot system to ensure that it is operating as expected.

Reverting to the pre-upgrade system (if the CallPilot upgrade failed)

Introduction

This section describes how to restore the CallPilot server to the state it was in before you upgraded the CallPilot software. Use this procedure to revert the system if the upgrade was not successful.

CallPilot upgrade reversion overview

This procedure includes the following steps:

1. Launch the MegaRAID BIOS Configuration Utility during the server's startup cycle, and then do the following:
   - Put the drive containing the upgraded CallPilot software into failed state.
   - Put the previously-failed drive (your backup drive) into online state.

   See "To reverse the hard drive states" below.
2. Rebuild the hard drive in the RAID system pack with pre-upgrade data (see page 245).

   This copies the pre-upgrade CallPilot data from the backup drive to the drive on which CallPilot was upgraded, thereby reverting the system to the previous CallPilot version.

To reverse the hard drive states

1. Restart the server and observe the startup diagnostics.

   For instructions on restarting the server, refer to “Restarting the server” in Part 1 of the *CallPilot Installation and Configuration* binder.

   Result: The AMI MegaRAID startup diagnostics appear, followed by a prompt to `Press Ctrl+M to run the MegaRAID Configuration Utility.`

   ATTENTION

   This prompt appears for only a couple of seconds, along with the message `Press Ctrl+H for WebBIOS`, which appears in white flashing letters.

   To avoid missing the prompt, press Ctrl+M after the AMI MegaRAID information begins displaying and before the prompt appears.

2. Press Ctrl+M.

   When the AMI MegaRAID startup diagnostics are finished, the MegaRAID BIOS Configuration Utility launches, and the Management Menu appears.

3. Choose Objects and then press Enter.
4. Choose Physical Drive and then press Enter.

   Result: The channels are scanned and when done, the Physical Drive Selection Menu appears.

5. Choose the failed drive (Channel 2), and then press Enter.
6. Choose Make Online, and then press Enter.

   Result: A warning message appears.

7. Choose Yes to ignore the warning and proceed, and then press Enter.
8. Choose the other online drive (Channel 1), and then press Enter.
9. Choose Fail Drive and then press Enter.

   Result: A warning message appears.

10. Choose Yes to ignore the warning and proceed, and then press Enter.

11 Press Esc three times to exit from the MegaRAID BIOS Configuration Utility.

12 Press Ctrl+Alt+Delete to restart the server.

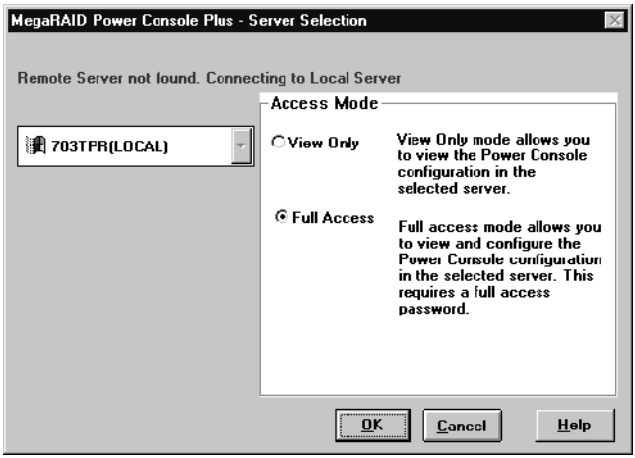
13 Continue with "To rebuild the hard drive in the RAID system pack with pre-upgrade data" below.

To rebuild the hard drive in the RAID system pack with pre-upgrade data

1 Start the server into Windows NT.

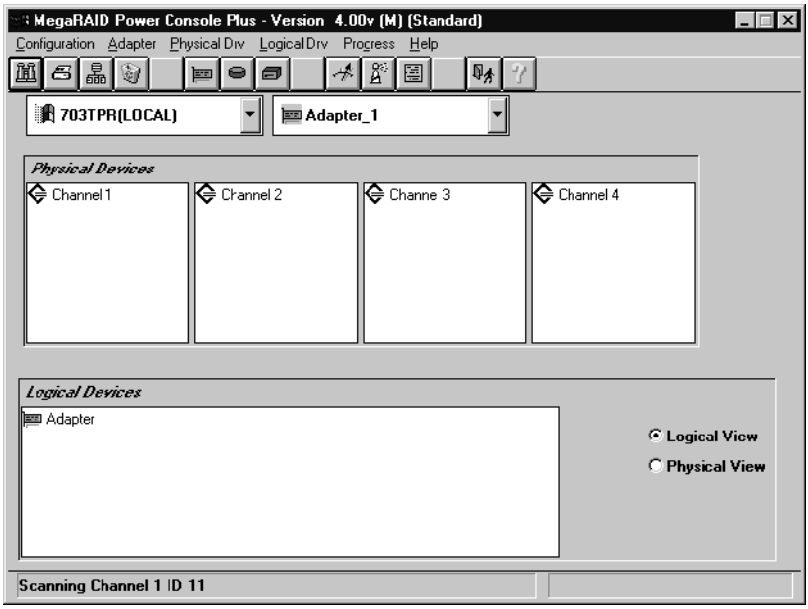
2 In Windows NT, click Start → Programs → MegaRAID Client.

The following window appears:

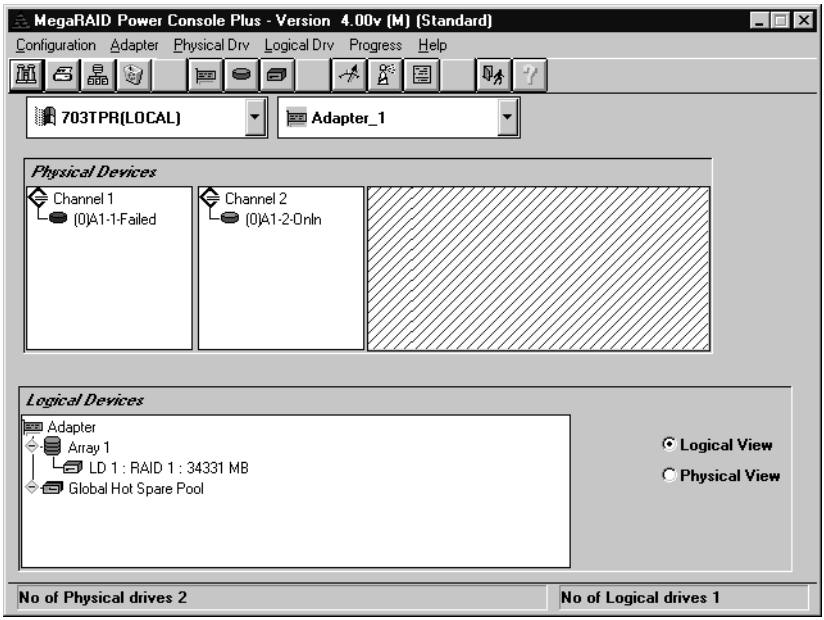


3 Ensure that Full Access is selected, and then click OK.

Result: The MegaRAID Power Console Plus window appears:



The status bar at the bottom of the window indicates that RAID channels are being scanned. When scanning is done, the screen refreshes as shown in the following screen example.

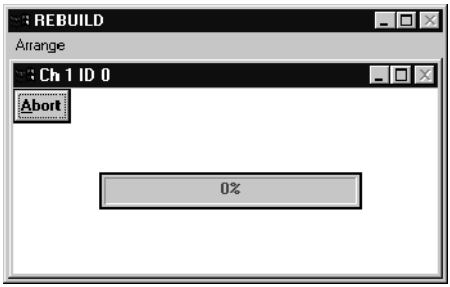


If the alarm is sounding, you can silence it temporarily by clicking Adapter → Alarm Control → Silence. *Do not disable the alarm under any circumstances.*

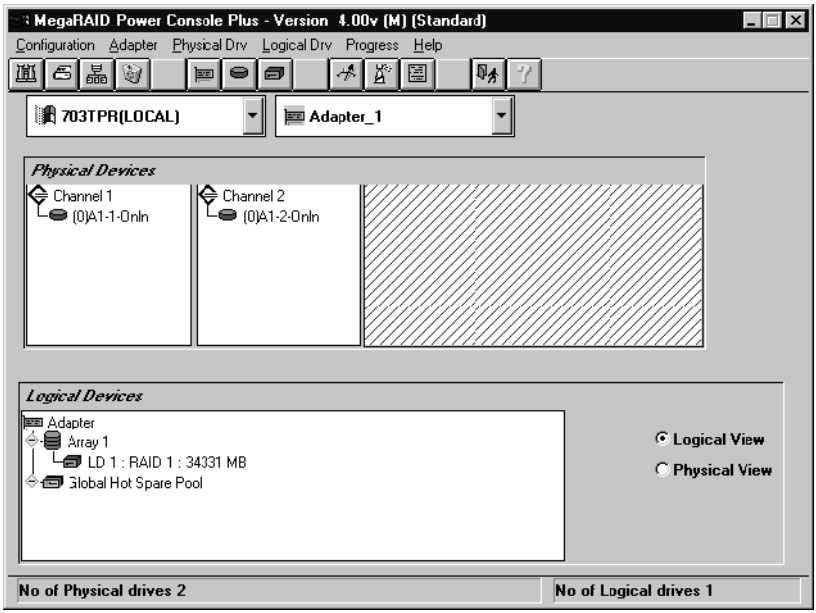
4 In the Physical Devices list, right-click Channel 1 (the failed drive).

5 From the pop-up menu that appears, click Tools → Rebuild.

Result: The rebuild begins, and displays the progress as follows:



The rebuild takes approximately 30 to 60 minutes. When done, the rebuild status dialog closes, and the MegaRAID Power Console Plus window refreshes to show both channels as online.



6 Click Configuration → Exit to close MegaRAID Client Power Console Plus.

Result: The following message appears:



7 Click OK.

Result: You are finished with RAID system pack maintenance. A server restart is not required.

What's next?

1. Check the CallPilot system to ensure that it reverted successfully to the pre-upgrade version.
2. Redo the entire CallPilot upgrade process (including the tasks in the Upgrade Readiness Checklist) as described in the *CallPilot 2.02 Upgrade Guide*.

Chapter 10

Replacing voice processing boards

In this chapter

DSP numbering and location 252
Replacing an MPB96 board 254

DSP numbering and location

Introduction

DSPs are the built-in voice processing components on MPB boards. DSPs are numbered to distinguish them in CallPilot maintenance programs, such as the Maintenance page in CallPilot Manager.

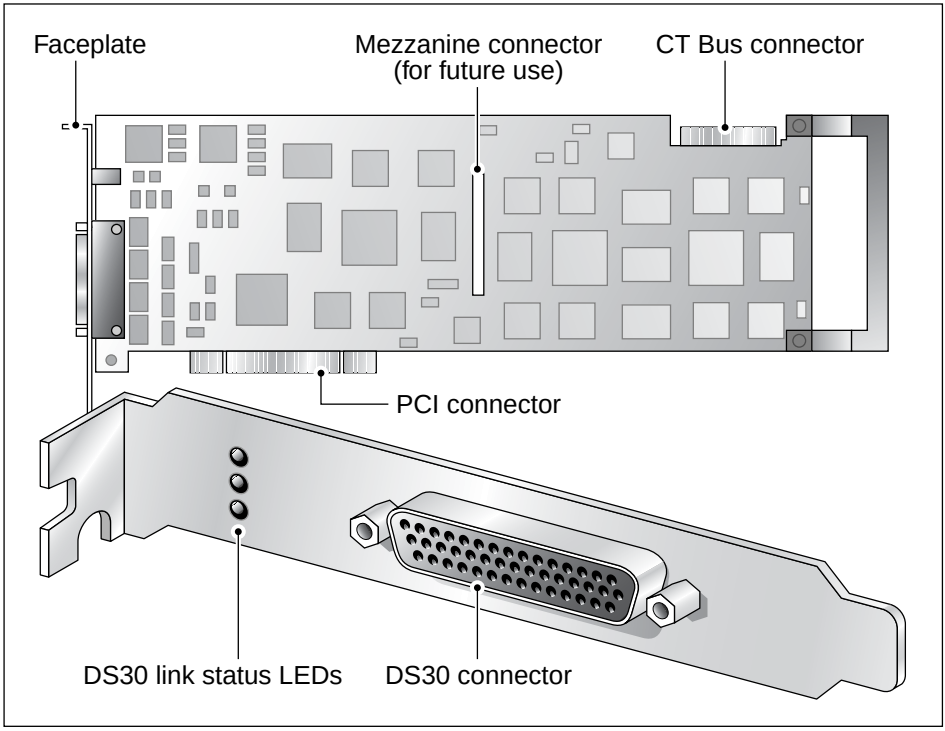
Each DSP supports up to eight multimedia channels.

DSP numbering on MPB96 boards

The MPB96 board has 12 embedded DSPs. MPC-8 cards are not required. If an embedded DSP is faulty, you must replace the entire MPB96 board.

Note: The CallPilot software supports up to 16 DSPs per MPB board, but only 12 DSPs are actually present. DSPs are numbered in software as 1 to 16.

The following diagram shows the MPB96 board:



Replacing an MPB96 board

Introduction

This section describes how to replace an MPB96 board.

You will need to replace an MPB96 board:

- if the board becomes faulty
- when the PCI firmware needs to be updated, and the board must be sent back to the factory



CAUTION

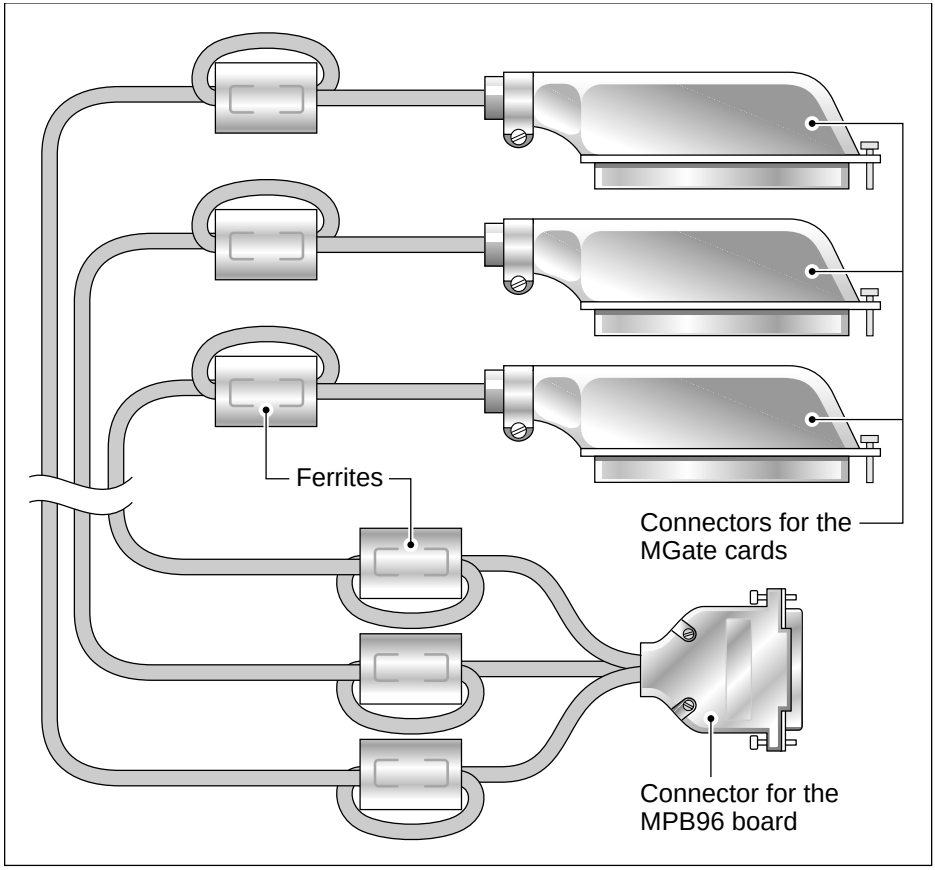
Risk of electrical damage

- Wear an antistatic ESD wrist strap when handling cards or boards, or when working inside the server.
- Do not touch the components or gold-edge connectors of cards or boards.
- Place the board on an antistatic surface until you are ready to install it.

Requirements

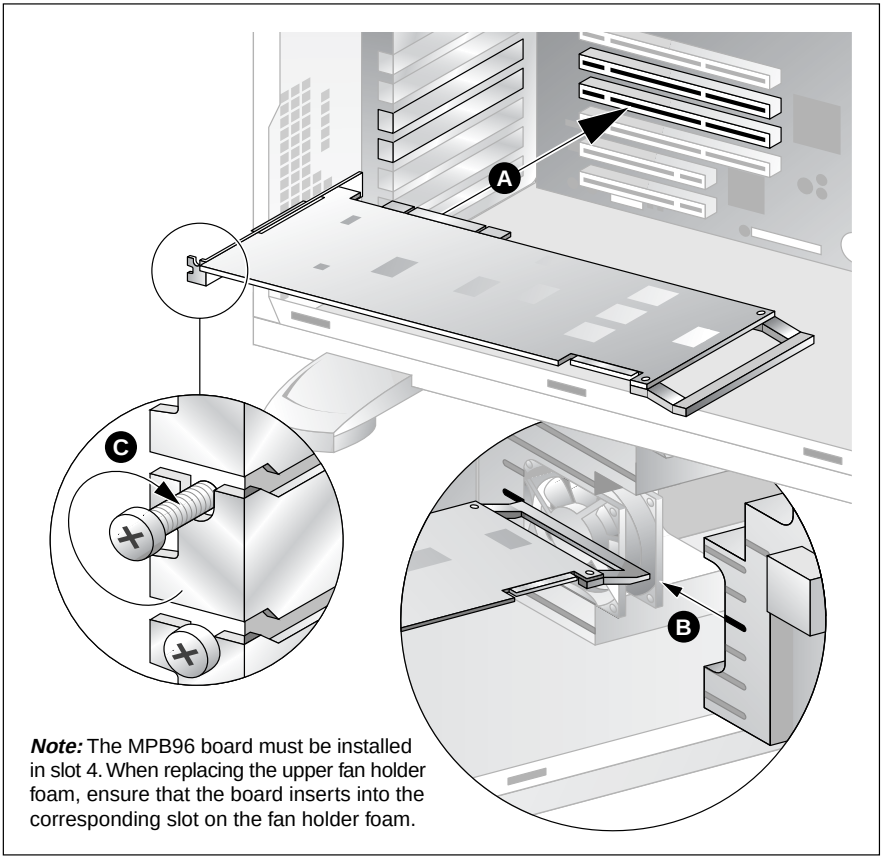
- MPB96 boards (NTRH40AA)
- DS30X cable (NTRH2014)

  The diagram on the following page shows the DS30X cable for the MPB96 board:



Note: The ferrites on this cable control EMC emission levels. Do not remove them.

MPB96 board installation



Note: The MPB96 board must be installed in slot 4. When replacing the upper fan holder foam, ensure that the board inserts into the corresponding slot on the fan holder foam.

G101777

To replace an MPB96 board

1 Prepare the server for MPB96 board replacement as follows:

   a. Shut down the server, and then disconnect the following cables:
   — power cable
   — peripheral device cables
   — DS30X cable

   b. Place the server on its side.

   c. Remove the side cover.

   d. Remove the upper fan holder foam.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Remove the faulty MPB96 board from its slot and save the retaining screw.

3 Unpack the replacement MPB96 board.

4 Hold the MPB96 board by its top edge or upper corners and then align it with the following:

   - end-plate opening in the chassis
     Ensure that the tapered foot of the board’s retaining bracket fits into the slot in the expansion slot frame.
   - PCI connector

5 Press the new MPB96 board firmly into its slot.

6 Secure the board using the retaining screw that you removed earlier.

7 Replace the upper fan holder foam.

   For instructions, see “To replace the upper fan holder foam” on page 160.

8 Replace the server cover.

Note: Be careful not to pinch any cabling when replacing the server cover.

Result: The MPB96 board replacement is complete.

9 Reconnect the peripheral device and power cables.

10 Reconnect the DS30X cable to the faceplate of the MPB96 board.

11 Power up the server and log on to Windows NT.

12 Run the Configuration Wizard to detect the new hardware.

For instructions, refer to “Running the Configuration Wizard” in Part 3 of the *CallPilot Installation and Configuration* binder.

Result: The MPB96 board replacement procedure is completed.

13 Test the multimedia channels to ensure that the new MPB96 board is functioning properly.

Refer to “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

Chapter 11

Working with DIMMs and the CPU

In this chapter

Replacing or adding baseboard DIMMs 260
Replacing the CPU 264

Replacing or adding baseboard DIMMs

Introduction

The baseboard provides four slots that support DDR266 SDRAM DIMMs. The server ships with two DIMMs that provide a total of 512 Mbytes of memory. DIMMs must be installed in pairs, and can be expanded to 8 Gbytes of memory.

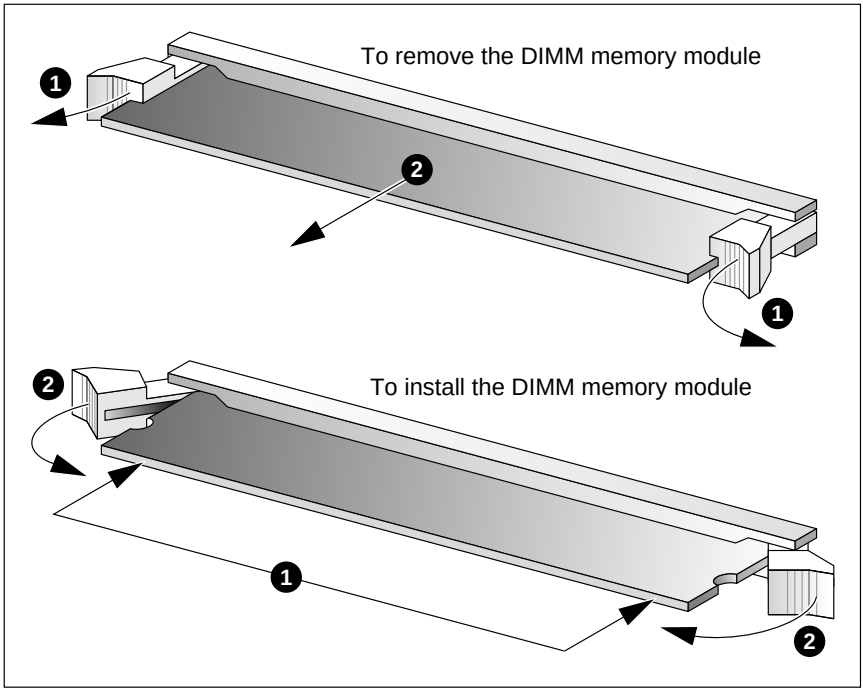
DIMM sizes and compatibility

Contact your Nortel Networks sales representative or customer support representative for a list of approved, Nortel Networks-qualified DIMMs for the 703t server.

ATTENTION

Do not use types of DIMMs that have not been approved by Nortel Networks.

DIMM removal and installation diagram



When installing DIMMs, ensure that the slots are populated in order, starting with the slot closest to the power connector:

- DIMM 1A (This is the slot closest to the power connector.)
- DIMM 1B
- DIMM 2A
- DIMM 2B

To remove baseboard DIMMs

1 Prepare the server for DIMM replacement as follows:

   a. Shut down the server, and then disconnect the power and peripheral device cables.

   b. Place the server on its side.

   c. Remove the side cover.

   For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Gently push the DIMM socket’s plastic ejector levers out and down to eject a DIMM from its socket.



CAUTION

Risk of equipment damage

Use extreme care when removing a DIMM. Too much pressure can damage the socket slot. Apply only enough pressure on the plastic ejector levers to release the DIMM.

3 Hold the DIMM only by its edges; be careful not to touch its components or gold-edge connectors. Carefully lift it away from the socket, and store it in an antistatic package.

4 Repeat to remove other DIMMs as necessary.

5 If you are replacing a DIMM, continue with “To install baseboard DIMMs” on page 263.

To install baseboard DIMMs



CAUTION

Risk of equipment damage and data corruption

Use only Nortel Networks-approved DIMMs. A mixture of dissimilar metals (from the use of non-approved DIMMs) can cause later memory failures, resulting in data corruption.

1 Prepare the server for DIMM installation as described in “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Hold the DIMM only by its edges when you remove it from its antistatic package.

3 Compare the length of the gold edge connectors on the DIMM with the socket, and align them accordingly.

4 Press the DIMM firmly down until it clicks into place inside the socket.



CAUTION

Risk of equipment damage and data corruption

Use extreme care when installing a DIMM. Too much pressure can damage the socket. DIMMs are keyed and can be inserted in only one way.

Result: The plastic ejector levers close automatically indicating correct installation.

Replacing the CPU

Introduction

The 703t server's motherboard provides two connectors for Xeon processor chips, but only one is populated for CallPilot. For a single-CPU configuration, the CPU must be installed on the CPU1 connector. A processor terminator board is not required.

CPU replacement package contents

The CPU assembly package contains the following:

- 2.0 GHz AT 400 MHz FSB microprocessor with 512 kbytes of L2 cache memory

  Note: A higher frequency microprocessor may be provided if the above-mentioned frequency becomes obsolete.
- heat sink with guides and clips
- syringe containing heat sink grease
- heat sink housing
- fan



WARNING

Risk of equipment damage

The microprocessor is extremely sensitive to electrostatic discharge (ESD) and requires careful handling to avoid static damage. To prevent ESD, perform the replacement at an ESD workstation or use an ESD wrist strap.

To remove the faulty CPU



CAUTION

Risk of electrical damage

Wear an antistatic ESD wrist strap during the CPU replacement process.

1 Prepare the server for CPU replacement as follows:

a. Shut down the server, and then disconnect the power and peripheral device cables.

b. Place the server on its side.

c. Remove the side cover.

d. Remove the upper fan holder foam.

For instructions, see “Preparing for hardware maintenance” on page 151.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing for hardware maintenance” on page 151 can result in electrical shock or equipment damage.

2 Disconnect the processor fan cable, and then remove the processor fan.

For instructions, see “To remove the processor fan” on page 173.

3 Using both hands, remove the heat sink housing, as follows:

a. Grasp the bottom edge of one side of the heat sink housing, and pry the bottom tabs away from the heat sink.

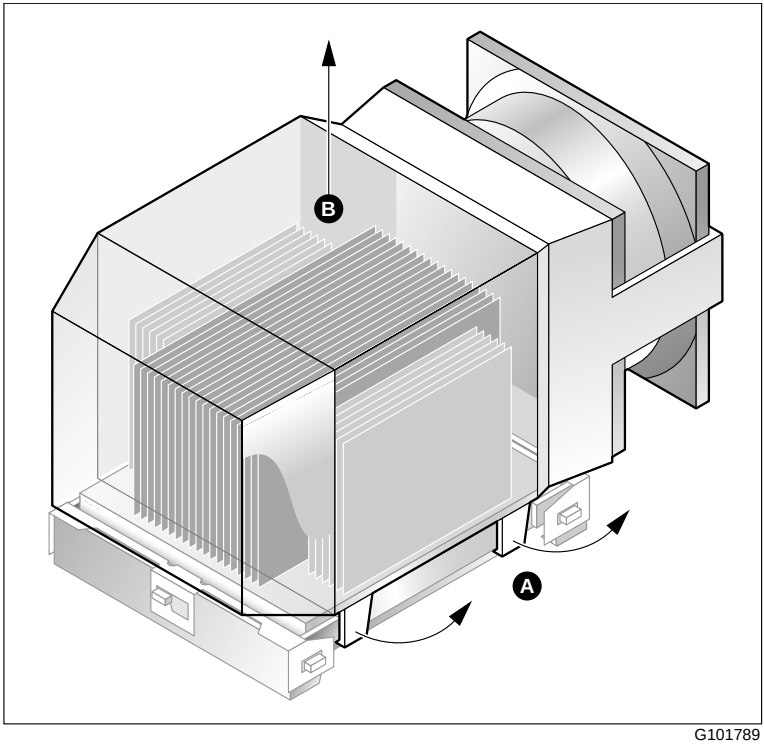
CAUTION

Risk of equipment damage

Ensure that you do not bend the wings of the heat sink while removing the heat sink housing as this will cause damage to the heat sink.

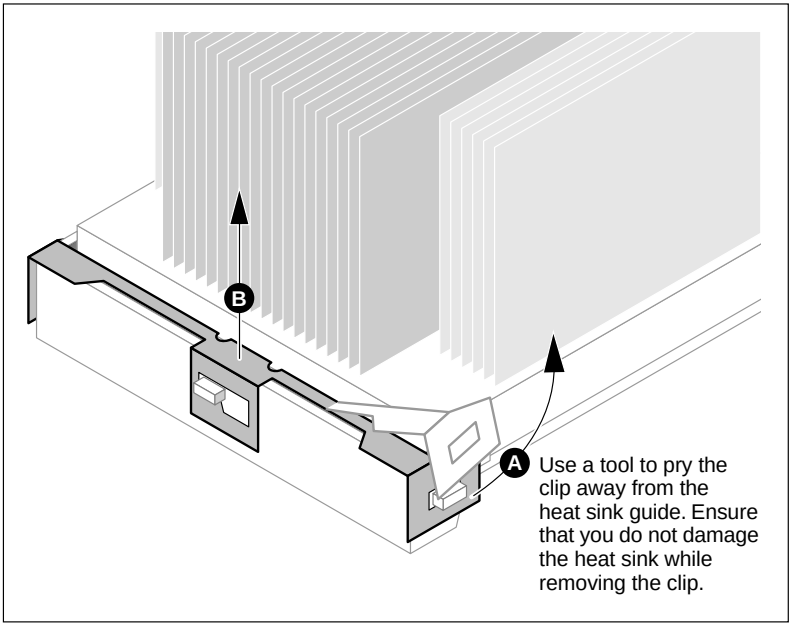
b. Repeat step a for the other side.

c. Lift the housing away from the heat sink.



G101789

4 Remove the clips that secure the heat sink to the motherboard, as shown in the following diagram:





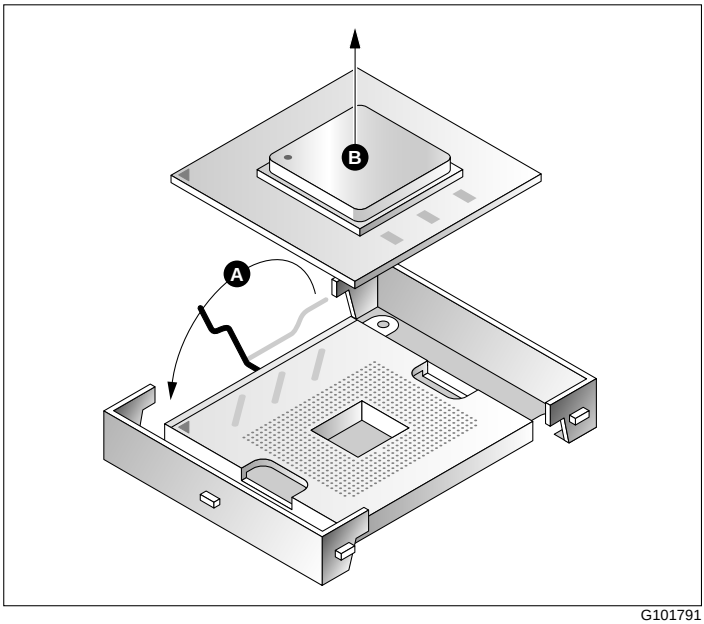
CAUTION

Risk of equipment damage

Ensure that you do not bend the wings of the heat sink while removing the clips as this will cause damage to the heat sink.

5 Remove the heat sink.

6 Remove the microprocessor as shown in the following diagram:



a. Lift the lever that secures the microprocessor to the motherboard.

While applying gentle downward pressure, push the lever away from you (towards the top of the server), and then lift it all the way to the left.

b. Remove the microprocessor, and put it in an antistatic package.

7 Continue with “To install a new CPU” on page 269.

To install a new CPU



CAUTION

Risk of electrical damage

Wear an antistatic ESD wrist strap during the entire CPU replacement process.

1 Remove the new microprocessor from its antistatic package.

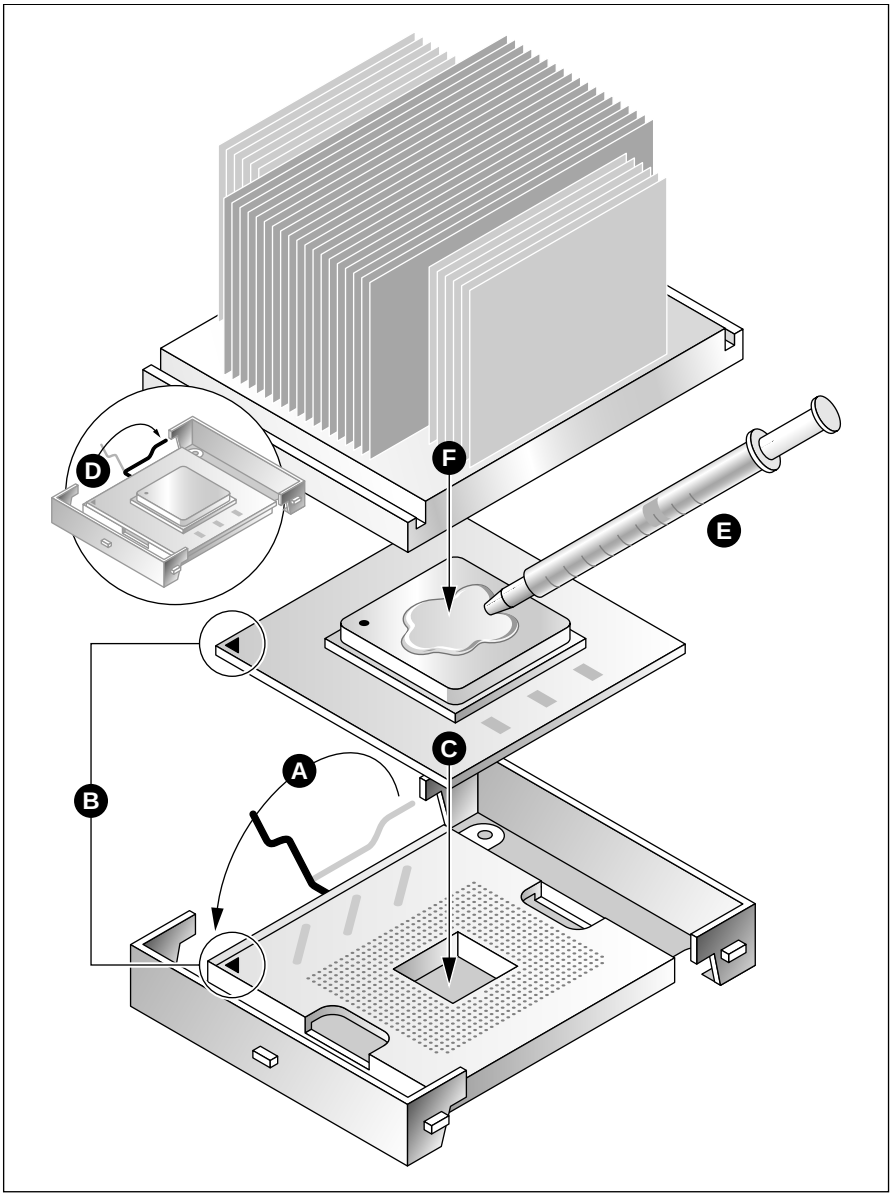


CAUTION

Risk of equipment damage

Do not touch the pins on the microprocessor. The pins are static-sensitive and bend easily.

2 Install the new microprocessor and heat sink as shown in the following diagram (see also the description that follows on page 271):



G101779

a. Ensure that the microprocessor lever is open all the way to the left.

b. Align the gold triangle on one corner of the microprocessor with the gold triangle on the socket.

Note: See the top left corner of the microprocessor in the photograph in step 6 on page 268.

c. Apply gentle downward pressure to the microprocessor to seat it in its socket.

d. Lower and secure the lever.

e. Apply all of the thermal grease in the syringe that was provided in the CPU assembly package to the metal square on the microprocessor.

f. Place the heat sink on top of the microprocessor, and then apply light pressure in a circular motion to spread the grease evenly over the entire metal square.

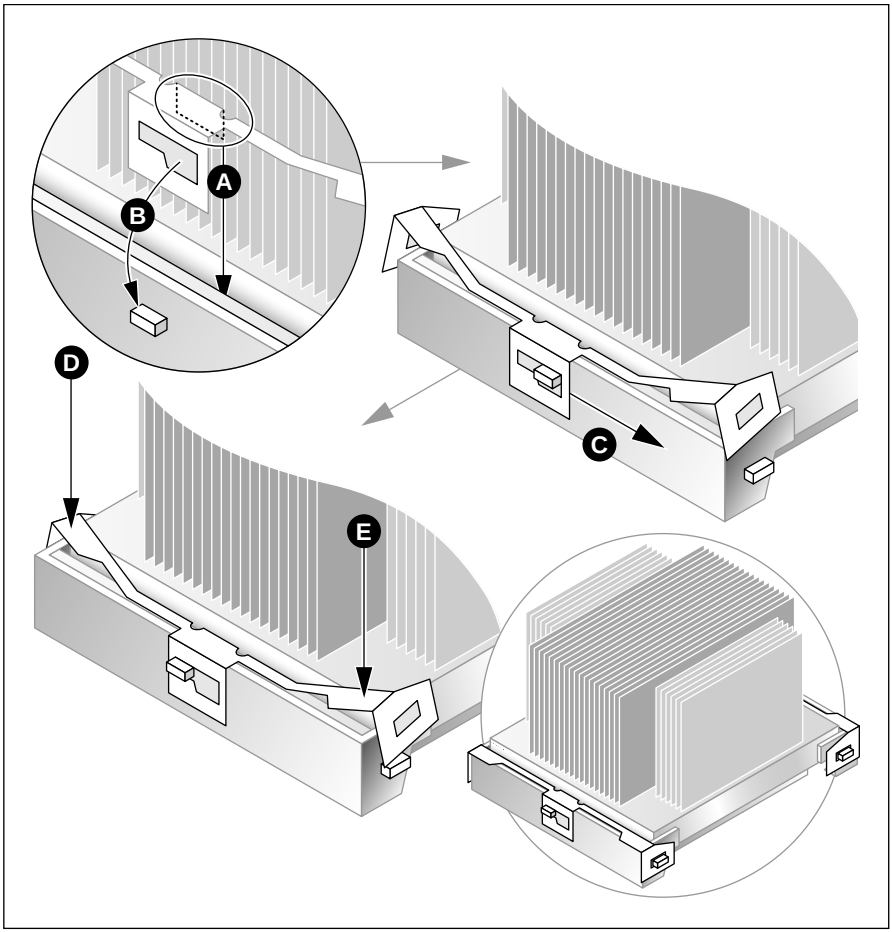
3 Install the heat sink clips as shown in the following diagram (see also the description that follows):



CAUTION

Risk of equipment damage

Ensure that you do not bend the wings of the heat sink while installing the clips as this will cause damage to the heat sink.



G101780

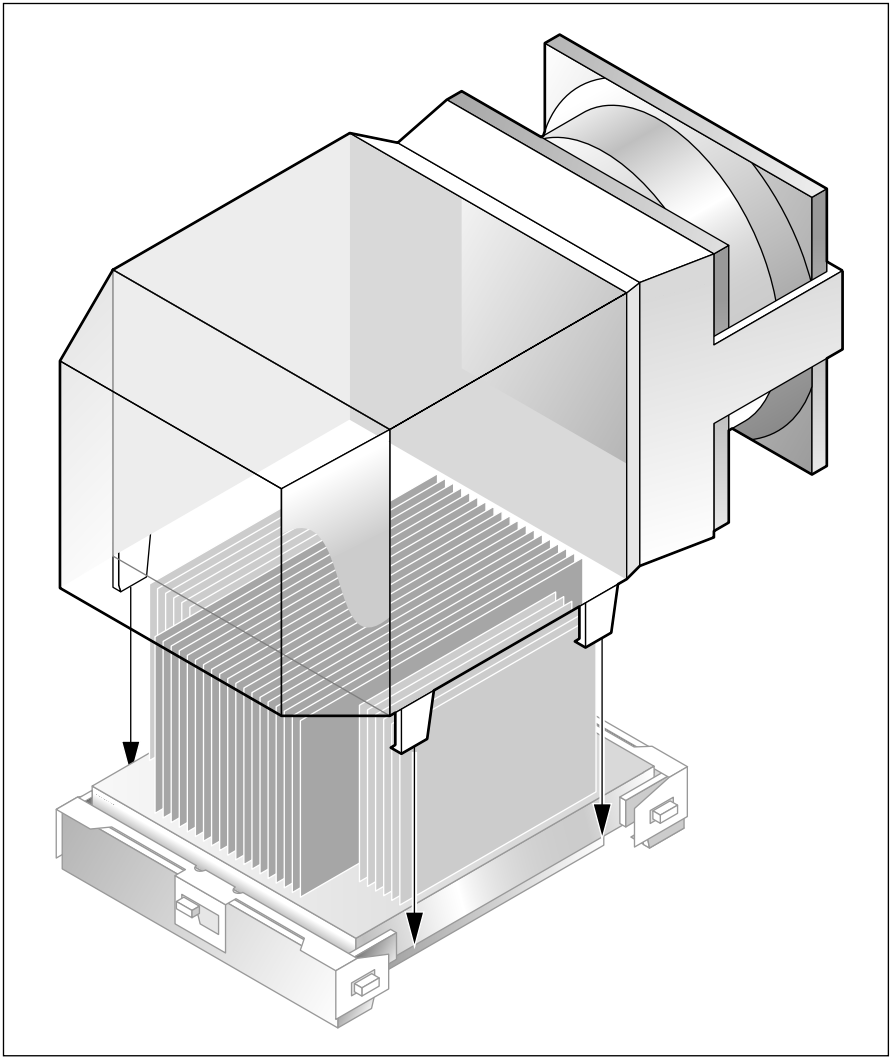
a. Align the side tabs on the clip over the heat sink guide.

b. Align the center hole on the clip over the tab on the heat sink guide.

c. Slide the clip forward or back until the tab is in the small portion of the hole.

d. With both hands, apply even downward pressure on the ends of the clip until it snaps into place over the end tabs on the heat sink guides.

4 Use both hands to install the heat sink housing assembly as shown in the following diagram (see also the description that follows page 274):



G101788

a. Grasp the bottom edge of each side of the heat sink housing.

b. Spread the sides of the housing slightly, and then lower the housing over the heat sink.

c. Release the housing to engage the tabs around the edge of the heat sink's platform.

d. Apply pressure to the top of the housing and work with the bottom tabs until the housing snaps into place. When all four tabs are secured, the housing will not move.

5 Install the processor fan.

For instructions, see "To install the processor fan" on page 174.

6 Replace the upper fan holder foam.

7 Replace the server's side cover.

8 Reconnect all peripheral device cables and power cord.

9 Restart the server and ensure that CallPilot starts.

Chapter 12

Working with the CallPilot server BIOS

In this chapter

Overview 276

BIOS settings 277

Updating and configuring the BIOS 283

Recovering from corrupted CMOS and BIOS 287

Overview

Introduction

The server's BIOS defines the compatibility of the server with expansion hardware.

All systems configured by Nortel Networks manufacturing are shipped with at least the minimum vintage BIOS. However, new BIOS may be issued to fix discovered bugs or to support new hardware standards and options.

BIOS release

The following are tested and supported releases of BIOS and firmware for the server:

- Intel BIOS release: P07_64 or later
- firmware release: BMC1.05

If these releases are not being used on the 703t server, they must be updated.

To determine the BIOS release

1. Start (or restart) the server.
2. Read the BIOS version on the display.

   The BIOS version appears after the MAC address information.

You can also find the BIOS version in the BIOS configuration sections in the server menu. See "To configure the BIOS," on page 285 for instructions.

BIOS settings

Introduction

This section identifies the 703t server's BIOS settings:

- Main (below)
- Advanced (see page 279)
- Security (see page 280)
- Server (see page 281)
- Boot (see page 282)

See "To configure the BIOS," on page 285 for instructions on how to verify that the 703t server settings are set to the values given in the following sections.

Main

Options	Settings
System Time	Set for the current time.
System Date	Set for the current date.
Floppy A:	1.44/1.25 Mbytes, 3.5 inch
Hard Disk Pre-Delay	Disabled
Primary IDE Master	CD-ROM
Primary IDE Slave	None

Options	Settings
Secondary IDE Master	None
Secondary IDE Slave	None
Processor Settings	■ Processor POST speed setting: 2 GHz (shown in grey) ■ Processor Hyperthreading: Enabled ■ Processor 1 CPU ID: F24 (shown in grey) ■ Processor 1 CPU Cache size: 512k ECC (shown in grey) ■ Processor 2 CPU ID: Not installed (shown in grey) ■ Processor 2 CPU L2 Cache size: (shown in grey)
Language	English (US)

Advanced

Options	Settings
PCI Configuration	Use default values. **Note:** Default values are generated by pressing F9 before you change CMOS values. ■ USB: Enabled ■ NIC1: Enabled ■ NIC2: Enabled ■ Video: Enabled ■ SCSI: Enabled ■ Option ROM: Enabled (where applicable) ■ PCI slots ROM: Enabled
Integrated Peripheral Configuration	■ COM1: IRQ4 ■ COM2: 2f8/IRQ3 ■ Parallel Port: ECP/378/IRQ7/DMA Channel 3 ■ Floppy disk controller: Enabled ■ Legacy USB support: Auto ■ Front Panel USB: Disabled
Memory Configuration	■ Bank 1: Installed ■ Bank 2: Not installed (shown in grey) ■ Memory Retest: Disabled
Advanced Chipset Control	■ Wake on LAN: Disabled ■ Wake on PME: Disabled ■ Wake on RTC alarm: Disabled

Options	Settings
Boot Time Diag Screen	Enabled
Reset Config Data	No
Num Lock	On
Sleep Button	Disabled

Security

Options	Settings
Use Password Is	Clear
Supervisor Password Is	Clear
Fixed Disk Boot Sector	None
Power Switch Inhibit	Disabled
NMI Control	Enabled

Server

Options	Settings
System Management	System Info (shown in grey)
Console Redirection	■ BIOS redirection port: Disabled ■ ACPI redirection: Disabled ■ Baud Rate: 9600 ■ Flow Control: CTS/RTS ■ Terminal Type: VT100+
Event Log Configuration	■ Clear All Events log: No ■ Event Logging: Enabled ■ Critical Event Logging: Enabled
Fault Resilient Booting	■ Late POST timeout: Disabled ■ Fault Resilient Booting: Stay on ■ Hard Disk OS Boot Timeout: Disabled ■ PXE OS boot timeout: Disabled
Assert NMI on PERR	Disabled
Assert NMI on SERR	Disabled
FRB-2 Policy	Disable BSP
POST Error Pause	Enabled
Boot Monitoring	Disabled
Boot Monitoring Policy	Retry 3 times

Boot

Options	Settings
BIOS Device Priority	■ Removable Devices ■ Hard Drive ■ ATAPI CDROM
Hard Drive	Do Not Change
ATAPI CDROM	Do Not Change

Updating and configuring the BIOS

BIOS update availability

ATTENTION

The BIOS installed on the CallPilot server must be version P07_64 or later.

BIOS updates are provided by Nortel Networks on a floppy disk (NTRH8057).



CAUTION

Risk of equipment damage

Do not power off or restart the server before BIOS update is complete. If you do, the BIOS will become corrupted.

If the server does lose power during BIOS update (for example, because of a power outage or lightning strike) you will need to perform the BIOS recovery procedure on page 288.

Note: For a complete list of BIOS settings refer to page 277.

To update the BIOS

1. Insert the BIOS update disk (NTRH8057) into the server's floppy disk drive.
2. Restart the server.

   For instructions, refer to "Restarting the server" in Part 1 of the *CallPilot Installation and Configuration* binder.

   Result: The server boots from the floppy disk and the BIOS update begins automatically.
3. When prompted, press 1, and then press Enter.
4. When the BIOS update is finished, the server will restart automatically.

5 While the server is restarting, remove the BIOS update disk from the server's floppy disk drive.

6 When the server has rebooted, continue with "To configure the BIOS" on page 285.

To configure the BIOS

Note: Only options that need to be changed from their defaults are described below. As you perform this procedure, you should still validate that all BIOS settings conform to the values listed in “BIOS settings,” on page 277.

1. During the server startup and while the startup diagnostics still appear on the screen, press F2 to display the Main menu screen.
2. Press BIOS Default (F9) to load the default BIOS settings.

   Result: You are prompted to confirm the settings.
3. Choose Yes, and then press Enter.

   Result: The Main menu reappears.
4. Use the right and left arrow keys to choose the Advanced screen.

   Result: A list of configuration sections appears.
5. Configure the sections as follows:
   - Boot-up Diag Screen: Enabled
   - Num Lock: ON
   - Sleep Button: Disabled
6. Use the right and left arrow keys to choose the Server screen.

   Result: A list of configuration sections appears.
7. Configure the sections as follows:
   - Assert NMI on PERR: Disabled
   - Assert NMI on SERR: Disabled
8. Use the right and left arrow keys to choose the Boot screen.

   Result: A list of configuration sections appears.
9. Ensure the boot device order is defined as follows:
   - first: floppy drive
   - second: hard drive

- third: CD-ROM drive

Note: The CallPilot operating system requires that the first startup be completed from the CD-ROM drive. To achieve this during the startup process, press Esc to display the boot menu, and then choose ATAPI CD-ROM to start the server temporarily from the CD-ROM.

Note: The hard drive boot option will not appear in the list if the RAID packs are not configured.

10 Use the right and left arrow keys to choose the Exit screen.

11 Choose the Exit Saving Changes option, and then press Enter.

Result: You are prompted to confirm.

12 Choose Yes to save the changes, and then press Enter.

Result: The server restarts.

Recovering from corrupted CMOS and BIOS

Introduction

If the system behaves abnormally (for example, it does not start up or it freezes during the startup process), the CMOS may be corrupted. To correct this, follow the procedure in "To recover from a corrupted CMOS" below.

In situations where a BIOS is corrupt or a BIOS update is not successful, the 703t server can start in recovery mode. To boot in recovery mode, follow the procedure in "To recover from a corrupted BIOS" on page 288.

To recover from a corrupted CMOS

1. Power down the server.
2. Remove the server cover and access the motherboard.
3. Move the CMOS Clear jumper (J1H1) to pins 2 and 3 (by default, the jumper is set to pins 1 and 2).

   To determine the jumper location, see "Jumper locations and settings" on page 289.
4. Power up the server.

   Result: A message appears stating that the CMOS has been cleared (reset to factory defaults).
5. Power down the server.
6. Move the CMOS Clear jumper (J1H1) back to pins 1 and 2.
7. Replace the server cover.
8. Power up the server.
9. Perform CMOS setup.

   For instructions, see "To configure the BIOS" on page 285.

To recover from a corrupted BIOS

Notes:

- To start the server into recovery mode, a memory DIMM module must be installed in the first socket, and a floppy disk drive must be installed.
- The CMOS is not cleared when the system BIOS is updated.

1 Insert the BIOS update disk (NTRH8057) into the floppy disk drive.

2 Power down the server.

3 Remove the server cover and access the motherboard.

4 Move the Boot jumper (J1H1) to pins 10 and 11.

To determine the jumper location, see “Jumper locations and settings” on page 289.

Note: The jumper connects pins 9 and 10 by default for normal BIOS.

5 Power up the server.

Result: The server boots from the floppy disk and the BIOS update begins automatically. A single high-pitched beep tone announces the start of the recovery process.

6 Wait until the BIOS update is finished.

A successful update ends with two high-pitched beep tones.

A failed update is indicated by a long series of short beep tones. This indicates that some of the BIOS files may be corrupted. Three beeps indicates that the BIOS update disk is not inserted in the floppy disk drive or is not bootable.

7 When the BIOS update is finished, the server will restart automatically.

8 While the server is restarting, remove the BIOS update disk from the server’s floppy disk drive.

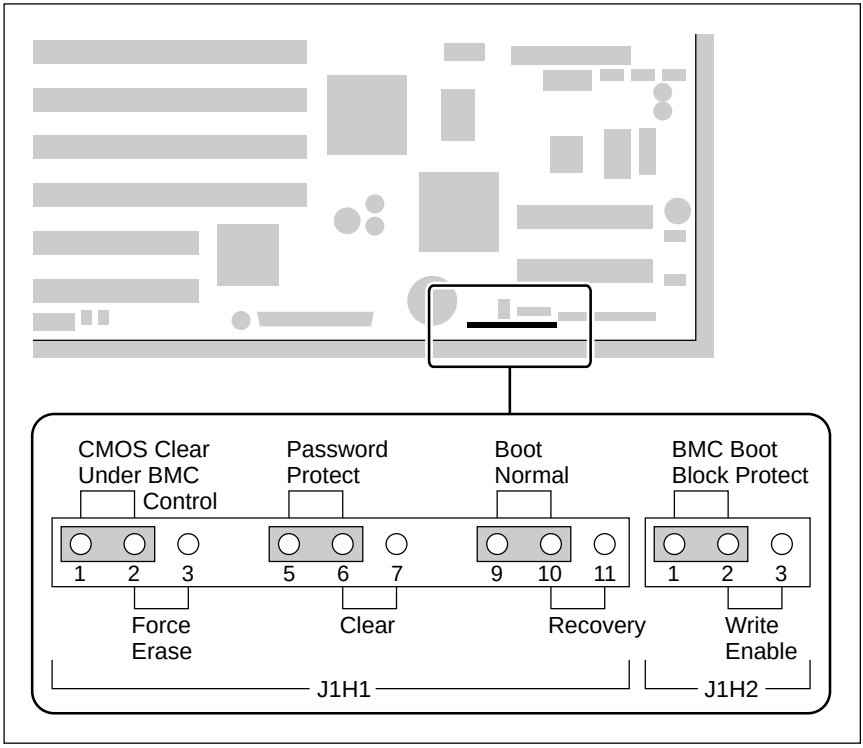
9 While the BIOS boot initialization screen is displayed, power down the server.

10 Move the Boot jumper (J1H1) back to pins 9 and 10.

11 Power up the server.

12 Verify that the BIOS version was updated.

Jumper locations and settings



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Appendix A

703t description reference

In this appendix

Server features 292

Slot assignments 299

IRQ mapping table 301

Server features

Introduction

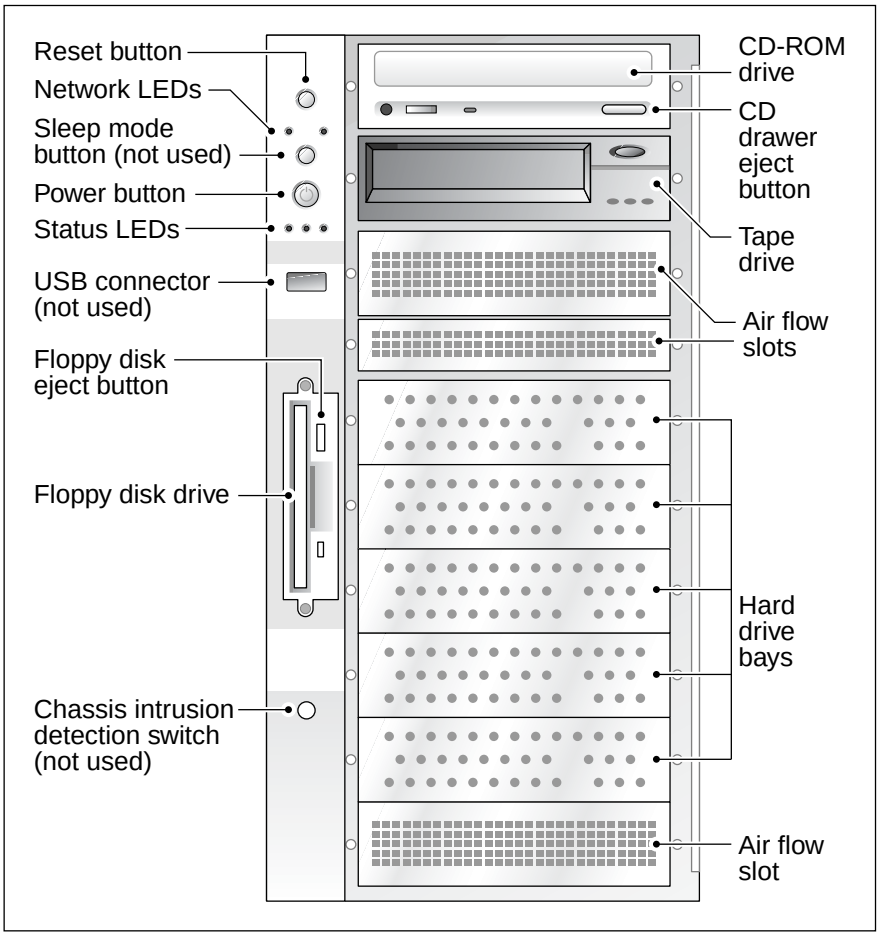
This section provides a general overview of the 703t server.

Server dimensions

Height	chassis only: 42 cm (16.75 in.) with chassis feet: 44 cm (17.5 in.)
Width	chassis only: 21.5 cm (8.6 in.) with chassis feet: 32 cm (12.7 in.)
Depth (distance from front to back)	65 cm (26 in.)
Clearance	■ front: 25 cm (10 in.) ■ rear: 12.5 cm (5 in.) ■ side: 7.5 cm (3 in.) **Note:** Additional side clearance is required for service. ■ top: 7.5 cm (3 in.)
Weight of fully loaded system with ■ two SCSI hard drives ■ six populated boards ■ CD-ROM drive ■ floppy drive ■ tape drive	approximately 22 kg (46 lb)

Front panel features

The following diagram shows the 703t server's front panel features:



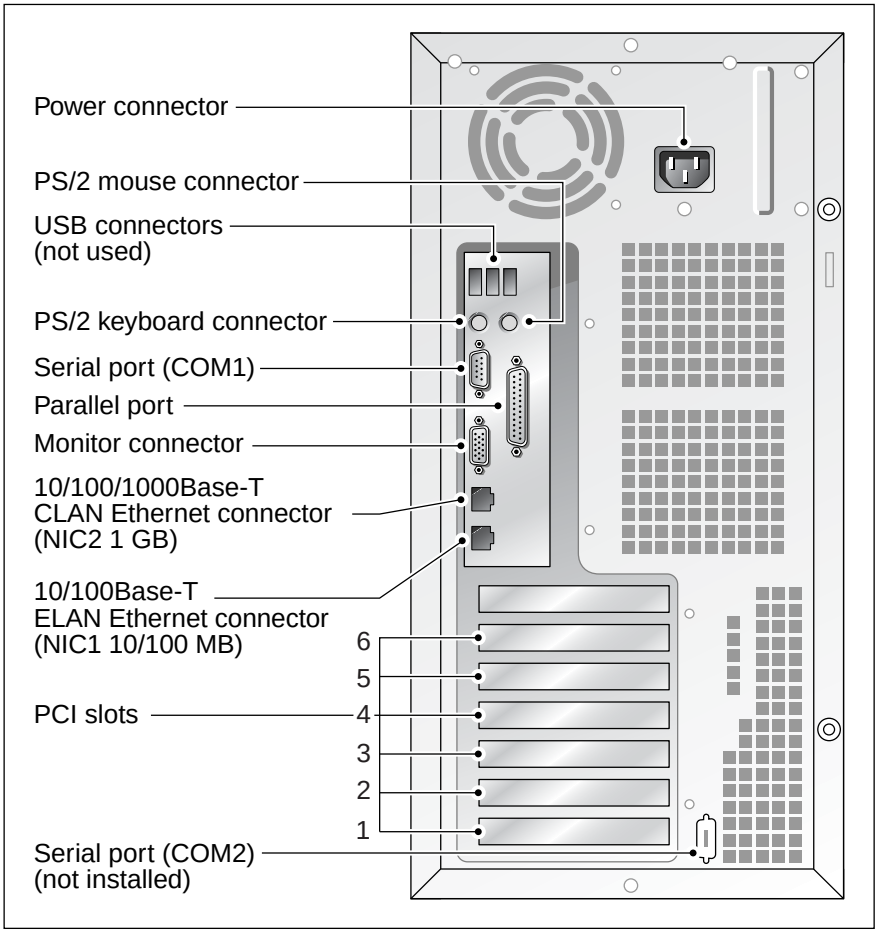
The table below describes the parts that are identified in the preceding diagram:

Part	Function
Reset button	Triggers a hardware (cold) reset. Do not use this button to perform a server restart. Restart the server as described in “Restarting the server” in *CallPilot Installation and Configuration Part 1: Installation and Maintenance Overview* (555-7101-210).
Network controller LEDs (green)	Left: 10/100Base-T controller LED (NIC1 10/100 MB: ELAN for Meridian 1/Succession 1000 connection) Right: 10/100/1000Base-T controller LED (NIC2 1 GB: CLAN for Customer LAN connection)
Sleep mode button	Not used
Power button	Turns the server’s power on or off.
Status LEDs	Indicate when the server is powered up and the disk drives are active. ■ Left: hard drive activity LED (not used) ■ Center: power/sleep LED (green) ■ Right: status LED (bi-color) indicates whether the server is functioning properly, or whether a hardware event has occurred.
USB connector	For future use
Floppy disk eject button	Ejects the floppy disk.
Floppy drive	Drive for 3-1/2 inch diskettes.

Part	Function
IDE CD-ROM drive (5.25 in.)	Enables you to use the CallPilot software and documentation CD-ROMs.
CD drive eject button	Opens the CD-ROM drawer. Push the button again to close the drawer.
Backup tape drive	Allows backup of hard drive data.
Hard drive 1	10,000 rpm hard drive
Hard drive 2	10,000 rpm hard drive
Drive bay	Vacant
Drive bay	Vacant
Drive bay	Vacant
Air flow slot	Must remain empty for proper system cooling.

Rear panel diagram

The following diagram shows the 703t server's rear panel features:



Note: For more information, see "Slot assignments" on page 299.

The table below describes the parts that are identified in the preceding diagram:

Part	Color
AC power supply connector (450 W non hot-swap power supply)	Not applicable
USB connectors	Not applicable
PS/2 keyboard connector	Purple
PS/2 mouse connector	Green
COM1 serial port connector (9-pin)	Teal
Parallel port connector (25-pin)	Pink
Monitor connector (15-pin)	Blue
10/100/1000Base-T CLAN network connector for Customer LAN connection (NIC2 1 GB) **Note:** For more information, refer to the description of LAN connectivity in *CallPilot Installation and Configuration Part 2: 703t Server Hardware Installation* (555-7101-226).	Not applicable
10/100Base-T ELAN network connector for Meridian 1/Succession 1000 connection (NIC1 10/100 MB) **Note:** For more information, refer to the description of LAN connectivity in *CallPilot Installation and Configuration Part 2: 703t Server Hardware Installation* (555-7101-226).	Not applicable

Part	Color
PCI slots (6) ■ Four slots are 100 MHz 3.3 V 64-bit PCI slots. ■ Two slots are 33 MHz 5 V 32-bit PCI slots. **Note:** For more information, see "Slot assignments" on page 299.	Not applicable
COM2 serial port connector slot (not installed)	Teal

Environmental specifications

Environmental condition	Specification
Operating temperature	10°C to 35°C (50°F to 95°F) Maximum rate of change must not exceed 10°C (50°F) per hour.
Non-operating (storage) temperature	-40°C to 70°C (-40°F to 158°F)
Non-operating humidity	95%, non-condensing at 30°C (86°F)
Altitude	1829 m (6000 ft)
Electrostatic discharge	15 kV or more
Acoustic noise	50 dBA in a typical office ambient temperature (18°C to 25°C [64.4°F to 77°F])
Operating shock	No errors with a half sine wave shock of 2G (with 1 millisecond duration)
Handling drop	Operational after a free fall from 45 cm to 60 cm (18 in. to 24 in.) (depending on weight)

Slot assignments

Introduction

The slot assignment tables show

- the physical location of boards inside the server, relative to other boards
- the order in which boards are installed (for example, board #1, 2, 3, and so on)
- how the boards are represented in CallPilot Manager applications (that is, on the Maintenance Administration page)
- the maximum capacity for each switch connectivity

Note: Your server may vary depending on what was ordered from Nortel Networks; therefore, your server may not have all of the slots populated.

Slot definition and numbering

In the following table, the term “slot” refers to the available slot openings in the chassis, not the PCI connectors inside the server.

The slots are numbered from the bottom of the server to the top. Slot 1 is the bottom slot in the chassis when the chassis is standing upright.

Slot number	CallPilot-assigned board label[a]	Description
Slot 7	Not used	Not used
PCI slot 6 (full length)	BRD06	RAID card
PCI slot 5 (full length)	BRD05	Not used
PCI slot 4 (full length)	BRD04	MPB96 board
PCI slot 3 (full length)	BRD03	Not used
PCI slot 2 (full length)	BRD02	Not used
PCI slot 1 (full length)	BRD01	Not used

a. In CallPilot Manager applications, the CallPilot-assigned board label may appear. This label corresponds to the slot number. For example, BRD01 refers to the board in slot 1.

IRQ mapping table

The following table lists the assignments for each Interrupt Request (IRQ). You do not need this information for installation, but it may be useful for troubleshooting.

Interrupt	I/O APIC level	Slot or device
INTR	INT0	Processor interrupt
IRQ0	INT2	Timer (from PIIX4)
IRQ1	INT1	PS/2 keyboard controller
IRQ2	Not applicable	Internal/reserved **Note:** IRQ2 is actually shared with IRQ9 as a cascade interrupt to support IRQs 8–15.
IRQ3	INT3	Onboard serial port B (COM2)
IRQ4	INT4	Onboard serial port A (COM1)
IRQ5	INT5	Available
IRQ6	INT6	Floppy disk drive controller
IRQ7	INT7	Parallel port 1(LPT1)
IRQ8	INT8	Real Time Clock
IRQ9	INT9	Available
IRQ10	INT10	Available
IRQ11	INT11	Available
IRQ12	INT12	PS/2 mouse
IRQ13	INT13	Internal/reserved

Interrupt	I/O APIC level	Slot or device
IRQ14	INT14	IDE controller
IRQ15	INT15	Available

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CallPilot

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Part 5: 703t Server Maintenance and Diagnostics

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