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CallPilot

703t Server Maintenance and Diagnostics

Product release 3.0 Standard 1.0 November 2004

NORTEL NETWORKS™

CallPilot

703t Server Maintenance and Diagnostics

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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

This guide is for administrators, technicians, and engineers responsible for maintaining a CallPilot server. This guide assumes that you have basic computing skills, and are familiar with necessary safety procedures. If you are not able to resolve your problem with the resources described in this guide, you can also refer to the following document:

- *Troubleshooting Guide* (555-7101-501)

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

The "Starting up and shutting down the CallPilot server" chapter in the *Installation and Configuration Task List* (555-7101-210) explains how to restart, shut down, and power up the CallPilot server. When you purchased your CallPilot server, it came preinstalled with the operating system and CallPilot server software. If your CallPilot server no longer functions because of a software problem, you may need to reinstall the CallPilot software or rebuild the system.

Reference documents

CallPilot Customer Documentation Map

NTP Number 555-7101-(nnn)

- **Fundamentals**
  - CallPilot Fundamentals (-010)
- **Planning and Engineering**
  - Planning and Engineering Guide (-101)
  - Network Planning Guide (-102)
  - Data Networking for Voice over IP (553-3001-160)
- **Installation and Configuration**
  - Installation and Configuration Task List (-210)
  - **Server Installation Guides**
    - 201i Server Hardware Installation (-220)
    - 703t Server Hardware Installation (-226)
    - 1002rp Server Hardware Installation (-205)
  - **Configuration and Testing Guides**
    - Meridian 1 and CallPilot Server Configuration (-222)
    - Succession 1000 System and CallPilot Server Configuration (-510)
  - **Unified Messaging Software Installation**
    - Desktop Messaging and MyCallPilot Installation Guide (-505)
- **Administration**
  - Administrator's Guide (-301)
  - Software Administration and Maintenance Guide (-202)
  - Desktop Messaging and MyCallPilot Administration Guide (-503)
  - Meridian Mail to CallPilot Migration Guide (-801)
  - Application Builder Guide (-325)
  - Reporter Guide (-310)
- **Maintenance**
  - Troubleshooting Guide (-501)
  - **Server Maintenance and Diagnostics**
    - 201i Server Maintenance and Diagnostics (-119)
    - 703t Server Maintenance and Diagnostics (-227)
    - 1002rp Server Maintenance and Diagnostics (-206)
- **End User Information**

End User Cards	End User Guides
Unified Messaging Quick Reference Card Unified Messaging Wallet Card Command Comparison Card A-Style Command Comparison S-Style Menu Interface Quick Reference Card Alternate Command Interface Quick Reference Card	Multimedia Messaging User Guide Speech Activated Messaging User Guide Desktop Messaging User Guide for Microsoft Outlook Desktop Messaging User Guide for Lotus Notes Desktop Messaging User Guide for Novell Groupwise Desktop Messaging User Guide for Internet Clients MyCallPilot User Guide

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 supplied 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 the *Installation and Configuration Task List* (555-7101-210) and the *703t Server Hardware Installation* (555-7101-226) guide 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

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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

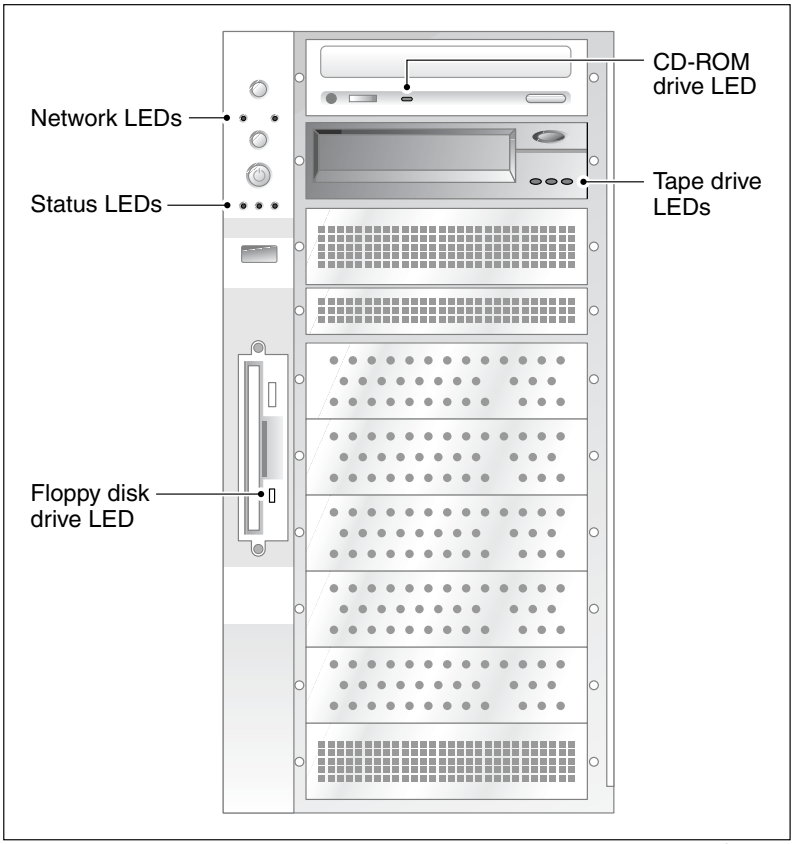
Interpreting front panel LEDs

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:

- operating system Event Viewer (see "Viewing event logs" on page 40)
- CallPilot Event Browser (see "Event Browser" on page 72)

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, "RAID operations."

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 17). 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 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 17).

Note: If the status LED indicates a problem, you can learn more about the problem by using the server's event log. For more information, see "Viewing event logs" on page 40.

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 226 for the slot position of the MPB96 boards in your server.

The illustration of the MPB96 board on page 180 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 to the switch is intermittent ■ the DS30 clock signal coming from the MGate card (NTRB18CA) 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 (NTRB18CA) 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 the operating system and the CallPilot diagnostic screen has started, either the board is faulty or there is a problem with the CallPilot DSP and Windows 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 226 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 29.
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 138
- "Replacing the tape drive" on page 148

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 19
- “RAID controller LED states” on page 26
- “When the 703t server does not boot and makes audible beeps” on page 35
- “When the 703t server boots to the operating system and makes audible beeps” on page 36

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 the operating system or if the server boots to the operating system, but fails to boot into CallPilot, refer to the *Troubleshooting Guide* (555-7101-501).
5. 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.
2. Refer to "Bootblock error beep codes" on page 28 and "Bootblock error 3-beep codes" on page 29, 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.
3. If the problem continues, the drive is faulty. Replace the hard drive as described in "Replacing a faulty hard drive" on page 139.

When the 703t server boots to the operating system and makes audible beeps

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

1 Rebuild the hard drive as soon as the operating system has finished loading. Refer to "RAID splitting" on page 171.

When the 703t server boots to the operating system 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 40.

2 If the diagnostic or event log information indicates failure of a multimedia board, replace the card as described in "Replacing MPB96 boards" on page 181.

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 Software Administration and Maintenance Guide (555-7101-202)* for instructions on how to reinstall software.

Chapter 3

Using Windows online diagnostic tools

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Using the chkdsk utility 53

Overview

Introduction

This section describes how to access the run-time online diagnostic tools provided by the Windows 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.

Operating system Event Viewer

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

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 the *Installation and Configuration Task List* (555-7101-210), messages in dialog boxes on the monitor indicate that CallPilot is ready to accept calls.

If one or more messages appear on the monitor, the message may contain information about an event, or a fault may have occurred. To determine what happened, you can use the following:

- operating system Event Viewer on the 703t server
- CallPilot Event Browser or Alarm Monitor in CallPilot Manager

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 Event Viewer.

Types of event logs

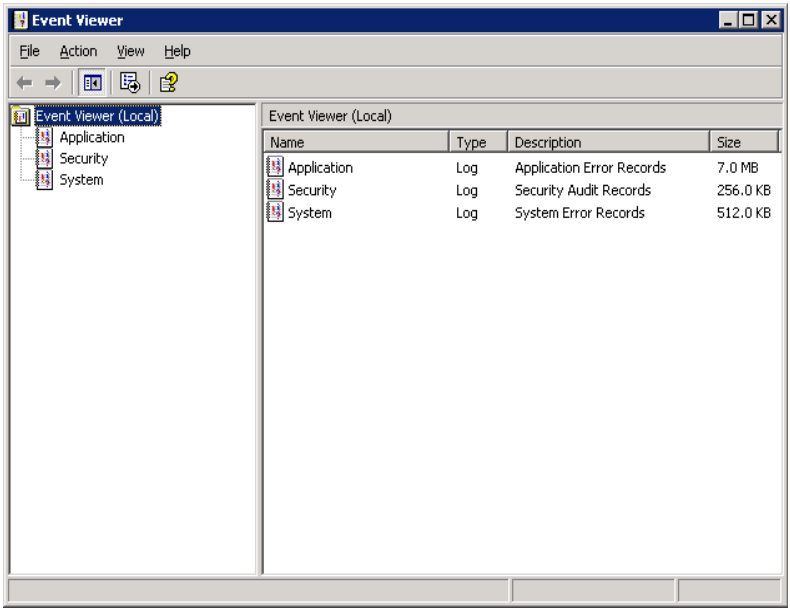
Three types of event logs are available from the Event Viewer, as follows:

Log type	Description
System	Logs events by Windows components, including RRAS or other Windows services.
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.

To use the operating system Event Viewer

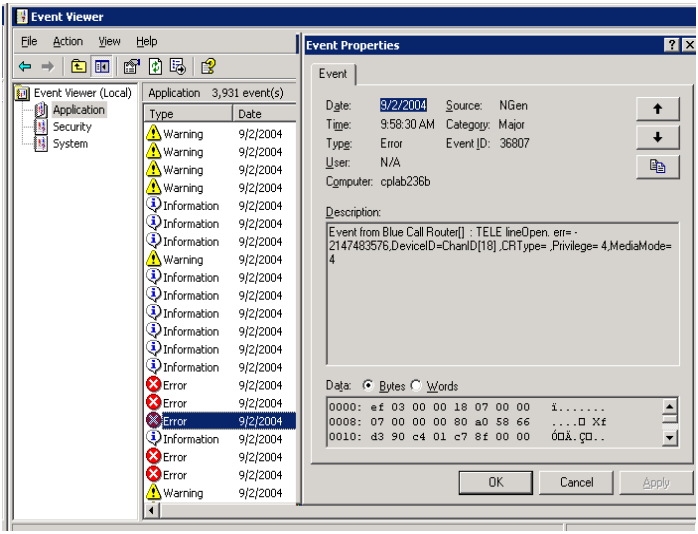
1 Click Start → Programs → Administrative Tools → Event Viewer.

Result: The Event Viewer window appears.

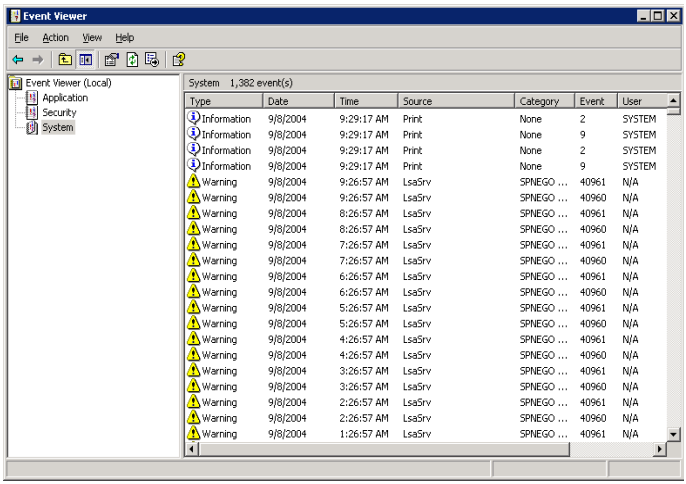


2 To view a log, click the name of the log in the left frame of the window.

The following illustration shows an example of the Application Log.



The following illustration shows an example of a System log.



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

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

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

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

Result: A description of the error appears in an Event detail dialog box. 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.

5 Click Close.

Result: The event log reappears.

6 Click Log → Exit.

Result: The Event Viewer closes.

Using TCP/IP diagnostic tools

Introduction

This section describes the following TCP/IP diagnostic tools available for the network adapter:

- ipconfig
- ping
- tracert
- arp
- nbtstat
- netstat

These utilities help you to verify network connectivity, test the network interface, and isolate configuration problems.

The ipconfig command

The ipconfig command displays IP configuration information.

Ipconfig default

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

Ipconfig command syntax

```
ipconfig /[ ]
```

The following flags are available for the ipconfig command:

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

To run the ipconfig command from Windows

1 Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

Result: The Command Prompt window appears.

2 At the Command prompt, type **ipconfig** *<with appropriate parameters>*.

Example: ipconfig /all

3 Press Enter.

Result: The system runs the ipconfig utility.

4 Type **Exit** to exit the Command Prompt window and return to Windows.

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

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

2. At the Command 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 the Command Prompt window and return to Windows.

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

1 Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

Result: The Command Prompt window appears.

2 At the Command 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 the Command Prompt window and return to Windows.

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.
-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

1 Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

Result: The Command Prompt window appears.

2 At the Command 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 the Command Prompt window and return to Windows.

The nbtstat command

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

Nbtstat command syntax

The nbtstat command uses the following syntax:

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

Parameter	Description
-a remotename	Lists the remote computer's name table using its name.
-A IP address	Lists the remote computer's name table using its IP address.
-c	Lists the contents of the NetBIOS name cache giving the IP address of each name.
-n	Lists local NetBIOS names. Registered indicates that the name is registered by broadcast (Bnode) or WINS (other node types).

Parameter	Description
-R	Reloads the LMHOSTS file after purging all names from the NetBIOS name cache.
-r	Lists name resolution statistics for Windows networking name resolution. On a Windows 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

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

2. At the Command prompt, type **nbtstat** with the required parameters.
3. Press Enter.

   Result: The system runs the nbtstat utility.

4. Type **Exit** to exit the Command Prompt window and return to Windows.

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

1 Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

Result: The Command Prompt window appears.

2 At the Command prompt, type **netstat** with the required parameters.

3 Press Enter.

Result: The system runs the netstat utility.

4 Type **Exit** to exit the Command Prompt window and return to Windows.

Using 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 file system level. Any problems existing at this level can cause problems for CallPilot. Even if there are no problems at the Windows 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 startup. Output from this utility appears on the blue startup 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

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

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

3. Press Enter.

   Result: The system runs the chkdsk utility.

4. Type **Exit** to exit the Command Prompt window and return to Windows.

Chapter 4

Using serial port diagnostic tools

In this chapter

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Restarting services 64

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

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 64.

To invoke the Net Stop command from Windows

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

2. At the Command 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 the Command Prompt window.

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 57.



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

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

2. At the Command 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 the Command Prompt window.

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 63.

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

1. Click Start → Programs → Accessories → Command Prompt to display the command prompt window.

   Result: The Command Prompt window appears.

2. At the Command 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 the Command Prompt window.

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

1. Click Start → Programs → Accessories → Command Prompt.

   Result: The Command Prompt window appears.

2. At the Command 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 the Command Prompt window.

Chapter 5

Using CallPilot Manager to monitor hardware

In this chapter

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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 MPB 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.

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 and all multimedia and call channels.
MPB board	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.
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 screen

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.

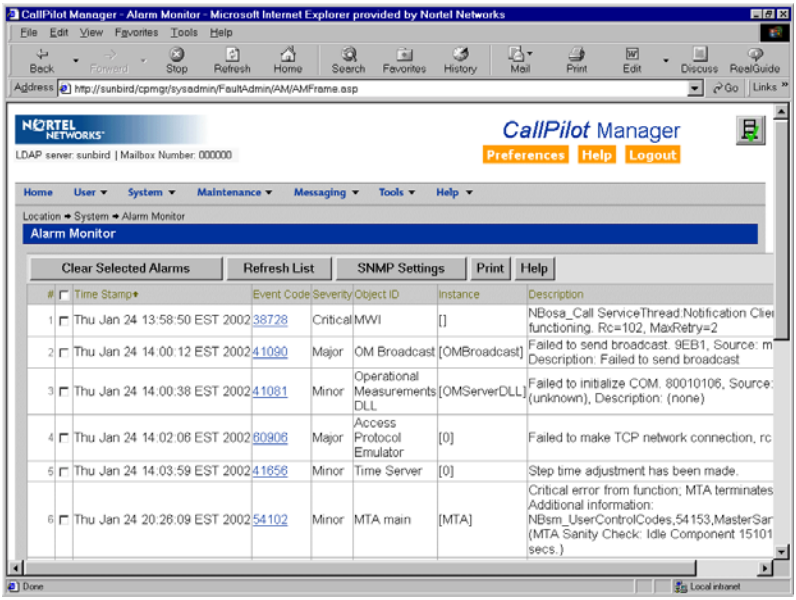
Each alarm in the Alarm Monitor has Help text that often provides a solution to the problem. If the solution is not apparent, use the Event Browser or the Maintenance screen to further investigate the problem.

To investigate using the Alarm Monitor

1 Run CallPilot Manager and login.

2 In CallPilot Manager, click System → Alarm Monitor.

Result: The Alarm Monitor window appears.



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

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

4 Review the description and recovery action.

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

6 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 72).

Note: For information on how to use the Alarm Monitor, refer to the *Administrator’s Guide* (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.

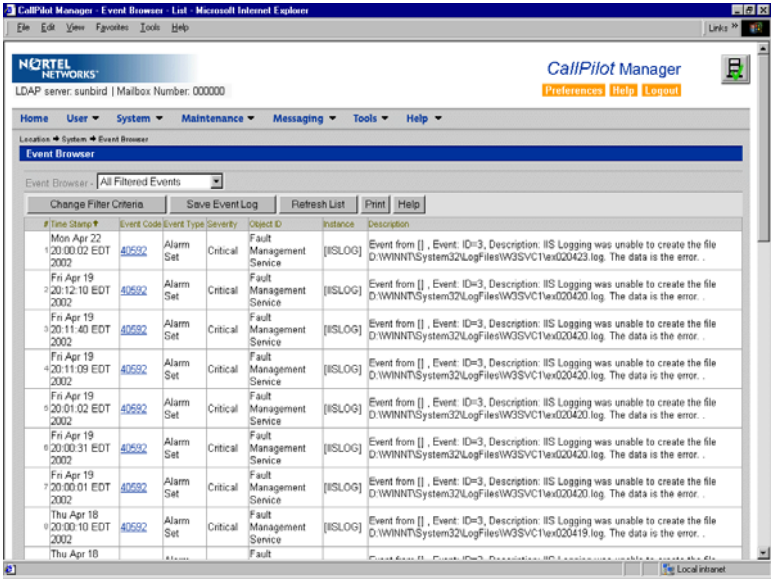
Events are classified as Information, Minor, Major, or Critical. By default, the Event Browser displays only the latest 100 critical events.

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. Run CallPilot Manager and login.
2. In CallPilot Manager, click System → Event Browser.

   Result: The Event Browser window appears.



3. 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.
4. View the description and recovery action.
5. Repeat steps 3 and 4 for a few more events, if necessary.
6. If the solution to the problem is not apparent, contact your Nortel Networks technical support representative.

Note: For information on how to use the Event Browser, refer to the *Administrator's Guide* (555-7101-301), 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.

The Maintenance screen

Introduction

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

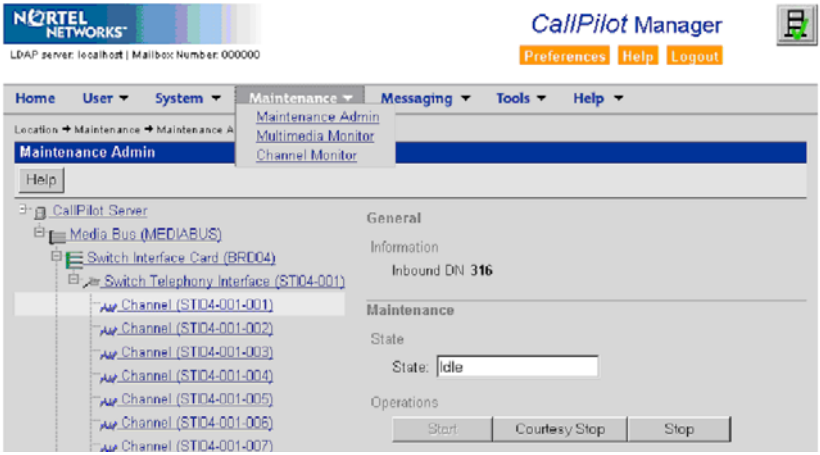
- Obtain general information about components.
- View component states.
- Start and stop components.
- Run integrated diagnostic tests.
- View the results of the last diagnostic test run against a component.

What the Maintenance screen provides

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

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

The following is an example of a partially expanded tree for the 703t server:



When you click a component, the screen refreshes to show the details about that component. (The example above shows details about a Channel.)

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.

Section	Description
Maintenance	This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test. This section appears only for components on which you are allowed to perform maintenance administration. For more information about working with component states, see the following sections: ■ "Viewing component states" on page 79 ■ "Starting and stopping components" on page 82
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 87 ■ "Viewing the last diagnostic results" on page 90

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?	Courtesy stop?	Diagnostics available?	Replaceable?
Media Bus	Yes	No	Yes	No
MPB board	Yes	No	Yes	Yes
Time Switch	No	No	No	No
Multimedia channels	Yes	Yes	Yes	No
Call channels	Yes	Yes	No	No
DS30X link	Yes	No	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 screen.

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 multimedia channel 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. Run CallPilot Manager and login.
2. In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance screen appears.
3. Click the plus sign (+) beside the CallPilot server to expand the component tree.
4. Continue clicking the plus sign (+) until the component with which you want to work is visible.
5. Click the hardware component with which you want to work.

   Result: The Maintenance screen refreshes to show details about the component.
6. Scroll down to the Maintenance section.
7. View the state of the selected component in the State box.

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 screen.

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 channels
- Channel Monitor: to courtesy stop a range of call channels:

  - DS30X channels (also known as DS0 channels)

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 is the recommended way to take the component out of service only after the component has finished processing the active call. Courtesy stop is preferred over a regular Stop.

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

Stop

A Stop takes the component out of service immediately, regardless of whether the component is currently processing calls. All active calls are dropped. Perform a Stop only when severe problems 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

The following components can be started and stopped when connected to a Meridian 1 or Succession 1000 switch:

Note: If you want to start or stop more than one or two multimedia or call (DS30X) channels, use the Multimedia Monitor or Channel Monitor. For instructions, see "Channel and Multimedia Monitors" on page 74.

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.
Multimedia Channel	Takes the selected Multimedia 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. Run CallPilot Manager and login.
2. In CallPilot Manager, click Maintenance → Maintenance Admin.

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

   Result: The Maintenance screen refreshes to show details about the component.
6. Scroll down to the Maintenance section.
7. Click Courtesy Stop, Stop, or Start, as required.

Button	Description
Start	If the selected component is out of service, click this button to 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.

Button	Description
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 screen 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 82.

Diagnostic tests available for each component

The diagnostic tests that are available for each component are listed in the Diagnostic section of the Maintenance screen. 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 when connected to a Meridian 1 switch or Succession 1000 switch:

Component	Diagnostics available?	Replaceable?
Media Bus	No	No
MPB board	Yes	Yes
Time Switch	No	No
Multimedia Channels	No	Yes (via MPB96 board)
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 89).

In both cases, check the Alarm Monitor to determine the reason and the appropriate action to take.

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 82.

1. Run CallPilot Manager and login.
2. In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance screen appears.
3. Click the plus sign (+) beside the CallPilot server to expand the component tree.
4. Continue clicking the plus sign (+) until the component with which you want to work is visible.
5. Click the hardware component for which you want to run diagnostics.

   Result: The Maintenance screen refreshes to show details about the component.
6. 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 85.
7. Scroll down to the Diagnostics section.
8. 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.
9. Click Run.

   Result: A new web browser window opens to display the progress and results of the diagnostics. 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 82.

1. Run CallPilot Manager and login.
2. In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance screen appears.
3. Click the plus sign (+) beside the CallPilot server to expand the component tree.
4. Continue clicking the plus sign (+) until the component with which you want to work is visible.
5. Click the hardware component for which you want to run diagnostics.

   Result: The Maintenance screen refreshes to show details about the component.
6. Scroll down to the Diagnostics section.
7. Check the check box for each diagnostic for which you want to review results.

8 Click Get Last Result.

Result: The results appear in the Diagnostic Results box with the following information:
- diagnostic title
- diagnostic result: pass or fail
- the date and time the test was completed

Working with the Multimedia Monitor

Introduction

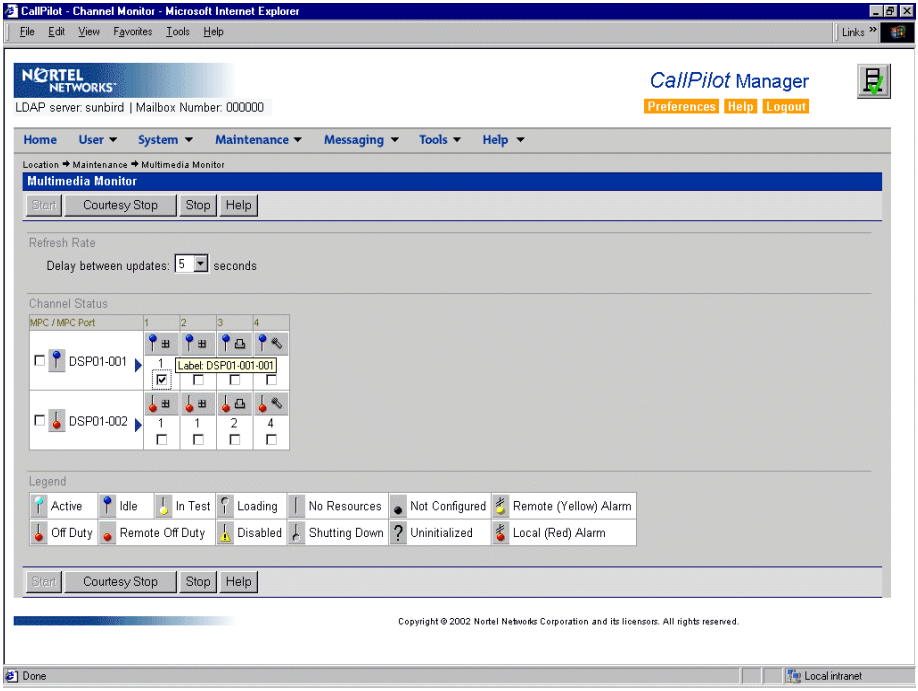
The Multimedia Monitor shows the status of multimedia channels. The multimedia channels are the DSP ports that process the calls. They are the voice, fax, and speech recognition channels.

To view or work with multimedia channel states

1 Run CallPilot Manager and login.

2 In CallPilot Manager, click Maintenance → Multimedia Monitor.

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



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

3 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.

4 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 screen 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

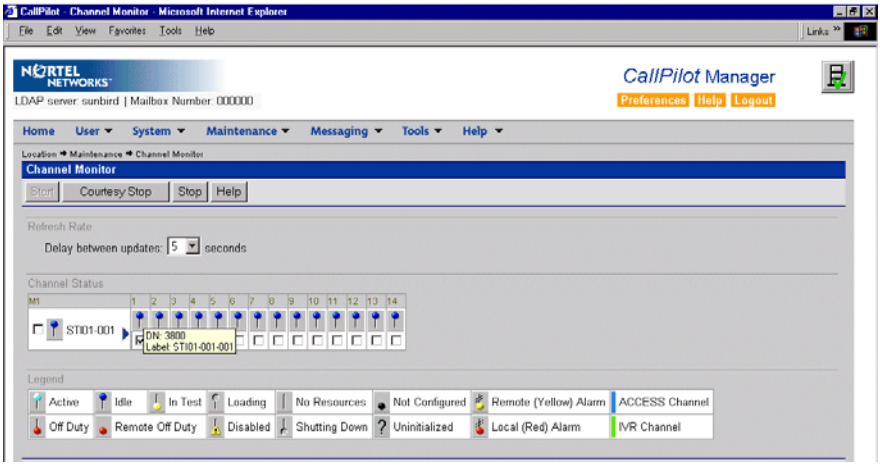
The Channel Monitor shows the status of call channels. The call channels are the connections between the server and the switch that carry the call signals to CallPilot.

To view or work with call channel states

1 Run CallPilot Manager and login.

2 In CallPilot Manager, click Maintenance → Channel Monitor.

Result: The Channel Monitor screen appears, showing the channels associated with each link.



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

3 Do one of the following:

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

4 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 screen 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 Alarms.

Chapter 6

Using CallPilot system utilities

In this chapter

Overview 98

Diagnostics Tool 99

PEP Maintenance utility 101

Session Trace 102

System Monitor 104

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 that this status is more accurate than the status that Windows 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. Diagnostics are displayed for:

- MediaBus, MPB board, MPC/DSP (for Meridian 1 and Succession 1000)

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 the *Installation and Configuration Task List* (555-7101-210).

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

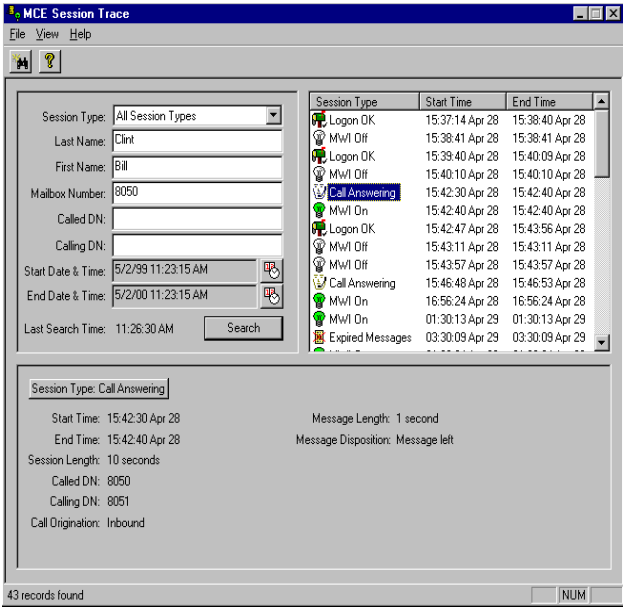
From the Windows desktop, click Start → Programs → CallPilot → System Utilities → Session Trace Tool.

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. The following example shows Call Answering 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, and call channels (DS30X channels in Meridian 1 and Succession 1000).
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.

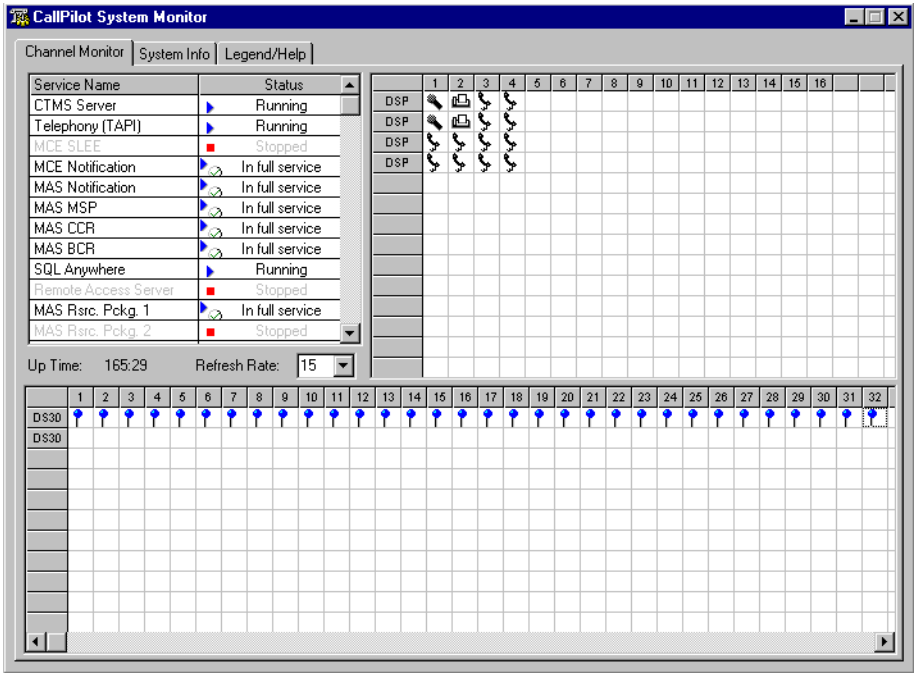
To access the System Monitor

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 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 Control Panel are also listed.

CallPilot System Monitor	Windows 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.

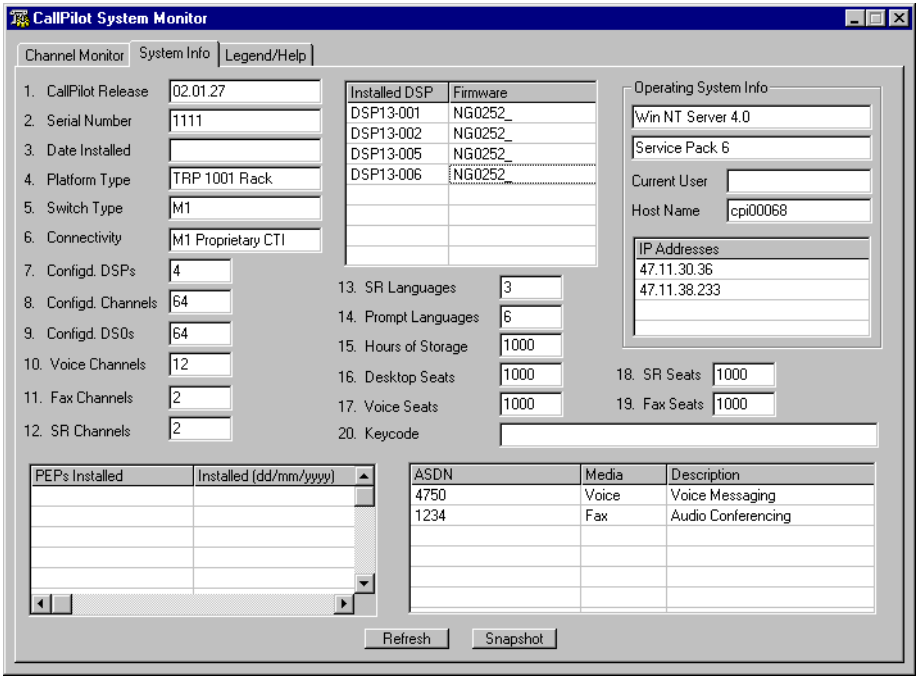
DS30X links

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 (NTRB18CA) 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:



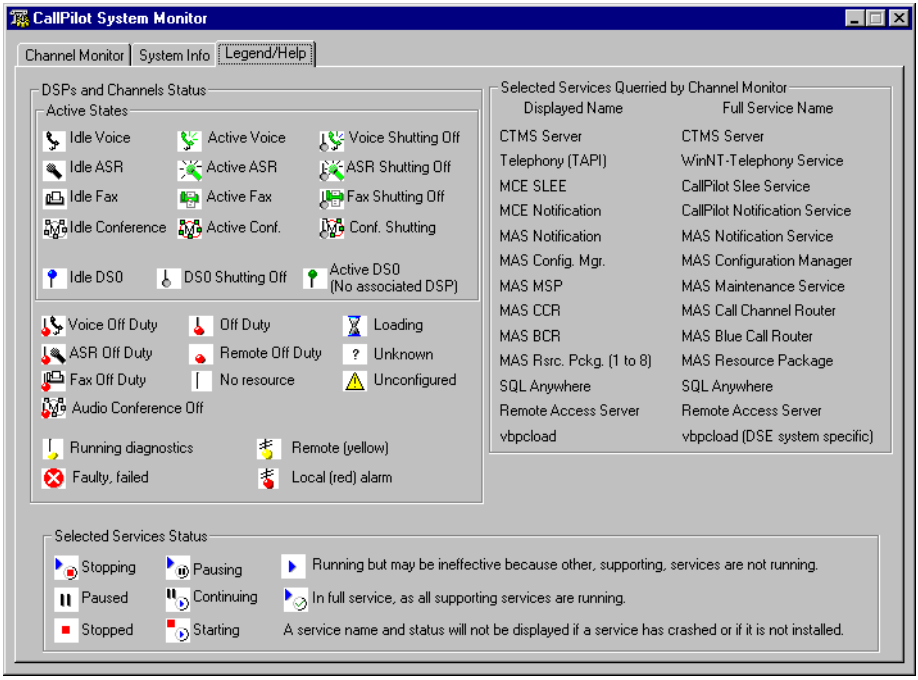
Note: The screen sample above was acquired from a 1001rp server, but provides the same type of information for any CallPilot server model.

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

Preparing the server for hardware maintenance 112
Removing the side cover 116
Removing and replacing the upper fan holder foam 119
Replacing the side cover 121
Cooling fans description 123
Replacing a front system fan 126
Replacing a rear system fan 130
Replacing the processor fan 133

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 113.



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 115.
- 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

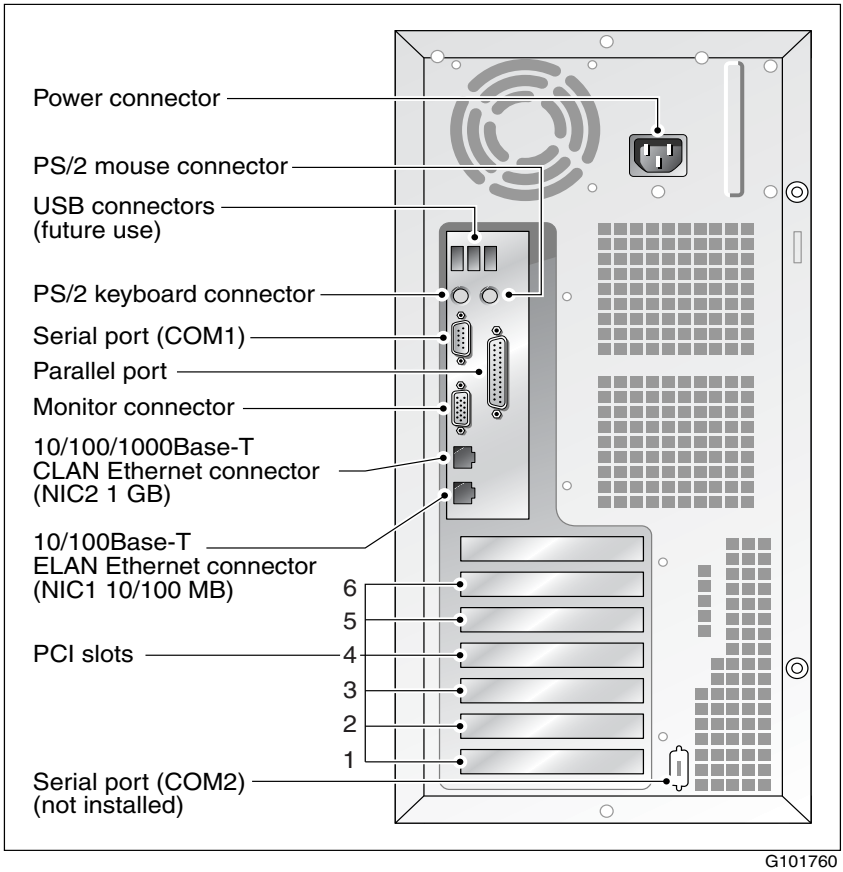
Before you access the server interior, do the following:

1 Courtesy stop and power off the server.

For instructions, see "Starting up and shutting down the CallPilot server" in the *Installation and Configuration Task List* (555-7101-210).

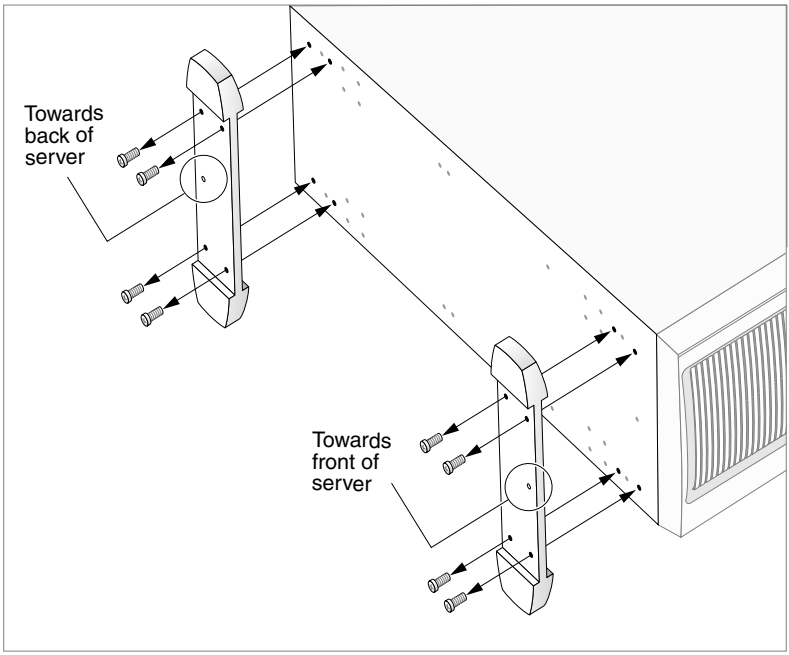
2 Label and disconnect the power cable and any other peripheral cables that may be in your way.

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 115.

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 116.

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.

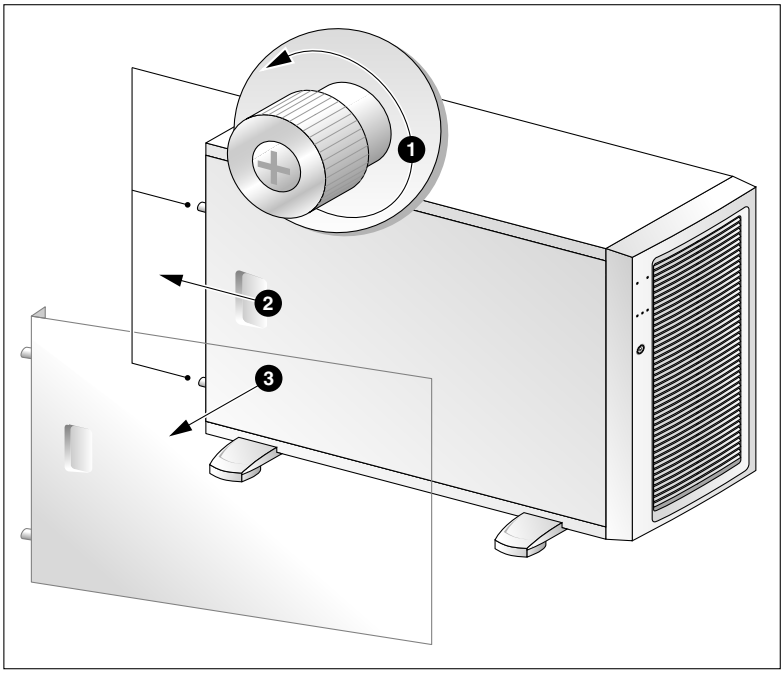


CAUTION

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.



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.

CAUTION

Risk of equipment damage

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

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.

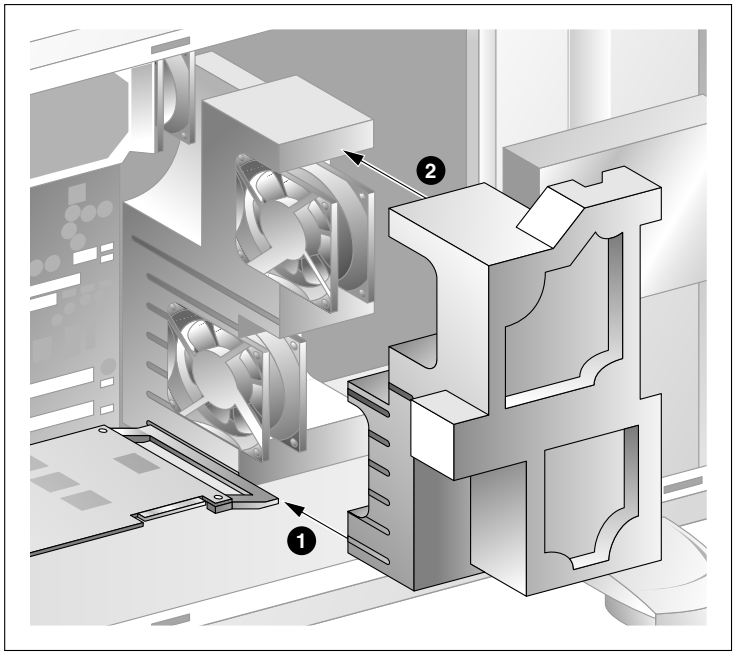
4 Set the cover aside.

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



CAUTION

Risk of equipment damage

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

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.

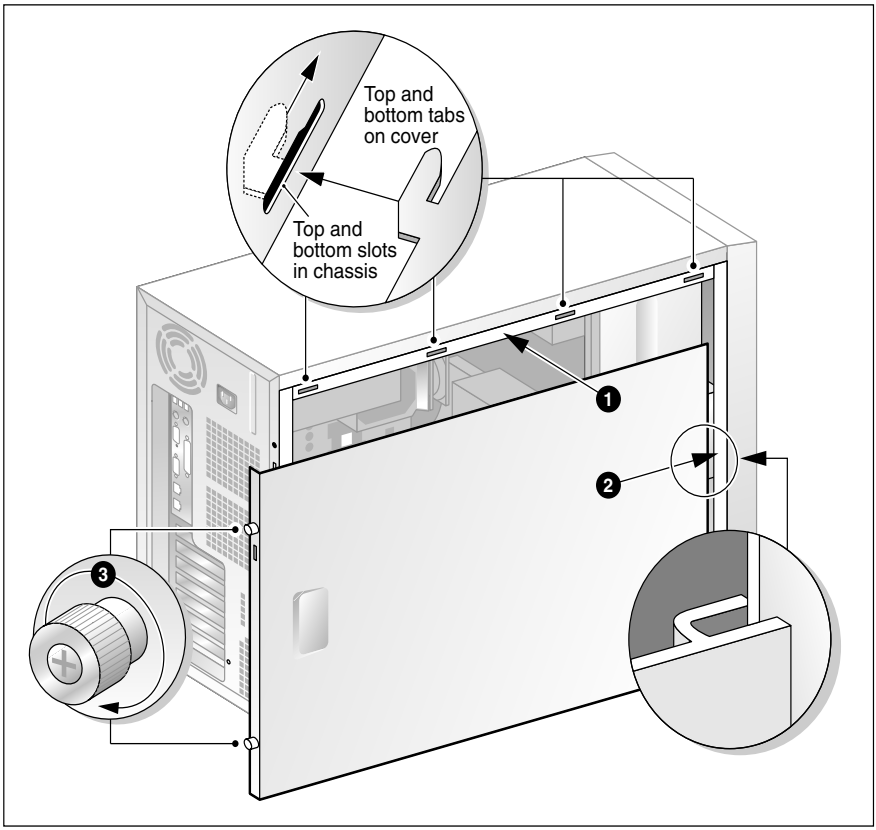


CAUTION

Risk of equipment damage

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

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

Cooling fans description

Introduction

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



WARNING

Risk of equipment damage

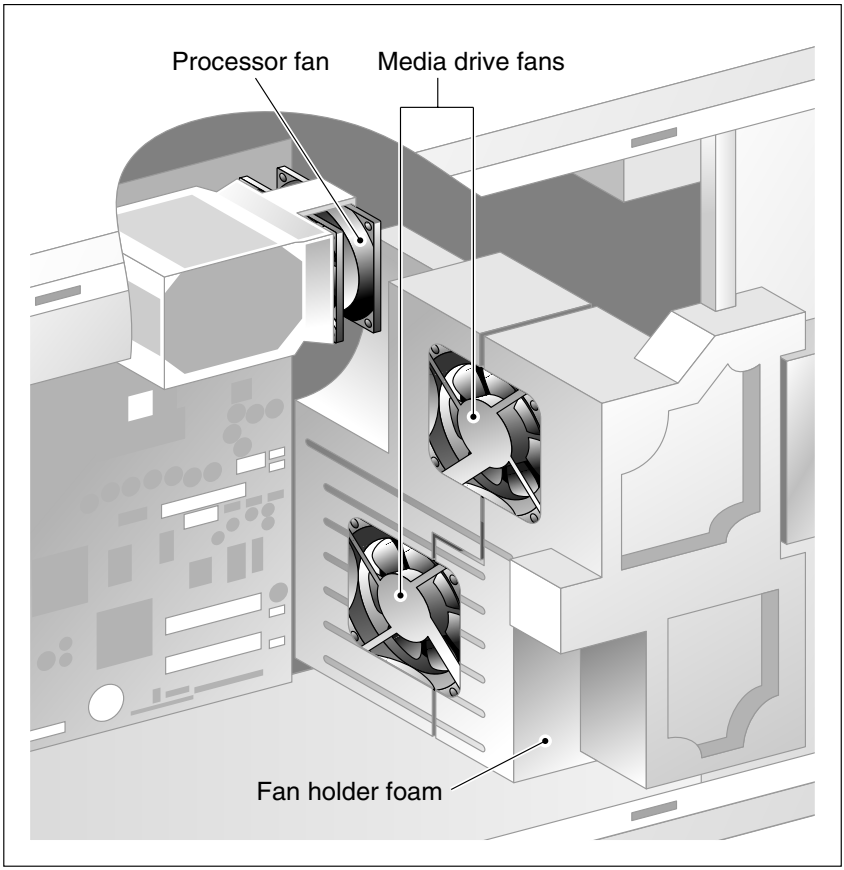
Ensure that any cables in the proximity of the fans are kept away from the fans. If a cable is caught in a fan, the fan will break.

Replaceable fan locations

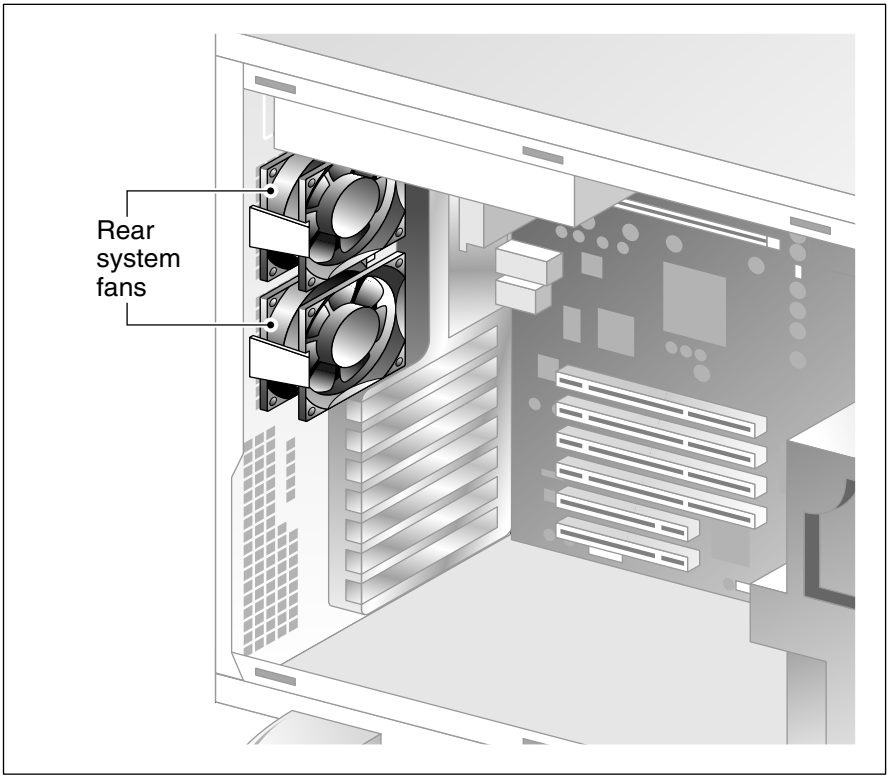
The server contains five replaceable fans:

- 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 124.
- 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 125.

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



CAUTION

Risk of equipment damage

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

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 “Preparing the server for hardware maintenance” on page 112.



WARNING

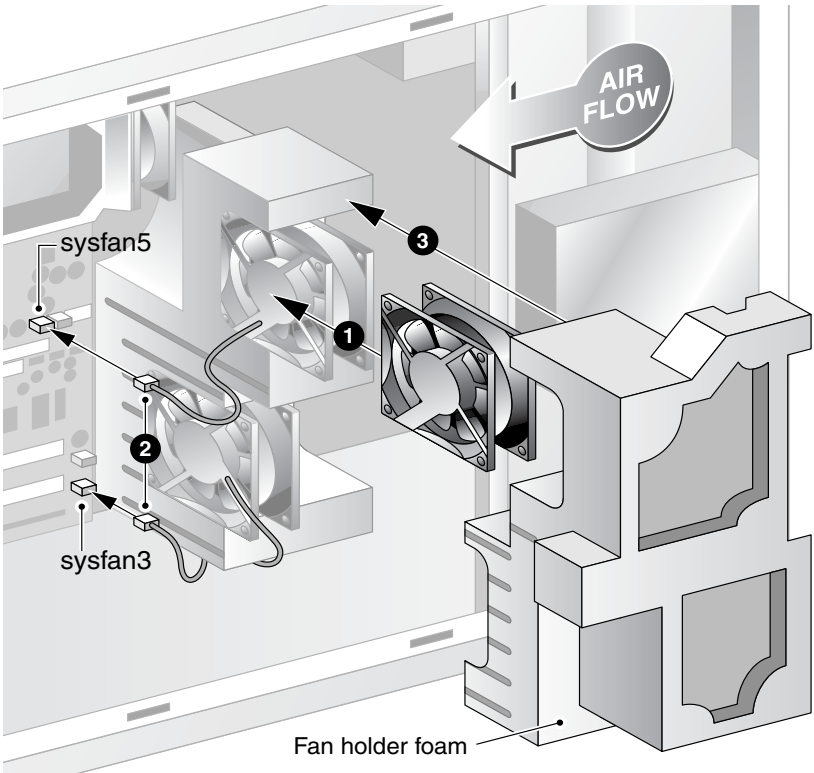
Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 120.

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



CAUTION

Risk of equipment damage

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

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 “Preparing the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

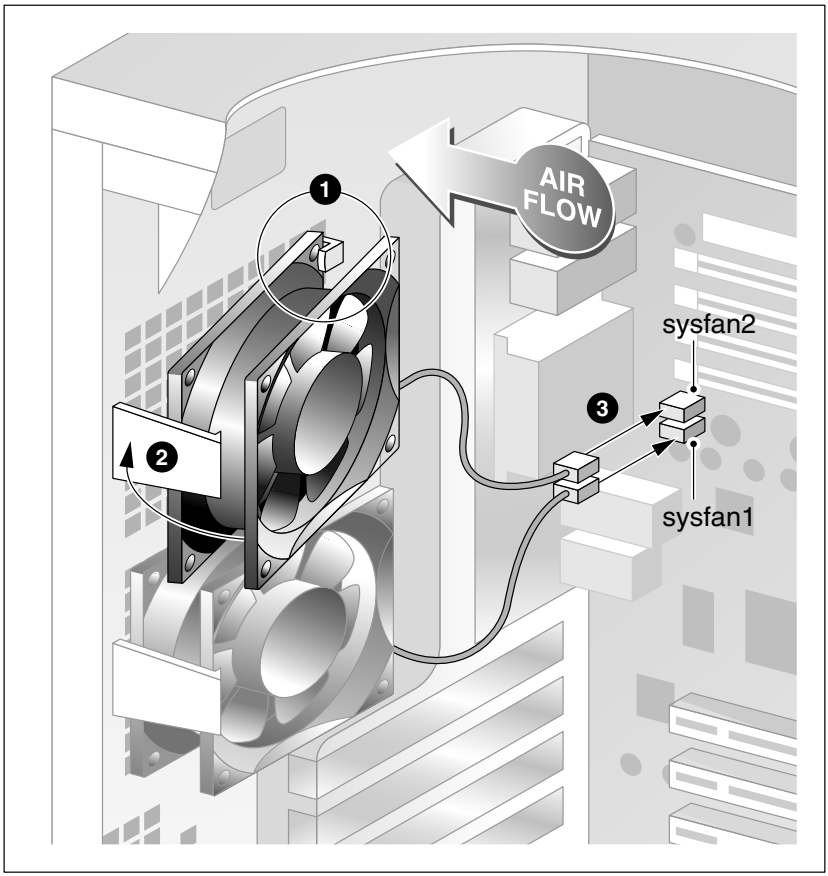
Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 can result in electrical shock or equipment damage.

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



CAUTION

Risk of equipment damage

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

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 "Preparing the server for hardware maintenance" on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in "Preparing the server for hardware maintenance" on page 112 can result in electrical shock or equipment damage.

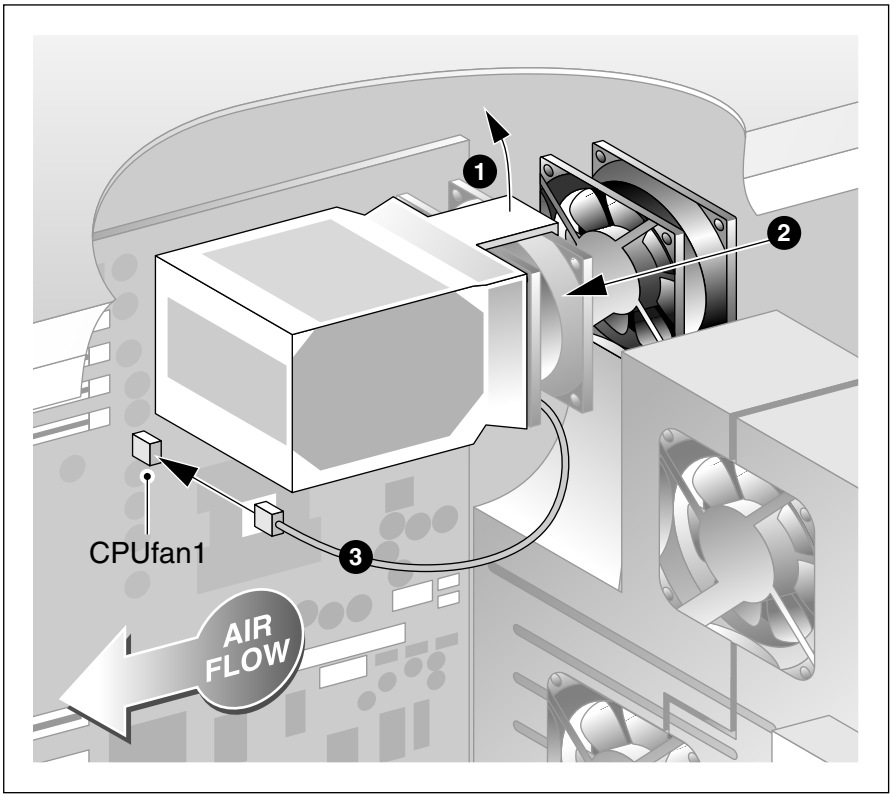
2 Disconnect the fan's power cable connector from the server's motherboard.

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 120.

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 138

Replacing a faulty hard drive 139

Replacing the tape drive 148

Replacing the CD-ROM drive 153

Replacing the floppy disk drive 157

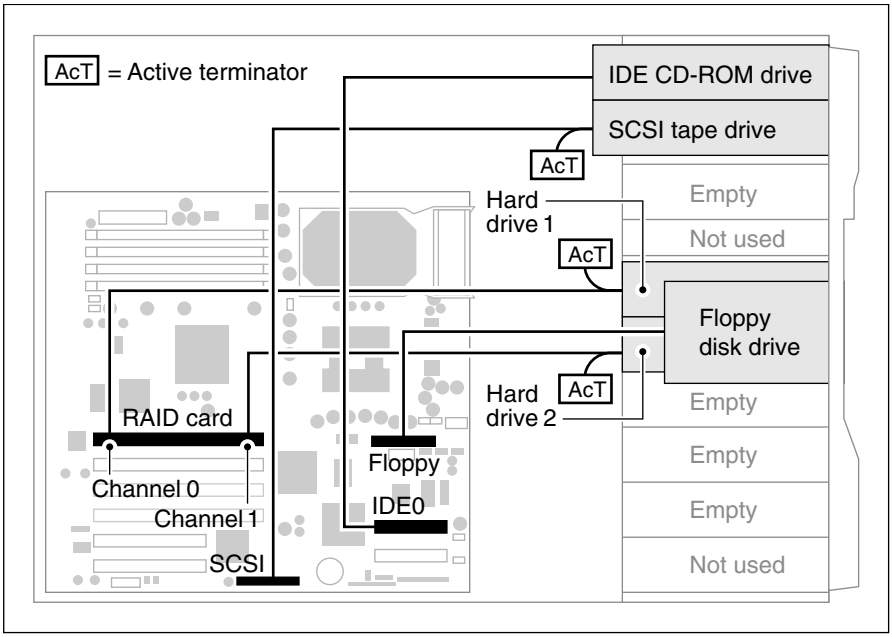
SCSI and IDE drive cabling

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 faulty hard drive, tape drive, or CD-ROM drive.



G101768

Replacing a faulty 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 the server for hardware maintenance” on page 112.

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 143.
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 144.
5. Install the drive carrier assembly in the server as described in “To install the hard drive” on page 145.

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

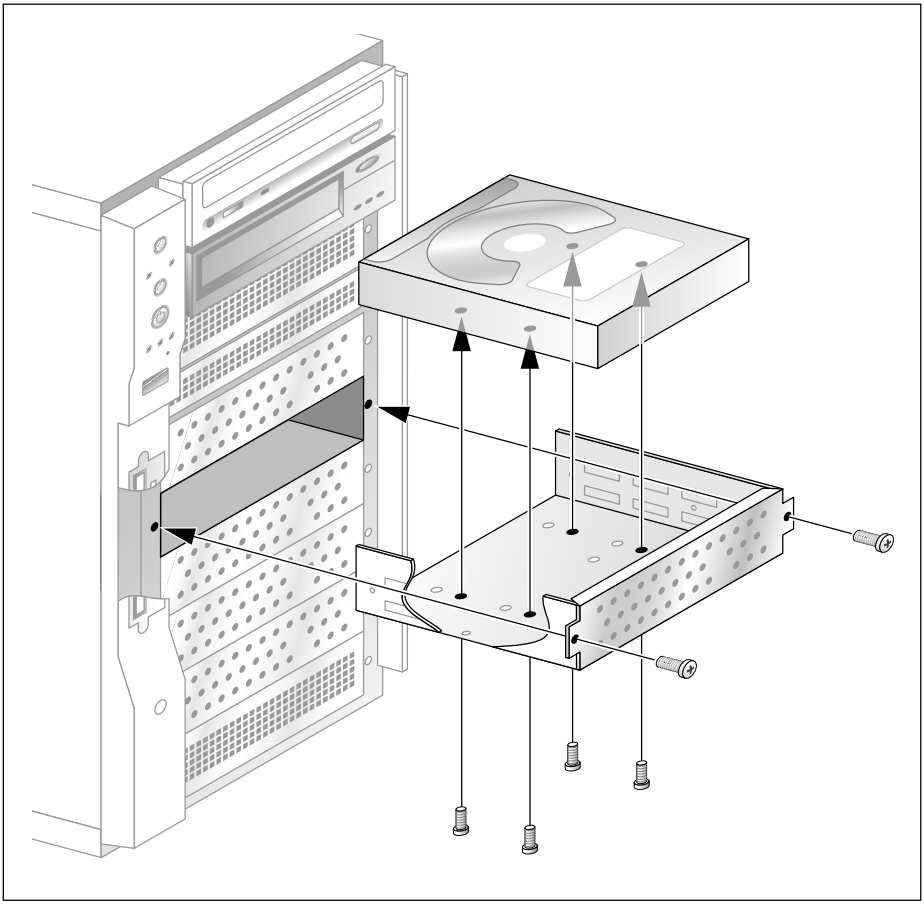
The following table identifies RAID and SCSI settings:

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



CAUTION

Risk of equipment damage

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

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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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



CAUTION

Risk of equipment damage

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

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 140.

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 138.

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 128.
- For instructions on replacing the upper fan holder foam, see “To replace the upper fan holder foam” on page 120.

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, “RAID operations.”

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 supplied 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.

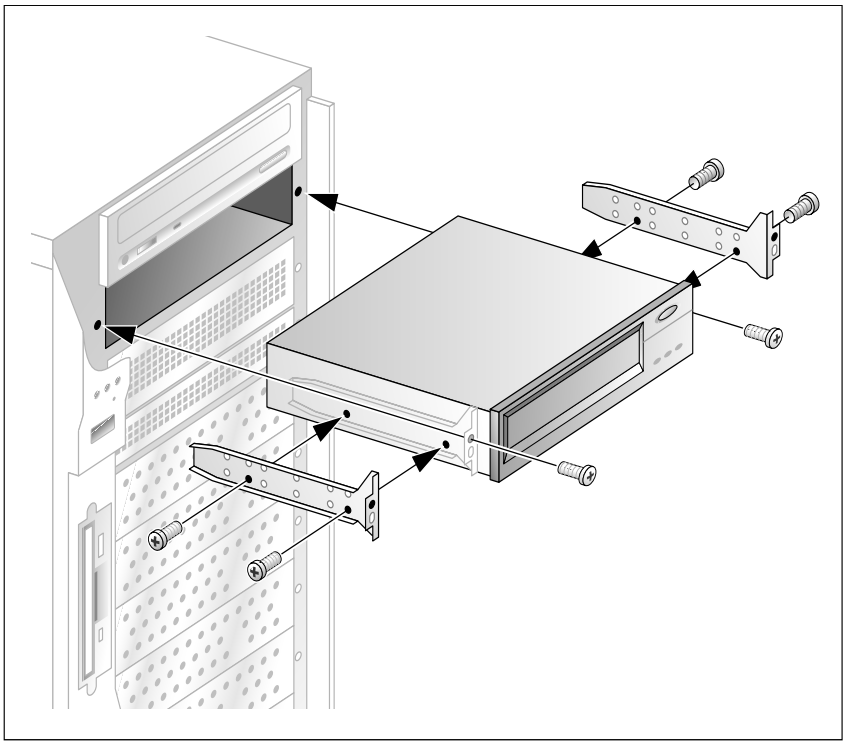
Ensure that the hard drives are configured as follows (for instructions, refer to the original equipment manufacturer documentation):

- 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 138).

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

Tape drive installation overview



G101772

To remove the tape drive



CAUTION

Risk of equipment damage

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

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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 148.

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 138, 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 120.

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

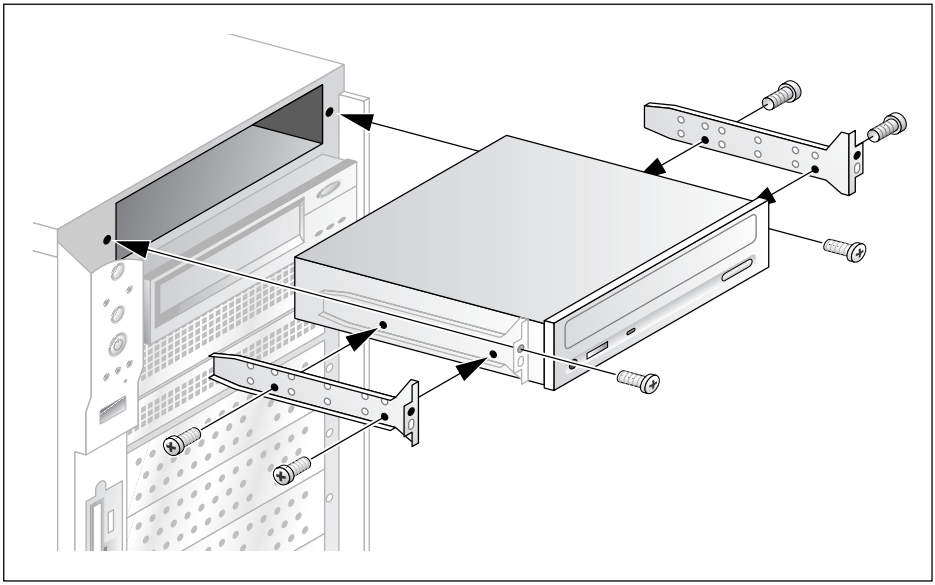
The CD-ROM drive is preinstalled at the factory. However, if it becomes faulty, follow the procedure in this section to replace it.

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



CAUTION

Risk of equipment damage

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

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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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



CAUTION

Risk of equipment damage

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

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 138.

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 120.

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

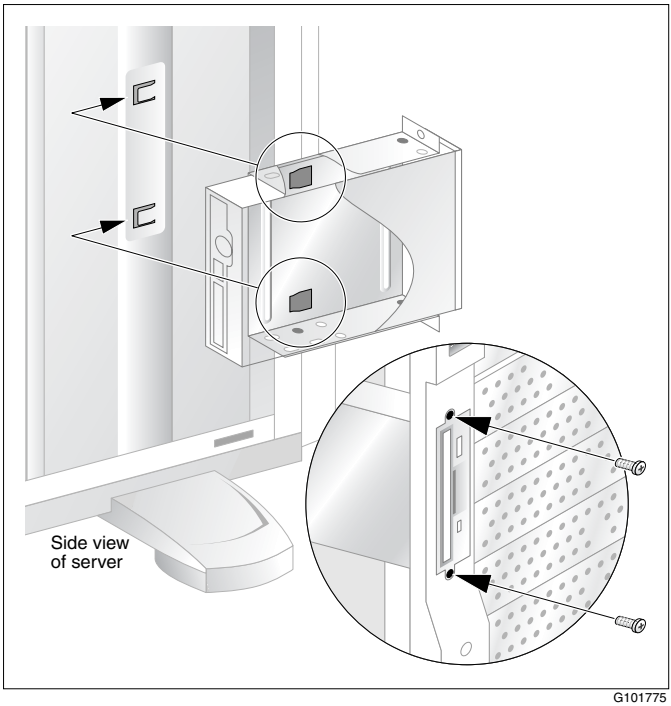
Introduction

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 supplied 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.



CAUTION

Risk of equipment damage

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

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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 159.

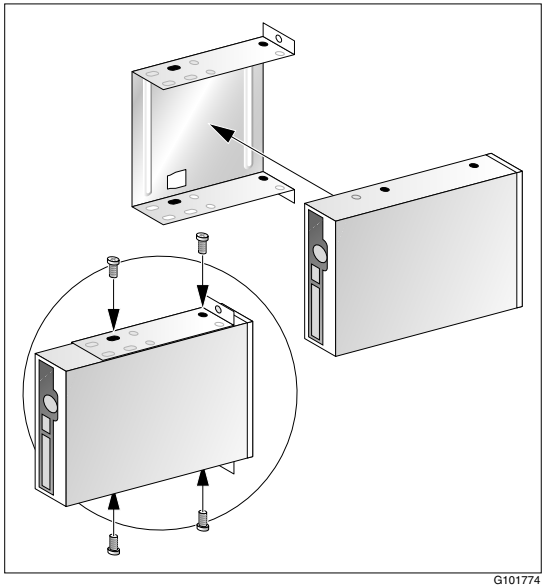
To install a replacement floppy disk drive

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 157.)

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 120.

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

RAID operations

In this chapter

RAID overview 164

Verifying the RAID firmware 165

Configuring RAID using the LSI Elite 1600 controller and Ctrl+M 167

Verifying consistency on the drives 170

RAID splitting 171

Task summary for configuring RAID 176

Task summary for RAID splitting 177

RAID overview

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.

RAID configuring and splitting

Working with RAID involves the following:

- Verifying the RAID firmware version
- Upgrading or downgrading the RAID firmware
- Configuring RAID using the LSI Elite 1600 controller and the Ctrl+M menu at server boot-up
- Ensuring that your system is fully working and the RAID hardware is properly configured
- Performing full data backup
- Performing RAID splitting
- Performing a CallPilot software upgrade
- Performing RAID synching if upgrade successful
- Performing RAID synching if upgrade NOT successful

Verifying the RAID firmware

The minimum requirement for RAID firmware:

- firmware: 111U

To verify the RAID firmware version

To determine what the current RAID firmware version is on the RAID LSI Elite 1600 controller do the following:

1. Turn on the server and press Ctrl+M when prompted during system bootup.

   Note: The Ctrl+M utility can take up to 1 minute to launch with 111U firmware. The system may appear frozen. Do not reset

2. Select Objects menu→ Adapter → Adapter Information.
   Or

   a. Launch the MegaRAID client using: Start > Programs > MegaRAID Client.

   b. From the MegaRAID Power Console Plus - Server Selection window, select Access Mode→Full Access to view or change configuration information and click OK.

   c. From the MegaRAID console, choose Adapter→ Properties.

3. Review the information on the screen. Ensure that Power Console Plus is version 5.00i or later. The LSI Elite 1600 controller firmware should be 111U.

4. If the firmware is not correct, perform a firmware update. For instructions, see “To upgrade or downgrade the RAID firmware” on page 166.

To upgrade or downgrade the RAID firmware

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

ATTENTION

Perform this procedure only if the firmware version is not the version identified in this section.

1. Insert the CallPilot 3.0 tower 703t Image CD-ROM 1 of 2 into the server 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, a menu appears.
4. Choose ATAPI CD-ROM, and press Enter.

   Result: The Startup menu appears.
5. Choose Other Utilities (Firmware, etc.), and then press Enter.

   Result: A menu appears.
6. Choose LSI Elite 1600 RAID card Firmware update, and 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 you are asked to restart the server.
9. Remove the CD-ROM from the CD-ROM drive.
10. Press Ctrl+Alt+Delete to restart the server.

Configuring RAID using the LSI Elite 1600 controller and Ctrl+M

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 replace the hard drives with 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 the hard drives is erased.

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

To configure an LSI Elite 1600 RAID system

To configure RAID, do the following:

1. Turn on the server and press Ctrl+M when prompted during system bootup.

   Note: The Ctrl+M utility can take up to 1 minute to launch with 111U firmware. The system may appear frozen. Do not reset.
2. From the Management menu, select the Objects menu and press Enter.
3. Select the Objects → Adapter and press Enter.
4. Select Adapter → Factory Default.
5. Select Yes to confirm the selection and press Enter.

6 Press Ctrl+Alt+Delete when prompted to restart system.

7 During bootup, press Ctrl+M to re-enter the RAID setup utility.

8 From the Management menu select Objects → Adapter, then ensure the values are set as follows:

Flex RAID Power Fail: **Enabled**
Fast Initialization: **On**
Disk Spinup Timings: **One every 6 seconds**
Cache Flush Timings: **Every 4 seconds**
Rebuild Rate: **30%**
Alarm: **Enabled**
Other Adapter Settings:
— Emulation: **Mass Storage**
— Auto Rebuild: **Disabled**
— Initiator ID: **7**
— Cluster Mode: **Disabled**
— Multiple PCI Delayed Transactions: **Disabled**
— Force Boot: **Off**
— Coercion Algorithm: **GigaByte Way**
— Cc Restoration: **Enabled**

Note: The Coercion Algorithm must be set properly. Once changed, it cannot be changed again. The only way to reset it is to reconfigure RAID from scratch and load the default configuration, then reboot.

9 Select Objects → Channel and press Enter.

10 From the Channel menu, ensure the values are set as follows:
Termination State: **Enabled**
SCSI Transfer Rate: **160M**

11 Select Configure menu → New Configuration. Click Yes to proceed.

Result: The system should display both SCSI channels, each having one drive. SCSI IDs should be 0 for each channel. All disk drives should be in READY state.

Note: Do not use the Load command on the Configure menu. This command is not for RAID operations.

12 Create the first logical drive by selecting Channel-1 ID 0 (A01-01), and pressing the Spacebar. The display will change to ONLIN A01-01. Select Channel-2 ID-0 (A01-02) and again press the Spacebar.

Result: After selection, the drives will blink.

13 Press Enter to End the Array.

14 Press F10 to configure the logical drives.

Result: The system prompts you for each of the logical drives to consecutively select:

RAID 1;
Size: accept the size displayed
Accept
SPAN = NO

Change the last value to NOSPAN if required.

15 Press Enter to accept these new values.

Result: The system will prompt you to save the configuration.

16 Highlight YES and press Enter.

17 Press ESC to exit the submenu.

18 In the Management menu choose the Initialize submenu.

19 Press F2 to select the logical drive.

20 Press F10 and consecutively select YES to initialize the drive pack.

21 When the initialization is complete, press any key to return to the Management menu.

22 Press ESC to exit the utility. Save the configuration when prompted.

23 Press Ctrl+Alt+Delete as indicated by the menu to reboot.

Verifying consistency on the drives

This optional consistency check on the RAID system's logical drive ensures that the data on the drives is identical. If any errors are found, they are corrected automatically. 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 to the CallPilot system from an unsuccessful upgrade or update. The consistency check can take up to 2 hours to complete.

To perform a consistency check

1. In Windows, click Start → Programs → MegaRAID Client.

   Result: The MegaRAID Power Console Plus Server Selection window appears.

2. Ensure that Access Mode → Full Access is selected, and click OK.

   Result: The MegaRAID Power Console Plus window appears displaying the Logical View of the Physical Devices and the Logical Devices. The status bar at the bottom of the window indicates that RAID channels are being scanned. When scanning is done, the screen refreshes and displays the Physical and Logical Devices.

3. In the Logical Drives section, right-click the logical drive, and then choose Check Consistency from the pop-up menu.

   Result: The Check Consistency status dialog appears.

   Note: The check can take up to 2 hours to complete. You are informed when it is finished. If any errors are found, a window with an error message is displayed.

4. Select Configuration → Exit to close the MegaRAID console.

   Result: An end of session message appears.

5. Click OK.

RAID splitting

Ensure that your system is in full working order and the RAID hardware configuration is set up properly as described on page 167.

ATTENTION

The most important thing to verify is that the RAID channel 1 is connected to the first hard drive (top as facing the machine) and channel 2 is connected to the second drive (bottom). Do that by either opening the lid and following the cables or by removing one hard drive and observing which drive is marked dead by the system. If the drive matches the graphic location on the Windows MegaRAID console, proceed with the next step.

Full data backup

ATTENTION

As an extra precaution, it is recommended that a full system backup be performed PRIOR to performing a RAID-split. For more information on system backups refer to the CallPilot Manager online help.

RAID splitting

ATTENTION

Because the 703t has only one physical drive per channel, the RAID splitting can be done using the Windows MegaRAID console without risk of CallPilot database corruption.

1 Click Start > Programs > MegaRAID Client to load the MegaRAID console.

Result: Result: the MegaRAID Power Console Plus window appears.

2 Ensure all drives are in ONLINE state (marked GREEN).

3 In the Physical Devices section, right-click the Channel-2 hard disk drive. Example: Channel-2 (0) A1-2-Onln.

4 Select Tools > Fail Drive from the pop-up menu.

Result: A message will appear advising that marking the Online drive Failed will result in changes.

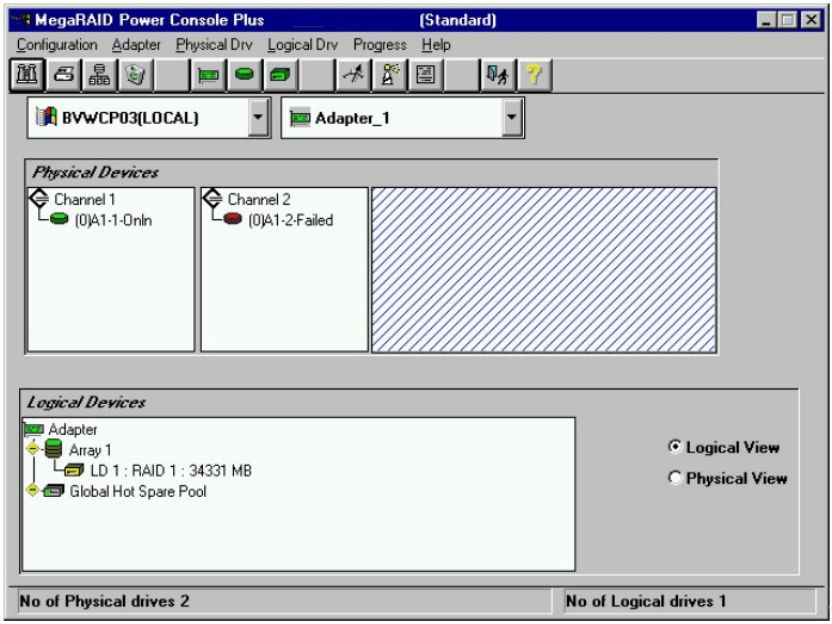
5 Ignore the warning and click OK. The drive status will change to FAILED and the color of the icon will change to RED.
Example: Channel-2 (0) A1-2-Failed.

Result: The audible alarm should start beeping.

ATTENTION

The alarm can be silenced, but under no circumstances should it be disabled. Select Objects → Adapter → Alarm Console → Silence Alarm from the toolbar.

At this point, the RAID is split, and the drive marked FAILED is the backup drive and will no longer be written to. A release upgrade or PEP installation can now be completed without impact to the ‘backup’ drive.



Perform a CallPilot software upgrade

Let the system boot. The system will still run after Channel 2 of the RAID card was taken out of service and will boot to Windows. Perform the software upgrade.

RAID synching after a successful upgrade

To restore RAID to full service after completing a successful upgrade or update:

1 **WITHOUT** shutting down the server, from Windows, click Start > Programs > MegaRAID Client.

Result: The MegaRAID Power Console Plus window appears.

2 In the Physical Devices section, right click the Channel 2 hard disk drive that was marked FAILED.
Example: Channel-2 (0)A1-2-Failed.

3 From the right mouse pop-up menu select Rebuild.

Result: When Rebuild is done, the drive status will change to ONLINE and the color of the icon should change to green. The alarm should stop beeping unless it was temporarily silenced.

Note: The process can take up to one hour. **DO NOT** shut down the machine before the rebuild is complete. If you do reboot or power down during this process, you need to do “RAID synching after an unsuccessful upgrade” on page 174, then start again. You can monitor the rebuild by opening the Windows MegaRAID console.

RAID synching after an unsuccessful upgrade

If the upgrade or update has failed, the system needs to be returned to the original configuration.

1 Restart the server and enter the Ctrl+M utility when prompted during system bootup.

2 From the Management menu select Objects and press Enter.

3 Select Objects > Physical Drive and press Enter.

4 Select FAIL Drive for the drive on Channel 1.

Result: The drive will show as FAIL.

5 Select the drive on Channel 2 (previously taken offline as the backup drive and marked ‘Failed’) and make it ONLINE. Ignore the warning message.

Result: At this point the drive on the Channel 2 is ONLINE and the one on Channel 1 is marked FAILED.

6 Exit the utility and press Ctrl+Alt+Delete to reboot the server.

Result: The system will boot up to the original configuration before the software upgrade and an audible alarm will indicate the state CRITICAL for the drives. You can silence the alarm but DO NOT disable it.

7 Once the system is fully booted, open the Windows MegaRAID console and rebuild the FAIL drive on Channel 1 using the same process indicated in “RAID synching after a successful upgrade,” on page 174. Reverting from a failed software upgrade is now complete. The audible alarm, if left on, should automatically stop.

Task summary for configuring RAID

Note: This summary should be used only after reviewing the more detailed procedures and warnings in this chapter.

What to do	How to do it
Verify the BIOS and firmware revisions	Firmware: 111U Use the Windows MegaRAID console and choose Adapter › Properties. Or turn on the server and press Ctrl+M. Select Objects menu› Adapter › Adapter Information.
Upgrade or downgrade firmware and BIOS	Use the CallPilot 3.0 tower 703t Image CD-ROM 1 of 2 and select Utilities, RAID 703t F/W upgrade.
Configure RAID using LSI 1600 controller using the Ctrl+M menu at server boot-up Note: **The Ctrl+M utility can take up to 1 minute to launch with 111U firmware. The system may appear frozen. Do not reset.**	1 Start the server and press Ctrl+M. Select Objects menu › Adapter › Factory Default, and select Yes to confirm the selection. Press Ctrl+Alt+Delete when prompted to restart system and re-enter Ctrl+M utility. 2 Select Objects › Adapter, then ensure the following values are set as following: Flex RAID Power Fail: **Enabled** Fast Initialization: **On** Disk Spinup Timings: **One every 6 seconds** Cache Flush Timings: **Every 4 seconds** Rebuild Rate: **30%** Alarm: **Enabled** Other Adapter Settings: — Emulation: **Mass Storage** — Auto Rebuild: **Disabled** — Initiator ID: **7** — Cluster Mode: **Disabled** — Multiple PCI Delayed Transactions: **Disabled** — Force Boot: **Off** — Coercion Algorithm: **GigaByte Way** — Cc Restoration: **Enabled** 3 Select Objects › Channel, then ensure that the following values are set as follows: Termination State: **Enabled** SCSI Transfer Rate: **160M** 4 In the Configure menu, select New Configuration. Press Yes to proceed. The system should display both SCSI channels, each having one drive. SCSI ID's should be 0 for each channel. All disk drives should be in READY state. **Note:** Do not use the Load command on the Configure menu. This command is not for RAID operations. 5 Create the first logical drive by selecting Channel-1 ID 0 (A01-01), and pressing the Spacebar. The display will change to ONLIN A01-01. Select Channel-2 ID-0 (A01-02) and again press the Spacebar. After selection, the drives will blink, press Enter or F10 to create first logical drive. 6 Press the Space bar to Select Configuration Array. *Span-1* appears in the box opened for the A01 logical drive. 7 Configure the logical drives by pressing F10. The system prompts for each of the logical drives to consecutively select RAID 1; Size: accept the size displayed; Accept SPAN = NO Change the last value to NOSPAN if required. Accept these new values by pressing Enter. The system will prompt you to save the configuration. Highlight Yes and press Enter. Exit the submenu by pressing Esc. 8 In the main menu enter the Initialize submenu. Select the logical drive by pressing F2. Press F10 and consecutively select **YES** to initialize the drive pack. When done, press any key to return to the main menu. 9 Exit the utility by pressing Esc. Save the configuration when prompted. Press Ctrl+Alt+Delete as indicated by the menu to reboot.

Task summary for RAID splitting

Note: This summary should be used only after reviewing the more detailed procedures and warnings in this chapter.

What to do	How to do it
Ensure that your system is fully working and the RAID hardware is properly configured.	The most important thing to verify is that the RAID channel 1 is connected to the first hard drive (top as facing the machine) and channel 2 is connected to the second drive (bottom). Open the lid and follow the cables or remove one hard drive and observe which drive is marked dead by the system. If the drive matches the graphic location on the Windows MegaRAID console, proceed with the next step.
Full data backup	Do a full data backup before RAID splitting is performed as an extra precaution.
RAID splitting **Note:** Because the 703t has only one physical drive per channel, the RAID splitting can be done using the Windows MegaRAID console without risk of CallPilot database corruption.	1 Load the Windows MegaRAID console. Ensure all drives are in ONLINE state (GREEN). 2 Right click the Channel 2 first drive (i.e (0) A1-2-Onln). Select Tools › Fail Drive. A warning message will pop-up. Ignore it and press OK. The drive status will change to FAILED and the color of the icon should change to RED. The alarm should start beeping. **Note:** The alarm can be silenced, but under no circumstances should it be disabled. Select Objects › Adapter › Alarm Console › Silence Alarm from the toolbar. Technically the drive that is marked FAILED is now the Backup Drive.
Perform CallPilot software upgrade	Let the system boot. The system will still run after Channel 2 of the RAID card was taken out of service and will boot to Windows. Perform the software upgrade.
RAID synching for upgrade successful	**WITHOUT** shutting down the server, in the Physical Devices section of the MegaRAID console, right click the Channel 2 first drive (i.e Channel 2 (0) A1-2-Failed). From the right mouse pop-up menu select Rebuild. When Rebuild is done, the drive status will change to ONLINE and the color of the icon should change to green. The alarm should stop beeping unless it was temporarily silenced. The process can take up to one hour. **DO NOT** shut down the machine before the rebuild is complete. If you do reboot or power down during this process, you need to do 'RAID synching for upgrade NOT successful', then start again. You can monitor the rebuild by opening the Windows MegaRAID console.
RAID synching for upgrade NOT successful	If the software upgrade has failed, the system needs to be returned to the original configuration. 1 Restart the server and enter the Ctrl+M utility. 2 Select Objects › Physical Drive › FAIL Drive for the drive on Channel 1.The drive will show as FAIL after this step. 3 Select the drive on Channel 2 (previously taken offline or the Backup drive) and make it ONLINE. Ignore the warning message. At this point the drive on the Channel 2 is ONLINE and the one on Channel 1 is marked FAILED. 4 Exit the utility and reboot. The system will boot up to the original configuration before the software upgrade and an audible alarm will indicate the state CRITICAL for the drives. At this time, you can silence the alarm but DO NOT disable it. 5 Once the system is fully operational, open the Windows MegaRAID console and rebuild the FAIL drive on Channel 1 using the same process indicated in "RAID synching for upgrade successful". Reverting to original from a failed software upgrade is now complete. The audible alarm, if left on, should automatically stop.

Chapter 10

Replacing or adding voice processing boards

In this chapter

DSP numbering and location 180

Replacing MPB96 boards 181

DSP numbering and location

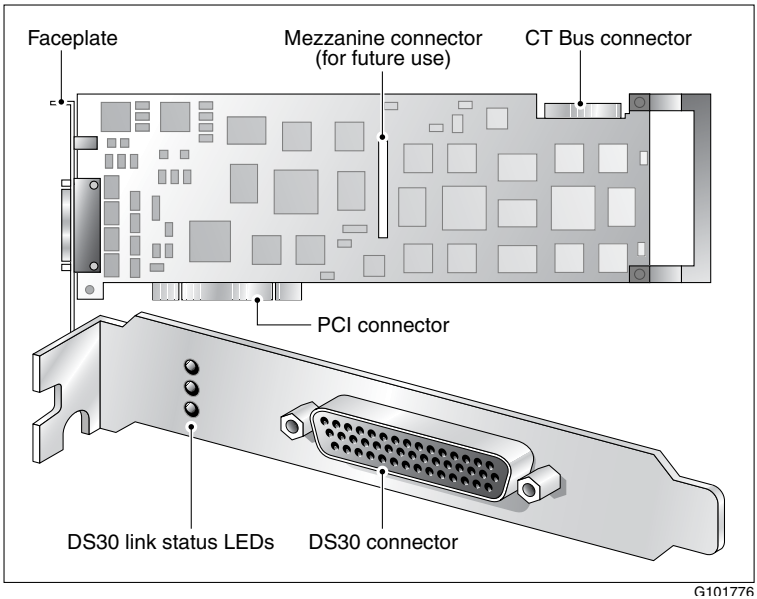
Introduction

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. If an embedded DSP is faulty, you must replace the entire MPB96 board.

The following diagram shows the MPB96 board:



Replacing MPB96 boards

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

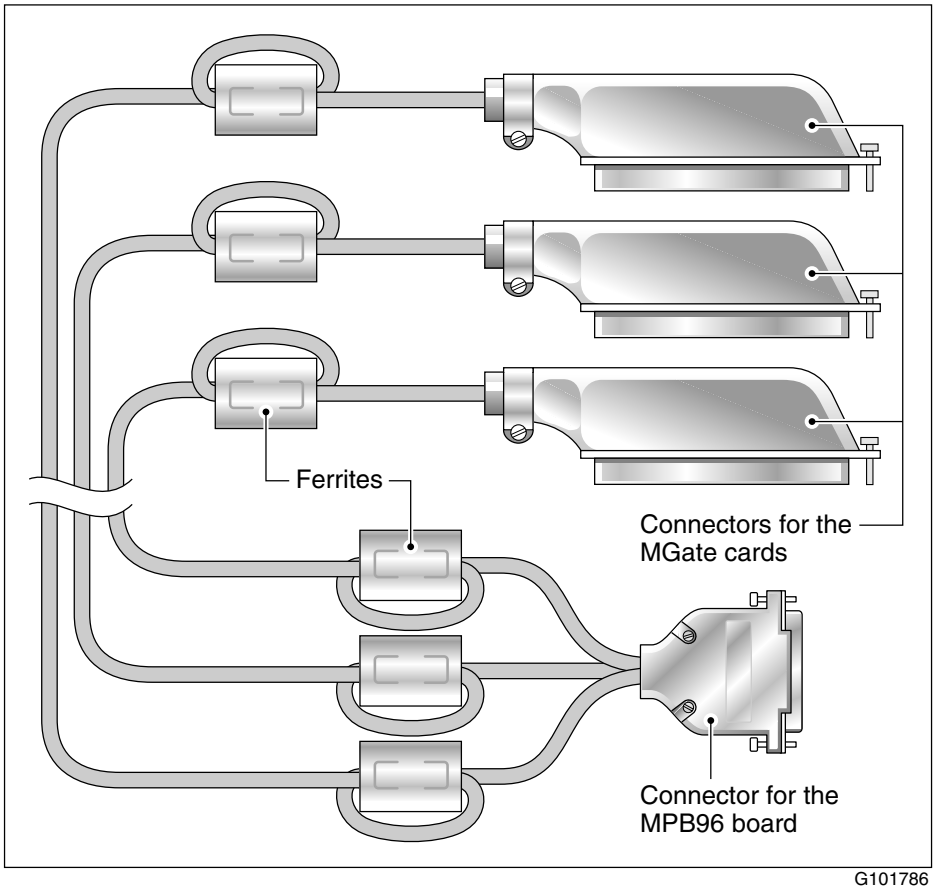
Risk of electrical damage

- 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

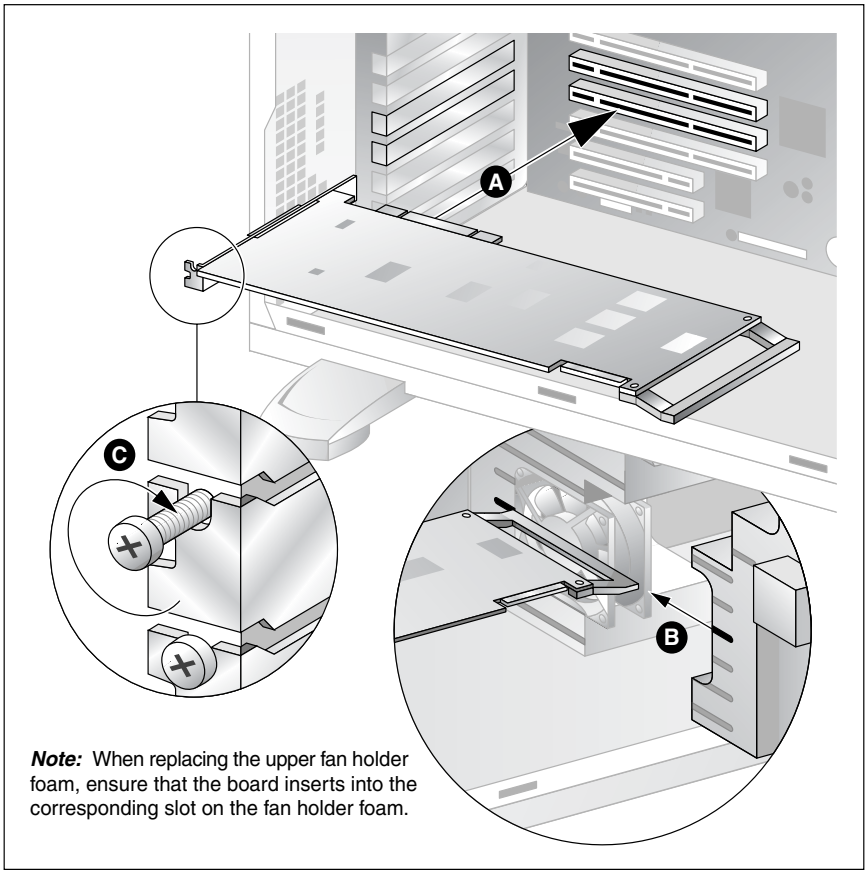
- MPB96 board (NTRH40AA)
- DS30X cable (NTRH2014)

  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



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Note: For Meridian 1 and Succession 1000 systems, the MPB96 board is installed in slot 4.

To replace an MPB96 board

1 Prepare the server for MPB96 board replacement as follows:

a. Shut down the server, shut off the power, and then disconnect the following cables:
— power cable
— peripheral device cables
— DS30X cable(s) (Meridian 1 and Succession 1000 only)

b. Place the server on its side.

c. Remove the side cover.

d. Remove the upper fan holder foam.

For instructions, see “Preparing the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 120.

8 Replace the server cover.

Note: Be careful not to pinch any cabling when replacing the server cover.

9 Reconnect the peripheral device and power cables.

10 Reconnect the DS30X cable to the faceplate of the MPB96 board.

Note: Ensure that a single-point ground reference is available for all the power outlets serving the CallPilot server and its peripherals. Before the CallPilot server installation, a qualified electrician must implement the single-point ground reference requirement between the power outlets of the CallPilot server and the power outlets of the switch.

11 Power up the server and log on to Windows.

12 Run the Configuration Wizard to detect the new hardware.

For instructions, refer to “Running the Configuration Wizard” in the *Installation and Configuration Task List* (555-7101-210).

Result: The MPB96 board replacement is complete.

13 Test the multimedia channels to ensure that the new MPB96 board is functioning properly.

Refer to “Testing the CallPilot installation” in the *Installation and Configuration Task List* (555-7101-210).

Chapter 11

Working with DIMMs and the CPU

In this chapter

Replacing or adding baseboard DIMMs 188

Replacing the CPU 192

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.

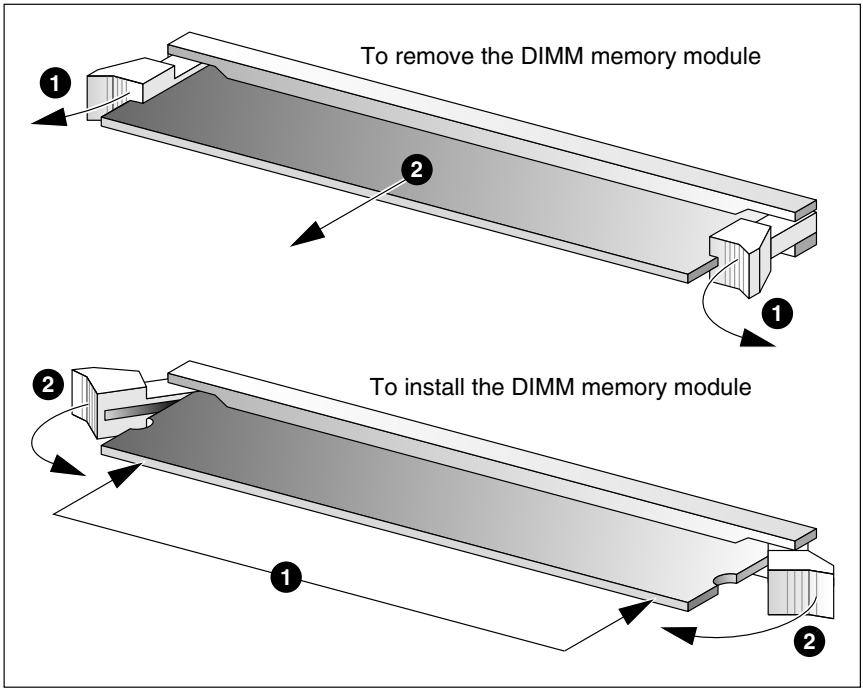
DIMM sizes and compatibility

Contact your Nortel Networks sales representative or customer support representative for a list of Nortel Networks-qualified DIMMs for the 703t server.

ATTENTION

Do not use types of DIMMs that have not been supplied 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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 191.

To install baseboard DIMMs



CAUTION

Risk of equipment damage and data corruption

Use only Nortel Networks-supplied DIMMs. A mixture of dissimilar metals (from the use of other DIMMs) can cause later memory failures, resulting in data corruption.

1 Prepare the server for DIMM installation as described in “Preparing the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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

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 the server for hardware maintenance” on page 112.



WARNING

Risk of personal injury or equipment damage

Failure to follow the procedures in “Preparing the server for hardware maintenance” on page 112 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 133.

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.

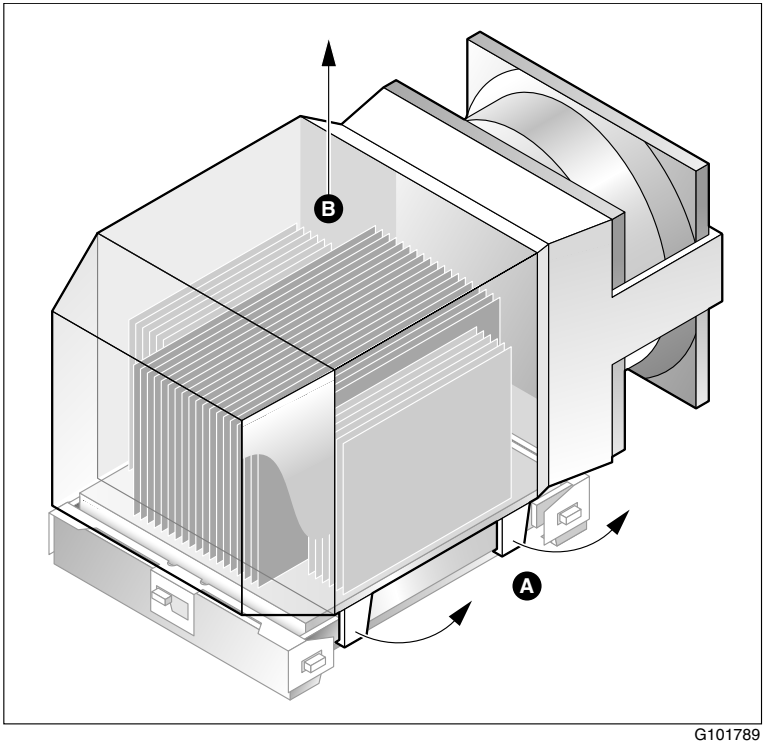
CAUTION

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.

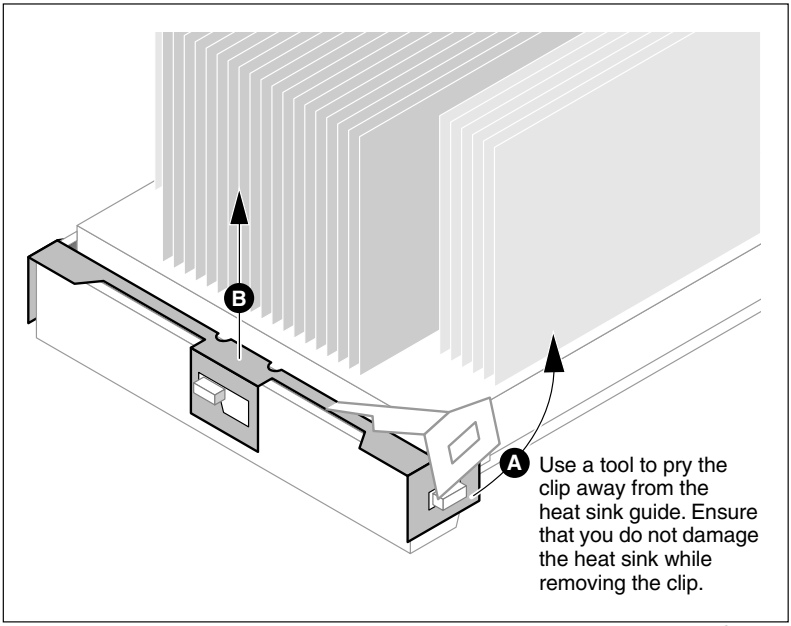
b. Repeat step a for the other side.

c. Lift the housing away from the heat sink.



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4 Remove the clips that secure the heat sink to the motherboard, as shown in the following diagram:





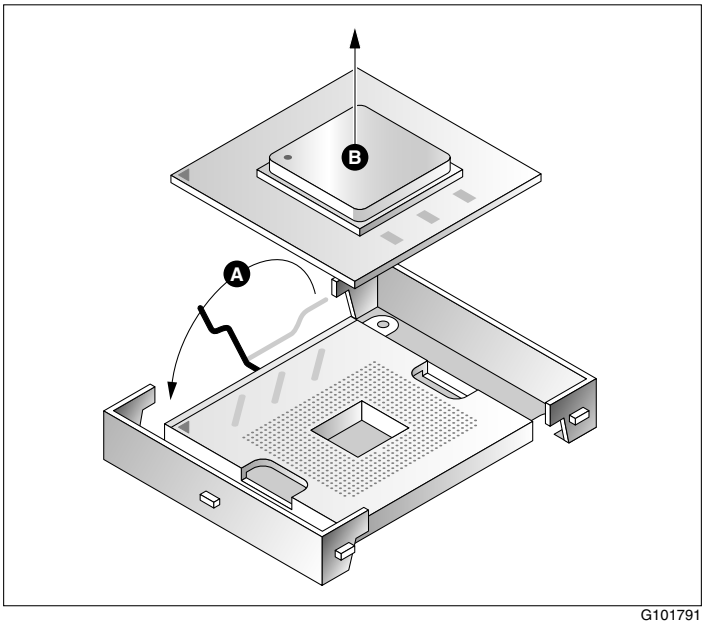
CAUTION

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 197.

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.

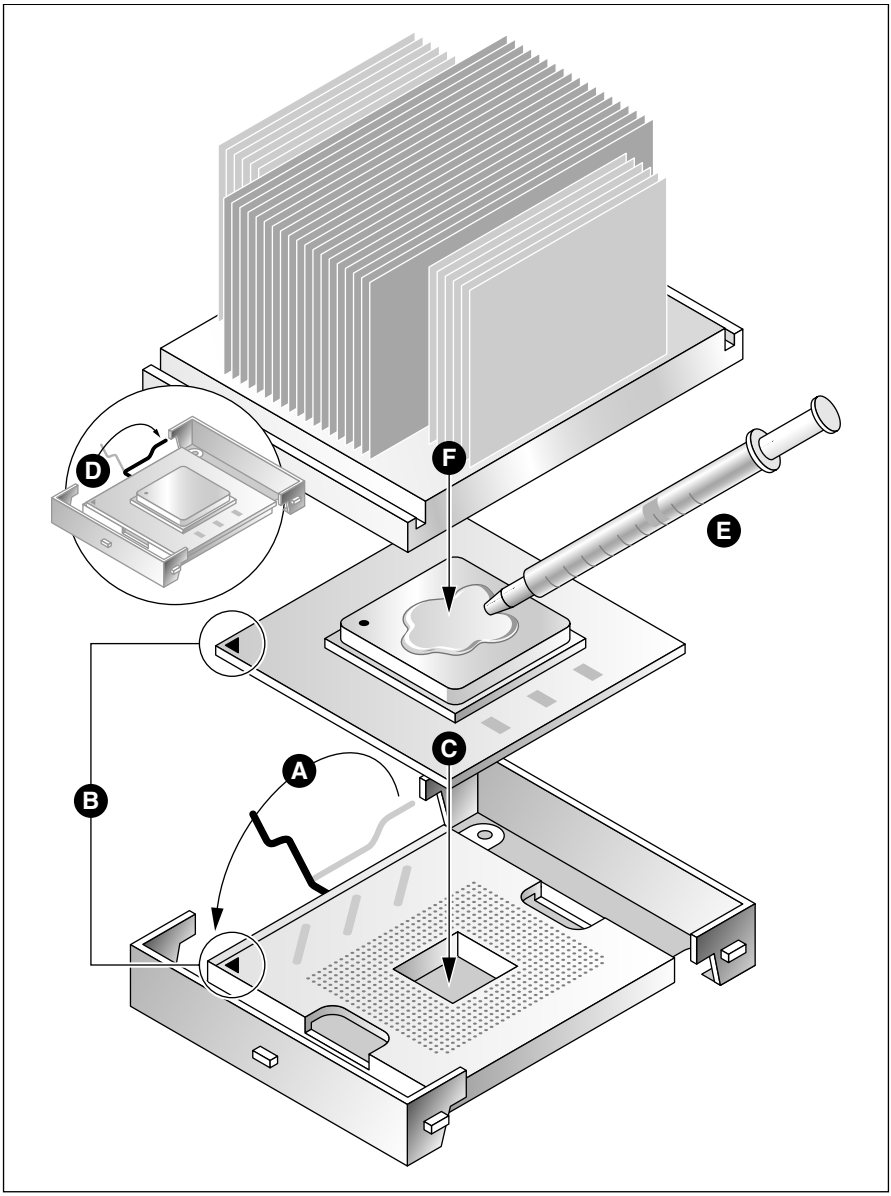


CAUTION

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 199):



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 196.

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.

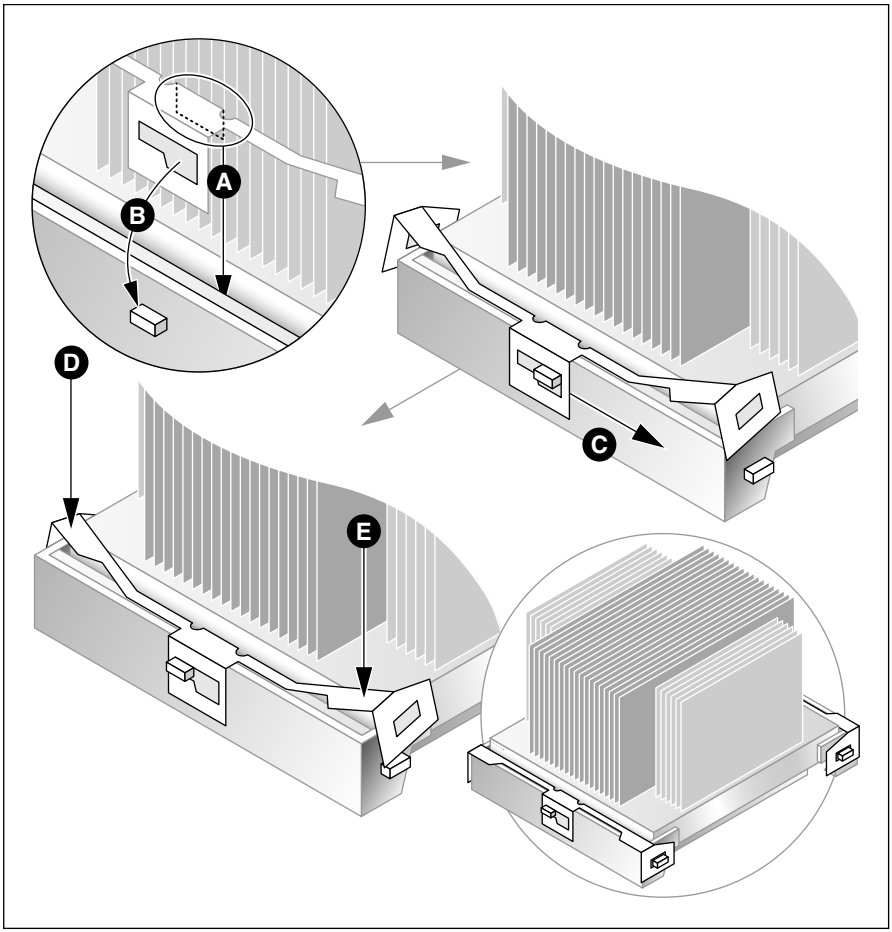
3 Install the heat sink clips as shown in the following diagram (see also the description that follows):



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

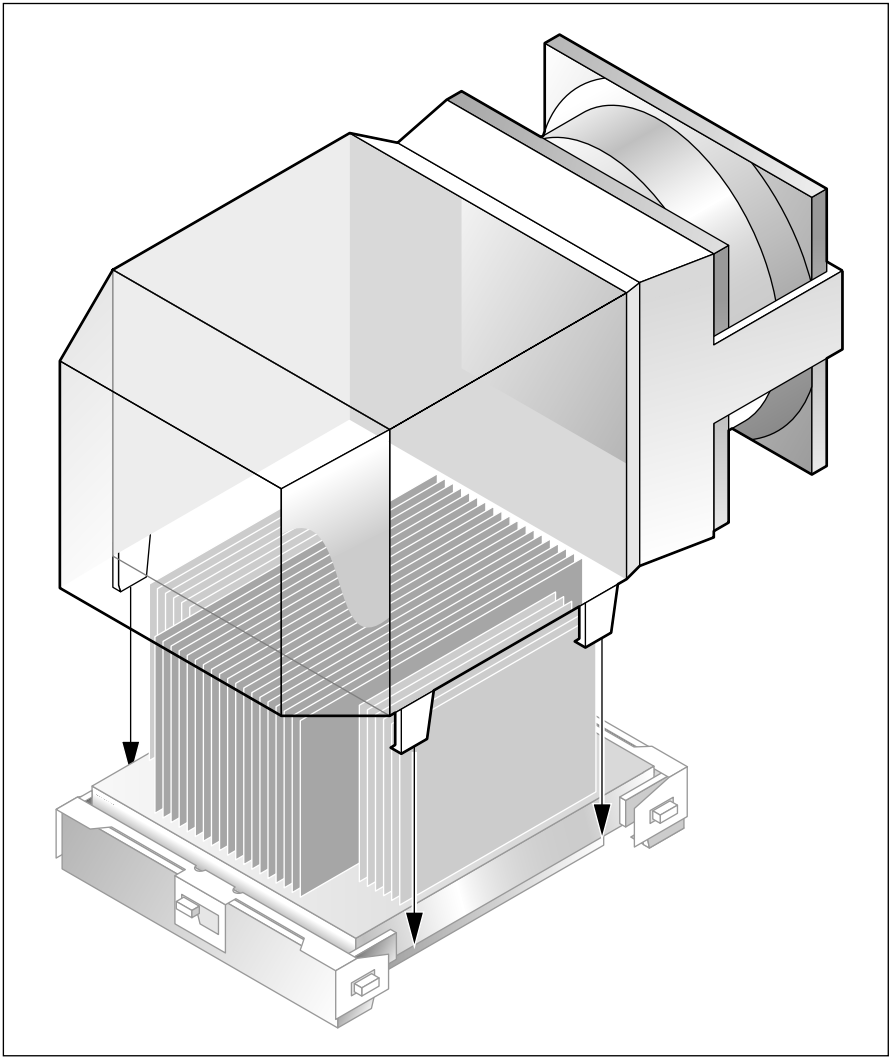
a. Align the side tabs on the clip over the heat sink guide.

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 202):



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 134.

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 204

BIOS settings 205

Updating and configuring the BIOS 211

Recovering from corrupted CMOS and BIOS 214

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: P16 Build 75
- firmware:
  BMC 1.18
  FRU/SDR 5.5i

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 212 for instructions.

BIOS settings

Introduction

This section identifies the 703t server's BIOS settings:

- Main (below)
- Advanced (see page 207)
- Security (see page 208)
- Server (see page 209)
- Boot (see page 210)

See "To configure the BIOS," on page 212 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. 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
Boot Time Diag Screen	Enabled

Options	Settings
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 215.

Note: For a complete list of BIOS settings refer to page 205.

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 the *Installation and Configuration Task List* (555-7101-210).

   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 212.

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 205.

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 215.

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 216.
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 212.

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 216.

   Note: The jumper connects pins 9 and 10 by default for normal BIOS.
5. Power up the server.

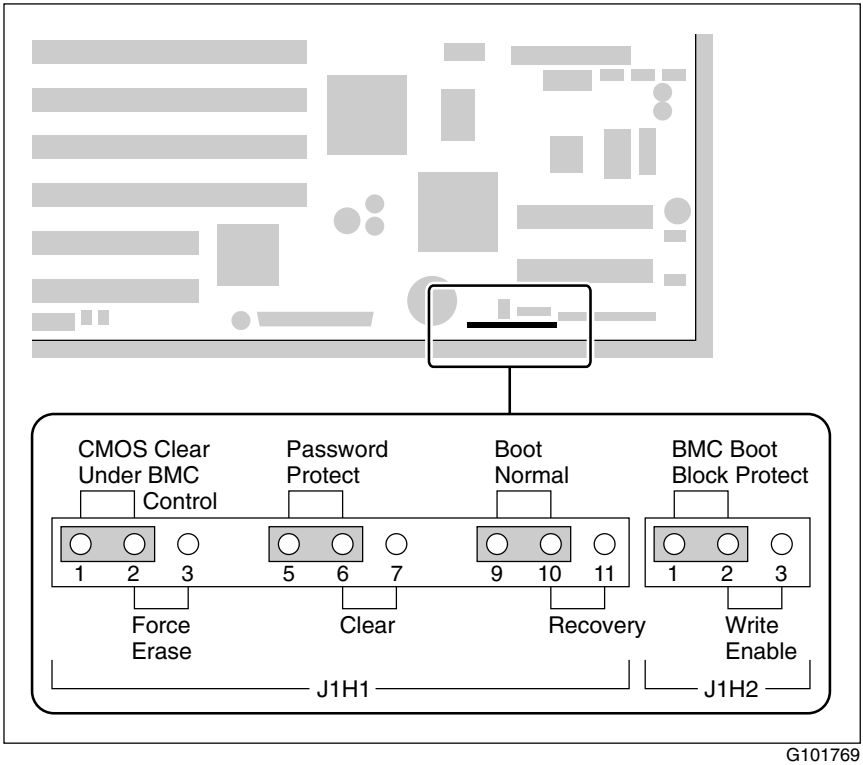
   Result: The server boots from the floppy disk and the BIOS update begins automatically. A single high-pitched beep tone announces the start of the recovery process.
6. Wait until the BIOS update is finished.

   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 218

Slot assignments 225

IRQ mapping table 227

Server features

Introduction

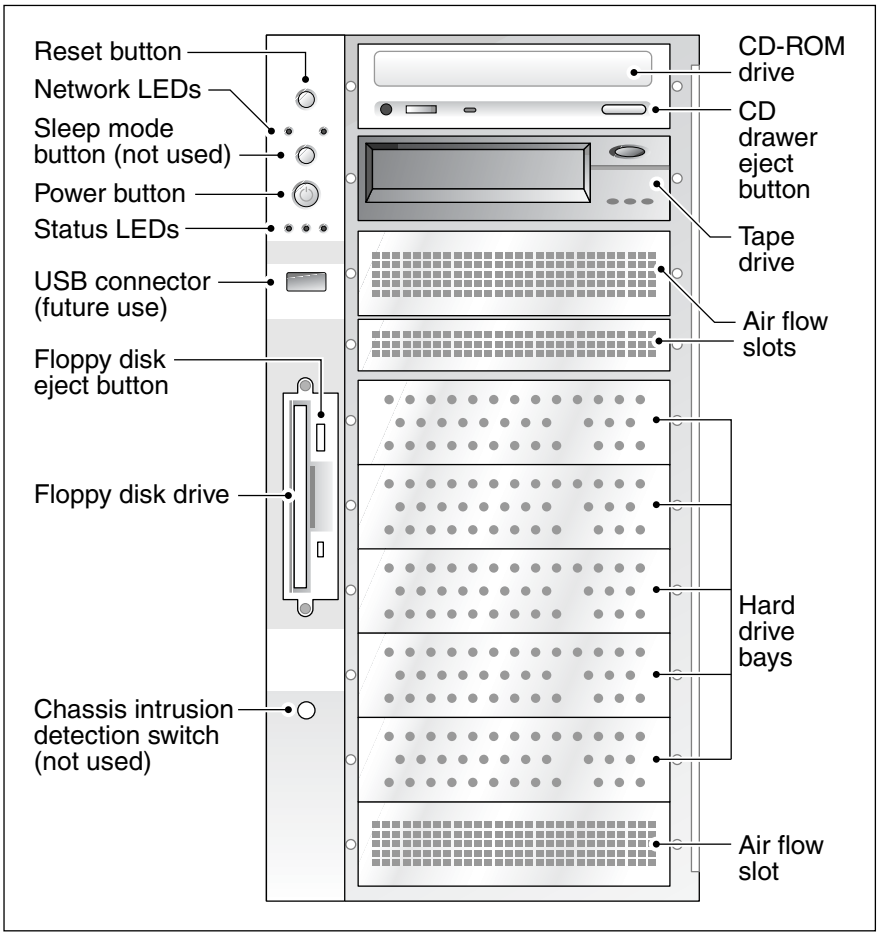
This section provides a general overview of the 703t server.

Server dimensions

Height	chassis only: 420 mm (16.75 in.) with chassis feet: 440 mm (17.5 in.)
Width	chassis only: 215 mm (8.6 in.) with chassis feet: 320 mm (12.7 in.)
Depth (distance from front to back)	650 mm (26 in.)
Clearance	■ front: 250 mm (10 in.) ■ rear: 125 mm (5 in.) ■ side: 75 mm (3 in.) **Note:** Additional side clearance is required for service. ■ top: 75 mm (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:



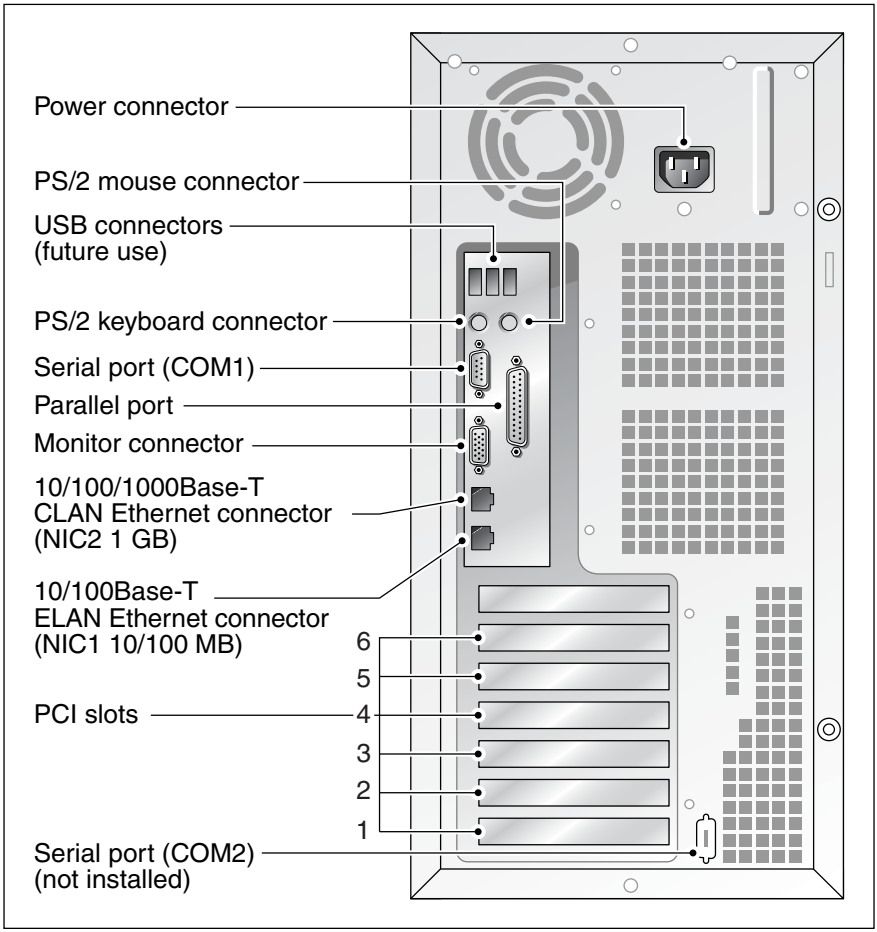
The table below describes the parts that are identified in the preceding diagram:

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 *Installation and Configuration Task List* (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 225.

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 *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 *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 225.	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 450 mm to 600 mm (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]	Meridian 1 or Succession 1000
PCI slot 7 (full length)	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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