



Nortel CallPilot

1002rp Server Maintenance and Diagnostics

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CallPilot 5.0 Standard 01.02 of the *1002rp Server Maintenance and Diagnostics* is issued for general release. Added a precaution note on replacement hard drive size.

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Chapter 1

How to get help

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

Getting help from the Nortel Web site

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

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

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

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

Getting help over the phone from a Nortel Solutions Center

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

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

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

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

Getting help from a specialist by using an Express Routing Code

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

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

Getting help through a Nortel distributor or reseller

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

Chapter 2

About this guide

In this chapter

"Maintenance and diagnostics overview" (page 13)

Maintenance and diagnostics overview

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

- troubleshooting and diagnostics (identifying the cause of system problems and resolving them)
- performing 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 system problem with the resources described in this guide, you can also refer to the following document:

- *Troubleshooting Guide* (NN44200-700)

Note: Nortel continually updates the *Troubleshooting Guide*, which is available from the Partner Information Center (PIC) at <http://www.nortel.com/pic>.

The "Starting up and shutting down the CallPilot server" chapter in the *Installation and Configuration Task List* (NN44200-306) explains how to restart, shut down, and power up the CallPilot server. You may be asked to perform one or more of these tasks while maintaining your server.

When you purchased your CallPilot server, it came preinstalled with the Windows 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.

Replacement parts

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



CAUTION

Risk of system damage

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

Preparing for maintenance activities

Before you proceed with hardware maintenance activities, review the *1002rp Server Hardware Installation* (NN44200-300) guide for the following information:

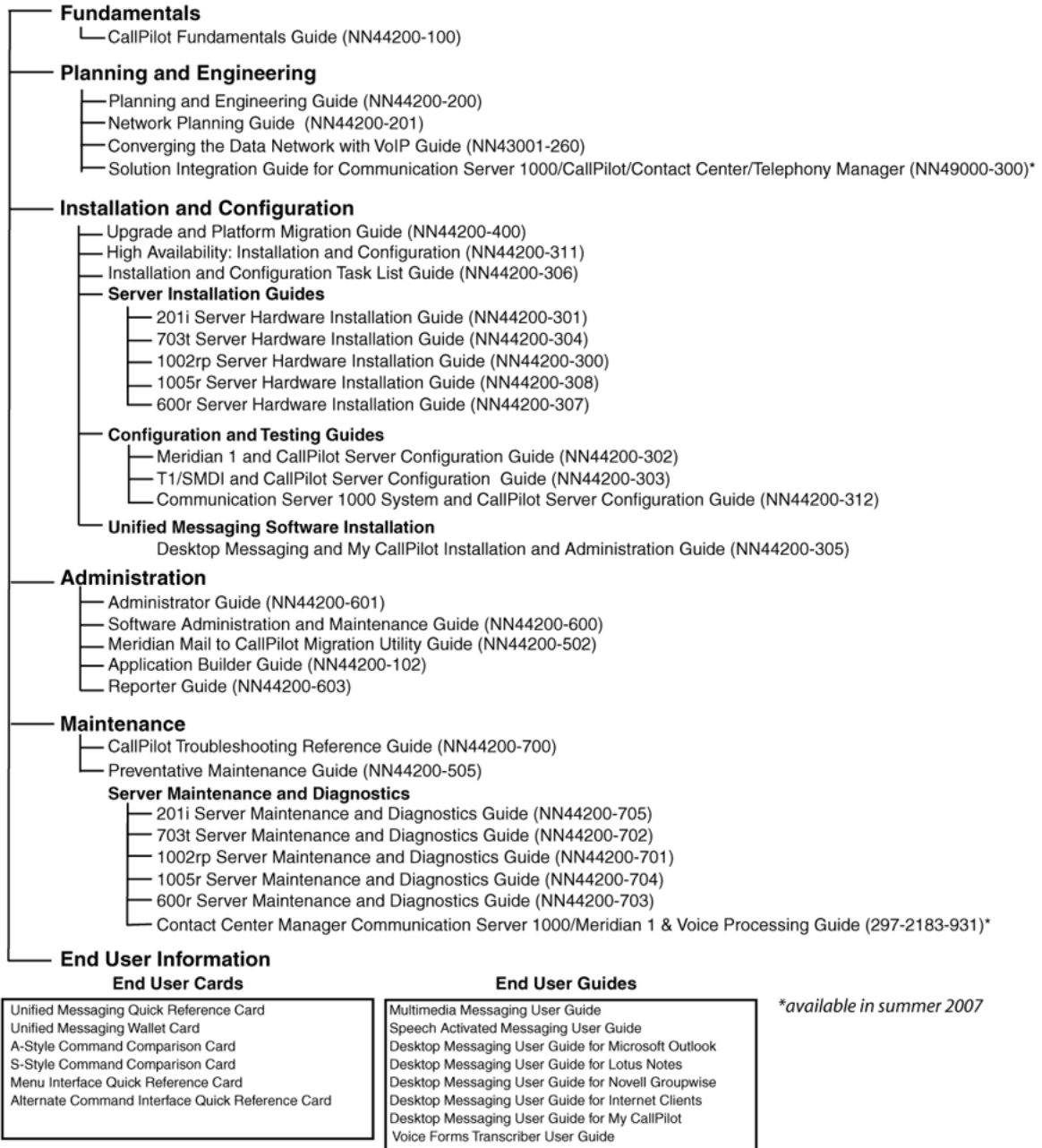
- required tools and equipment
- recommended safety precautions for electrostatic discharge, handling cards, and handling your server
- instructions for shutting down your 1002rp server or for taking it out of service

Reference documents

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



CallPilot Customer Documentation Map



Chapter 3

Troubleshooting your CallPilot system

In this chapter

"Startup diagnostics overview" (page 17)

"Basic hardware check" (page 17)

"Power-On Self-Test diagnostics" (page 18)

"Interpreting POST diagnostics" (page 19)

"Interpreting startup diagnostics from SCSI BIOS" (page 20)

"What to do when the server fails to boot into service" (page 21)

Startup diagnostics overview

This section contains procedures for interpreting the startup diagnostics on the 1002rp server.

Types of startup diagnostics

The following types of startup diagnostics are available on the server:

- basic hardware check (for example LEDs)
- Power-On Self-Test (POST) diagnostics
- SCSI controller diagnostics or RAID controller diagnostics

These diagnostics are available at initial system startup, or after any 1002rp server reset.

Basic hardware check

This section describes some basic checks that you can do when you start up the server.

To run the startup test

Step	Action
1	Power on the server and observe the front panel display. Result: All LEDs on the panel illuminate for a few seconds. The green power LED remains illuminated.
2	Observe the following server actions: <ul style="list-style-type: none"> • Cooling fans on the front panel start up, and the red fault LED next to each fan extinguishes. • Drives spin up, and the amber hard drive activity LEDs over the front panel display extinguish, and then flash with activity. • LEDs illuminate temporarily as the system checks the floppy drive, tape drive, and CD-ROM drive. • The LED on each power supply lights up red as supply fans spin up and components charge. LEDs turn green when the attached power supply is fully operational.
3	Check the monitor for any error messages as the server counts RAM and completes a POST. See "Power-On Self-Test diagnostics" (page 18) for more details on POST.

—End—

Power-On Self-Test diagnostics

The Power-On Self-Test (POST) is a system diagnostic program (stored in the BIOS) that runs each time the 1002rp server is started. The function of the POST is to test system components and then display status messages.

To run the POST

Step	Action
1	Power up the CallPilot server and monitor. Result: After a few seconds, POST begins to run. After the memory test, various screen prompts and messages appear. The screen prompts may be accompanied by a single beep.
2	Observe the screen for any error messages and listen for POST beep codes. When POST completes, the server beeps once.

If the server halts before POST is finished, the server emits a beep code indicating that a fatal system error requires immediate attention. See ["Interpreting POST diagnostics" \(page 19\)](#) for details.

If POST can display a message on the monitor, the server emits two beeps as the message appears.

Record the message that appears on the monitor and the beep code that you hear. This information is useful if you need assistance from your technical support representative.

—End—

Interpreting POST diagnostics

This section provides an explanation of the POST diagnostic codes.

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 code sequence before calling Nortel technical support.

ATTENTION

Some POST beep codes are fatal and may require that you replace the Single Board Card (SBC). See the table below for more information about beep codes.

POST beep codes

Beep count	Error message	Description
1	Refresh Failure	The memory refresh circuitry of the processor board is faulty.
2	Parity Error	A parity error was detected in the base memory (the first block of 64 kbytes) of the system.
3	Base 64KB Memory Failure	A memory failure occurred within the first 64 kbytes of memory.
4	Timer Not Operational	A memory failure occurred within the first 64 kbytes of memory, or Timer #1 on the processor board failed to function properly.
5	Processor Error	The Central Processing Unit (CPU) on the processor board failed to function properly.

Beep count	Error message	Description
6	8042 - Gate A20 Failure	The keyboard controller (8042) contains the Gate A20 switch, which allows the CPU to operate in protected mode. This error message means that the BIOS cannot switch the CPU into protected mode.
7	Processor Exception Interrupt Error	The CPU on the processor board generated an exception interrupt.
8	Display Memory Read/Write Error	The system video adapter is either missing or its memory is faulty.

Note: This is not a fatal error.

9	ROM Checksum Error	The ROM checksum value does not match the value encoded in the BIOS.
10	CMOS Shutdown Register Read/Write Error	The shutdown register for the CMOS RAM failed.
11	Cache Memory Bad: Do Not Enable Cache	The cache memory test failed. Cache memory is disabled.

Note: Do not press Ctrl+Alt+Shift<+> to enable cache memory.

Interpreting startup diagnostics from SCSI BIOS

The results from the SCSI controller diagnostics appear after the POST results.

Applicable cards

Results of the startup diagnostics appear only if you have the following cards installed on your system:

- Adaptec SCSI controller

The adapter is integrated in the SBC and can be disabled.

- LSI Elite 1600 controller

What to do when the server fails to boot into service

This section suggests tasks you can perform to determine why the server fails the bootup cycle.

To determine why the server failed to boot to Windows

Step	Action
1	Make a note of any diagnostic codes.
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.
4	Refer to the <i>Troubleshooting Guide</i> (NN44200-700) for other suggestions. If you still cannot determine the cause of the startup failure, call your Nortel technical support representative.

—End—

To determine why the server failed to boot into CallPilot

If the system-ready indicator indicates that the system is not booting into CallPilot, follow these steps:

Step	Action
1	Make a note of any diagnostic codes.
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.
4	View the event logs. For instructions, see "Viewing event logs" (page 23) .
5	Refer to the <i>Troubleshooting Guide</i> (NN44200-700) for other suggestions. If you still cannot determine the cause of the startup failure, call your Nortel technical support representative.

—End—

Chapter 4

Using Windows online diagnostic tools

In this chapter

"Overview" (page 23)

"Viewing event logs" (page 23)

"Using TCP/IP diagnostic tools" (page 27)

"Using the chkdsk utility" (page 34)

Overview

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

- Windows Event Viewer
- TCP/IP diagnostics
- chkdsk utility



CAUTION

Risk of software corruption

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

Viewing event logs

When the server startup cycle is complete, and if the CallPilot server has been configured, 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 diagnostic tools:

- Windows Event Viewer on the 1002rp 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 Windows Event Viewer.

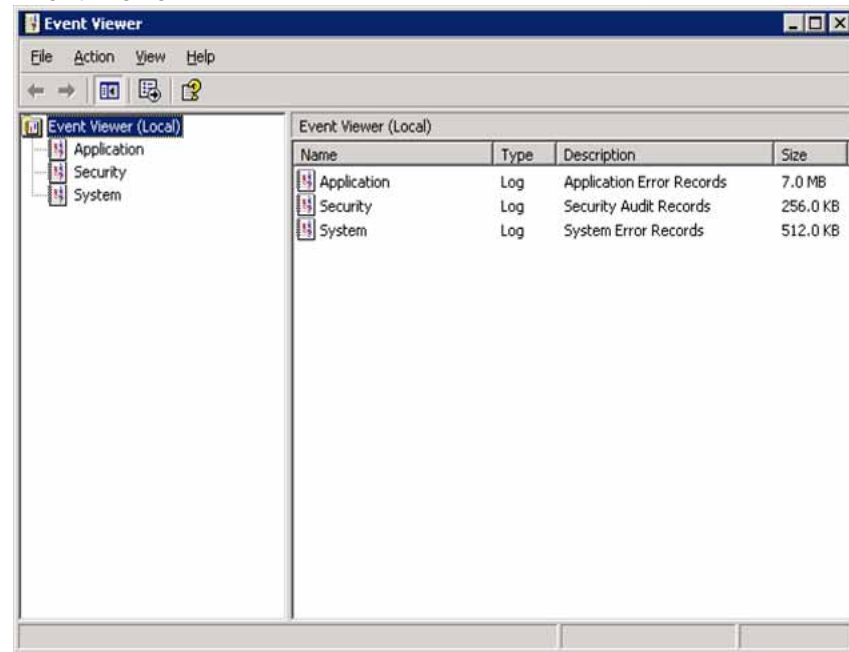
Types of event logs

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

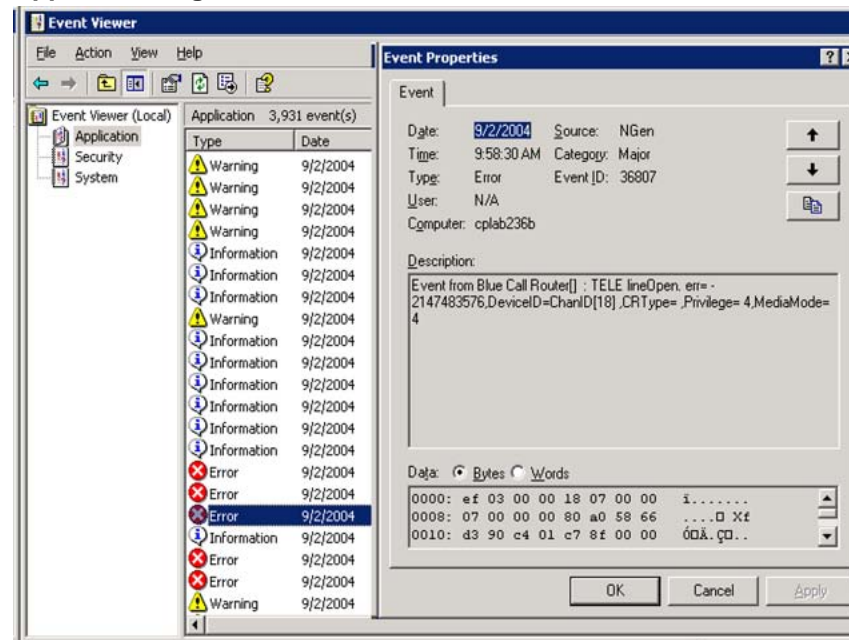
Log type	Description
System	Logs events by Windows components, including RRAS or other Windows services.
Security	Logs security events, such as logons, logoffs, and illegal access. This option is available only to users with Administrative access.
Applications	Logs events by application, such as database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

To use the operating system Event Viewer

Step	Action
1	Click Start → Programs → Administrative Tools → Event Viewer. Result: The Event Viewer window appears.

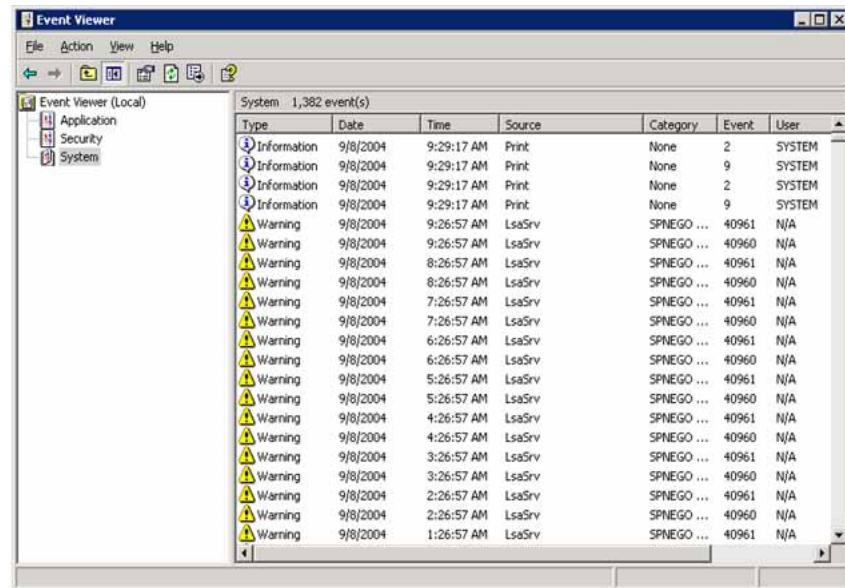
Event Viewer

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

Application log

The following illustration shows an example of a System log.

System log



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

- Look for error codes that have occurred since the last startup. Error codes are flagged with the following symbols.



Note: Each error is date- and time-stamped.



indicates major or critical errors



indicates minor errors



indicates information

- 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 the error description does not suggest a solution, contact your Nortel support representative.

- 5 Click Close.
Result: The event log reappears.
- 6 Click Log → Exit.
Result: The Event Viewer closes.

—End—

Using TCP/IP diagnostic tools

This section describes the following TCP/IP diagnostic tools which are 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 any configuration problems.

The ipconfig command

The ipconfig command displays IP configuration information.

ipconfig default

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

ipconfig command syntax

The ipconfig command uses the following syntax:

```
ipconfig [/ ]
```

The following flags are available for the ipconfig command.

ipconfig command extensions

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

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>ipconfig <parameters></code> . Example: <code>ipconfig /all</code>
3	Press Enter. Result: The system runs the ipconfig utility.
4	Type Exit to exit the Command Prompt window and return to Windows.
—End—	

The ping command

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

Ping command syntax

The ping command uses the following syntax:

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

ping command extensions

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	Sets Don't Fragment flag in packet.
-i TTL	Specifies the Time To Live
-v TOS	Specifies the Type Of Service
-r count	Specifies the number of Record route for count hops
-s count	Specifies the number of Time stamp for count hops
-j host-list	Specifies the Loose source route along host list

Parameter	Description
-k host-list	Specifies the Strict source route along host list
-w timeout	Specifies the Timeout in milliseconds to wait for each reply

To run the ping command from Windows

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

—End—

The tracert command

This utility determines the route taken to a destination.

How tracert works

The tracert utility follows several steps to complete its task:

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

Tracert syntax

The tracert command uses the following syntax:

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

Tracert parameters

the following table shows the tracert parameters.

Tracert parameters

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

To run the tracert command from Windows

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. 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.
—End—	

The arp command

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

ARP command syntax

The ARP command uses the following syntax:

```
arp -s inet_addr eth_addr [if_addr]
```

```
arp -d inet_addr [if_addr]
```

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

ARP command parameters

ARP command parameters

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 where the 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

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

—End—

The nbtstat command

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

Nbtstat command syntax

The nbtstat command uses the following syntax:

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

nbtstat command parameters

nbtstat command parameters

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

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type nbstat with the required parameters.
3	Press Enter. Result: The system runs the nbstat utility.
4	Type Exit to exit the Command Prompt window and return to Windows.
—End—	

The netstat command

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

Netstat command syntax

The netstat command uses the following syntax:

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

netstat command parameters

netstat command parameters

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

To run the netstat command from Windows

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>netstat</code> with the required parameters.
3	Press Enter. Result: The system runs the netstat utility.
4	Type <code>Exit</code> to exit the Command Prompt window and return to Windows.
—End—	

Using the chkdsk utility

The chkdsk utility checks a specified disk on the server and displays a status report. You can run the utility 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 errors at the Windows file system level. CallPilot can be affected by errors at both the Windows and CallPilot file system levels. The chkdsk utility will not detect CallPilot file system level errors.

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]
```

Chksdsk utility parameters

Chksdsk utility parameters

Parameter	Description
drive:	Drive letter of the drive that you want to check.
filename	Names of files to check for fragmentation.
/F	Optional parameter to fix errors on the disk.

Parameter	Description
/V	Optional parameter to display the full pathname of every file on the disk.
/R	Optional parameter to locate bad sectors and to recover readable information.

To run the chkdsk utility from Windows

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>chkdsk <drive letter:></code> (for example, <code>chkdsk c:</code>).
3	Press Enter. Result: The system runs the chkdsk utility.
4	Type E xit to exit the Command Prompt window and return to Windows.

—End—

Chapter 5

Using serial port diagnostic tools

In this chapter

"Overview" (page 37)

"Shutting down services" (page 37)

"Conducting TSTSERIO tests" (page 40)

"Conducting TSTSERIO tests with the loopback plug" (page 42)

"Restarting services" (page 43)

Overview

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 following procedures before you invoke the TSTSERIO local loopback tests.



CAUTION

Risk of communications loss

By stopping the services on COM1 or COM2, you lose the support access feature.

**CAUTION****Risk of stopping call processing**

By stopping the services on COM2, you stop call processing on CallPilot.

Services to stop for COM1 testing

- Routing and Remote Access Service

Services to stop for COM2 testing

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

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 you run the diagnostic. For details, see ["Restarting services" \(page 43\)](#).

To invoke the Net Stop command from Windows

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>net stop "service_name"</code> , and then press Enter. Example: Type <code>net stop "Remote Access Server"</code> , 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.

—End—

Service Control (SC) command

Use the Service Control command to stop a specified service on a serial port.

Service Control command syntax

The Service Control command uses the following syntax:

```
sc <service_name>
```

ATTENTION

You must restart the services that you shut down through the Service Control command after you run the diagnostic. For details, see ["Restarting services" \(page 43\)](#).

To invoke the Service Control command from Windows

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>sc stop "service_name"</code> , and then press Enter. Example: Type <code>sc stop "Remote Access Server"</code> , and then press Enter. Note: The quotation marks are required, as in the example above. Result: The system runs the Service Control command utility.
3	Type Exit , and then press Enter to exit the Command Prompt window.

—End—

Conducting TSTSERIO tests

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" \(page 37\)](#).



CAUTION

Risk of communications loss

By stopping the services on COM1 or COM2, you lose the support access feature.



CAUTION

Risk of stopping call processing

By stopping the services on COM2, you stop call processing on CallPilot.

TSTSERIO command syntax

The syntax for the TSTSERIO command is as follows:

```
TSTSERIO [/?] /P:comport [/S:subststname] [/L:loops]
```

TSTSERIO command parameters

TSTSERIO command parameters

Flag	Requirement	Description
?	n/a	Displays Help.
/P:comport	Required	Specifies the symbolic port name assigned to the port you want to test.
/S:subststname	Optional	Specifies a TSTSERIO subtest. See the following table 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.

TSTSERIO internal loopback subtests

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

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>tstserio</code> with the required parameters, and then press Enter. For example, type <code>TSTSERIO /P com1</code> or <code>TSTSERIO /P com 2</code> , and then press Enter.
3	Type <code>Exit</code> , and then press Enter to exit the Command Prompt window.
—End—	

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" \(page 42\)](#)

TSTSERIO external loopback plug subtests.

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

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>tstserio</code> with the required parameters, and then press Enter. For example, type <code>TSTSERIO /P com1 /S extr</code> , and then press Enter.
3	Type <code>Exit</code> , and then press Enter to exit the Command Prompt window.
—End—	

Conducting TSTSERIO tests with the loopback plug

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

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

Restarting services

This section describes how to restart the services for COM1 or COM2 after invoking the TSTSERIO local loopback tests.

Services to restart after COM1 testing

- Routing and Remote Access Service

Services to restart after COM2 testing

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

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

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	At the Command prompt, type <code>net start "service_name"</code> , and then press Enter. For example, type <code>net start "Remote Access Server"</code> , and then press Enter. Note: The quotation marks are required, as in the example above.
3	Type <code>Exit</code> , and then press Enter to exit the Command Prompt window.

—End—

Service Control Start command

Use the Service Control Start command to restart a specified service on a serial port. The syntax for the Service Control Start command is as follows:

```
sc <service name>
```

To invoke the Service Control Start command from Windows

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

- | | |
|---|---|
| 1 | Click Start → Programs → Accessories → Command Prompt.
Result: The Command Prompt window appears. |
| 2 | At the Command prompt, type <code>sc start "service_name"</code> , and then press Enter.

For example, type <code>sc start "Remote Access Server"</code> , and then press Enter.

Note: The quotation marks are required, as in the example above. |
| 3 | Type <code>Exit</code> , and then press Enter to exit the Command Prompt window. |

—End—

Chapter 6

Using CallPilot Manager to monitor hardware

In this chapter

"Understanding fault management" (page 45)

"Alarm Monitor" (page 47)

"Event Browser" (page 48)

"Channel and Multimedia Monitors" (page 50)

"The Maintenance screen" (page 50)

"Viewing component states" (page 53)

"Starting and stopping components" (page 55)

"Running integrated diagnostics" (page 58)

"Viewing the last diagnostic results" (page 60)

"Working with the Multimedia Monitor" (page 61)

"Working with the Channel Monitor" (page 63)

Understanding fault management

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 MPB96 card switching to disabled status.

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

Alarm notification

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

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

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, all multimedia channels, and all 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 time switch.
MPB96	All multimedia channels on the MPB96 card.
DS30X	All DS30X channels associated with the DS30X link.
T1 board	Telephony Interface. All DS0 (zero) channels associated with the telephony interface.

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

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:

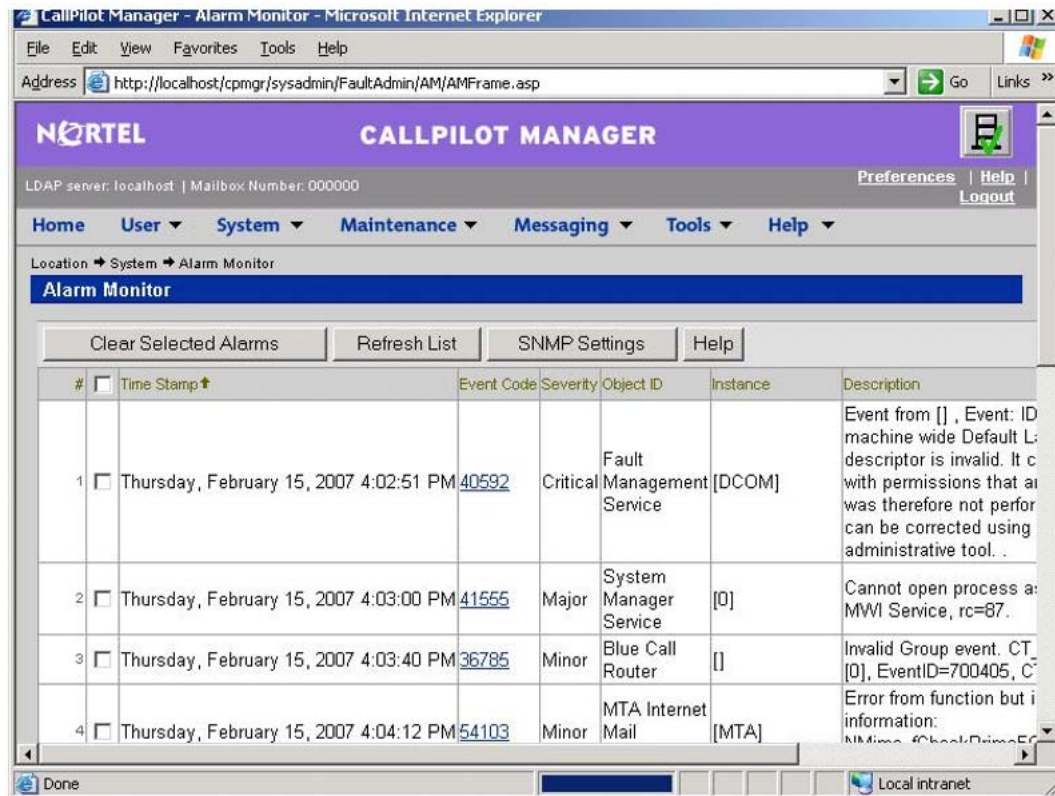
- Alarms appear in the Alarm Monitor only for Minor, Major, and Critical events (not Information events). All events can be reported in the Event Browser (depending on filtering criteria defined in the Event Browser).
- The first time an event occurs, it generates an alarm that appears in the Alarm Monitor. 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

Step	Action
1	Run CallPilot Manager and log in.
2	In CallPilot Manager, click System→Alarm Monitor.
Result: The Alarm Monitor screen appears.	

Alarm monitor screen



- 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 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" (page 48)).

—End—

Event Browser

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

About events

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

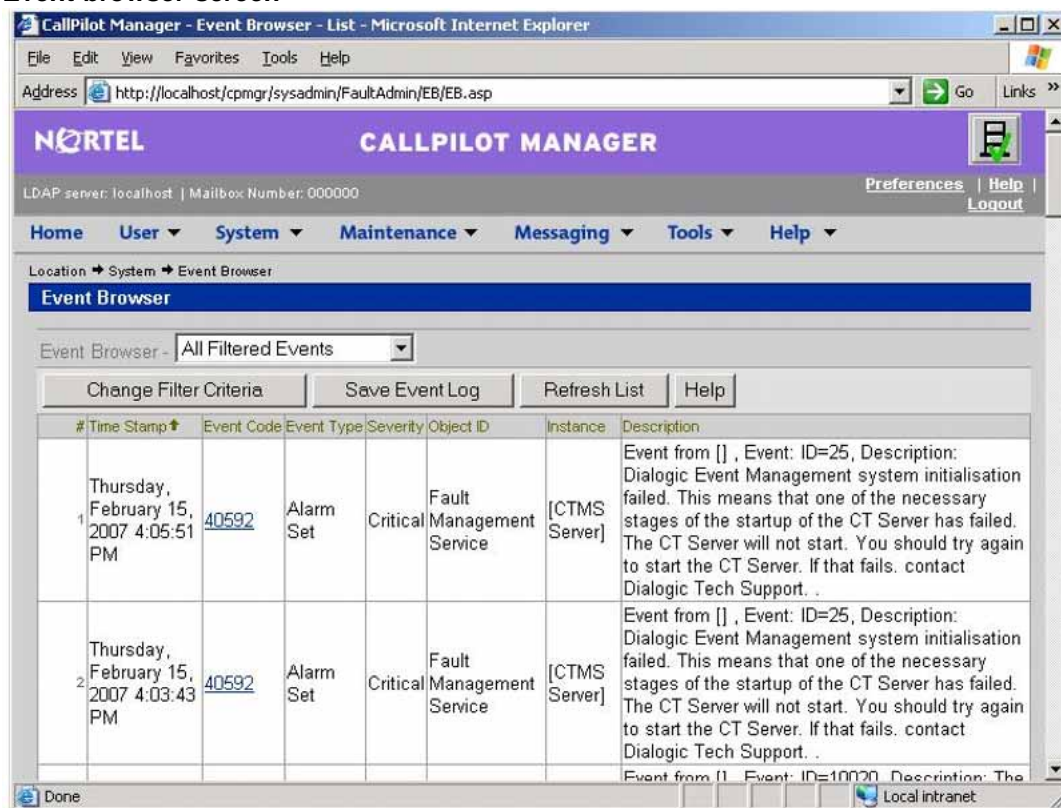
Events are classified as Information, Minor, Major, or Critical. By default, the Event Browser displays only the latest 100 critical events.

To investigate using the Event Browser

Step	Action
1	Run CallPilot Manager and log in.
2	In CallPilot Manager, click System→Event Browser.

Result: The Event Browser screen appears.

Event browser screen



- 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 more events, if necessary.
- 6 If the solution to the problem is not apparent, contact your Nortel technical support representative.

—End—

Note: For information on how to use the Event Browser refer to the CallPilot Manager online Help.

Channel and Multimedia Monitors

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

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

Disabling call channels

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

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.

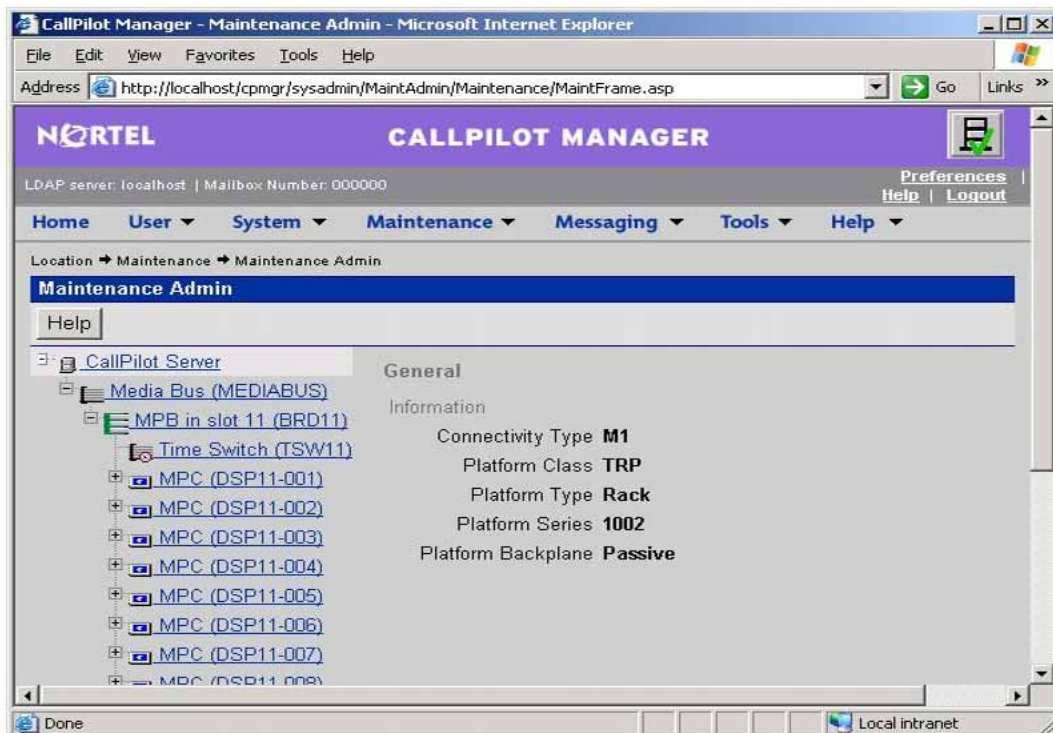
What the Maintenance screen provides

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.

"Partially expanded tree for 1002rp" (page 51) shows a partially expanded tree for the 1002rp server.

Partially expanded tree for 1002rp



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

Component sections

Section	Description
General	<p>This section shows general technical information about the selected component. This typically includes the following details:</p> <ul style="list-style-type: none"> the name, class, type, series, or version of a component various capabilities of a component (for example, whether a component is removable) <p>Note: This section does not appear for all components.</p>
Maintenance	<p>This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test.</p> <p>This section appears only for components on which you are allowed to perform maintenance administration.</p> <p>For more information about working with component states, see the following sections:</p> <ul style="list-style-type: none"> "Viewing component states" (page 53) "Starting and stopping components" (page 55)
Diagnostics	<p>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.</p> <p>This section appears only for components on which you are allowed to run diagnostics.</p> <p>For more information about running diagnostics, see the following sections:</p>

Section	Description
	<ul style="list-style-type: none"> • "Running integrated diagnostics" (page 58) • "Viewing the last diagnostic results" (page 60)

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.

Maintenance activities

Component	Start, stop?	Courtesy stop?	Diagnostics available?	Replaceable?
Media Bus	Yes	No	Yes	No
MPB96 board	Yes	No	Yes	Yes
Time Switch	No	No	No	No
MPCs (embedded on MPB boards)	Yes	No	Yes	embedded: 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 these items are causing the problem and need to be replaced.

Viewing component states

View a component state to determine the general condition of the component, including whether the component is disabled or off duty. The component 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 resource or device.
Loading	The component has been started, which takes it out of the Off Duty state.
	This state occurs quickly and is immediately followed by Idle.
Local (Red) Alarm	A Receive Loss of Synchronization error occurred on incoming data over a T1 link and lasted more than 2.5 seconds. This condition will exist until synchronization is recovered and remains recovered for 12 seconds.
No resources	The hardware required for the component to operate is not installed or is not operating properly.
Not Configured	The device is not configured in CallPilot.
	For example, a DSP is not being used because it was not allocated in the Configuration Wizard.
Off Duty	The component has been stopped.
Remote Off Duty	The component has been taken out of service at the switch.
Remote (Yellow) Alarm	A red alarm exists at the receiving device. This alarm is sent by the receiving T1 device to CallPilot, and it remains in effect until the red alarm is cleared at the receiving device.
Shutting Down	The component is in the process of stopping.
	This state occurs quickly and is immediately followed by Off Duty.
Uninitiated	The call processing component has not initialized the resource.

Alert icons

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

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

To view the state of a hardware component

Step	Action
1	Run CallPilot Manager and log in.
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.
—End—	

Starting and stopping components

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

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

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

ATTENTION

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

To courtesy stop CallPilot, use the following:

- Multimedia Monitor - to courtesy stop a range of multimedia channels
- Channel Monitor - to courtesy stop a range of call (DS30X, 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 takes the component out of service only after the component has finished processing the active call.

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

Courtesy stop is the preferred method for taking a component out of service.

Stop

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

Components that can be started and stopped

Only the following components can be started and stopped.

Note: If you want to start or stop more than one or two multimedia (DSP) or call (DS30X) channels, use the Multimedia Monitor or Channel Monitor.

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.

Component	Effect of stopping
Time Switch	You cannot perform maintenance administration on the time switch.
Multimedia Channel	Takes the selected Multimedia Channel out of service.
Channels	Takes the selected DS30X channel out of service.
DS30X link	Takes the selected DS30X link out of service.

To start or stop a component

Step	Action
1	Run CallPilot Manager and log in.
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, 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 calls to be completed before disabling the component.

Button	Description
--------	-------------

ATTENTION

If you are courtesy stopping all components (that is, you are taking the entire system down), ensure that you inform all administrators, desktop messaging users, and web messaging users so that they can log off their sessions before you proceed.

The system asks you to confirm the courtesy stop. If you click OK, the component is put out of service after all calls are finished.

Stop	Click this button to take the selected component out of service immediately. All calls that are in progress are disconnected immediately.
------	---

ATTENTION

If you are stopping all components (that is, you are taking the entire system down), ensure that you inform all administrators, desktop messaging users, and web messaging users so that they can log off their sessions before you proceed.

—End—

Running integrated diagnostics

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" \(page 55\)](#).

Components that have diagnostic tests available

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

Component	Diagnostics available?	Replaceable?
Media Bus	No	No
MPB96 board	Yes	Yes
Time Switch	No	No
Multimedia Channels	Yes	No
Channels	No	No
DS30X link (cable)	Yes	Yes

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.

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 screen [step 8](#)).

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 technical support representative, depending on the component.

To run a diagnostic test

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

ATTENTION

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

- 1 Run CallPilot Manager and log in.
- 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.
- 7 Scroll down to the Diagnostics section.
- 8 Select the check box for each diagnostic that you want to run.
Note: If you want to run all of the diagnostics, select 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.
Note: The Diagnostic Results box in the Diagnostics section displays diagnostic results when you click Get Last Result.

—End—

Viewing the last diagnostic results

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

To view the last diagnostics result

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

ATTENTION

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

- 1 Run CallPilot Manager and log in.
- 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 Select 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

—End—

Working with the Multimedia Monitor

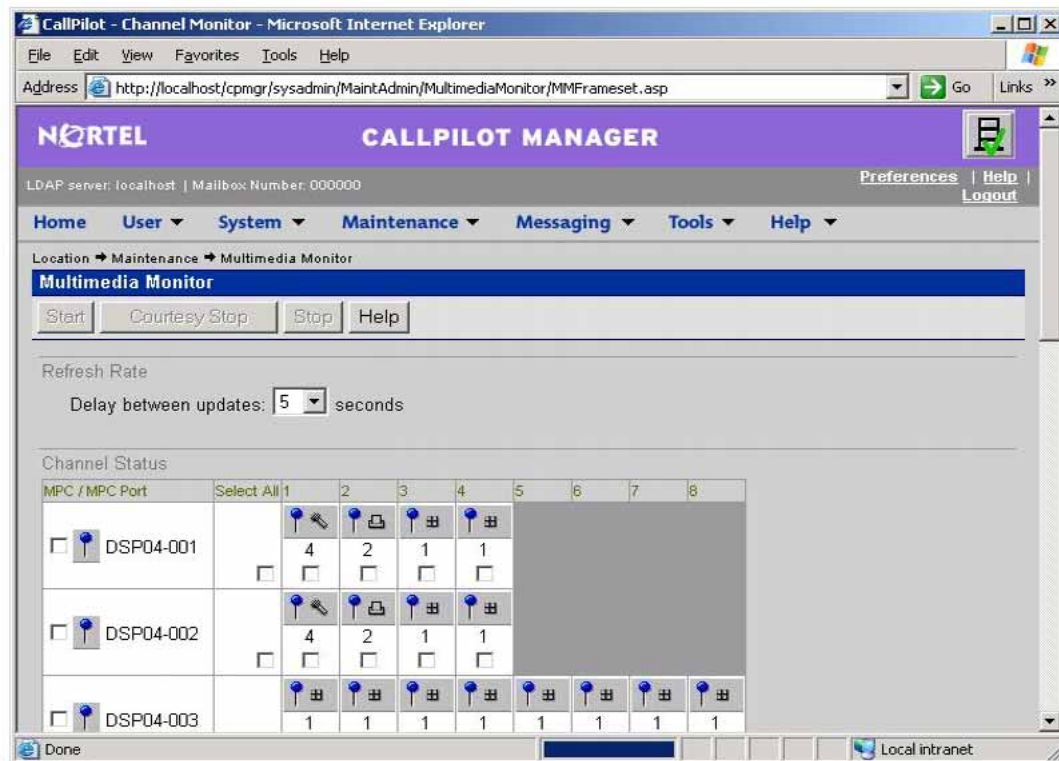
The Multimedia Monitor shows the status of multimedia channels. The multimedia channels are the DSP ports that process the calls. They are the voice, fax, and speech recognition channels.

To view or work with multimedia channel states

Step	Action
1	Run CallPilot Manager and log in.
2	In CallPilot Manager, click Maintenance→Multimedia Monitor.

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

Multimedia monitor screen



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	select the check box to the left of the DSP that you want to stop or start.

Repeat this step for each DSP.

IF you want to stop or start	THEN
------------------------------	------

only one or several channels that are associated with a DSP	select 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 off-duty or on-duty status, according to the action you chose.

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

—End—

Working with the Channel Monitor

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

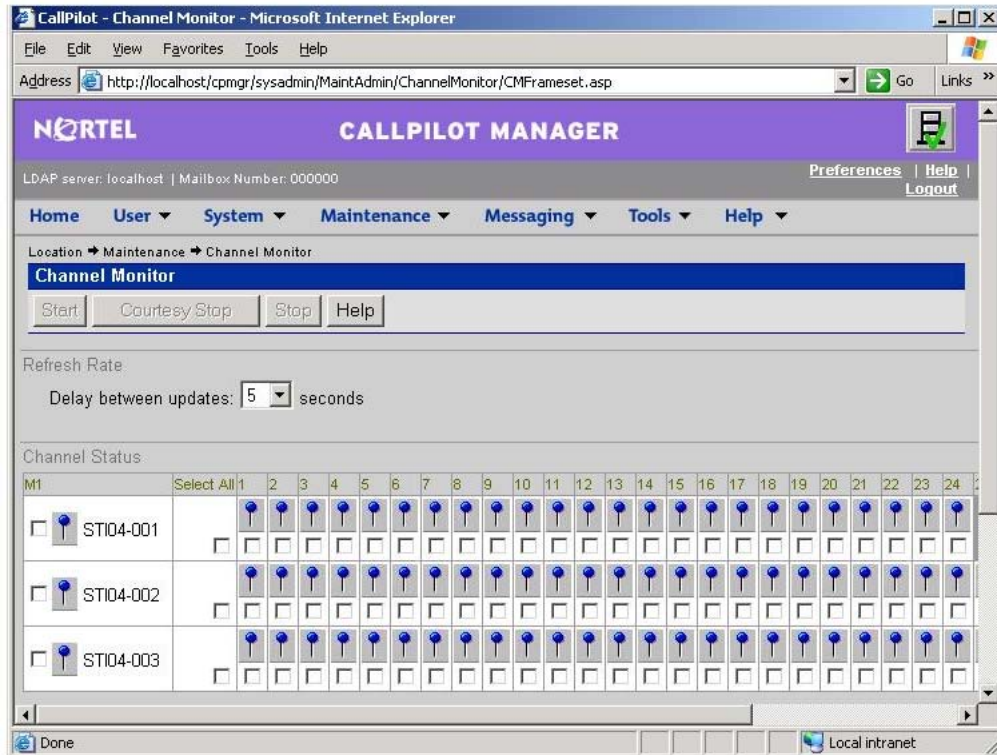
To view or work with call channel states

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

- | | |
|---|--|
| 1 | Run CallPilot Manager and log in. |
| 2 | In CallPilot Manager, click Maintenance→Channel Monitor. |

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

Channel monitor screen



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

all of the channels associated with a DS30X link

THEN

select the check box to the left of the DS30X link that you want to stop or start.

Repeat this step for each DS30X link.

only one or several channels that are associated with a DS30X link

select 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 off-duty or on-duty status, according to the action you chose.

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

—End—

Chapter 7

Using CallPilot system utilities

In this chapter

"Overview" (page 67)

"Diagnostics Tool" (page 68)

"PEP Maintenance utility" (page 69)

"Session Trace" (page 69)

"System Monitor" (page 71)

Overview

The following table lists the CallPilot system utilities.

Utility	Description
Diagnostics Tool	Allows CallPilot startup diagnostics to be enabled or disabled (turned on or off).
PEP Maintenance	Displays a list of installed PEPs and enables PEP removal.
Session Trace	Displays detailed information about the activity in a user's mailbox and the state of the message waiting indicator (MWI).
System Monitor	Displays the following information:

- the status of all CallPilot channels
- the status of all CallPilot services

Note: This status is more accurate than the status that Windows provides in the Services Control Panel.

Utility	Description
	<ul style="list-style-type: none"> 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

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. When you disable startup diagnostics, you can save time during system maintenance operations where restarts or call processing services restarts are required. There are three recommended steps:

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

To access the Diagnostics Tool

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

Result: The Diagnostics Tool window appears.

To enable startup diagnostics

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

To disable startup diagnostics

ATTENTION

Nortel 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 (for example, DSP, TimeSwitch, or MediaBus).

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

PEP Maintenance utility

The PEP Maintenance utility displays a list of all installed PEPs on the server and enables you to uninstall PEPs. For information on installing or uninstalling PEPs, refer to the *Installation and Configuration Task List* (NN44200-306).

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

Step	Action
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.

—End—

Session Trace

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

- 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

Step	Action
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. <ul style="list-style-type: none">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.

Call answering session

The screenshot shows the 'MCE Session Trace' window. On the left, search criteria are entered: Session Type: All Session Types, Last Name: Clint, First Name: Bill, Mailbox Number: 8050, Called DN: , Calling DN: , Start Date & Time: 5/2/99 11:23:15 AM, End Date & Time: 5/2/00 11:23:15 AM, and Last Search Time: 11:26:30 AM. A 'Search' button is at the bottom of this section. On the right, a table lists session events:

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

Below the table, the selected session details are shown for 'Session Type: Call Answering':

- Start Time: 15:42:30 Apr 28
- End Time: 15:42:40 Apr 28
- Session Length: 10 seconds
- Called DN: 8050
- Calling DN: 8051
- Call Origination: Inbound
- Message Length: 1 second
- Message Disposition: Message left

At the bottom, it states '43 records found' and has a 'NUM' button.

—End—

System Monitor

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

System Monitor tabs

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

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

To access the System Monitor

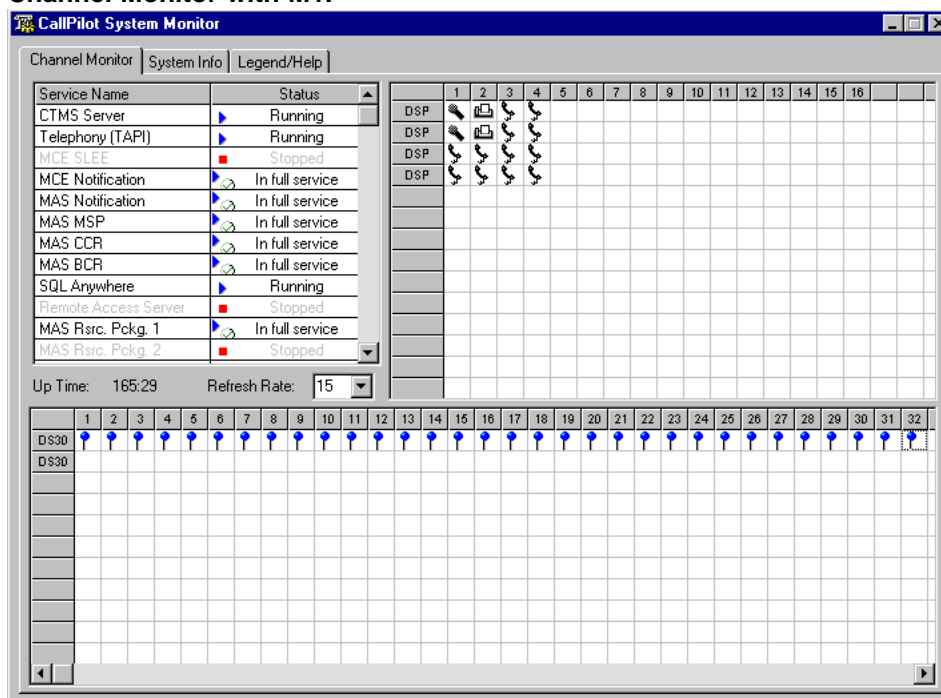
On the Windows desktop, click Start → Programs → CallPilot → System Utilities → System Monitor.

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.

Channel Monitor tab

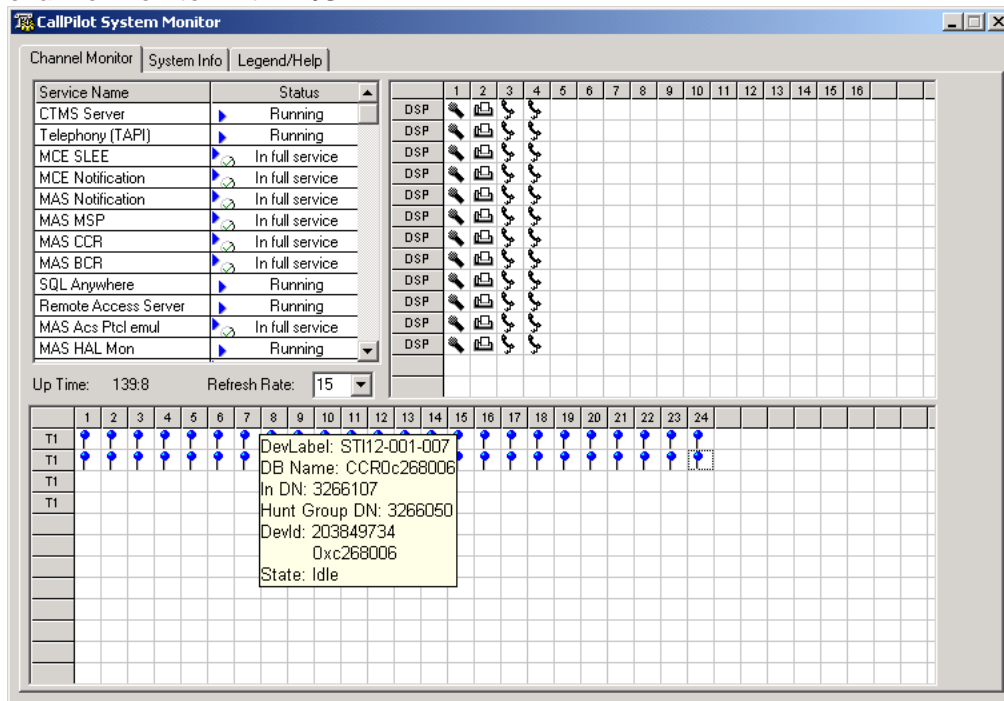
The following is an example of the Channel Monitor tab when connected to an Meridian 1*

Channel Monitor with M1.



The following is an example of the Channel Monitor tab when connected to a T1/SMDI.

channel Monitor with T1/SMDI

**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. Call Nortel technical support for assistance.

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

The critical services that are required 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.

For tower and rackmount CallPilot servers, DSPs reside in MPB96 and MPB16-4 boards and MPC-8 cards. For 1002rp servers, DSPs are distributed as follows:

- MPB96 board has 12 DSP sections embedded on board
- One MPB16-4 board consists of two embedded DSPs and up to four MPC-8 cards.
- Each MPC-8 card contains a single DSP.

DS30X links

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

The DS30X links connect the CallPilot server to the MGate card (NTRB18CA) in the Meridian 1 switch or Communication Server 1000* system.

For the 1002rp server, the DS30X link to the switch is supported by the connection of the server to the switch backplane.

T1 Links

In the T1 link pane, each row represents a T1 link. Each box in the row represents one DS0 channel.

The T1 links connect the CallPilot Server to a Line Side T1 card on the SL100 or to a Channel Bank on the DMS-100* switch.

System Info tab

"System info tab" (page 75) shows an example of the System Info tab.

System info tab

CallPilot System Monitor

Channel Monitor | **System Info** | Legend/Help

1. CallPilot Release	02.01.18	Installed DSP	Firmware	Operating System Info	
2. Serial Number	1111	DSP13-001	NG0252	Win NT Server 4.0	
3. Date Installed		DSP13-002	NG0252	Service Pack 6	
4. Platform Type	TRP 1001 Rack	DSP13-005	NG0252	Current User	
5. Switch Type	M1	DSP13-006	NG0252	Host Name cpi00068	
6. Connectivity	M1 Proprietary CTI			IP Addresses	
7. Configd. DSPs	4			47.11.30.36	
8. Configd. Channels	64	13. SR Languages	3	47.11.38.233	
9. Configd. DS0s	64	14. Prompt Languages	6		
10. Voice Channels	12	15. Hours of Storage	1000		
11. Fax Channels	2	16. Desktop Seats	1000	18. SR Seats	1000
12. SR Channels	2	17. Voice Seats	1000	19. Fax Seats	1000
		20. Keycode			

PEPs Installed	Installed (dd/mm/yyyy)

ASDN	Media	Description
4750	Voice	Voice Messaging
1234	Fax	Audio Conferencing

Refresh Snapshot

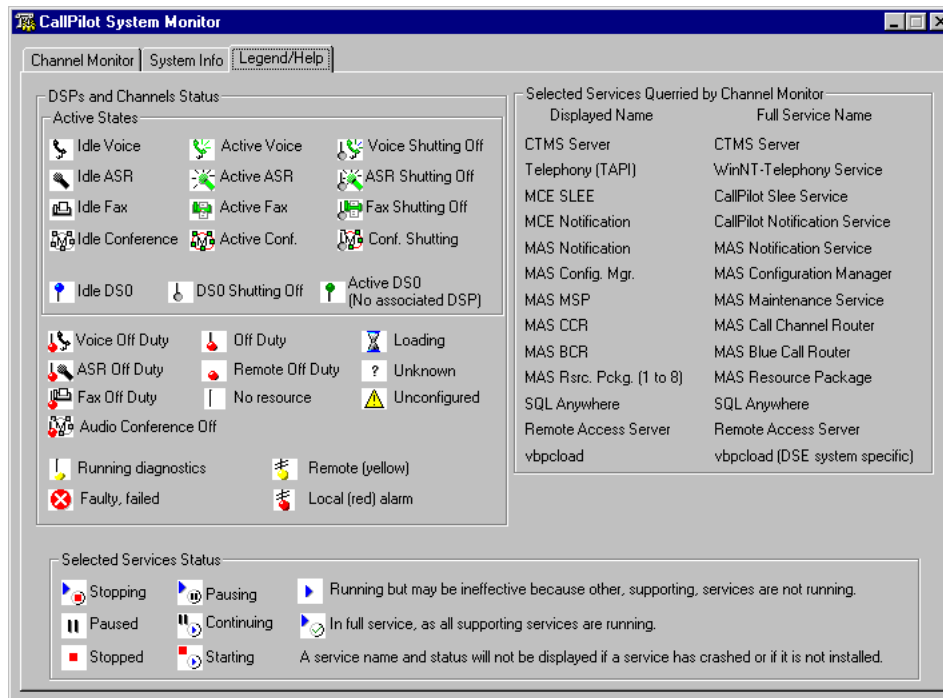
The numbered items provide information about the features purchased. Information about the underlying operating system is provided in the top right corner, including the server IP addresses.

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

Legend/Help tab

"Legend/Help tab" (page 76) shows an example of the Legend/Help tab. Consult this window for descriptions of the icons found in the Channel Monitor tab.

Legend/Help tab



Chapter 8

Replacing basic chassis components

In this chapter

"Removing the front bezel and server cover" (page 77)

"Replacing air filters" (page 80)

"Replacing the power supply" (page 81)

"Replacing the SCA SCSI drive cage and fused power cable" (page 84)

"Replacing the cooling fan" (page 88)

"Replacing the fuse (AC system only)" (page 91)

"Replacing the alarm board" (page 93)

"Setting jumpers on the alarm board" (page 94)

"Replacing the status display panel" (page 96)

Removing the front bezel and server cover

If the maintenance task requires replacing front panel components, you must remove the front bezel. The exception is the hard drives, which can be accessed by simply unlocking and opening the front bezel doors.

If you require access to the server interior, remove both the front bezel and the server cover.

Requirements

Before you remove the front bezel and server cover, gather the following tools:

- the customer's chassis keys for the front bezel doors
- a flat-blade screwdriver

- an antistatic wrist strap

About the front bezel doors

Two locked doors on the front of the server cover the front panel, including the CD-ROM drive and tape drive.

These doors are part of the front bezel. You must unlock the front panel doors before you can remove the front bezel.

To remove the front bezel

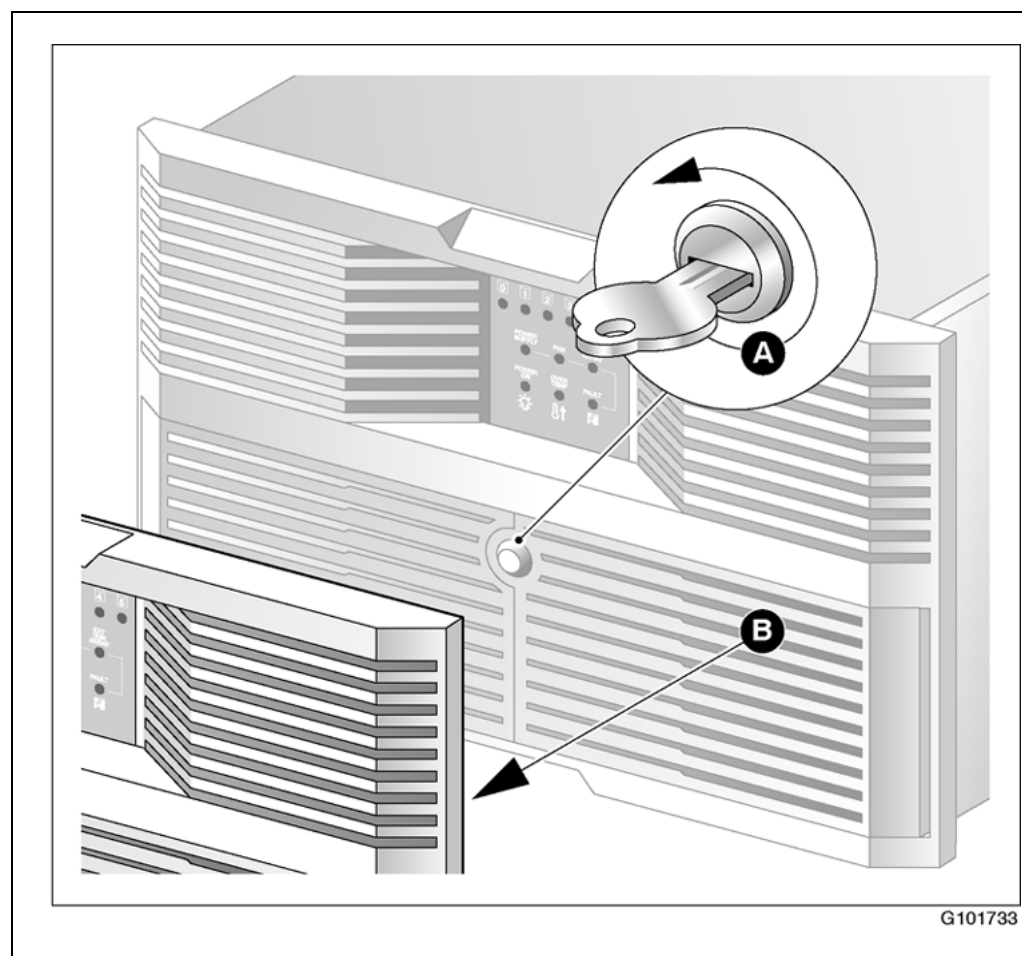


CAUTION

Risk of equipment damage

Do not attempt to move or lift the server before you have removed the front bezel. If the front bezel is attached, the server can disengage from the front bezel and fall.



Front bezel removed



G101733

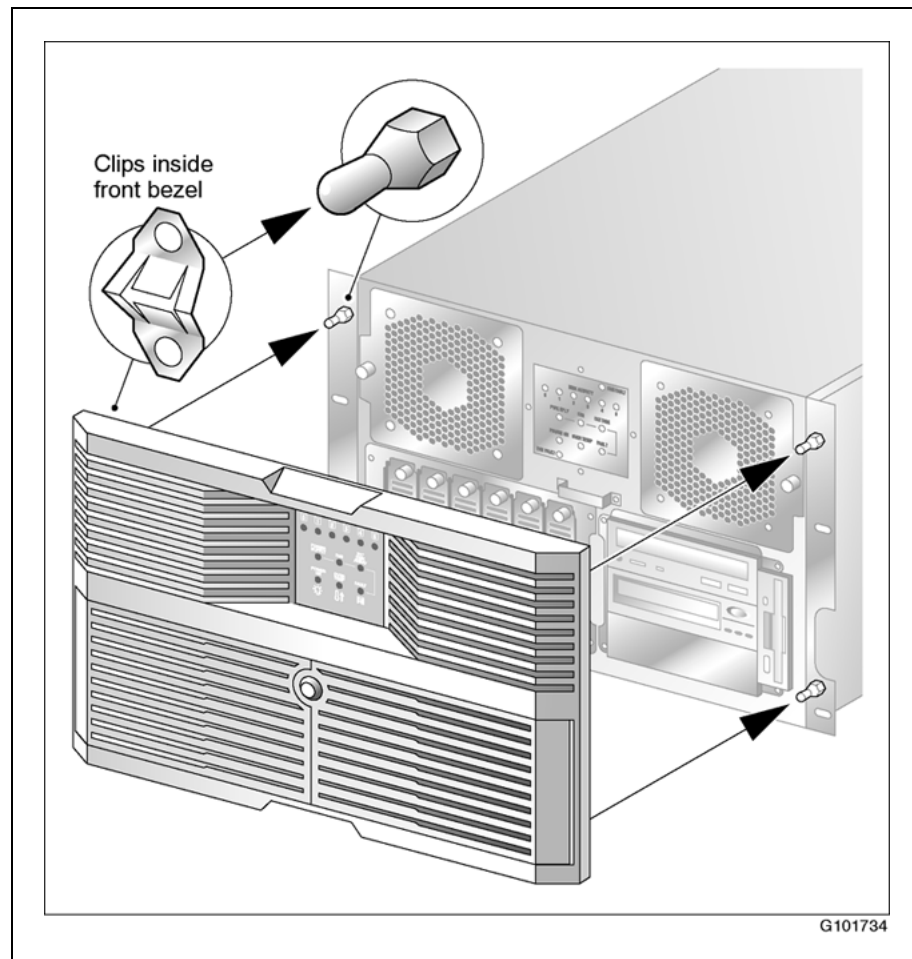
Step	Action
1	Unlock and open the double doors of the front bezel. See A in " Front bezel removed " (page 78).
2	Firmly grasp the front bezel by the hand-holds on either side of the chassis, and pull the front bezel from the chassis. See B in " Front bezel removed " (page 78).
—End—	

To remove the server cover

Step	Action
<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>DANGER</p> <p>Risk of electric shock</p> <p>High current inside the chassis can cause severe injury.</p> </div> </div>	
<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>CAUTION</p> <p>Risk of equipment damage</p> <p>Take precautions to protect internal components. Electrostatic discharge (ESD) can damage boards and make them unusable. Wear an ESD wrist strap.</p> </div> </div>	
1	Remove the front bezel.
2	Power down the server and disconnect all power cords.
3	Loosen the three thumbscrews at the rear of the top cover.
4	Remove the server cover by pulling the cover toward the rear of the chassis, and then lifting it up and off.
5	Clip the lead from your ESD wrist strap to an unpainted metal section of the chassis.
—End—	

To replace the front bezel after maintenance is complete

When the CallPilot server maintenance is complete, replace the front bezel.

Front bezel replaced**Step Action**

- 1 Align the front bezel with the ball studs located at each faceplate corner.
- 2 Apply pressure evenly until the bezel snaps onto each ball stud.
- 3 Close and lock the double doors of the front bezel.

—End—

Replacing air filters

To ensure your server cools and functions properly, remove and clean air filters every six months in clean environments and every three months in industrial or dirty environments. If they appear to be damaged or become inefficient, replace the filters. There are four air filters on the 1002rp

server—one inside each of the two doors of the front bezel, and two on the top half of the front bezel. They are made of polyester foam material and are flame retardant.

Requirements

You require the customer's chassis keys for the front bezel.

To replace the front bezel air filter

Step	Action
1	Remove the front bezel from the chassis. See "To remove the front bezel" (page 78) .
2	Pull the filters away from the Velcro strips that secure them to the bezel.
3	Replace the filter by seating the new filter pads evenly over the Velcro strips and securing them.
4	Install and lock the front bezel on the chassis.

—End—

To replace the door air filter

Step	Action
1	Unlock and open the front doors.
2	The air filter is trapped between the inside of the door and the wire. The wire pivots near the key lock. Pull the wire away from the key lock to free the air filter.
3	Remove and replace the air filter.
4	Pivot the wire to trap the filter, ensuring that the ends of the wires are pinched inside the door.
5	Close and lock the doors.

—End—

Replacing the power supply

The power supply is hot-swappable. This means that you can replace the power supply without powering down the server.

Requirements

Before you hot-swap a power supply, gather the following tools:

- one flat-blade screwdriver
- one Phillips screwdriver
- one antistatic wrist strap
- the replacement power supply

When to hot-swap the power supply

A green LED indicates that the power supply is working properly. If the green LED on the power supply module is unlit or red, the module is failing or has failed. Other indicators of failure are the alarm that sounds and the power supply module LED on the status display that turns red.

To hot-swap a power supply

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

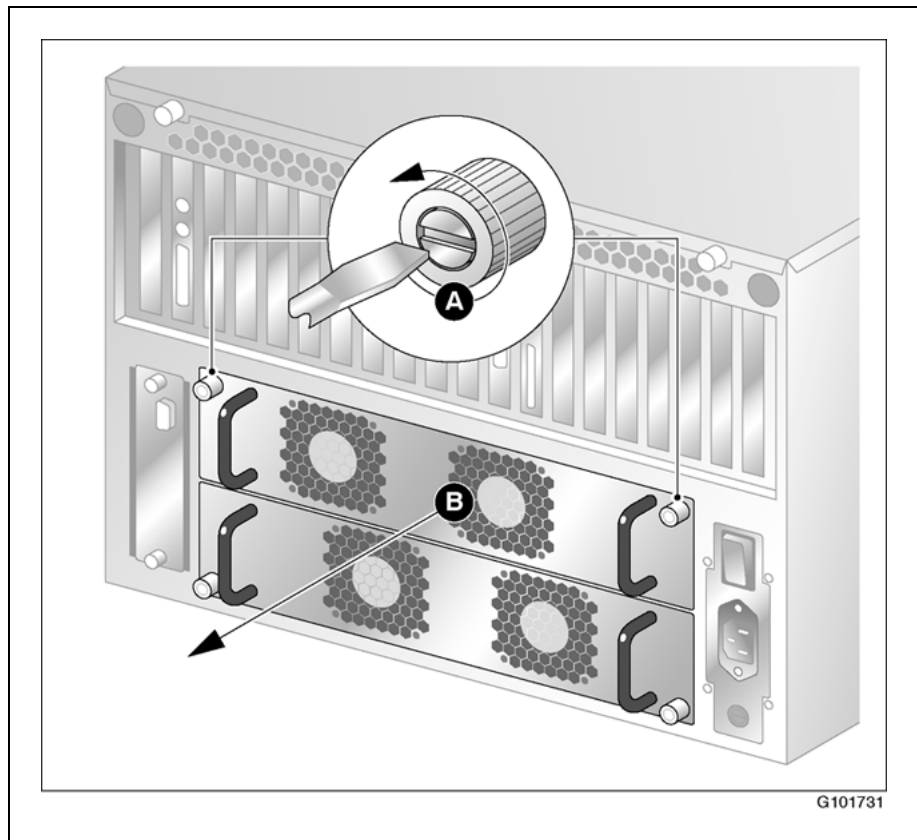


DANGER

Risk of electric shock

High current inside the chassis can cause severe injury.

- | | |
|---|--|
| 1 | <p>Loosen the thumbscrews at the top right and left of the failed power supply module (see A in the following diagram).</p> <p>If needed, use a flat-blade screwdriver. The thumbscrew must rotate freely and not contact the chassis threads.</p> |
|---|--|



- 2 Grasp the molded horizontal handles on the power supply module and pull the power supply module free from the chassis (see B in the preceding diagram).
- 3 Align the replacement module with the empty chassis bay.
- 4 Slide the replacement power supply module into the bay until the module is secured by its connector. Use some force, if necessary.
- 5 Secure the power supply module to the chassis with two thumbscrews at the corners of the power supply faceplate.

Result: The power supply LED illuminates green.

Note: If the LED does not illuminate, remove and reinstall the power supply with more force. If this does not work, contact your Nortel customer support representative.

—End—

Replacing the SCA SCSI drive cage and fused power cable

Due to the potential of an over-current condition, Nortel provides a retrofit SCSI power cable kit for the **N0029330** power cable. The kit comprises an improved SCSI power cable, product label, and retrofit procedure.

The cable kit part number for all locations, except EMEA, is **FR029367**. At EMEA locations, use part number **N0029367**.

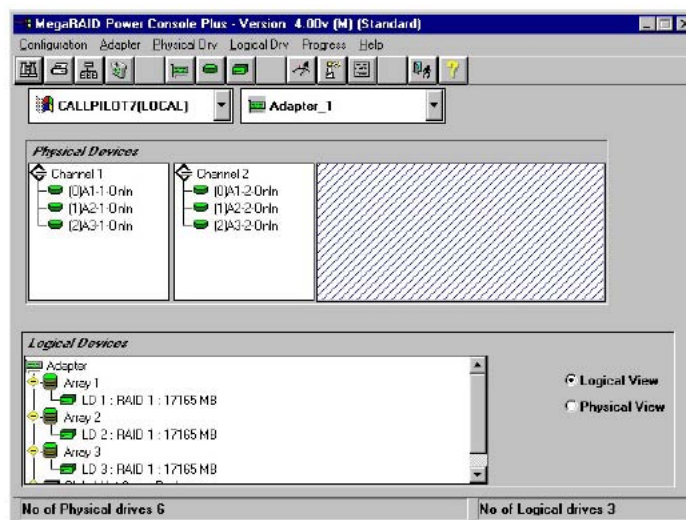
- Only qualified field technicians who are familiar with CallPilot and RAID should attempt this procedure.
- A full-system backup and RAID drive consistency check must be performed prior to replacing the SCSI power cable. These can both be performed while the server is online.
- If at any step in the procedure, the result is not as indicated, stop and contact your next level of support for assistance before continuing.

To replace the SCSI power cable

Step	Action
1	Log into the CallPilot server.
2	Launch the MegaRAID client to check the status of the RAID sub-system: <ol style="list-style-type: none"> Click Start → Programs → MegaRAID Client. Open the Server Selection window. Select Access Mode → Full Access and click OK.

Result: The MegaRAID Power Console Plus window appears.

MegaRAID Power Console Plus



- 3 Open the Physical Devices window and check the drive pair settings. The table below shows the correct settings.

Drive pair settings

LED No	ID	Channel-1	LED No	ID	Channel-2
0	0	ONLIN A01-01	3	0	ONLIN A01-02
1	1	ONLIN A02-01	4	1	ONLIN A02-02
2	2	ONLIN A03-01	5	2	ONLIN A03-02

Note: If your settings do not match those in the table, stop and contact your next level of support for assistance before continuing.

- 4 Check that all drives are marked in green and Online.
- Note:** If they are not all online, stop and contact your next level of support for assistance before continuing.

- 5 Check the RAID drive consistency:

- a. Select Check Consistency.

Result: The Logical Drives Configured dialog box appears.

- b. Use the arrow key to highlight the first drive to be checked.
- c. Press the space key to select the drive.
- d. Press F10 to check consistency.

Result: The Do you wish to continue? dialog box appears.

- e. Click Ok.

Result: The consistency check begins and a status dialog box appears.

- f. Repeat steps c to e for each drive until all three drives have been checked for consistency. This may take up to 2 hours to complete. If any data consistency errors are detected, they are corrected automatically.

- 6 Perform a full-system backup of the CallPilot server (either to tape or file server).

- 7 Review the backup logs to verify success.

- 8 Perform a controlled shutdown of the CallPilot software:

- a. Click Ctrl+Alt+Delete and select Shutdown from the Windows Security window.

Result: The Shutdown Computer dialog box appears.

- b. Select Shutdown.

Result: The CallPilot server turns off.

- 9 Remove power from the system by disconnecting the AC or DC mains.
- 10 Remove the bezel cover from the front of the chassis using the four snaps located at each corner.

Bezel cover on chassis front



- 11 Remove the 4 Phillips-head screws from each corner of the SCSI disk-drive cage

Chassis front with bezel removed.



- 12 Carefully remove the SCSI drive cage from the chassis to provide access to the internal cable assemblies.

SCSI drive cage attached to chassis



Note: An arrow points to the SCSI power cable in the picture above.

- 13 Unplug the original power cable from the SCA backplane and from the T board inside the chassis. The power cable is schematically shown in "SCSI power cable attached to T board" (page 87).

SCSI power cable attached to T board



Note: Leave all other cable assemblies connected. Do not damage or disconnect other components on the SCA backplane.

- 14 Replace the original SCSI power cable with the new cable. Securely attach it to both the SCA backplane and the T board inside the chassis.
- 15 Reinstall the SCSI drive cage into the bay and screw it into place. Torque the screws at 6 to 8 inch lbs.
- 16 Affix a revised product label above the existing labels on the left rear of the chassis.

Product label location on chassis



- 17 Replace the bezel cover on the front of the chassis.
- 18 Reconnect the AC or DC mains power.
- 19 Reboot the CallPilot server and bring it into full service.

—End—

Replacing the cooling fan

The cooling fan is hot-swappable, so you can replace the cooling fan without powering down the server.

When to hot-swap the cooling fan

When the LED associated with a cooling fan turns red, the fan requires replacement.

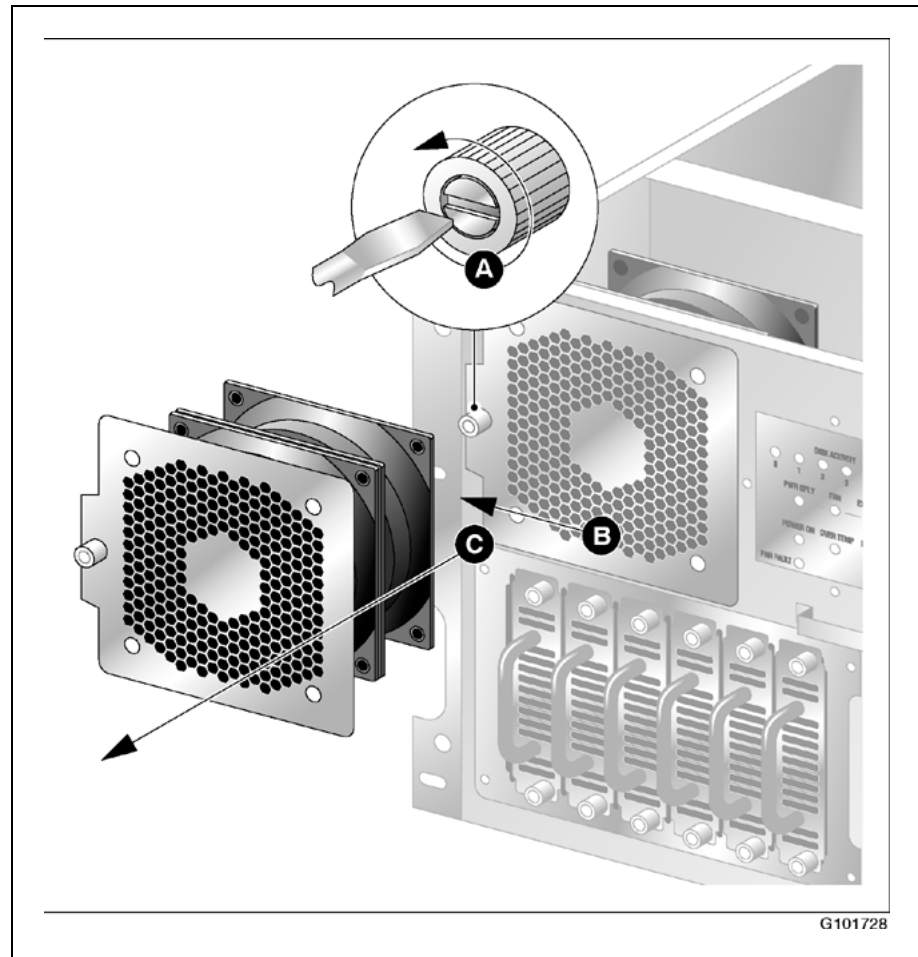
**CAUTION****Risk of equipment damage**

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

To hot-swap a cooling fan**Step Action**

- 1 Remove the front bezel.
- 2 Use the front panel display LED to locate the defective fan.
- 3 Loosen the thumbscrew located on the outside of the failed cooling fan module (see A "[Cooling fan thumbscrew](#)" (page 90)).
If needed, use a flat-blade screwdriver. The thumbscrew must rotate freely and not contact the chassis threads.

Cooling fan thumbscrew



- 4 Unseat the cooling fan module by sliding the module horizontally away from the display and toward the rack rail (see B in the diagram).

Result: The module power connector unseats from the power connector located behind the display and LEDs.

- 5 Slide the failed cooling fan module out of the chassis (see C in the diagram).

- 6 Align the replacement cooling fan module tabs with the four support slots on the chassis.

Ensure that the module is oriented with the thumbscrew, and insert the tabs into the supporting slots of the chassis.

- 7 Slide the cooling fan module toward the front panel display and into position.

Result: The fan module connects with slight resistance. The fans rotate and pull air into the chassis. The cooling fan LED goes out.

- 8 Tighten the module thumbscrew and replace the front bezel.

—End—

Replacing the fuse (AC system only)

The fuse is located below the power input socket on the rear panel. When the server fuse blows, the server stops operating.



CAUTION

Risk of equipment damage and personal injury

Disconnect power from the server before replacing a fuse.

Requirements

You require the following:

- an approved fuse for replacement

Two different types of fuses exist: one for North America, and one for international use. Ensure that the fuse you are replacing has been approved by Nortel for your region.

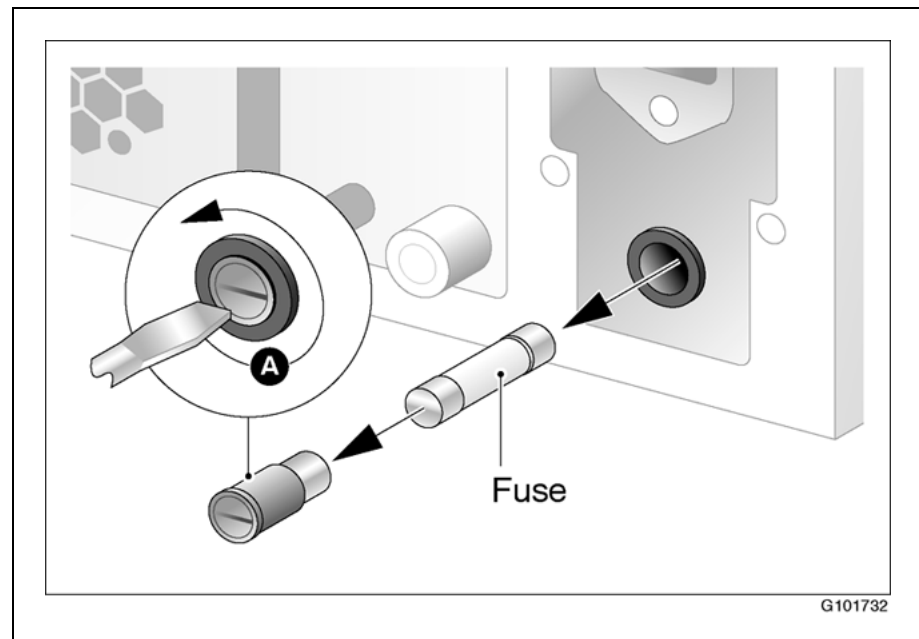
- a flat-blade screwdriver

To replace the fuse

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

- | | |
|---|--|
| 1 | Power off the server. |
| 2 | Unplug the power cable from the wall outlet. |
| 3 | Unplug the power cable from the power input socket on the server. |
| 4 | Unscrew the fuse receptacle (see A in "Fuse receptacle" (page 92)). |

Fuse receptacle



- 5 Slide the fuse receptacle out of the fuse chamber.
Note: Observe how the blown fuse is positioned in the receptacle.
- 6 Remove the blown fuse from the fuse receptacle.
- 7 Install the approved replacement fuse. Use a flat-blade screwdriver to screw in the fuse receptacle with a push and 1/4 clockwise turn.
- 8 Slide the fuse receptacle back into its chamber.
- 9 Fasten the fuse receptacle with a flat-blade screwdriver.
- 10 Plug the power cable back into the power input socket on the server.
- 11 Plug the power cable into the wall outlet.
- 12 Power on the server.

—End—

ATTENTION

If the fuse blows after replacement, swap one power supply module with the other. If this does not work, call your Nortel customer support representative.

Replacing the alarm board

The 1002rp server alarm board and status panel are used to monitor and indicate the server status. The basic hardware check on page ["Basic hardware check" \(page 17\)](#) fails if the board is defective or damaged. When these units are damaged, replace them immediately.



CAUTION

Risk of equipment damage

Take precautions to protect computer boards. ESD can damage boards and make them unusable. Wear an ESD wrist strap.

Requirements

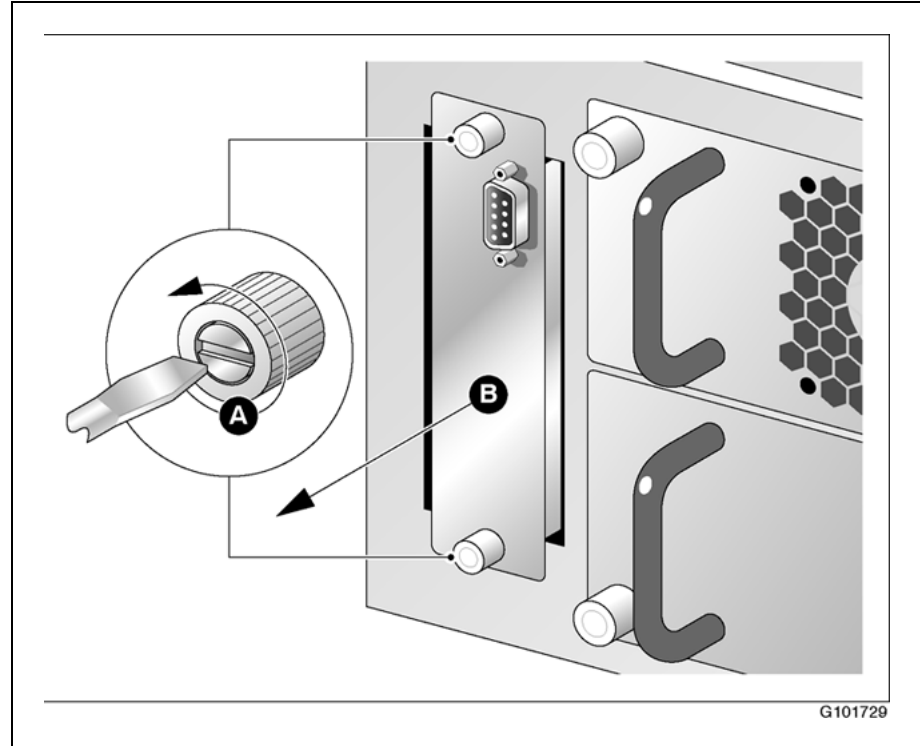
Before replacing the alarm board or panel display, gather the following tools:

- a Phillips screwdriver
- an antistatic wrist strap
- the replacement components

To replace the alarm board

Step	Action
1	Power off the server.
2	Loosen the two thumbscrews securing the faceplate to the left of the 1002rp server power supply modules (see A in "Alarm board carrier" (page 94)). If needed, use a flat-blade screwdriver. The thumbscrew must rotate freely and not contact the chassis threads.

Alarm board carrier



- 3 Pull the carrier free from the chassis (see B in ["Alarm board carrier" \(page 94\)](#)).
- 4 The alarm board is secured to the carrier by two Phillips-head screws. Remove the defective alarm board from the carrier.
- 5 Secure the replacement alarm board to the carrier using two Phillips-head screws.
- 6 Align the carrier with the chassis and slide the board into the chassis.
Note: The card encounters some resistance as it meets the connector.
- 7 Tighten the thumbscrews to secure the faceplate to the chassis.

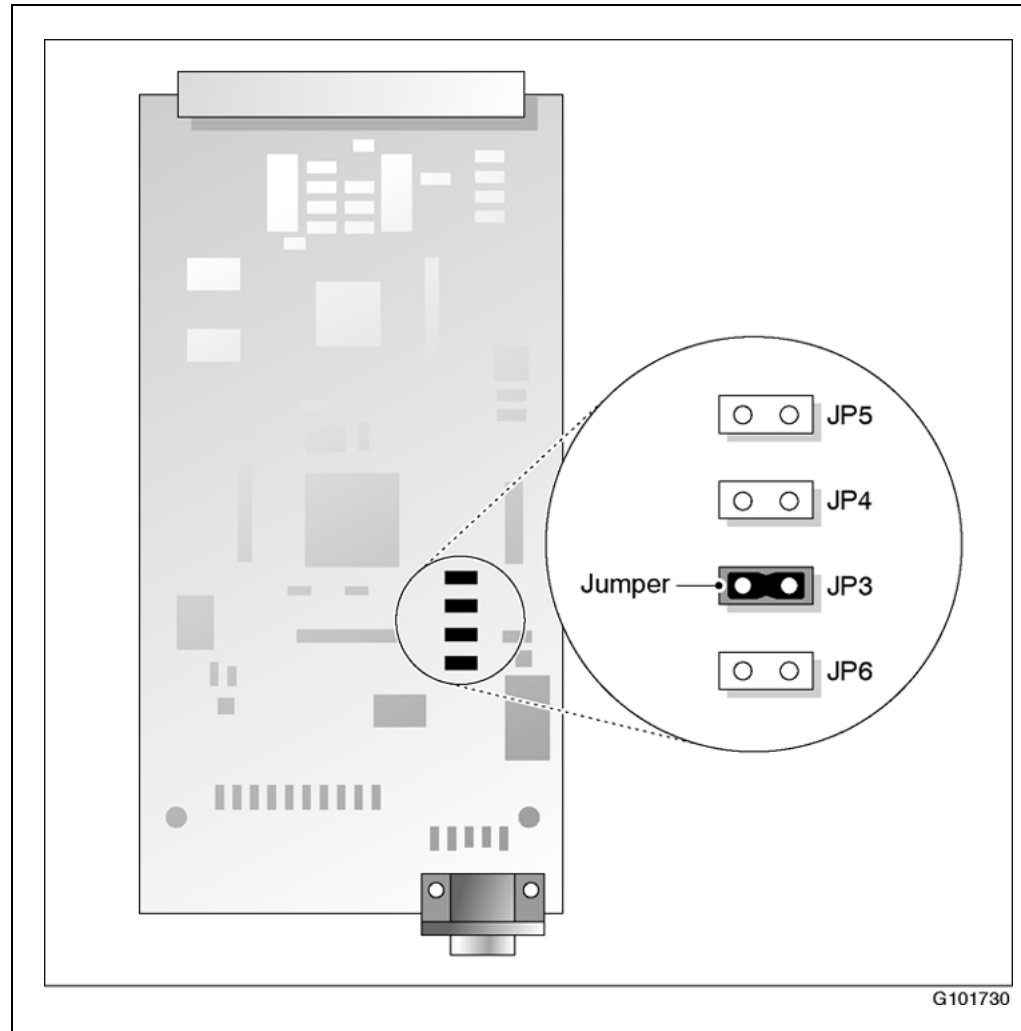
—End—

Setting jumpers on the alarm board

The jumpers on the alarm board enable or disable sensing and display functions. This section describes the features that are enabled or disabled by setting jumpers on the alarm board.

The default and recommended setting is to have only JP3 jumpered (see ["Jumpers on alarm board" \(page 95\)](#)). This setting enables normal sensing and LED display.

Jumpers on alarm board



Jumper descriptions

JP6 - do not change

Leave the jumper installed on JP6.

JP5 - Disarming no power in the bottom bay

If you are operating with one power supply, you can disable sensing of no power from the bottom power supply. To do this, install a jumper on jumper block 1, JP5.

Ensure that the functioning power supply is installed in the upper power bay.

JP4

Not used.

JP3 - LED display

Install a jumper on jumper block 1, JP3, to configure the alarm board to send alarm signals to the full array of LEDs. This is the default setting and the required setting for normal server operation.

If this jumper is not installed over both pins, the alarm board does not send the correct format of signals to the front panel display.

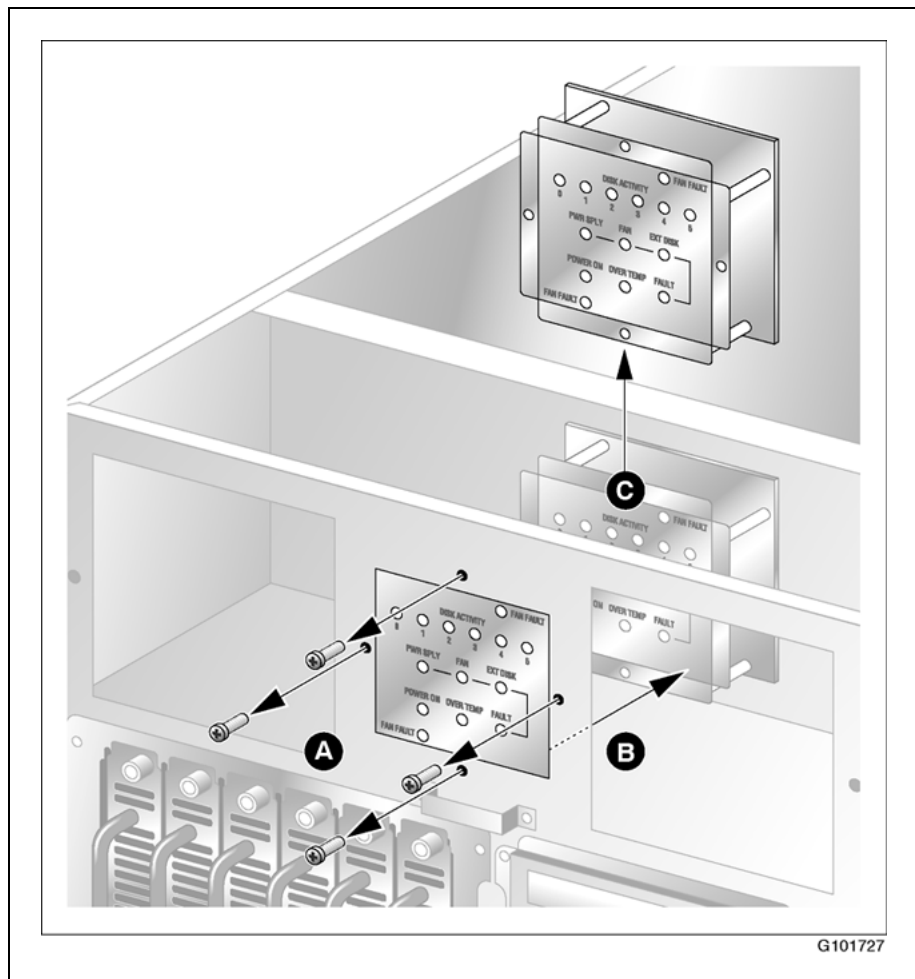
Replacing the status display panel

The display is located at the front of the chassis and is cabled to the rear of the chassis and the alarm board.

To replace the status display panel

Step	Action
<div data-bbox="422 909 584 1058" data-label="Image"> </div> <div data-bbox="603 888 756 921" data-label="Section-Header">CAUTION</div> <div data-bbox="603 924 989 961" data-label="Section-Header">Risk of equipment damage</div> <div data-bbox="603 959 1350 993" data-label="Text"> <p>Use an ESD wrist strap to protect static-sensitive components.</p> </div>	
1	Power off the server.
2	Remove the top cover and the front bezel from the chassis.
3	Remove the cooling fans (see "Replacing the cooling fan" (page 88)). The cooling fans block the access to the status panel.
4	Loosen the four Phillips-head screws that secure the status display panel to the front of the chassis (see A in "Status display panel." (page 97))



Status display panel.

- 5 Label and remove the 40-pin flat cable from the back of the status display panel.
- 6 Move the defective status display panel towards the back of the chassis, and then lift it out of the chassis (see B and C in the diagram).
- 7 Set the replacement status display panel into position, and secure it to the chassis by replacing the Phillips-head screws.
- 8 Reconnect the cable.
- 9 Replace the top cover and front bezel.

—End—

Chapter 9

Replacing media drives

In this chapter

"Replacing a faulty hard drive" (page 99)

"About the media drive bay" (page 103)

"Removing the media drive carrier from the chassis" (page 103)

"Replacing a tape, CD-ROM or floppy drive" (page 106)

"Installing a tape drive" (page 108)

Replacing a faulty hard drive

The hard drives are hot-swappable. This means that you can replace a faulty hard drive without powering down the server.

ATTENTION

Replacement hard drives must be the same size or larger than the hard drives being replaced

When to hot-swap hard drives

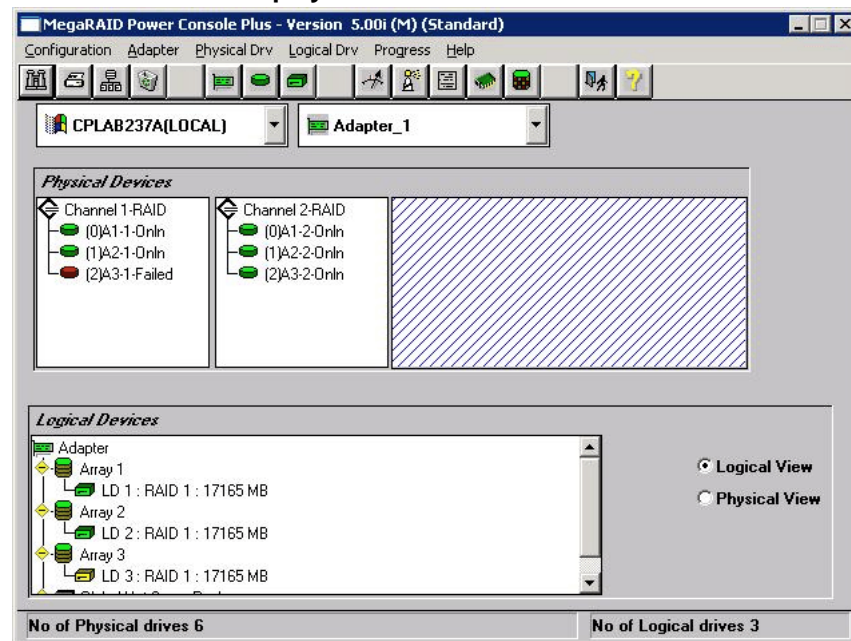
With a RAID controller, hot-swap device drivers, and operating system support, faulty SCA SCSI hard drives can be hot-swapped on the 1002rp server.

Note: Identify which hard drive to remove using the Windows Event Viewer (see "[Viewing event logs](#)" (page 23)). The appearance of event codes such as 40211(disk access error) or 40218 (error reading or writing multimedia volume) may be an indication of a failing disk drive.

Use the RAID management software to check if any drives are in a failed state.

The following image shows a failed drive highlighted in red with the corresponding logical drive highlighted in yellow (degraded mode)

Failed hard drive displayed in red



RAID SCSI hard drive configuration

"RAID SCSI hard drive configurations" (page 100) shows proper SCSI drive bay, channel, and ID configurations in the hot-swappable drive bay. The SCSI backplane assigns the SCSI IDs as shown.

RAID SCSI hard drive configurations

Hard drive bay	SCSI channel	SCSI ID	Logical drive label ^a
1 (far left)	0	0	A01-01 (primary hard drive)
2	0	1	A02-01 (primary hard drive)
3	0	2	A03-01 (primary hard drive)
4	1	0	A01-02 (secondary hard drive)

a. RAID pairs (logical drives) consist of the following pairs: hard drives 1 and 4, 2 and 5, and 3 and 6. these pairs are represented in the software with the labels A01-01 and A01-02, A02-01 and A02-02, and A03-01 and A03-02 where the first number is the logical drive number (for example, A03) and the second number indicates if it is the primary or secondary hard drive (01 for primary and 02 for secondary)

Hard drive bay	SCSI channel	SCSI ID	Logical drive label ^a
5	1	1	A02-02 (secondary hard drive)
6 (far right)	1	2	A03-02 (secondary hard drive)

a. RAID pairs (logical drives) consist of the following pairs: hard drives 1 and 4, 2 and 5, and 3 and 6. these pairs are represented in the software with the labels A01-01 and A01-02, A02-01 and A02-02, and A03-01 and A03-02 where the first number is the logical drive number (for example, A03) and the second number indicates if it is the primary or secondary hard drive (01 for primary and 02 for secondary)

To replace hot-pluggable SCA SCSI hard drives

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



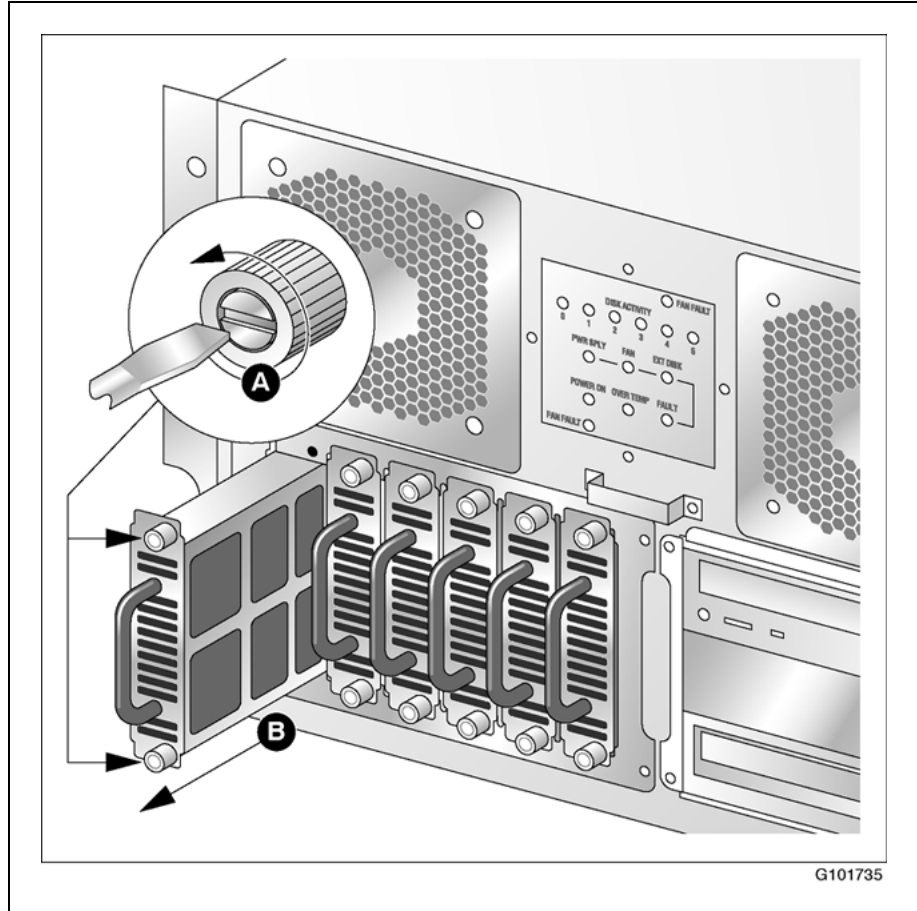
CAUTION

Risk of equipment damage

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

- 1 Ensure the new hard drive has the SCSI ID set to 0, termination disabled, and parity checking enabled.
- 2 Open the front bezel doors.
- 3 Locate the SCA SCSI drive frame below a cooling fan and beside the media drive.
- 4 Loosen the two thumbscrews on the carrier of the faulty hard drive, and remove the carrier from the chassis.

Remove SCSI carrier from chassis



- 5 Remove the faulty drive by loosening the four Phillips-head screws that secure it to the carrier.
- 6 Attach the new drive to the carrier by four Phillips-head screws.
- 7 Align the carrier with the drive frame and slide it into the chassis.
Note: Expect resistance as the carrier and backplane connectors meet.
- 8 Fasten the two thumbscrews.
- 9 Close the front bezel and lock it.

—End—

About the media drive bay

Media drive bays contain media devices, including CD-ROM, tape, and floppy drives. If your media drives become damaged or you want to upgrade, you can replace these drives. This section provides procedures for replacing or upgrading any device in the media drive bay.

To replace media drives

Step	Action
<i>Perform the procedures in the following order to replace media drives:</i>	
1	"Removing the media drive carrier from the chassis" (page 103)
2	"Replacing a tape, CD-ROM or floppy drive" (page 106)
—End—	

Removing the media drive carrier from the chassis

When replacing the media hard drives, the first step is to remove the media drive carrier from the media drive bay.

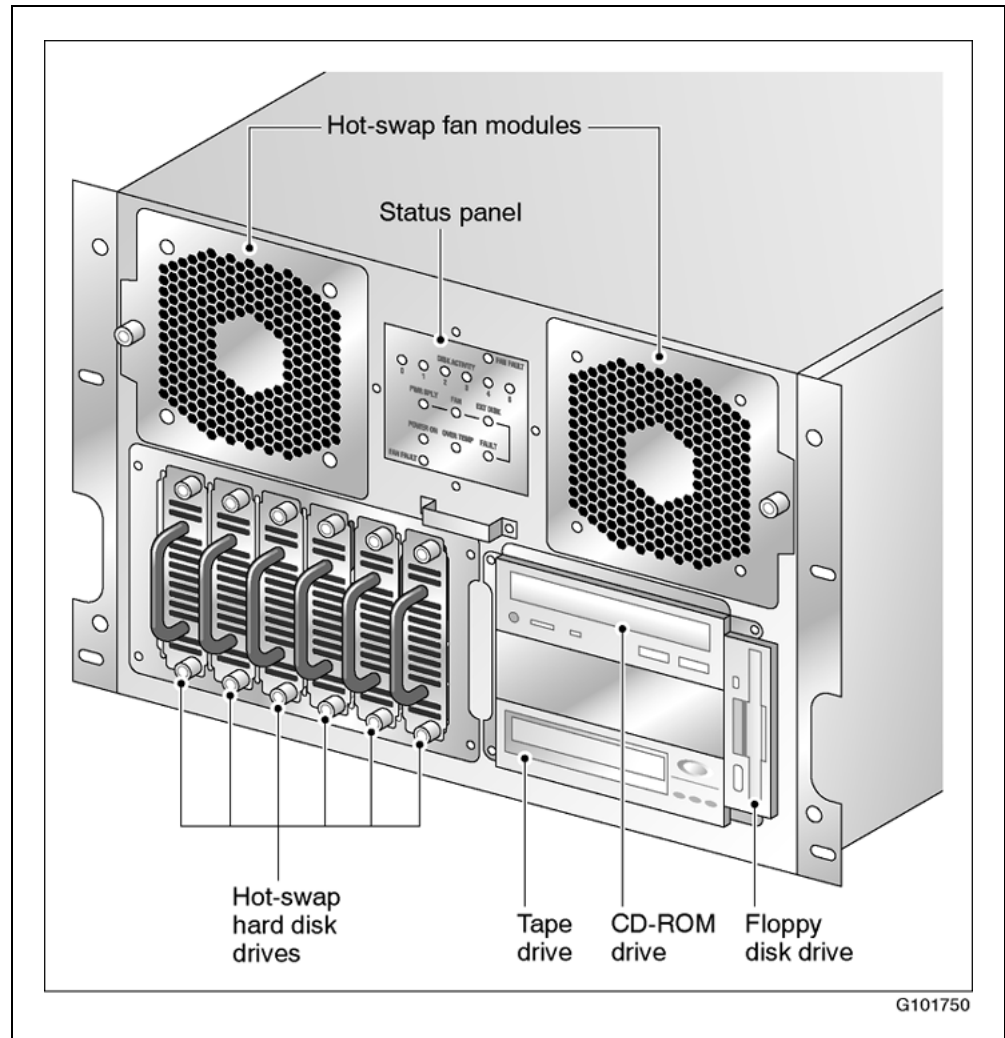
Requirements

To remove the media drive carrier from the media drive bay, you require the following:

- keys for the front bezel doors
- a Phillips screwdriver
- cable identification labels
- a pen or pencil

Locate the media drives

The media drives (CD-ROM drive, tape drive, and floppy drive) are shown in the bottom right corner shown in ["Media drives" \(page 104\)](#).

Media drives**Media drive carrier**

The media drives are housed in a media drive carrier that can be removed from the server, as described later in this section. Where no media device is installed, a blank panel is secured to the media drive carrier for protection.

Media drive carrier slot assignment

The carrier is designed to stack three devices horizontally, and to house the floppy drive vertically to the right side of the carrier frame.

To remove the media drive carrier from the chassis

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



DANGER

Risk of electrocution

High current inside the chassis can cause severe injury.



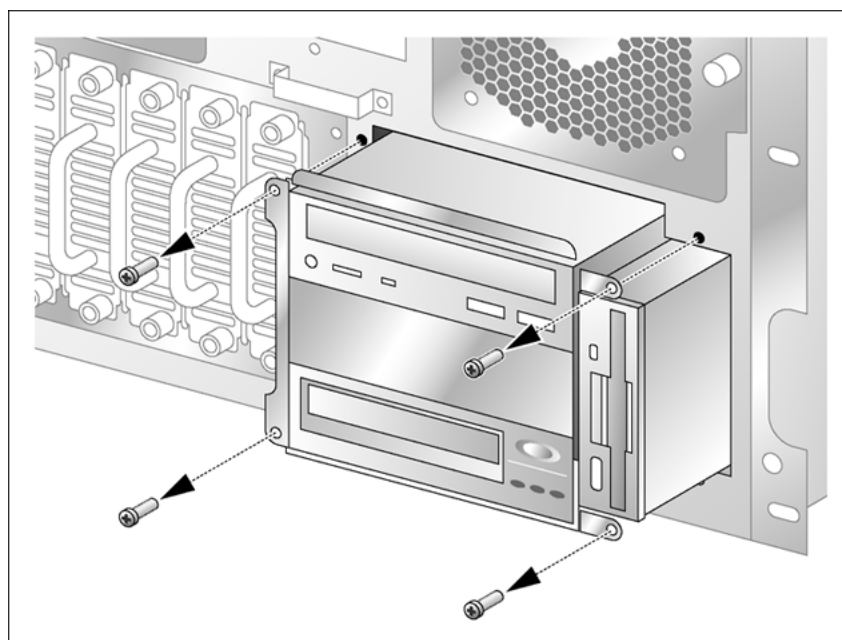
CAUTION

Risk of equipment damage

Electrostatic discharge due to improper handling can cause components to be damaged or rendered unusable.

- 1 Remove the front bezel from the chassis. See ["Removing the front bezel and server cover" \(page 77\)](#).
- 2 Locate the media drive carrier, and loosen the four Phillips-head screws and washers securing the carrier to the drive bay, as shown in ["Remove media drive from chassis" \(page 105\)](#).

Remove media drive from chassis



G100747

- 3 Hold cables away from the drive bay as you pull the media drive carrier away from the chassis until the connectors attached behind the components can be reached.

**CAUTION****Risk of equipment damage**

To avoid damaging cables during this procedure, ensure that no cables are crossed when moving the media drive carrier in and out of the drive bay.

- 4 Label and disconnect cables from installed media drives, and then free the carrier from the chassis.

—End—

Replacing a tape, CD-ROM or floppy drive

This section describes how to replace a media drive (tape, CD-ROM, or floppy drive) in the media drive carrier.

To replace a media drive

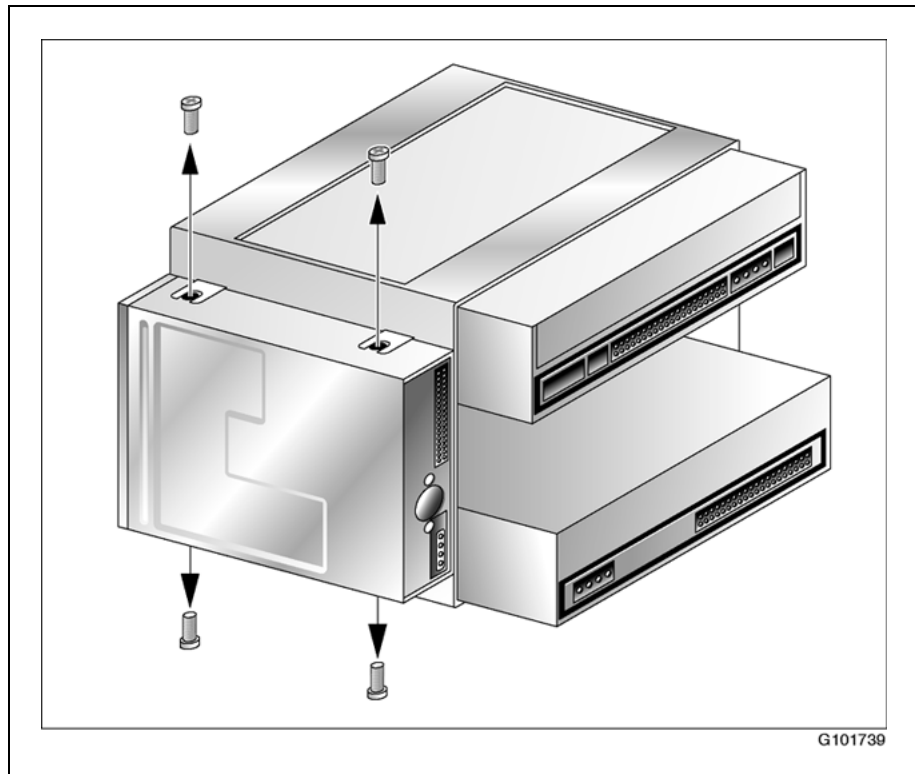
Step	Action
<div data-bbox="421 1110 584 1262" data-label="Image"> </div> <div data-bbox="600 1089 756 1125" data-label="Section-Header">CAUTION</div> <div data-bbox="600 1125 989 1163" data-label="Section-Header">Risk of equipment damage</div> <div data-bbox="600 1161 1353 1194" data-label="Text"> <p>Use an ESD wrist strap to protect static-sensitive components.</p> </div>	
1	Remove the media drive carrier from the chassis (see "Removing the media drive carrier from the chassis" (page 103)).
2	Remove the faulty drive from the media drive carrier and save the screws (see the diagrams that follow).

- 1 Remove the media drive carrier from the chassis (see ["Removing the media drive carrier from the chassis" \(page 103\)](#)).

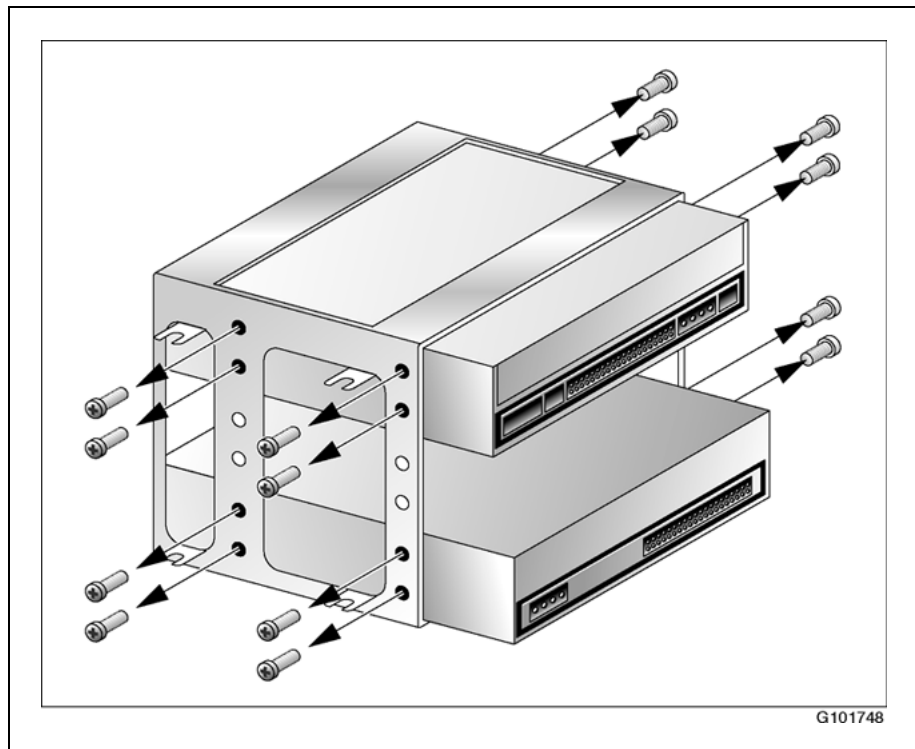
- 2 Remove the faulty drive from the media drive carrier and save the screws (see the diagrams that follow).

Note: To remove the tape drive or CD-ROM drive, you must first remove the floppy drive.

Replace media drive - step 1



Replace media drive - step 2

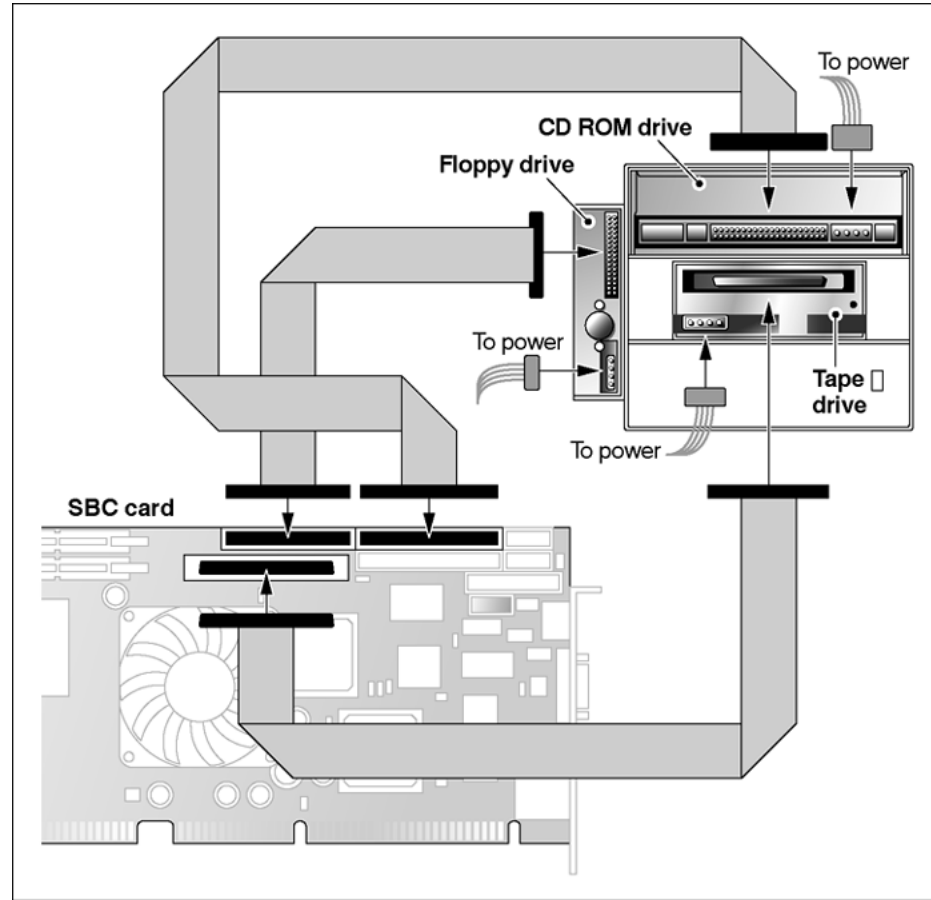


- 3 If you are installing a tape drive, configure it as described in ["To configure the tape drive"](#) (page 109).
- 4 Slide the new drive into the media drive carrier, and secure it with the screws that were previously removed.
- 5 Reattach any media drives that you removed to access a specific media drive slot.
- 6 Position the media drive carrier in the media drive bay, leaving enough room to reach behind the carrier, and attach the connectors.
- 7 Carefully connect the existing signal and power cables as shown in ["Cabling example"](#) (page 109).
Note: If your tape drive is a narrow device, you require a wide-to-narrow adapter to connect to the wide SCSI cable.
- 8 Slide the carrier into the media drive bay.
Note: Ensure that the cables are free and undamaged.
- 9 Secure the media drive carrier to the chassis with four Phillips-head screws.
- 10 Replace and lock the front bezel.

—End—

Installing a tape drive

This procedure provides instructions for installing a tape drive on a server that currently does not have a tape drive.

Cabling example

G101651

To configure the tape drive

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 technical support representative.

Step	Action
1	Set the SCSI ID to 6.
2	Disable the Active Terminators (Term Enable). Note: Termination is provided by an active SCSI terminator that you connect to the end of the SCSI cable (see "Cabling example" (page 109)).
3	Enable Parity Checking.
4	Enable Termination power (TPWR).

- 5 Leave the remaining settings at the default values.

—End—

To install a new tape drive (no tape drive previously installed)

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



CAUTION

Risk of equipment damage

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

- 1 Courtesy down CallPilot, and then power down the server.
- 2 Ensure that the tape drive settings are as described in ["To configure the tape drive" \(page 109\)](#).
- 3 Remove the chassis cover.
- 4 Remove the media drive carrier (see ["Removing the media drive carrier from the chassis" \(page 103\)](#)).
- 5 Slide the new tape drive into the media drive carrier, and secure it with four undercut Phillips-head screws.

Note: You may need to first remove other media drives from the carrier to access the tape drive slot.
- 6 Reattach any media drives that you removed to access the tape drive slot.
- 7 Position the media drive carrier in the media drive bay, leaving enough room to reach behind the carrier, and attach the connectors.
- 8 Carefully connect the existing signal and power cables as shown in ["Cabling example" \(page 109\)](#).
- 9 Slide the carrier into the media drive bay.

Note: Ensure that the cables are free and undamaged.
- 10 Secure the media drive carrier to the chassis with four Phillips-head screws.

Result: The tape drive is installed.

11 Replace the chassis cover and front bezel.

12 Power on the server.

Result: The tape drive is detected by Windows, and the tape drive is ready for use.

—End—

Chapter 10

RAID operations

In this chapter

"Outlining RAID functions" (page 113)

"Configuring RAID firmware, driver, and power console" (page 113)

"Replacing the LSI1600 card with LSI320-2" (page 114)

"Configuring the RAID controller after a hardware change" (page 116)

"Splitting the RAID drives" (page 119)

"Synchronizing RAID drives" (page 121)

Outlining RAID functions

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.

Configuring RAID firmware, driver, and power console

Verifying the RAID configuration

There is a direct relationship between the driver, firmware and Power Console utility versions used with a RAID card. While mixing driver versions with firmware is not critical, mixing Power Console Utility with the wrong

driver or firmware can lead to system instability and data corruption. ["RAID driver, firmware, and Power console configuration."](#) (page 114) shows the accepted and tested combinations for Windows 2003

RAID driver, firmware, and Power console configuration.

RAID card	Driver	Firmware	MegaRAID Power Console
LSI1600	6.45 (6.36 works temporarily but must be upgraded)	111U	5.00i
LSI320-2	6.45 (6.36 works temporarily but must be upgraded)	1L37	5.00i

To determine the current RAID firmware version:

Step	Action
1	Select Objects Menu → Adapter → Adapter Information.
2	Launch the MegaRAID client using: Start → Programs → Power Console Plus → Launch Client.
3	From the MegaRAID Power Console Plus, Server Selection window, select Access Mode → Full Access to view or change configuration information and click OK.
4	Select Adapter → Properties.
5	If the configuration is not one of the valid configuration in "RAID driver, firmware, and Power console configuration." (page 114), perform a firmware update. For instructions, see "Replacing the LSI1600 card with LSI320-2" (page 114).

—End—

Replacing the LSI1600 card with LSI320-2

Use this procedure to replace a failed LSI1600 RAID card.

To replace the LSI1600 card with the LSI320-2 card.**Step Action****WARNING**

Nortel strongly recommends that you not perform low level formatting. Performing low level formatting results in the drives becoming unusable.

ATTENTION

If your replacement RAID card has been previously used and holds an existing configuration, the system will report a mismatch between the controller NVRAM and Drive MetaData. The steps below will correct the mismatch.

- 1 Power up the server and click Ctrl+M to enter the utility.
- 2 Select Objects → Adapter → Other Adapter to set the following:
 - a. Set Force Boot to On.
 - b. Set Auto-Rebuild to Disabled.
 - c. Select Objects → Channel and ensure channel speed is 160M. ((Default for LSI320 is 320M).
 - d. Repeat for all channels.
- 3 Exit the utility and reboot the server.
- 4 Set the server to boot from CD.
- 5 Insert the RAID Update Utility CD and reboot the server.
Result: The DOS boot menu appears.
- 6 Select Update LSI320-2 Firmware.
Result: The system will prompt twice to confirm you are upgrading the firmware.
- 7 Answer Y to both questions.
Result: The system upgrades the firmware and asks you to reboot.
- 8 Allow the system to reboot to Windows 2003.
- 9 Insert the RAID Update Utility CD and unzip the RAIDUP.EXE file.
Result: A directory called RAIDUP is created on C:\ drive

- 10 Locate SCSI controllers → LSI Adapter in the RAIDUP directory. Double click on it, then select Driver.
Result: You are asked to choose the Upgrade Driver.
- 11 Point to the c:\raidup\Win2k3 folder.
- 12 The system asks you to reboot.
Result: The system reboots to Windows 2003.
- 13 Check the driver, firmware and Power Console configuration.
 - a. Open the MegaRAID Power Console from the Start → Programs menu.
 - b. Select Help About from the menu and verify the MegaRAID Power Console version is 5.00i.
 - c. Select Adapter → Properties and verify the firmware version is 1L37 and the board type is LSI320-2.
 - d. Exit the Power Console.
- 14 Right click on C:\WINNT\SYSTEM32\DRIVERS\mraid3xx.sys and select Properties → Version. Verify the Driver version is 6.45.

—End—

Configuring the RAID controller after a hardware change

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).



WARNING

Nortel strongly recommends that you not perform low level formatting. Performing low level formatting results in the drives becoming unusable.

To configure an LSI Elite 1600 or LSI320-2 RAID system

Step	Action
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. The system may appear frozen. Do not reset.
2	From the Management menu, select Objects and press Enter.
3	From the Objects menu select Adapter and press Enter.
4	From the Adapter menu select 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 Spin up Timing: 1 Disk every 6 secs Cache Flush Timings: Every 4 seconds Rebuild Rate: 30% Alarm Control: Enabled Other Adapter Settings: — Emulation: Mass Storage — Auto Rebuild: Disabled — Initiator ID: 7 — Cluster Mode: Disabled — Multiple PCI Delayed Transactions: Disabled — Force Boot: On — 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. Ensure that the values are set as follows: Termination State: Enabled

SCSI Transfer Rate: **160M**

- 10** In the Configure menu, select New Configuration. Press Yes to proceed.

Result: The system should display both SCSI channels, each having three drives. SCSI ID's should be listed in order from 0 to 2 for each channel, starting from the top. 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.

- 11** Create the first logical drive by selecting A01-01 (first drive from channel 0), to A01-02 (first drive from channel 1) and pressing the space bar.

Result: After selection, the drives will blink.

- 12** Press Enter to create the first logical drive.

- 13** Repeat the process for the second and third logical drives to create packs as follows:

A02-01 and A02-02 as second pack

A03-01 and A03-02 as third pack

- 14** Press Enter or F10 to configure the logical drives.

- 15** Press the space bar to Select Configuration Array. Span-1 appears in the box opened for A01 logical drive. DO NOT select and press the space bar for the other logical drives at this point.

- 16** Configure logical drive A01, by pressing F10.

RAID 1:

Size: accept the size display

Accept

SPAN = NO

- 17** Highlight Accept and press Enter to accept these new values. Repeat for the two remaining logical drives.

Result: After the last logical drive, the system will prompt you to save the configuration.

- 18** Highlight YES and press Enter.

- 19** Press ESC twice to exit the submenus.

- 20** In the Management menu choose the Initialize submenu.

- 21** Press F2 to select all three logical drives.

- 22 Press F10 and consecutively select YES to initialize the drive packs.
- 23 When the initialization is complete, press any key to return to the Management menu.
- 24 Press ESC to exit the utility. Save the configuration when prompted.
- 25 Press Ctrl+Alt+Delete as indicated by the menu to reboot.

—End—

Splitting the RAID drives

Ensure that your system is in full working order and the RAID hardware configuration is set up properly as described on ["Configuring the RAID controller after a hardware change" \(page 116\)](#).

ATTENTION

You must verify that the RAID channel 1 is connected to the first three hard drives on the left as facing the machine, and channel 2 is connected to the last three to the right. Either open the lid and follow the cables or take one hard drive offline and observe which drive is marked FAIL by the system. If the drive matches the graphic location on the Windows MegaRAID console, proceed with the next step.

ATTENTION

The drives must not be un-seated, re-seated or disconnected during the RAID splitting process unless you are planning to replace the drives.

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.

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

Step	Action
1	Restart the CallPilot system and press Ctrl+M when prompted, to enter the RAID setup utility during bootup.
2	From the Management Console, select Check Consistency. Result: The Logical Drives Configured dialog box displays.
3	Use the arrow key to highlight the first drive to be checked.
4	Press the space key to select the drive.
5	Press F10 to check consistency. Result: The "Do you wish to continue?" dialog box appears.
6	Click Ok. Result: The consistency check begins and a status dialog box appears.
7	Repeat steps 3 to 6 for each drive until all three drives have been checked for consistency.

—End—

To split the RAID

Step	Action
<p style="text-align: center;">ATTENTION</p> <p>To split the RAID Because the 1002rp has three physical drives, the RAID splitting must be done at the Ctrl+M utility level. Do not perform this procedure using the Windows MegaRAID console. There is a risk of database corruption.</p>	
1	Restart the CallPilot system and press Ctrl+M when prompted, to enter the RAID setup utility during bootup.
2	From the Management menu select Objects > Physical Drive. Result: A list of all drives organized per channel appears.
3	Select the A01- 2 drive using the cursor and press Enter.
4	Select Fail Drive. Result: A warning message box appears. Ignore it and select Yes. The drive status changes to FAILED. The alarm should start beeping.

- 5 Repeat this process for the remaining two drives present on Channel 2.
- 6 Press Esc three times to exit the Ctrl+M utility.
- 7 Reboot.

Result: The system reports that three drives are in critical mode and starts beeping. This is OK; the system will still reboot.

ATTENTION

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

At this point, the RAID is split, and the drives marked FAILED become the backup drives and are no longer written to. A PEP installation can now be done without impact to the 'backup' drives.

—End—

Synchronizing RAID drives

To synchronize the RAID after a successful operation

Step	Action
1	Without shutting down the server, right-click the first drive on Channel 2. Example: (0) A1-2-Failed.
2	From the pop-up menu select Rebuild. When the Rebuild is complete, repeat the process for the remaining two drives on Channel 2. Result: When all three drives are rebuilt, <ol style="list-style-type: none"> a. All three drive status' changes to ONLINE. b. The color of the icons changes to green. c. The alarm should stop beeping unless it was temporarily silenced. <p>Note: The process can take up to 1 hour. DO NOT shut down the machine before the rebuild is complete.</p>
3	Monitor the rebuild by opening the Windows MegaRAID console.

—End—

To synchronize the RAID after an unsuccessful operation

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

If the operation has failed, the system needs to be returned to the original configuration.

- | | |
|---|--|
| 1 | Reboot the CallPilot server. |
| 2 | Press Ctrl+M while the server is booting.
Result: The RAID configuration utility opens. |
| 3 | Break the mirroring of the logical drives.
a. Select Objects → Physical Drive.
Note: All server drives on channel 1 must be online.
b. Select CH1 ID0 (A01-01) and press Enter.
c. Select Fail Drive and press Enter.
d. Select Yes to confirm the fail action and press Enter.
e. Repeat these steps for each remaining drive on channel 2: CH1 ID1 (A02-01) and CH1 ID2 (A03-01). |
| 4 | Bring the drives on channel 2 online (the drives on which the previous CallPilot release is installed).
a. Select Objects → Physical Drive.
b. Select CH2 ID0 (A01-02) and press Enter.
c. Select Make Online and press Enter.
d. Select Yes to confirm that the driver must be brought online and press Enter.
e. Repeat these steps for each remaining drive on channel 2: CH2 ID1 (A02-02) and CH2 ID2 (A03-02). |
| 5 | Press Esc to return to the Objects menu. |
| 6 | Press Esc to return to the Management menu. |
| 7 | Press Esc to exit the RAID configuration utility.
Result: A confirmation box appears. |

- 8 Click Yes to confirm that you want to exit the RAID configuration utility and press Enter.
- 9 Press Ctrl+Alt+Delete to reboot the server.

—End—

Chapter 11

Configuring MPB96 boards

In this section

"Determining board and card configuration" (page 125)

"Identifying hardware components" (page 126)

"Installing valid configurations" (page 128)

Determining board and card configuration

T1 switch connectivity

There are two valid configurations for PCI T1 cards and MPB 96 boards with T1 switch connectivity. "MPB 96 with T1 switch" (page 125) shows valid configurations.

MPB 96 with T1 switch

MPB96 boards	PCI T1 cards	Max. Channels	MPU
1	2	96	96
3	4	192	288

Meridian 1 (M1)/Communication Server 1000 (CS 1000) switch connectivity

There are two valid configurations for MPB 96 boards with M1/CS 1000 switch connectivity. "MPB 96 with M1/CS1000 switch" (page 126) shows valid configurations.

MPB 96 with M1/CS 1000 switch

MPB96 boards	Max. Channels	MPU
1	96	96
3	192	288

Determine which configuration applies to your system.

Taking safety precautions

Before you make any changes to the server hardware, follow these safety precautions:

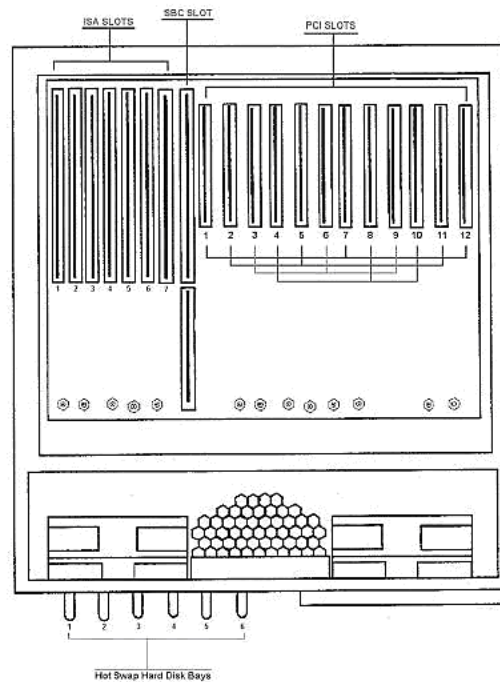
- Respect appropriate ESD rules.
- Power the system OFF.
- Do not drop and leave screws inside the server.
- Do not drop hard objects (such as screwdrivers) inside the server as this can damage the server.

Identifying hardware components

"1002rp server chassis" (page 127) shows the arrangement of slots in a 1002rp server chassis.

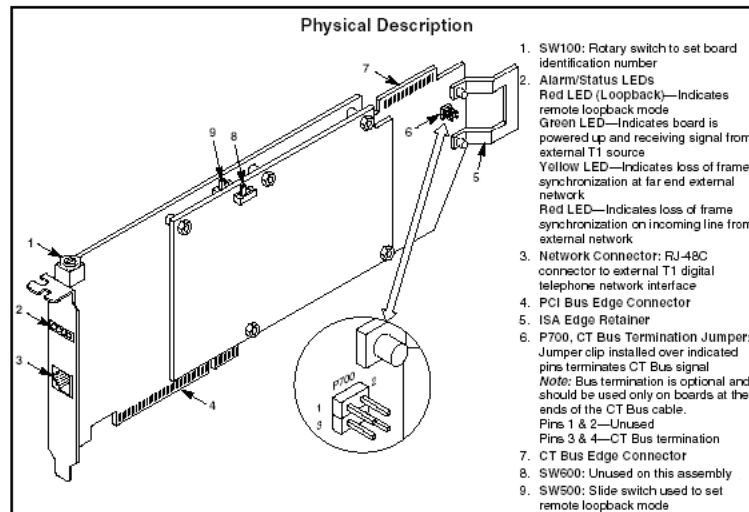
1002rp server chassis

1002rp Server Chassis, Backplane and PCI IRQ distribution



"D480JCT1 PCI T1 board" (page 127) shows the layout of jumpers and switches on the D/480JCT-2T1 PCI T1 board.

D/480JCT-2T1 PCI T1 board



Installing valid configurations

ATTENTION

You must use one of the valid configurations and respect the slot map or the system behavior will be erratic.

T1 switch connectivity

To configure one MPB96 and two T1 PCI cards

Step	Action
1	Plug the MPB96 card in PCI slot 3.
2	On the first Intel D/480JCT-2T1 PCI card: <ol style="list-style-type: none"> Set the card SW100 ID rotary dial switch to 0. Ensure that there are no termination jumpers installed on P700.
3	Plug the first Intel D/480JCT-2T1 PCI card 1 in PCI slot 4.
4	On the second Intel D/480JCT-2T1 PCI card: <ol style="list-style-type: none"> Set the card SW100 ID rotary dial switch to 1. Install a termination jumper on P700 3&4 termination jumpers ON (to enable CT Bus termination). <p>Note: Only one Intel D/480JCT-2T1 PCI card in the system (the last on the CT Bus cable) should have the termination jumper set to ON.</p>
5	Plug the Intel D/480JCT-2T1 PCI card 1 in PCI slot 5.
6	Connect the 3 drop CT-Bus cable so all three connectors are securely connected to all cards. <p>Note: If a 7 drop cable is used in this configuration, ensure that the end connectors are connected to the end cards and no connector is left dangling at any end of the cable.</p>

—End—

To configure three MPB96 and four T1 PCI cards

Step	Action
1	Plug the MPB96 card in PCI slot 3.
2	On the first Intel D/480JCT-2T1 PCI card:

- a. Set the card SW100 ID rotary dial switch to 0.
 - b. Ensure that there are no termination jumpers installed on P700.
- 3 Plug the Intel D/480JCT-2T1 PCI card 1 in PCI slot 4.
- 4 On the second Intel D/480JCT-2T1 PCI card:
 - a. Set the card SW100 ID rotary dial switch to 1.
 - b. Ensure that there are no termination jumpers installed on P700.
- 5 Plug the Intel D/480JCT-2T1 PCI card 2 in PCI slot 5.
- 6 Plug the MPB96 card in PCI slot 6.
- 7 On the third Intel D/480JCT-2T1 PCI card:
 - a. Set the card SW100 ID rotary dial switch to 2.
 - b. Ensure that there are no termination jumpers installed on P700.
- 8 Plug the Intel D/480JCT-2T1 PCI card 3 in PCI slot 7.
- 9 On the fourth Intel D/480JCT-2T1 PCI card:
 - a. Set the card SW100 ID rotary dial switch to 3.
 - b. Ensure that there are no termination jumpers on P700 pins 3 and 4.
- 10 Plug the Intel D/480JCT-2T1 PCI card 4 in PCI slot 8.
- 11 Plug the MPB96 card in PCI slot 9.
- 12 Connect the 7 drop CT Bus cable to all MPB96 and T1 cards. Ensure that the end connectors are connected to the end cards and no connector is left dangling at any end of the cable.

—End—

M1/CS 1000 switch connectivity

To configure one MPB96 board

Plug the MPB96 card in PCI slot 3.

To configure three MPB96 boards

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

- | | |
|---|--|
| 1 | Plug the first MPB96 board in PCI slot 3. |
| 2 | Plug the second MPB96 board in PCI slot 6. |

- 3 Plug the third MPB96 in PCI slot 9.
- 4 Connect the 7-drop CT Bus cable to all MPB96 and T1 boards, with the end connectors of the CT Bus cable connected to MPB96 in slot 3 and MPB96 in slot 9.

Note: There should be no dangling connectors at either end of the CT Bus cable.

—End—

Chapter 12

Replacing or adding voice processing boards

In this chapter

"DSP numbering and location" (page 131)

"Replacing an MPB96 board" (page 132)

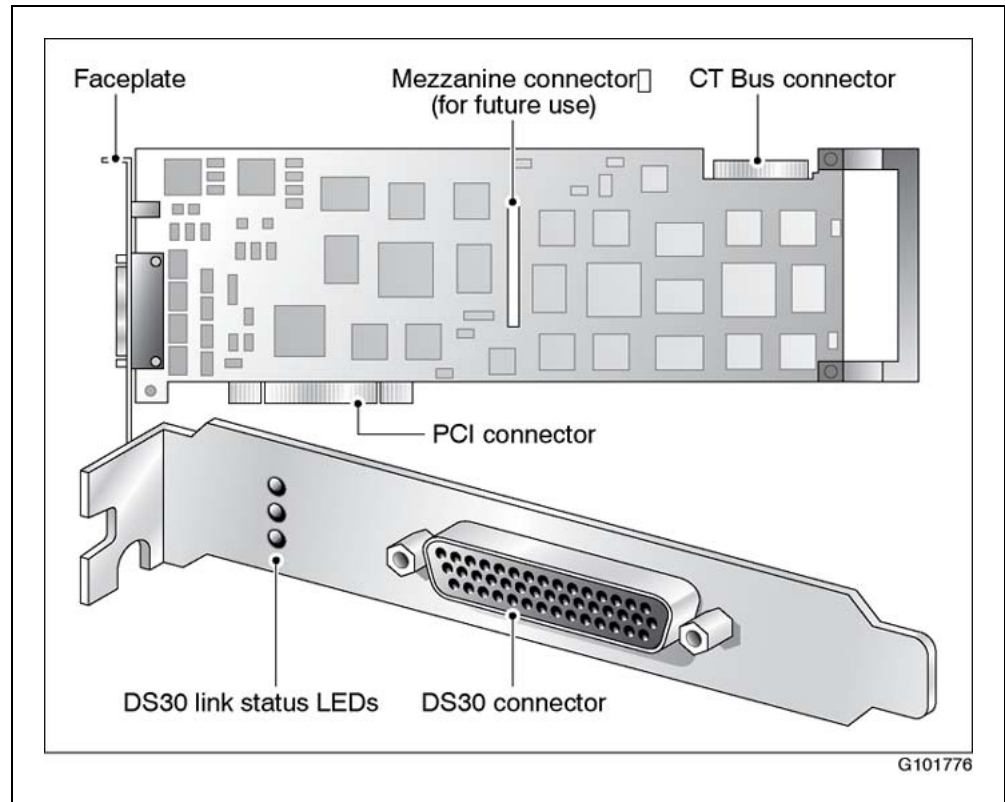
DSP numbering and location

DSPs are the built-in voice processing components on MPB boards. DSPs are numbered to distinguish them in CallPilot maintenance programs, such as the Maintenance page in CallPilot Manager. Each DSP supports up to eight multimedia channels.

DSP numbering on MPB96 boards

The MPB96 board has 12 embedded DSPs. MPC-8 boards are not required. If an embedded DSP is faulty, you must replace the entire MPB96 board.

MPB96 board



Replacing an MPB96 board

This section describes how to replace an MPB96 board.

You must 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.

To replace or add an MPB96 board

Step	Action
1	Courtesy stop all CallPilot channels.
2	Power down the server and all peripheral devices.
3	Disconnect the following cables: <ol style="list-style-type: none"> power cable peripheral device cables DS30X cables (Meridian 1 and Communication Server 1000 only) CTbus cable (if present)
4	Remove the server cover. For instructions on removing the server cover, see "Removing the front bezel and server cover" (page 77).
5	Unpack the replacement MPB96 board.
6	Hold the MPB96 board by its top edge or upper corners and then align it with the following: <ul style="list-style-type: none"> 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
7	Press the new MPB96 board firmly into its slot.
8	Secure the board using the retaining screw.
9	Reattach the CTbus cable. Refer to "Installing valid configurations" (page 128)
10	Replace the server cover.
11	Replace the front bezel and lock it.
12	Reconnect the peripheral device and power cables.
13	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.

- 14 Power up the server and log on to Windows.**Result:**The Windows New Hardware Found Wizard screen appears.

ATTENTION

Before clicking Next to install the hardware driver, wait 10 minutes or until you see the dialog box "CallPilot is running and is able to accept calls"; otherwise the server could display a blue screen and then restart. If this happens, the server may not recognize the cards or boards.

- 15 Click Next.
- 16 Select the presented Nortel MPB driver.
- 17 Repeat the previous two steps each time the Windows New Hardware Found Wizard screen appears.
- 18 Restart the server
- Note:** After restarting the server, you receive a dialog box indicating you have new hardware. Click OK.
- 19 Run the Configuration Wizard to detect the new hardware.
For instructions, refer to the *Installation and Configuration Task List* (NN44200-306).
Result: The MPB96 board replacement is complete.
- 20 Test the multimedia channels to ensure the new MPB96 board is functioning properly.
Refer to "Testing the CallPilot installation" in the *Installation and Configuration Task List* (NN44200-306).

—End—

Chapter 13

Replacing the D/480JCT-2T1 T1 interface card

In this chapter

"TD/480JCT-2T1 card function" (page 135)

"Replacing the D/480JCT-2T1 card" (page 135)

TD/480JCT-2T1 card function

A selection of one to four D/480JCT-2T1 T1 interface cards can be configured to match the number of voice channels connecting to the switch. Each T1 interface card occupies one PCI slot.

The Intel D/480JCT-2T1 card carries the media stream and call control signals between CallPilot and SL-100* or DMS-100. The card connects to the MPB96 board with a CTbus cable.

Replacing the D/480JCT-2T1 card

If you determine that a problem exists with your card, replace it. You must identify the type of card before you can decide where to install it.

Requirements

To replace the card, you require the following:

- one Phillips screwdriver
- one antistatic wrist strap
- the replacement card

Identify the card

Identify the card from other types of cards by its connector.

**DANGER****Risk of electric shock**

High current inside the chassis can cause severe injury.

**CAUTION****Risk of equipment damage**

Take precautions to protect internal components. Electrostatic discharge (ESD) can damage boards and make them unusable. Wear an ESD wrist strap.

To replace a faulty D/480JCT-2T1 card

Step	Action
1	Review the manufacturer's documentation for the replacement of the Intel D/480JCT-2T1 card.
2	Power down the server and disconnect all power cords.
3	See valid slot assignments on "Installing valid configurations" (page 128) to determine the configuration.
4	Remove the chassis cover to expose the installed cards.
5	Set aside any cables covering the card.
6	Remove the CTbus cable.
7	Free the card from the faceplate by loosening the screw.
8	Lift the card out of the slot and set it aside.
9	Unpack the replacement card and align it with the proper slot.
10	Apply downward pressure until the card is evenly and securely seated in the slot.
11	Secure the card by tightening the screw located at the top of the faceplate.
12	Set the T1 card terminations as detailed on "Installing valid configurations" (page 128) .
13	Replace the CTbus cable.
14	Replace the chassis cover.
15	Power up the server.

—End—

Manually setting T1 card manual termination jumpers

Manually set T1 card manual termination jumpers only on the last card at the end of the CTbus.

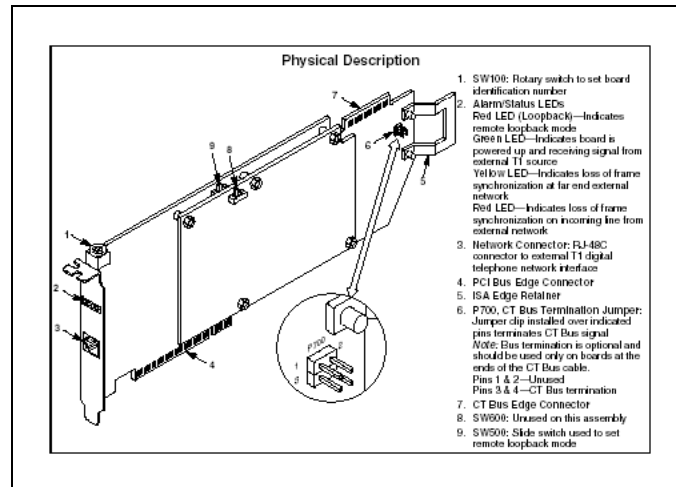
ATTENTION

Risk of equipment damage

Do not install this jumper on any of the other T1 cards.

Apply a jumper between pins 3 and 4 of the P700 header on the Intel/Dialogic D/480JCT-2T1 card. The diagram below shows a detail of the T1 card.

D/480JCT-2T1 card



To test the D/480JCT-2T1 card

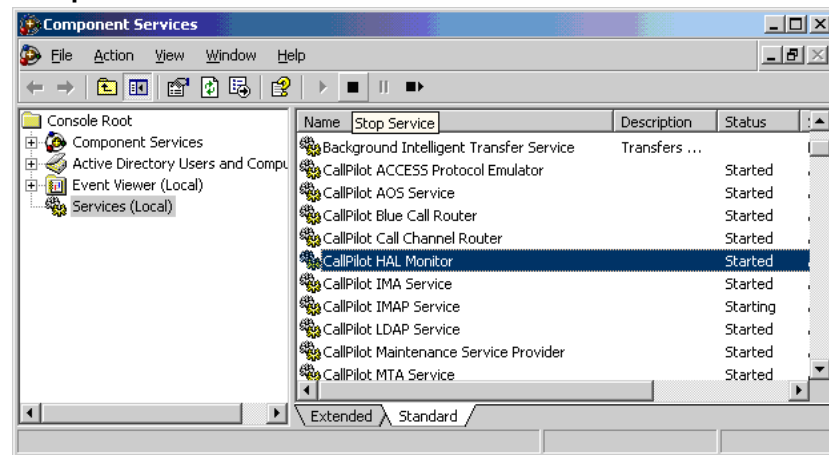
Test the D/480JCT-2T1 card using the Universal Dialogic Diagnostic (UDD) utility.

Note: Before running this utility, you must stop essential services. All call processing ceases and you must restart the system after the diagnostics are complete.

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

- | | |
|---|---|
| 1 | Stop the CallPilot HAL Monitor service. Refer to "To start or stop a component" (page 57) for instructions. |
|---|---|

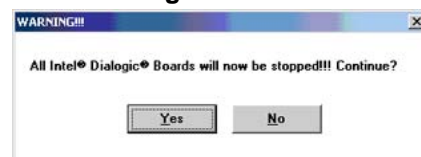
Component services



- Click Start → Programs → Intel Dialogic System → Universal Dialogic Diagnostics Utility.

Result: The Intel Warning box appears asking you to confirm the stoppage of the boards.

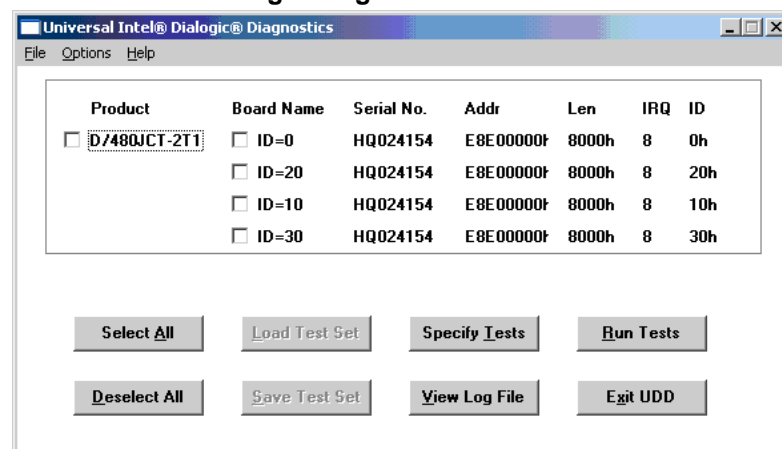
Intel Warning box



- Click Yes to confirm.

Result: The Universal Intel Dialogic Diagnostics screen appears.

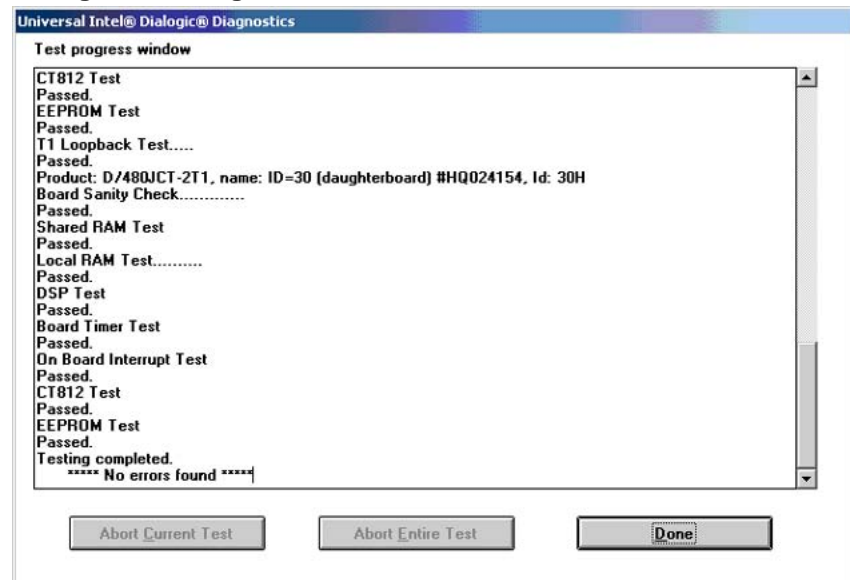
Universal Intel Dialogic Diagnostics



- Click Select All and then click Run Tests.

Result:The Test Progress window appears.

Dialogic Test Progress



- 5 Click Done when the tests are complete. Save any error information.
- 6 Restart the CallPilot HAL Monitor service. Refer to ["To start or stop a component" \(page 57\)](#) for instructions

—End—

Chapter 14

Maintaining the Pentium III SBC card

In this chapter

"Overview" (page 141)

"Replacing the Pentium III SBC card" (page 142)

"Configuring the 1002rp Pentium III BIOS" (page 144)

"Replacing or adding dual inline memory modules" (page 147)

"Maintaining the onboard video and network cards" (page 149)

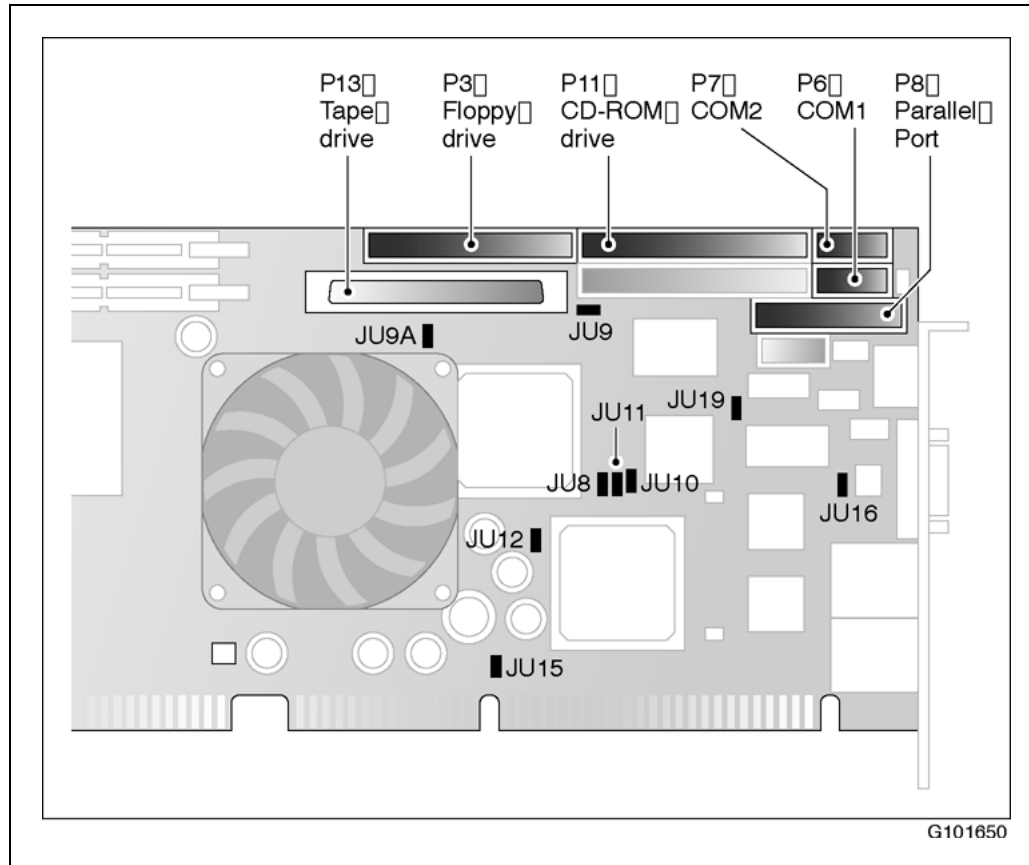
Overview

This section describes the Pentium III SBC card (single board card). It covers procedures for replacing and configuring the SBC card. The SBC card is always installed in the SBC slot located between the ISA expansion slots and the PCI slots on the backplane. Refer to "[SBC card location](#)" ([page 142](#)) for SBC card location.

SBC card connectors and jumpers

"SBC card connectors and jumpers." (page 143) shows the location of connectors where cables must be disconnected or connected as part of the procedure to replace the SBC card. The jumpers shown in this diagram are used in the BIOS configuration procedures

SBC card connectors and jumpers.



To replace the SBC card

DANGER

Step	Action
1	Power down the server.
2	Disconnect the power cord.



DANGER

Risk of explosion

The SBC has a lithium battery installed. If you are discarding the SBC, dispose of used batteries according to the manufacturer's instructions. Replacement of the battery with an incorrect type also raises the risk of an explosion.

- 1 Power down the server.
- 2 Disconnect the power cord.

- 3 Remove the top cover.
- 4 Disconnect and label all cables from the SBC card. See ["SBC card connectors and jumpers" \(page 143\)](#). Refer to ["SBC card location" \(page 142\)](#) to locate the SBC card.
- 5 Disconnect and label cables from the SBC card faceplate.
- 6 Loosen and remove the screw that is securing the SBC card.
- 7 Loosen and remove the screw located at the top of the card faceplate.
- 8 Loosen the SBC and pull it up from the backplane.

Note: You can now do the following:

- Replace the SBC with a new card. To replace it, continue with step 9.
- Increase RAM by adding DIMM(s) to the card. See ["To add SDRAM DIMMs to the SBC card" \(page 148\)](#).

- 9 Remove the new card from its protective wrapping.
- 10 Align the card with its slot on the backplane and press it into place.
Result: The board seats properly in both the ISA-style and PCI-style connectors.
- 11 Fasten the card down with the screw provided.
- 12 Install the new I/O bracket.
- 13 Fasten the I/O bracket using the screw provided.
- 14 Remove the labels attached to all connectors and reconnect them to the card. See ["SBC card connectors and jumpers" \(page 143\)](#).
- 15 Replace the top cover.

—End—

Configuring the 1002rp Pentium III BIOS

BIOS is the Basic Input/Output System of the computer. It is Flash ROM-based code. The system is equipped with Flash BIOS, which enables you to upgrade by running a single program that writes updated code to the Flash ROM chips.

When to upgrade the BIOS

Do not upgrade the BIOS unless specifically instructed to do so by your Nortel representative. The CallPilot server is shipped to the customer with the required minimum BIOS vintage, so an upgrade is only necessary if Nortel deems this necessary to solve a system problem. The minimum release BIOS for CallPilot 4.0 is NNCXUA07 or later.

When to configure the BIOS

BIOS configuration is performed at the factory before the CallPilot server is shipped to the customer. It may be necessary to reconfigure the BIOS at a customer site after a BIOS or CMOS failure and recovery.

Requirements for upgrading or reconfiguring the BIOS

CallPilot Image CD (1 and 2)

To upgrade the BIOS

You must perform both of the following procedures to upgrade the BIOS:

Step	Action
1	Upgrade the BIOS (" To upgrade the BIOS " (page 145)).
2	Configure the SBC (" To configure the Pentium III SBC " (page 146)).
—End—	

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



CAUTION

Risk of data loss

Perform this procedure only if specifically instructed to do so by your Nortel representative.

- 1 Disconnect the cable that connects the CallPilot server to the Nortel server subnet.
- 2 Power on the CallPilot server.
- 3 Insert the CallPilot Image CD 1 of 2 for the platform into the CD-ROM drive.
- 4 Set the CallPilot server BIOS to boot from the CD-ROM.

Result: The server boots from the CD-ROM and displays the installation menu.

- 5 Press 2 to select `Utilities` (BIOS, Firmware, etc...), and then press Enter.

- 6 Press 1 to select `Update 1002rp BIOS to version NNCXUA07` and then press Enter.

Result: The system prompts you to confirm that the single board computer (SBC) is a SLE model.

- 7 Choose yes (Y) to confirm.

Result: The system prompts you to save the existing BIOS.

- 8 Type `n` and then press Enter.

Result: The system prompts you to enter the file name.

- 9 Type `nncxau07.rom` and then press Enter.

Result: The system prompts you to program the boot block.

- 10 Type `y` and then press Enter.

Result: The system updates the BIOS and then prompts you to reboot the server.

- 11 Press Ctrl+Alt+Delete to reboot the CallPilot server.

Result: The CallPilot server reboots.

- 12 During the reboot sequence, check the version of the BIOS on the top of the first screen. The BIOS version must be NNCXUA07.

Tip: If the BIOS version is not NNCXUA07, then check if the J10 and J11 jumpers are both in the top position. Power down the server, remove the single board computer (SBC) board and set the jumpers to the correct position. Follow the electrostatic discharge (ESD) rules to prevent static electricity from damaging the SBC board.

—End—

To configure the Pentium III SBC

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

**CAUTION****Risk of data loss**

Perform this procedure only if specifically instructed to do so by your Nortel representative.

- 1 Restart the server, and then press Delete to enter Setup when prompted.
- 2 Set the MPS 1.4 Support value to Disabled in the Chipset menu.
- 3 Press F9 to accept the other default values.
- 4 Press Enter when prompted to confirm this change.
- 5 Press F10 to save and exit the BIOS setup.
- 6 Restart the server.

Result: BIOS reconfiguration is completed.

—End—

Replacing or adding dual inline memory modules

The DIMMs are located on the SBC. The gold-plated edge connectors on DIMMs are designed to plug into matching edge-connector slots. The design allows you to add or remove these modules repeatedly without tools or without causing damage. Install DIMMs on the SBC only.

Capacity

The base CallPilot has one 512-Mbyte DIMM installed in Bank 1. Another 512-Mbyte DIMM can be installed in Bank 2 for total memory of 1 Gbyte. No other memory configurations are supported on this server.

Requirements

To add DIMMs to the card, you require the following:

- an antistatic wrist strap
- DIMMs with gold-plated edge connectors

To add SDRAM DIMMs to the SBC card

Step	Action
<div data-bbox="419 384 582 535" data-label="Image"> </div> <div data-bbox="600 363 756 396" data-label="Section-Header"> <h3>CAUTION</h3> </div> <div data-bbox="600 396 968 434" data-label="Section-Header"> <h4>Risk of electrical damage</h4> </div> <div data-bbox="600 432 1401 497" data-label="Text"> <p>Wear an antistatic ESD wrist strap when handling cards or boards, or when working inside the server.</p> </div>	
1	<p>Remove the SBC card from the server and place it down on a flat surface.</p> <p>Note: To remove old DIMMs, perform steps 2 to 4. To add new DIMMs, go to step 5.</p>
2	<p>Push the DIMM release tab outwards at both sides of the DIMM to be removed.</p>
3	<p>Hold the DIMM by its edges, being careful not to touch its components. Remove the DIMM by lifting it away from its slot. Store it in an antistatic package.</p>
4	<p>Remove other DIMMs as necessary.</p>
5	<p>Orient the DIMM so that the two notches in the bottom edge of the DIMM align with the keyed slot.</p>
6	<p>Insert the bottom edge of the DIMM into the slot, and press down firmly on the DIMM until it seats correctly.</p> <p>When the DIMM seats correctly, release the tabs lock back to an upright position. If the DIMM does not seat correctly, remove it and reinstall. Do not force the locking tabs to close.</p> <p>Note: The optional DIMMs can be installed when the SBC is in the server. If you do this, you must ensure that the server is powered off, and you must support the back of the SBC when you press the DIMM into the slot.</p>
7	<p>Repeat steps 5 and 6 to install each additional DIMM.</p>
8	<p>Replace the SBC card in the server.</p>



—End—

Maintaining the onboard video and network cards

Network card failure

The network cards are integrated into the SBC card. If the network cards fail, they cannot be replaced by add-in network cards in the expansion slots.

Video card failure

The video cards are integrated into the SBC card. If the video cards fail, they cannot be replaced by add-in video cards in the expansion slots.

Indicators for video card failure

If the monitor appears to be functioning but no display is visible, look for the following indicators of video card malfunction:

- Brightness and contrast are set at normal level.
- The server is powered on, and one long beep is followed by two short beeps.
- The floppy drive light goes on when the server is powered, but no display is visible on the monitor.
- The floppy drive light comes on when you type `dir a:` and press Enter, but no display is visible on the monitor.

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