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CallPilot

Installation and Configuration
Part 5: 702t Server Maintenance and Diagnostics

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CallPilot

Installation and Configuration
Part 5: 702t Server Maintenance and Diagnostics

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Standard 1.0 of *CallPilot Installation and Configuration, Part 5: 702t Server Maintenance and Diagnostics* is issued for general release.

Contents

Chapter 1

About this guide

In this chapter

Maintenance and diagnostics overview

Introduction

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

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

Who should read this guide

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

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

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

Resolving system problems

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

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

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

- *CallPilot Troubleshooting Reference*

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

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

Preparing for hardware or software maintenance

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

Performing hardware maintenance

Chapters 7 to 13 in this guide explain how to replace or maintain hardware components. For more details, see “Replacing hardware components” on page 17.

Rebuilding the CallPilot system

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

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

Resolving system problems

Introduction

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

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

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

Using this guide

This guide provides instructions for using the resources provided by your 702t server, as follows:

To	See
interpret POST codes and troubleshoot startup problems	Chapter 2, "Troubleshooting your CallPilot system" on page 19
use Windows NT 4.0 diagnostic tools, including Event Viewer and TCP/IP diagnostic tools	Chapter 3, "Using Windows NT online diagnostic tools" on page 27
run diagnostics on the serial ports	Chapter 4, "Using serial port diagnostic tools" on page 51
use the Event Browser, Alarm Monitor, and Maintenance page in CallPilot Manager	Chapter 5, "Using CallPilot Manager to monitor hardware" on page 63

To	See
use the following CallPilot system utilities: ■ Diagnostics Tool ■ System Monitor	Chapter 6, "Using CallPilot system utilities" on page 103

Using the *CallPilot Administrator's Guide*

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

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

Using the *CallPilot Troubleshooting Reference*

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

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

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

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

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

Replacing hardware components

Introduction

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

To replace or install	See
the server cover, or cooling fan	Chapter 7, “Replacing basic chassis components” on page 115
the hard drive, tape drive, CD-ROM drive, or floppy diskette drive	Chapter 8, “Replacing a hard drive, tape drive, CD-ROM drive, or floppy drive” on page 125
the RAID card	Chapter 9, “Performing RAID maintenance” on page 147
▪ MPC-8 cards ▪ MPB16-4 boards	Chapter 10, “Replacing or adding voice processing boards” on page 241
the Ethernet network interface card	Chapter 11, “Replacing network cards” on page 255
memory modules	Chapter 12, “Replacing DIMMs and the CPU” on page 259
the CPU	Chapter 12, “Replacing DIMMs and the CPU” on page 259
the BIOS	Chapter 13, “SSU and BIOS” on page 265

Approved replacement parts

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

CAUTION

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

Preparing for maintenance activities

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

- required tools and equipment
- recommended safety precautions for electrostatic discharge, handling cards, and handling your server
- instructions for shutting down your 702t server or for taking it out of service

Chapter 2

Troubleshooting your CallPilot system

In this chapter

Overview

Introduction

This section describes the startup diagnostics available on the 702t server, and the methods for troubleshooting startup problems. This includes the following:

- Power-On Self-Test (POST) diagnostics
- SCSI controller diagnostics or RAID controller diagnostics

See also

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

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

  These diagnostic tools can only be used if you are able to start up the CallPilot server. See “Resolving system problems” on page 14 for more details.
- *CallPilot Administrator’s Guide* (NTP 555-7101-301)

  See “Using the CallPilot Administrator’s Guide” on page 15 for more details.
- CallPilot Troubleshooting Reference

  This guide is written for Nortel Networks distributors and technical support representatives. As a result, this guide is not part of the customer documentation package. See “Using the CallPilot Troubleshooting Reference” on page 15 for more details.

Interpreting POST diagnostics

Introduction

This section explains POST diagnostic codes.

Definition

The Power-On-Self-Test (POST) is a system diagnostic program (stored in the BIOS) that runs every time the 702t server is started. POST's function is to test system components, and then to display status messages.

POST message formats

POST reports on the system status using POST beep 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. Write down the beep codes before calling your Nortel Networks customer support representative.

ATTENTION

Some POST beep codes are critical and require you to replace your motherboard. See the table below for more information about beep codes.

Number of beeps	Error message and conditions
1	Refresh failure
2	Parity cannot be reset
3	First 4 kbytes memory failure
4	Timer not operational
5	Processor failure
6	Keyboard controller gate A20 is off (v_mode)
7	Exception interrupt error
8	Display memory read/write error
9	ROM checksum error
10	Shutdown register read/write error

Interpreting startup diagnostics from SCSI BIOS

Introduction

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 Symbios Logic SCSI controller adapter card installed on your system. This controller is integrated into the system and is always present.

What to do when the server fails to boot into service

Introduction

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 NT

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 *CallPilot Troubleshooting Reference* for other suggestions.

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

   Note: If you are not a distributor, contact your Nortel Networks technical support representative for assistance.
5. If you still cannot find the boot failure cause, call your Nortel Networks technical support representative.

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:

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.

Note: Allow five minutes for the boot cycle to complete.

4 View the event logs.

For instructions, see "Viewing event logs" on page 30.

5 Refer to the *CallPilot Troubleshooting Reference* for other suggestions.

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

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

6 If you still cannot find the boot failure cause, call your Nortel Networks technical support representative.

Chapter 3

Using Windows NT online diagnostic tools

In this chapter

Overview

Introduction

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

CAUTION

Risk of software corruption
Do not run any utilities that are not documented in this guide.

Windows NT Event Viewer

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

Windows NT Diagnostics

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

TCP/IP diagnostics

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

- ipconfig
- ping
- tracert
- arp

- nbtstat
- netstat

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

chkdsk utility

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

Viewing event logs

Introduction

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

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

- Windows NT Event Viewer on the 702t server (see "To use the Windows NT Event Viewer" on page 32)
- CallPilot Event Browser or Alarm Monitor in CallPilot Manager

  For more information, do one of the following:

  - See "Alarm Monitor" on page 68
  - Refer to the *CallPilot Administrator's Guide* (NTP 555-7101-301)

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

Types of event logs

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

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

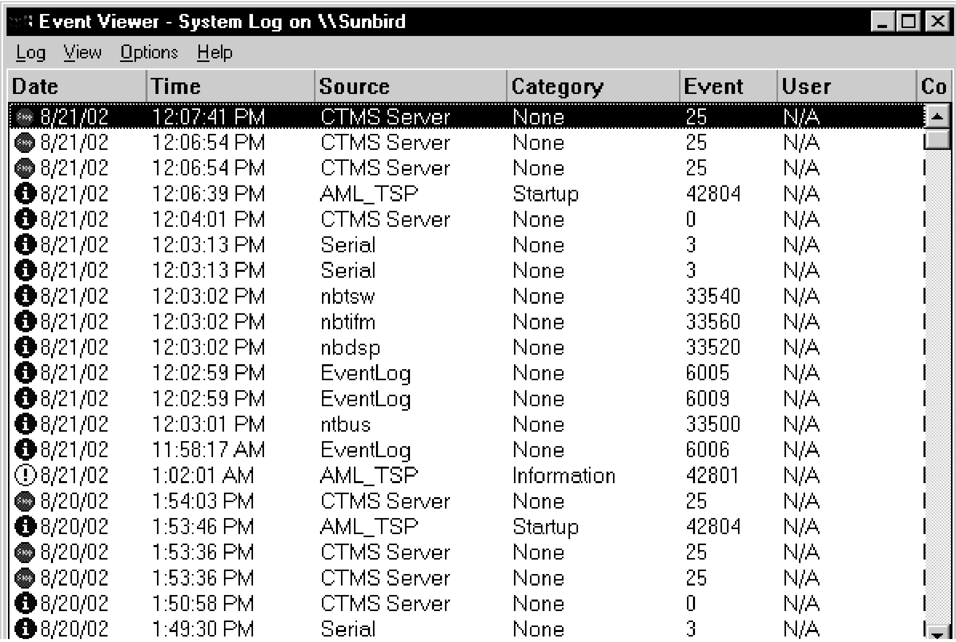
Where to get more information

For more information about using the Windows NT Event Viewer, click Help → Contents in the Event Viewer window. See also “To use the Windows NT Event Viewer” on page 32.

To use the Windows NT Event Viewer

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

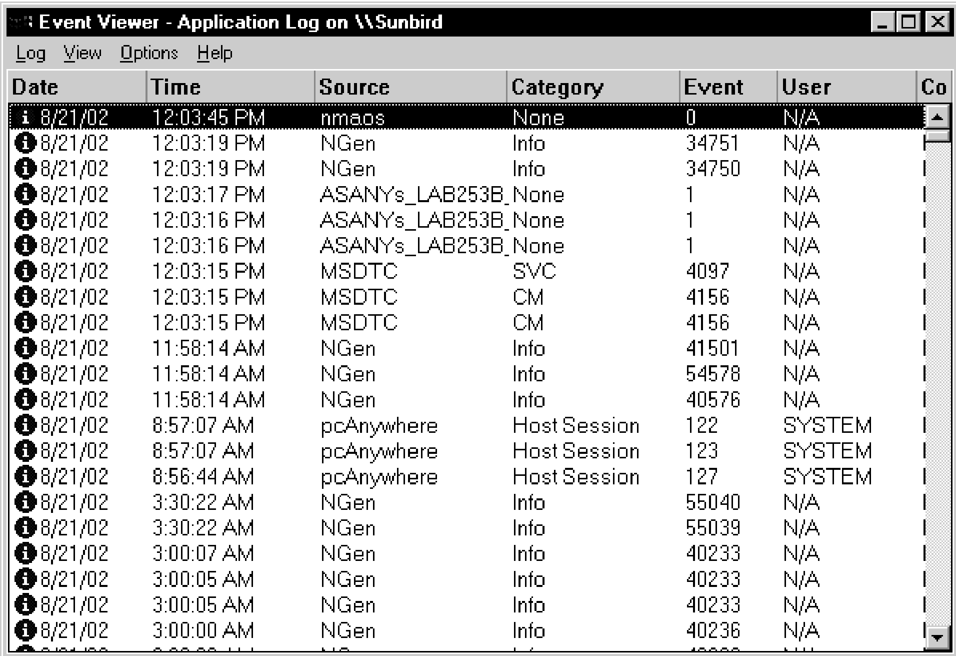
Result: The Event Viewer window appears.



Note: The System Log appears by default.

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

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



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

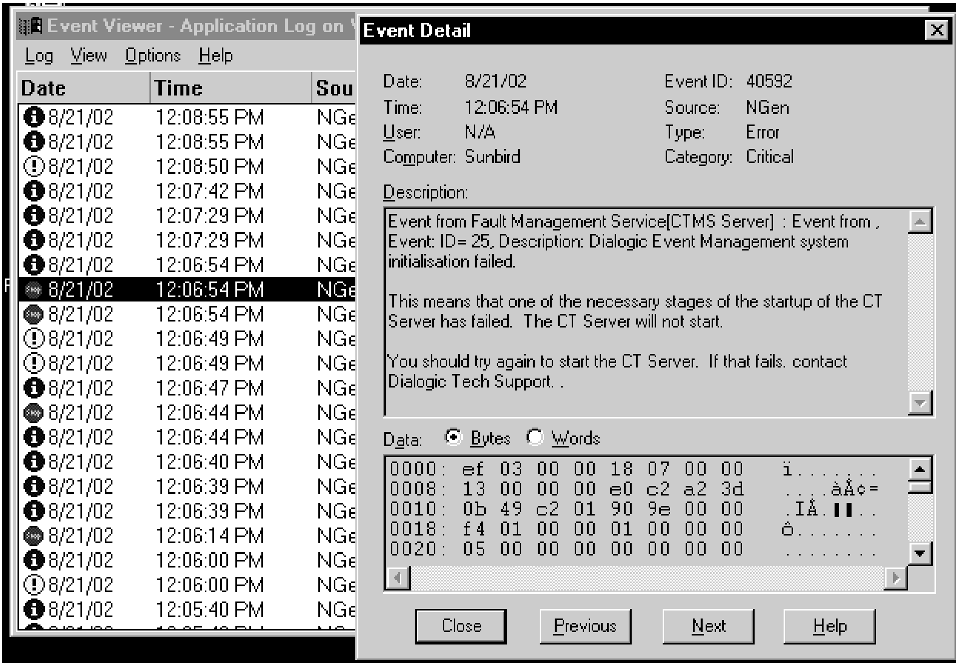
3 Look for error codes flagged with  or  that have occurred since the last startup.

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

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

Result: A description of the error appears.

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



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

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

6 Click Close.

Result: The event log reappears.

7 Click Log → Exit.

Result: The Event Viewer closes.

Checking hardware using Windows NT Diagnostics

Introduction

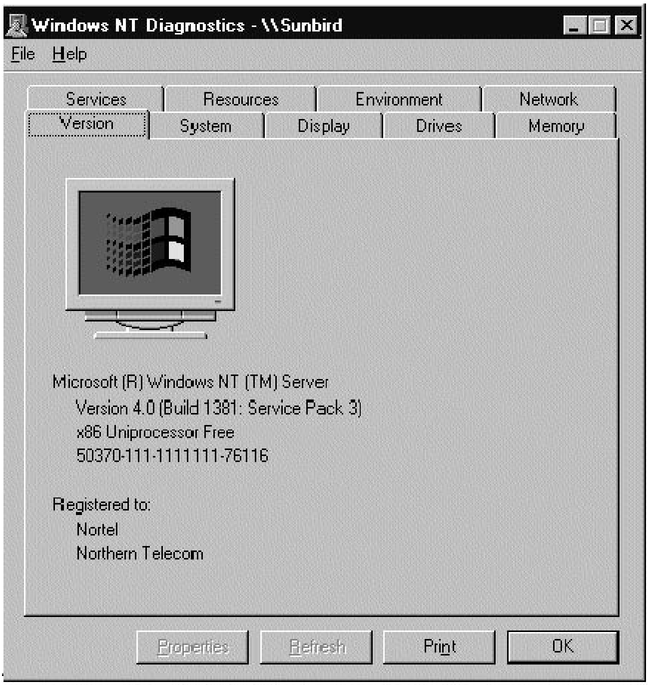
The Windows NT 4.0 Diagnostics window allows you to view details about the system and network components.

To use the Windows NT 4.0 Diagnostics tool

1 Log on to Windows NT.

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

Result: The Windows NT Diagnostics window appears.



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

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

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

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

Using TCP/IP diagnostic tools

Introduction

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

- ipconfig (below)
- ping (page 40)
- tracert (page 41)
- arp (page 43)
- nbtstat (page 44)
- netstat (page 46)

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

The ipconfig command

The ipconfig command displays IP configuration information.

Ipconfig default

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

Ipconfig command syntax

```
ipconfig /[ ]
```

The following flags are available for the ipconfig command:

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

To run the ipconfig command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

Example: ipconfig /all

3 Press Enter.

Result: The system runs the ipconfig utility.

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

The ping command

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

Ping command syntax

The ping command uses the following syntax:

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

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

To run the ping command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

3 Press Enter.

Result: The system displays the ping results.

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

The tracert command

This utility determines the route taken to a destination.

How tracert works

The tracert utility follows several steps to complete its task:

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

Tracert syntax

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

Tracert parameters

The tracert command uses the following parameters:

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

To run the tracert command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

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

Example: tracert 200.286.0.32 210 200.236.0.04

3 Press Enter.

Result: The system runs the tracert utility.

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

The arp command

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

Arp command syntax

The arp command uses the following syntax:

```
arp -s inet_addr eth_addr [if_addr]

arp -d inet_addr [if_addr]

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

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

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

To run the arp command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

3 Press Enter.

Result: The system runs the arp command.

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

The nbtstat command

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

Nbtstat command syntax

The nbtstat command uses the following syntax:

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

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

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

To run the nbtstat command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

3 Press Enter.

Result: The system runs the nbtstat utility.

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

The netstat command

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

Netstat command syntax

The netstat command uses the following syntax:

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

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

To run the netstat command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

3 Press Enter.

   Result: The system runs the netstat utility.

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

Invoking the chkdsk utility

Introduction

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

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

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

Chkdsk utility syntax

The chkdsk utility uses the following syntax:

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

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

To run the chkdsk utility from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

3 Press Enter.

Result: The system runs the chkdsk utility.

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

Chapter 4

Using serial port diagnostic tools

In this chapter

Overview

Introduction

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

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

Shutting down services

Introduction

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

CAUTION

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

CAUTION

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

Services to stop for COM 1 testing

- Routing and Remote Access Service

Services to stop for COM 2 testing

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

- 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 running the diagnostic. For details, see “Restarting services” on page 60.

To invoke the Net Stop command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

For example, type **net stop “Routing and Remote Access Service”,** and then press Enter.

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

Result: The system runs the net stop command utility.

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

Conducting TSTSERIO tests

Introduction

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

Note: Before conducting these tests, shut down the appropriate services. See “Shutting down services” on page 53.

CAUTION

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

CAUTION

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

TSTSERIO command syntax

The syntax for the TSTSERIO command is as follows:

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

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

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

TSTSERIO internal loopback diagnostic subtests

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

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

To invoke the TSTSERIO /P command from Windows NT 4.0

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

Result: The MS-DOS Command Prompt window appears.

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

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

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

TSTSERIO external loopback plug subtests

The following external loopback subtests are available for the TSTSERIO command. For each of these tests, an external loopback connector must be used. For more information, see “Conducting TSTSERIO tests with the loopback plug” on page 59.

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

To invoke the TSTSERIO /S command from Windows NT 4.0

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

   Result: The MS-DOS Command Prompt window appears.

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

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

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

Conducting TSTSERIO tests with the loopback plug

Introduction

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

9-pin connector plug

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

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

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

Restarting services

Introduction

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

Services to restart after COM 1 testing

- Routing and Remote Access Service

Services to restart after COM 2 testing

- CallPilot SLEE Service
- CallPilot MWI Service
- CallPilot Access Protocol Emulator
- CallPilot Blue Call Router
- CallPilot Call Channel Router
- CallPilot Time Service
- 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 NT 4.0

1 Click Start → Programs → Command Prompt.

Result: The MS-DOS Command Prompt window appears.

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

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

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

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

Chapter 5

Using CallPilot Manager to monitor hardware

In this chapter

Understanding fault management

Introduction

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

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

Event processing

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

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

Alarm notification

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

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

Section A: Tools for isolating and fixing hardware problems

In this section

Overview

Introduction

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

Component dependencies

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

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

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

Detecting hardware problems

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

Other indications of a hardware problem include the following:

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

Alarm Monitor

Introduction

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

About alarms

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

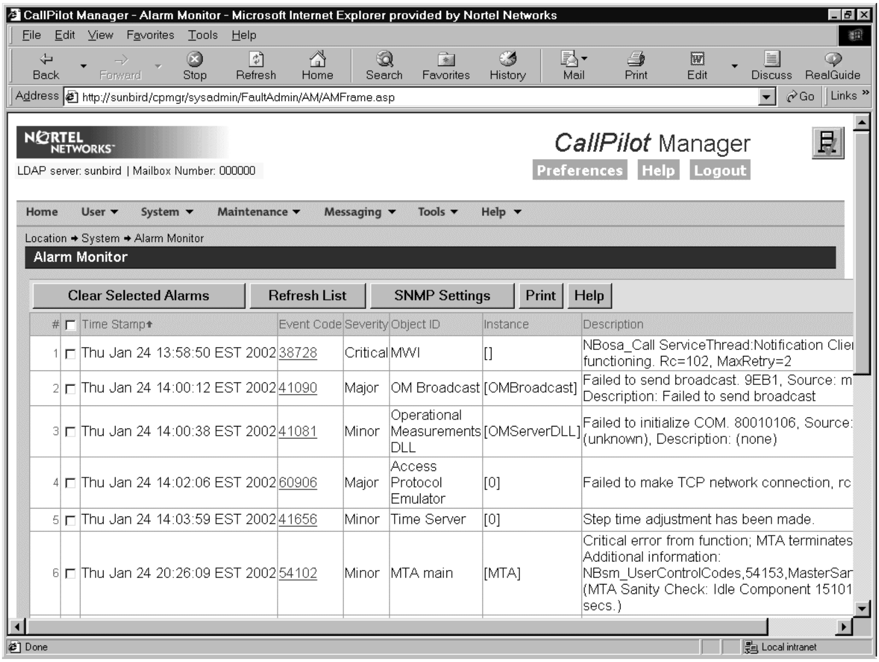
- Alarms appear in the Alarm Monitor only for Minor, Major, and Critical events (not Information events). All events can be reported in the Event Browser (depending on filtering criteria defined in the Event Browser).
- The first time an event occurs, it generates an alarm that appears in the Alarm Monitor.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

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

To investigate using the Alarm Monitor

1 In CallPilot Manager, click System→ Alarm Monitor.

Result: The Alarm Monitor page appears.



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

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

3 Review the description and recovery action.

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

5 If the solution to the problem is not apparent, obtain the return code of the first event and continue the investigation by using the Event Browser (see “Event Browser” on page 71).

See also

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

Event Browser

Introduction

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

About events

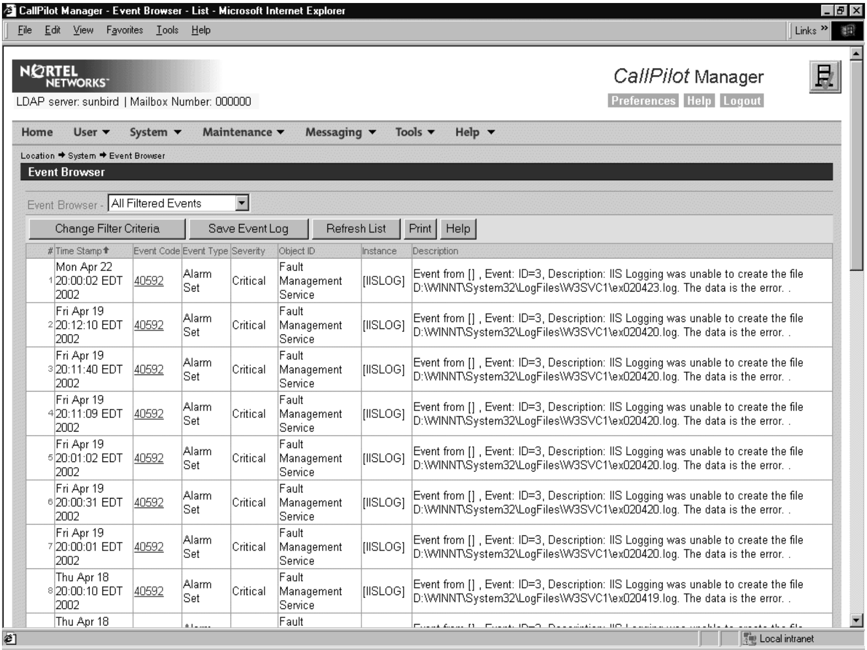
The Event Browser displays events that have been recorded in the server log. Each event identifies the time the event occurred, the object that generated the event, and the cause of the event.

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

To investigate using the Event Browser

1 In CallPilot Manager, click System → Event Browser.

Result: The Event Browser page appears.



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

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

3 View the description and recovery action.

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

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

See also

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

Maintenance page

Introduction

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

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

More information

For information on all aspects of the Maintenance page, see Section B: "Working with the Maintenance page" on page 77, or the CallPilot Manager online Help.

Channel and Multimedia Monitors

Introduction

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

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

Disabling call channels

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

- Courtesy stop the channels (preferred method).

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

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

For information about using the Channel and Multimedia Monitors, see Section C: “Working with the Multimedia and Channel Monitors” on page 97.

Running diagnostics on call channels

If you must run diagnostics for one or more channels, use the Diagnostics section on the Maintenance page. For more information, see “Working with the Maintenance page” on page 77.

Section B: Working with the Maintenance page

In this section

Introducing the Maintenance page

Introduction

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

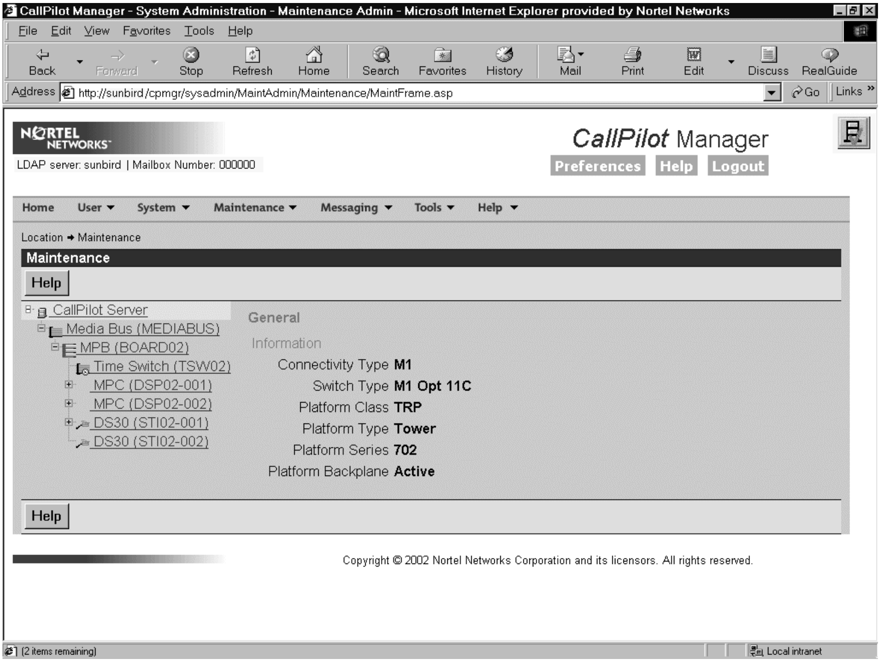
- Obtain general information about components.
- View component states.
- Start and stop components.
- Run integrated diagnostic tests.
- View the results of the last diagnostic test run against a component.

What the Maintenance page provides

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

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

The following is an example of a partially expanded tree for the 702t server:



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

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

Section	Description
Maintenance	This section shows the state of the selected component. Use this section to start and stop a component before running a diagnostic test. This section appears only for components on which you are allowed to perform maintenance administration. For more information about working with component states, see the following sections: ■ “Viewing component states” on page 82 ■ “Starting and stopping components” on page 85
Diagnostics	Use the Diagnostics section to run one or more diagnostic tests, or to view the results of the last diagnostic tests that were run on the selected component. This section appears only for components on which you are allowed to run diagnostics. For more information about running diagnostics, see the following sections: ■ “Running integrated diagnostics” on page 89 ■ “Viewing the last diagnostic results” on page 94

Maintenance activities for each component

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

Component	Start, stop, or courtesy stop?	Diagnostics available?	Replaceable?
Media Bus	Yes	Yes	No
MPB board	Yes	Yes	Yes

Component	Start, stop, or courtesy stop?	Diagnostics available?	Replaceable?
Time Switch	No	No	No
MPCs (embedded on MPB boards or on MPC-8 cards)	Yes	Yes	embedded: No MPC-8 cards: Yes
DSPs	Yes	Yes	No
Channels	Yes	No	No
DS30X link	Yes	No	No

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

Viewing component states

Introduction

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

Component states

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

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

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

Alert icons

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

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

To view the state of a hardware component

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

Result: The Maintenance page appears.

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

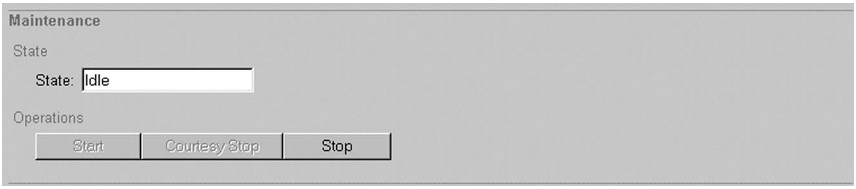
3 Continue clicking the plus sign (+) until the component with which you want to work is visible.

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

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

5 Scroll down to the Maintenance section.

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



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

Starting and stopping components

Introduction

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

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

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

ATTENTION

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

To courtesy stop CallPilot, use the following:

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

For instructions, see Section C: “Working with the Multimedia and Channel Monitors” on page 97.

Stop versus Courtesy stop

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

Courtesy stop

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

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

Courtesy stop is preferred over a regular Stop.

Stop

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

Components that can be started and stopped

Only the following components can be started and stopped:

Note: If you want to start or stop more than one or two multimedia (DSP) or call (DS30X) channels, use the Multimedia Monitor or Channel Monitor. For instructions, see Section C: “Working with the Multimedia and Channel Monitors” on page 97.

Component	Effect of stopping
Media Bus	Takes all call processing resources out of service.

Component	Effect of stopping
MPB board	Takes all call processing resources on the selected board out of service.
Time Switch	You cannot perform maintenance administration on the timeswitch.
MPCs (embedded on MPB boards or on MPC-8 cards)	Takes the selected MPC out of service.
DSPs	Takes the selected DSP out of service.
Channels	Takes the selected DS30X channel out of service.
DS30X link	Takes the selected DS30X link out of service.

To start or stop a component

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

   Result: The Maintenance page appears.

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

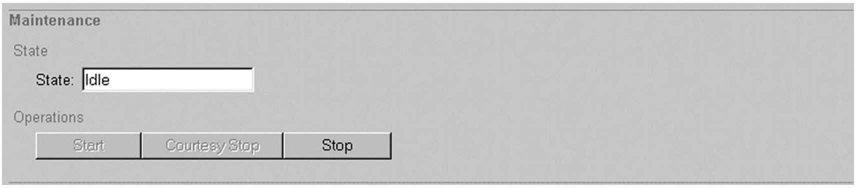
3 Continue clicking the plus sign (+) until the component with which you want to work is visible.

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

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

5 Scroll down to the Maintenance section.

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



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

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

Running integrated diagnostics

Introduction

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

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

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

Before you begin

ATTENTION

Take the component out of service before you run the diagnostic test. See "Starting and stopping components" on page 85.

Components that have diagnostic tests available

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

Component	Diagnostics available?	Replaceable?
Media Bus	Yes	No
MPB board	Yes	Yes
Time Switch	No	No

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

Diagnostic tests available for each component

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

If a diagnostic test fails or cannot be run

If a warning message appears, the diagnostic test cannot be run because a prerequisite condition has not been met. If a diagnostic test fails, a message appears in a new browser window (see the example on page 93).

In both cases, check the Alarm Monitor to determine the reason and the appropriate action to take. (See "Tools for isolating and fixing hardware problems" on page 65.)

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

To run a diagnostic test

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see “Starting and stopping components” on page 85.

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

  Result: The Maintenance page appears.

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

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

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

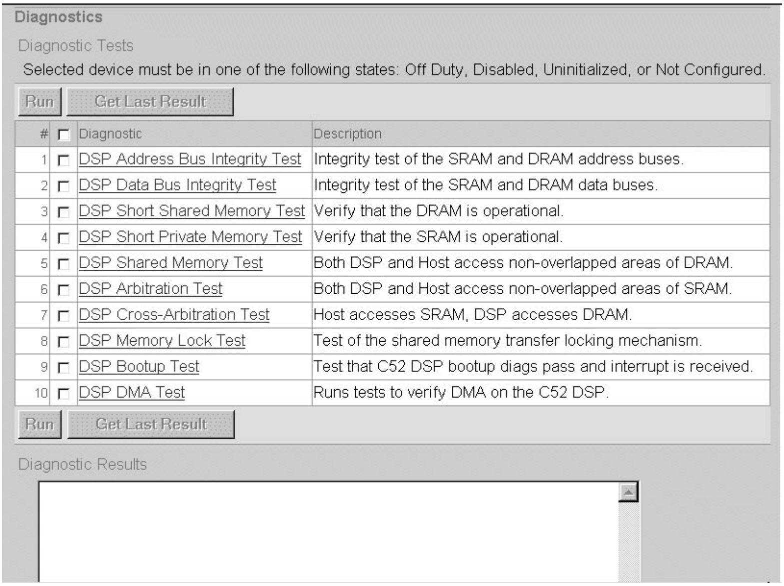
  Result: The Maintenance page refreshes to show details about the component.

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

  Note: For instructions on taking the component out of service, see “To start or stop a component” on page 87.

6 Scroll down to the Diagnostics section.

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



Diagnostics

Diagnostic Tests

Selected device must be in one of the following states: Off Duty, Disabled, Uninitialized, or Not Configured.

Run Get Last Result

#	☐	Diagnostic	Description
1	☐	DSP Address Bus Integrity Test	Integrity test of the SRAM and DRAM address buses.
2	☐	DSP Data Bus Integrity Test	Integrity test of the SRAM and DRAM data buses.
3	☐	DSP Short Shared Memory Test	Verify that the DRAM is operational.
4	☐	DSP Short Private Memory Test	Verify that the SRAM is operational.
5	☐	DSP Shared Memory Test	Both DSP and Host access non-overlapped areas of DRAM.
6	☐	DSP Arbitration Test	Both DSP and Host access non-overlapped areas of SRAM.
7	☐	DSP Cross-Arbitration Test	Host accesses SRAM, DSP accesses DRAM.
8	☐	DSP Memory Lock Test	Test of the shared memory transfer locking mechanism.
9	☐	DSP Bootup Test	Test that C52 DSP bootup diags pass and interrupt is received.
10	☐	DSP DMA Test	Runs tests to verify DMA on the C52 DSP.

Run Get Last Result

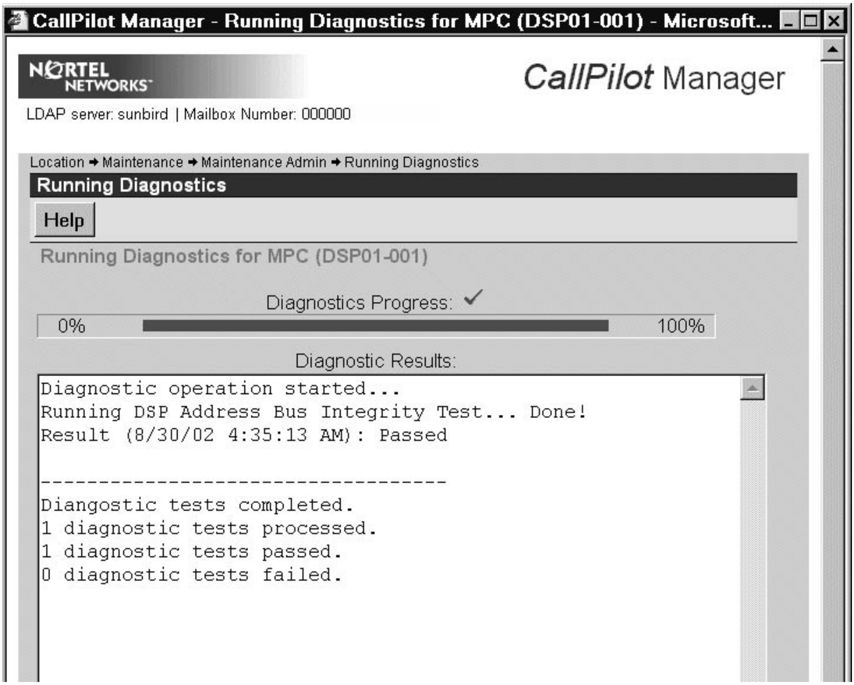
Diagnostic Results

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

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

8 Click Run.

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



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

Viewing the last diagnostic results

Introduction

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

To view the last diagnostics result

ATTENTION

Nortel Networks recommends that you courtesy stop rather than stop a component if possible. For instructions, see “Starting and stopping components” on page 85.

1 In CallPilot Manager, click Maintenance → Maintenance Admin.

Result: The Maintenance page appears.

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

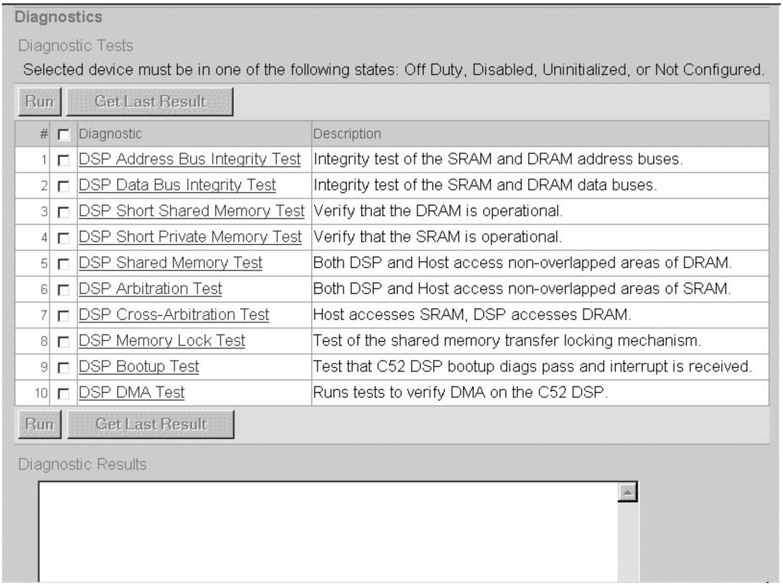
3 Continue clicking the plus sign (+) until the component with which you want to work is visible.

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

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

5 Scroll down to the Diagnostics section.

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



Diagnostics

Diagnostic Tests

Selected device must be in one of the following states: Off Duty, Disabled, Uninitialized, or Not Configured.

Run | Get Last Result

#	☐	Diagnostic	Description
1	☐	DSP Address Bus Integrity Test	Integrity test of the SRAM and DRAM address buses.
2	☐	DSP Data Bus Integrity Test	Integrity test of the SRAM and DRAM data buses.
3	☐	DSP Short Shared Memory Test	Verify that the DRAM is operational.
4	☐	DSP Short Private Memory Test	Verify that the SRAM is operational.
5	☐	DSP Shared Memory Test	Both DSP and Host access non-overlapped areas of DRAM.
6	☐	DSP Arbitration Test	Both DSP and Host access non-overlapped areas of SRAM.
7	☐	DSP Cross-Arbitration Test	Host accesses SRAM, DSP accesses DRAM.
8	☐	DSP Memory Lock Test	Test of the shared memory transfer locking mechanism.
9	☐	DSP Bootup Test	Test that C52 DSP bootup diags pass and interrupt is received.
10	☐	DSP DMA Test	Runs tests to verify DMA on the C52 DSP.

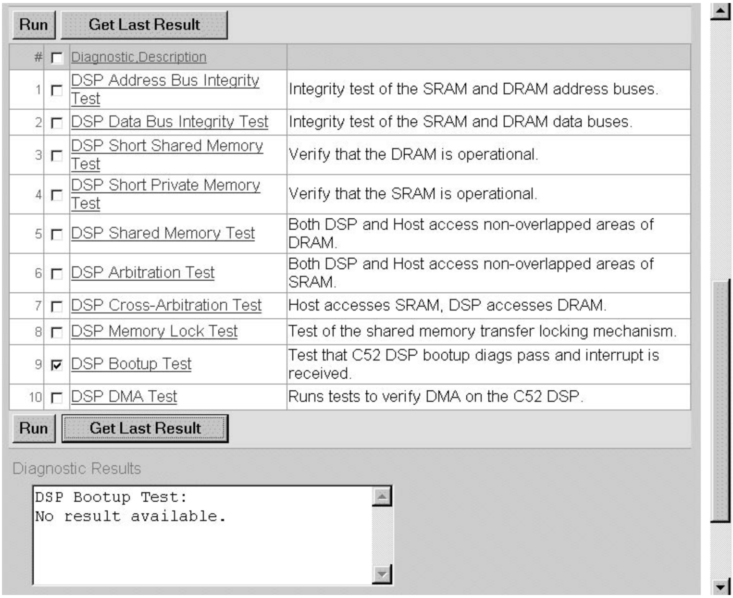
Run | Get Last Result

Diagnostic Results

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

7 Click Get Last Result.

Result: The results appear in the Diagnostic Results box.



Last diagnostic results

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

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

Section C: Working with the Multimedia and Channel Monitors

In this section

Working with the Multimedia Monitor

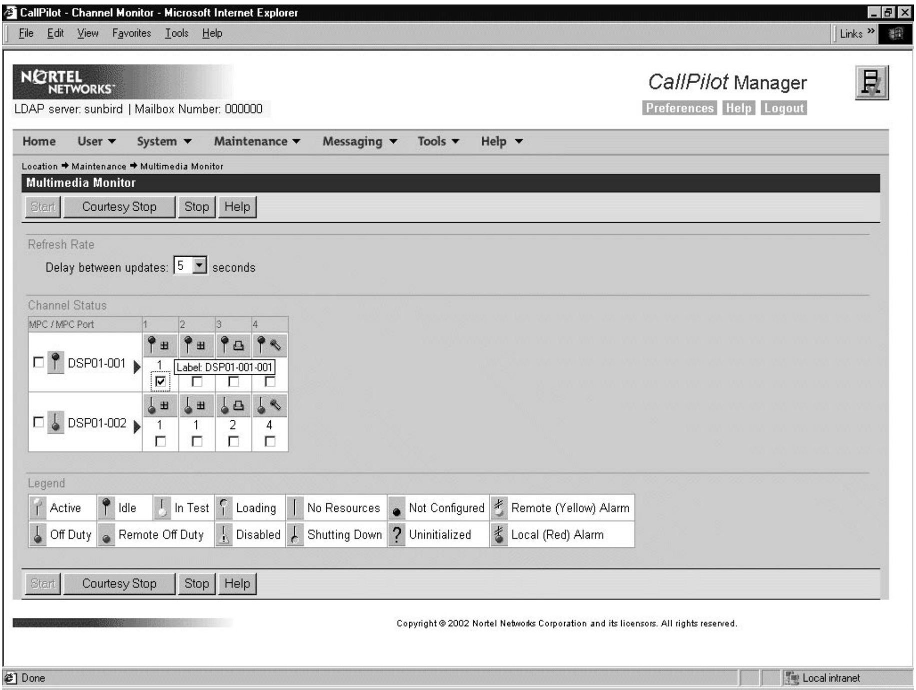
Introduction

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

To view or work with multimedia channel states

1 In CallPilot Manager, click Maintenance → Multimedia Monitor.

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



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

2 Do one of the following:

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

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

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

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

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

Working with the Channel Monitor

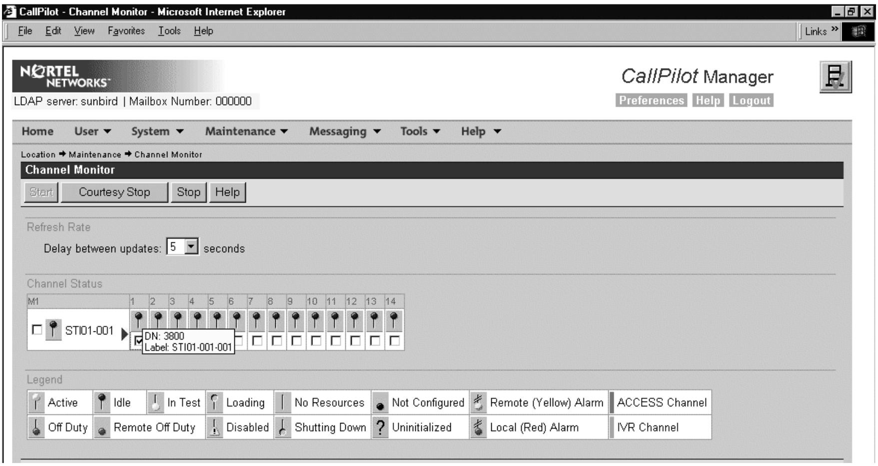
Introduction

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

To view or work with call channel states

1 In CallPilot Manager, click Maintenance → Channel Monitor.

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



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

2 Do one of the following:

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

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

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

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

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

Chapter 6

Using CallPilot system utilities

In this chapter

Overview

Introduction

The following table lists the CallPilot system utilities:

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

Accessing the system utilities

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

Diagnostics Tool

Introduction

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

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

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

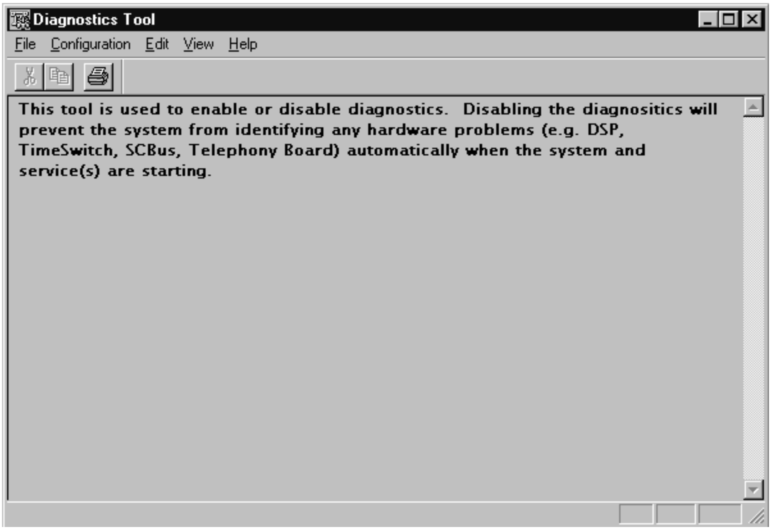
There are three recommended steps:

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

To access the Diagnostics Tool

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

Result: The Diagnostics Tool window appears.



To enable startup diagnostics

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

To disable startup diagnostics

ATTENTION

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

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

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

PEP Maintenance utility

Introduction

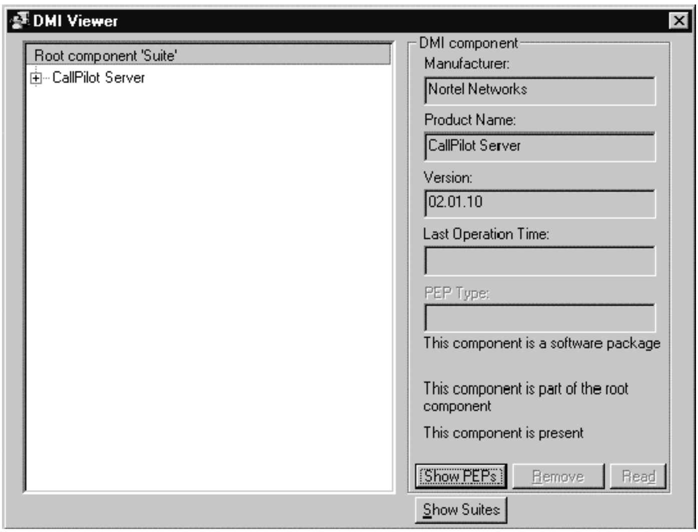
The PEP Maintenance utility displays a list of all installed PEPs on the server and enables you to uninstall PEPS.

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

To access the PEP Maintenance utility

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

Result: The DMI Viewer window appears.



To view a list of all installed PEPs

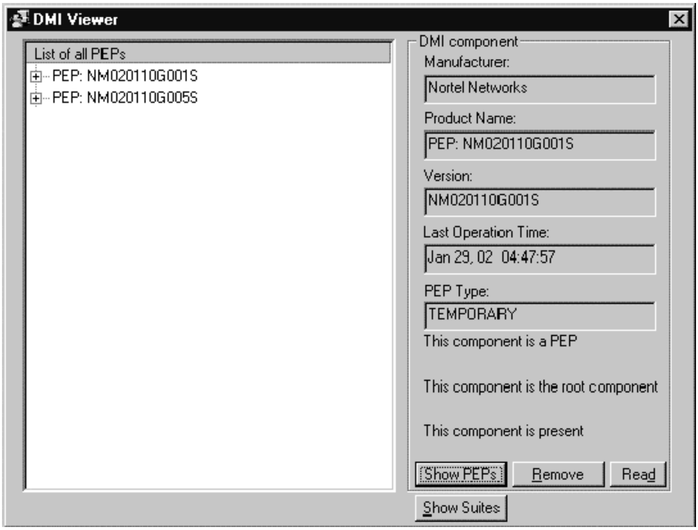
1 Click the component for which you want to display the PEP list.

2 Click **Show PEPs**.

Result: A list of all installed PEPs appears in the left pane.

3 If you want to review the readme file associated with a PEP, click the PEP, and then click **Read**.

Result: The readme file opens in Notepad.



System Monitor

Introduction

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

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

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

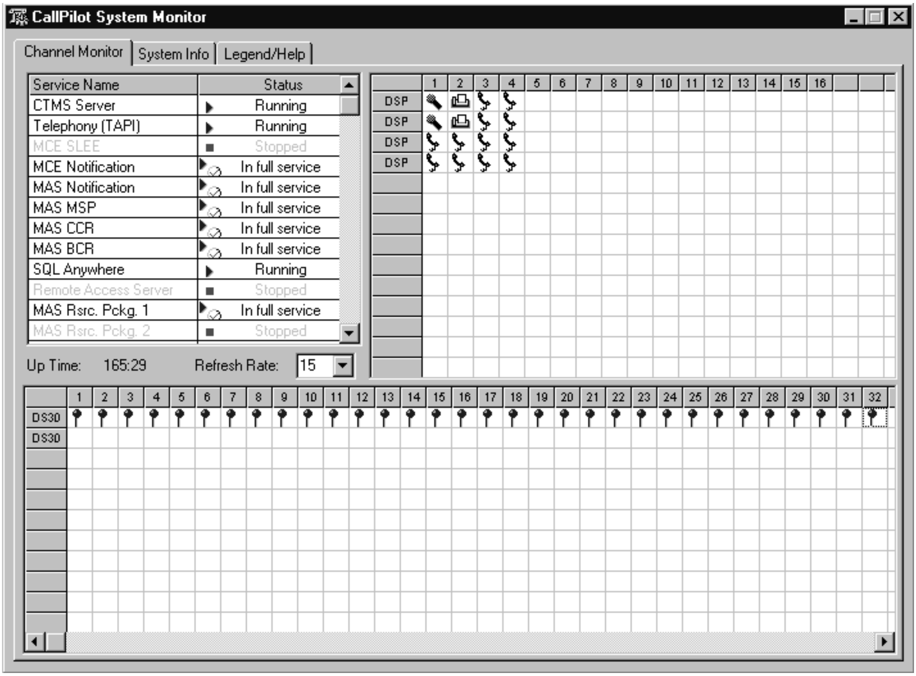
To access the System Monitor

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

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

About the Channel Monitor tab

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



CallPilot services

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

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

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

Critical Services needed for CallPilot Call Processing include the following:

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

DSPs

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

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

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

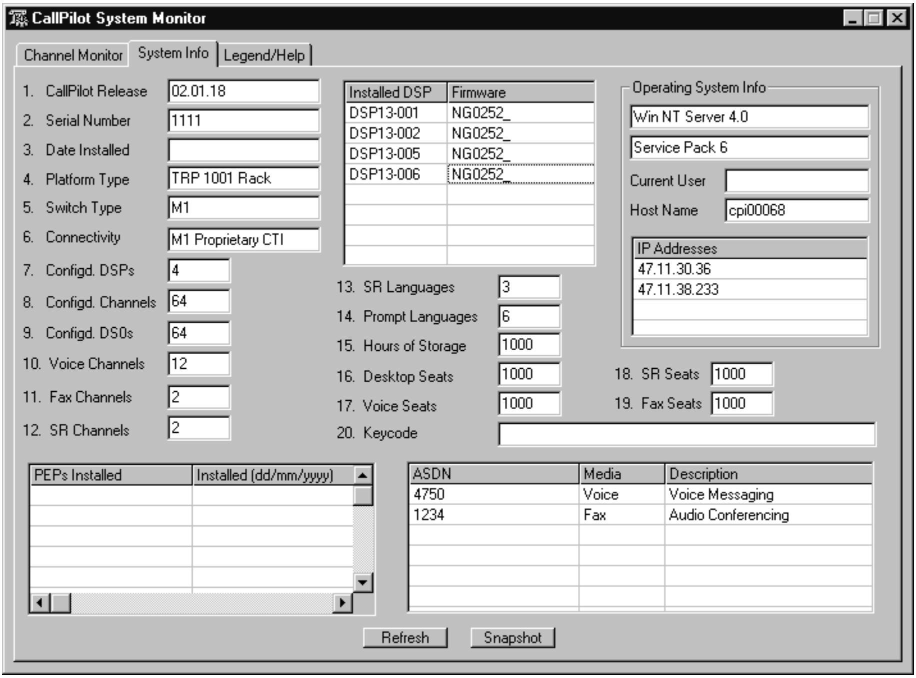
DS30X links

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 in the Meridian 1 switch or Succession CSE 1000 system.

About the System Info tab

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

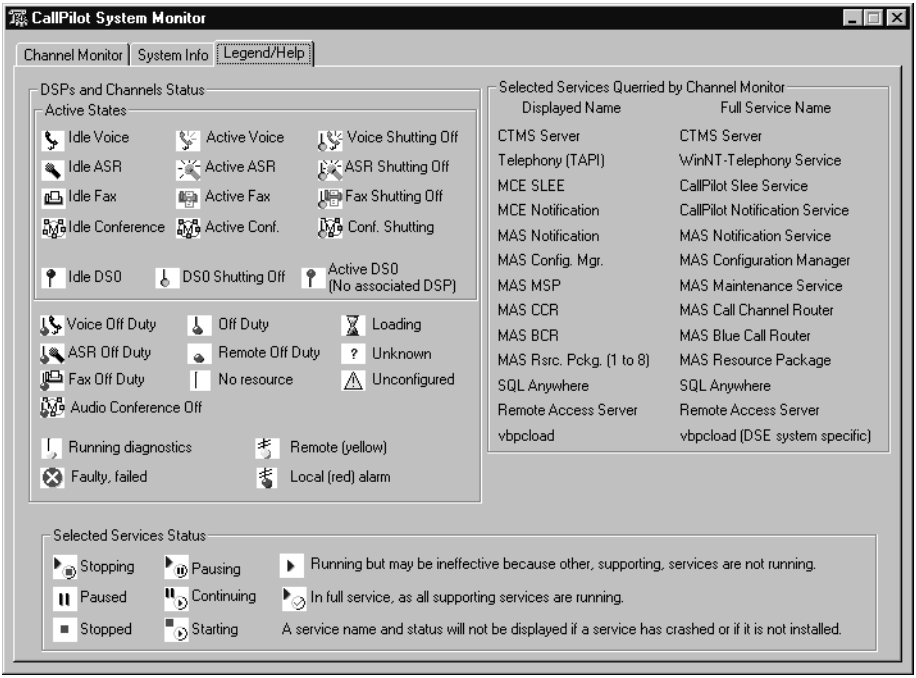


The numbered items provide information about the features purchased. Information about the underlying operating system is provided in the top right corner, including the server IP addresses.

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

About the Legend/Help tab

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



Chapter 7

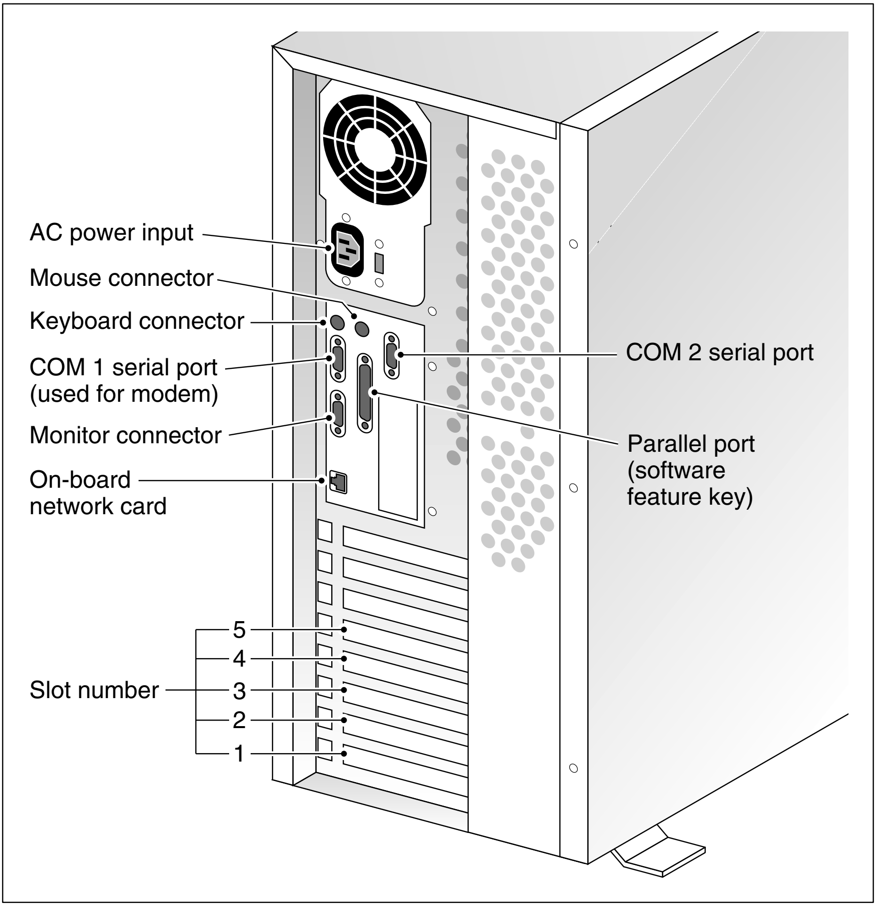
Replacing basic chassis components

In this chapter

Before you begin

Disconnect the power cable

Before you access the server interior, courtesy stop and power off the server (see Part 1 of the *CallPilot Installation and Configuration* binder for details). Then label and disconnect the power cable and any other peripheral cables that may be in your way. See the following diagram:



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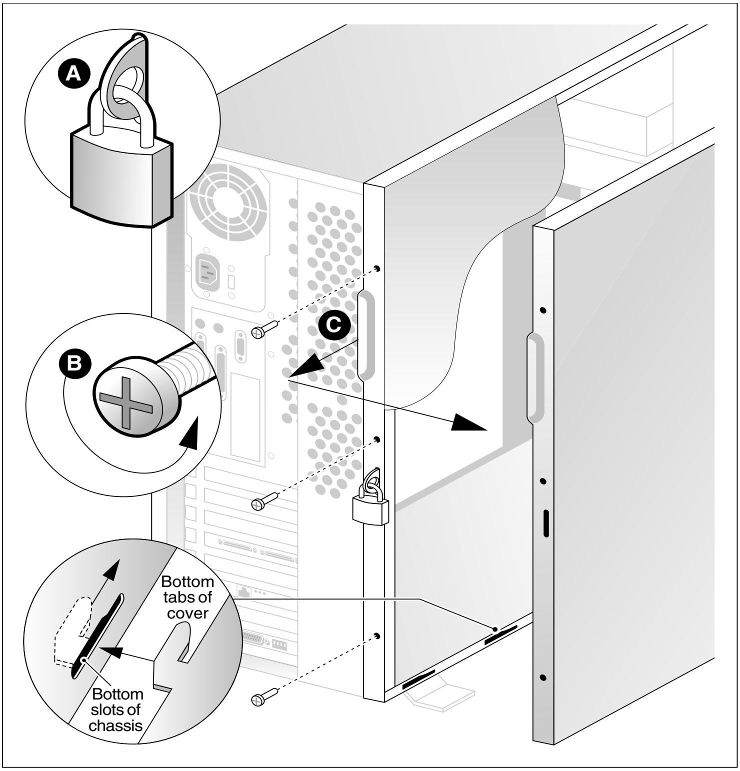
Removing the side cover

To remove the side cover

1 If a padlock is installed on the back of the system, unlock and remove it. See “A” in the diagram below:



2 Remove and save the three screws from the back of the side cover. See “B” in the diagram above.

Note: You need the screws to reattach the side cover.

3 Place the fingertips of your left hand under the built-in handle on the back of the cover.

WARNING

Risk of personal injury

Do not touch the sharp metal edges of the cover as they can cause personal injury.

4 Pull the cover approximately 2.5 cm (one inch) away from the front of the server until it stops. See “C” in the diagram above.

5 Use your left hand to pull the back end of the cover toward you to disengage the bottom row of tabs from the notches in the chassis, as shown in the diagram above.

6 Use both hands to lift the cover upward to disengage the top row of tabs from the notches in the top edge of the chassis.

7 Set the cover aside.

8 Place the server on its side.

CAUTION

Risk of server damage

Always lay the server on its side, with the open side facing up, before you begin working in the server interior. This provides greater stability. If you leave the server in its standing position, it may tip over as you remove or insert components.

Replacing the side cover

To replace the side cover

CAUTION

Risk of equipment damage

Ensure that there are no tools or loose parts inside the server chassis before replacing the side cover.

1. Position the cover over the chassis so the top row of tabs aligns with the slots in the top of the chassis.
2. Repeat the action for the bottom row of tabs.
3. Slide the cover toward the front of the system until the cover tabs firmly engage in the chassis.
4. Attach the side cover to the chassis using the three screws you removed earlier, and tighten them firmly.
5. Replace the padlock through the metal loop that protrudes through the slot in the back of the side cover.
6. Connect all external cables and the power cord to the back panel.

Removing the front cover

Before you begin

Before you remove the front panel assembly, disconnect all peripheral devices except the hub from the server, and remove the side panel.

To remove the front cover

1. Remove and save the screw from the front cover.
2. Squeeze the two plastic tabs inside the front cover, and push them in to unlatch the cover from the slots in the chassis.
3. Pull the left side of the cover out slightly, about 38 cm (15 in.), until the cover clears the power and reset buttons.
4. Slide the cover to the right until the tabs disengage from the chassis slots.
5. Set the cover aside.

Replacing the front cover

To replace the front cover

1. Insert the metal tabs on the front cover into the slots on the right side of the chassis.
2. Align the front panel with the server by lining up the CD-ROM drive with its cutout.
3. Flex and snap the right edge of the panel to insert the four metal tabs into their slots.
4. Squeeze the front panel and chassis together along the left side until the plastic tabs snap into their slots.
5. Reinstall and firmly tighten the screw.

Removing the fan

Introduction

For cooling and airflow, the system contains two removable chassis fans to cool the boards, and removable media drives. The integrated power supply fan provides additional cooling and airflow.

Before you begin

Before you remove the fan, power down the server, detach the power cord, and remove the side cover.

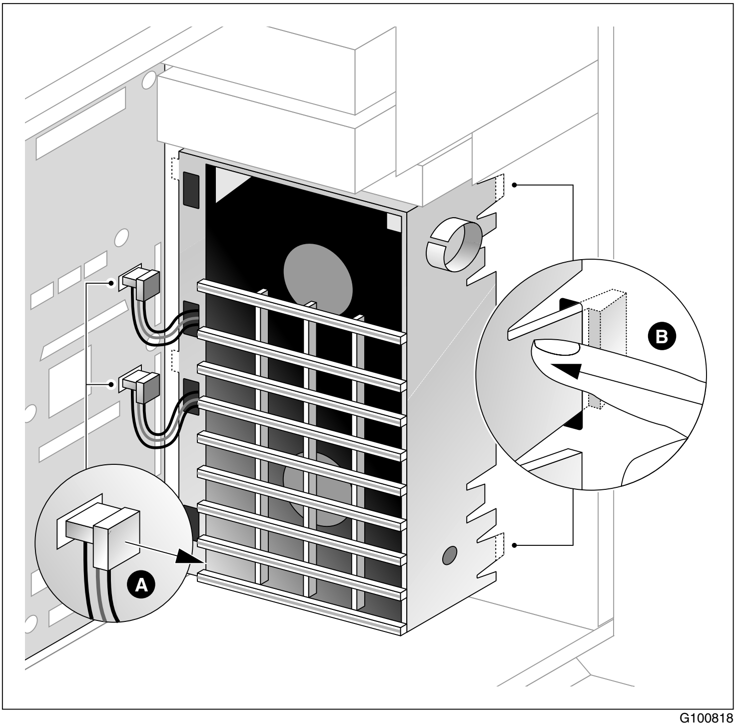
To remove the fan

1 Label and disconnect any cables attached to add-in boards.

2 Remove all add-in boards.

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

3 Disconnect the fan power cable connector(s) from the fan header on the baseboard. See “A” in the diagram below:



4 Remove the plastic “snap-on” fan housing assembly by firmly pressing the three plastic tabs on the assembly inward until you can pull the tabs out of the slots in the chassis. See “B” in the diagram above.

Note: The plastic tabs are actually sections of the housing that were created by cutting slots into the housing.

5 Swing the assembly to the left until you disengage the plastic tabs on the other edge of the assembly from the slots in the chassis. Remove the assembly from the chassis, and place it on a flat surface.

6 Unsnap the fan from the housing by pressing out on the plastic tabs that hold the fan in place. Remove the fan from the housing, and set it aside.

Replacing the fan

Introduction

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

Correct airflow direction

The removable fan pulls air from outside of the chassis so that it flows across the boards and out the back. Orient the fan for the correct airflow direction.

To install the fan

1 Position the cable side of the fan, label-side facing the card guides, over the plastic guide posts in the fan housing.

2 Thread the fan power cable through the two openings on the side of the housing.

   Note: Do not pinch the cable as you snap the fan into the housing.

3 Insert the assembly's inner edge plastic tabs, those near the fan cable, into the slots in the chassis.

4 Carefully swing the assembly to the right until the outer edge tabs on the fan housing snap into the slots in the front of the chassis.

5 Reconnect the fan power cable connector on the baseboard.

   Note: A fan in the bottom of the housing connects to the Fan 1 header. A fan in the top of the housing connects to the Fan 0 header. Orient the cables so that the red wires are closest to the middle of the baseboard.

6 Reinstall the add-in boards.

7 Reconnect any cables to the add-in boards.

8 Reinstall the side and front covers.

Chapter 8

Replacing a hard drive, tape drive, CD-ROM drive, or floppy drive

In this chapter

SCSI and IDE cabling illustrations

Introduction

The diagrams in this section illustrate the cabling and termination of the SCSI devices (hard drives and tape drives), as well as the cabling for an IDE CD-ROM drive. Use these diagrams to assist you with the procedures for replacing or adding a hard drive, tape drive, or CD-ROM.

Specifically, the following diagrams are provided:

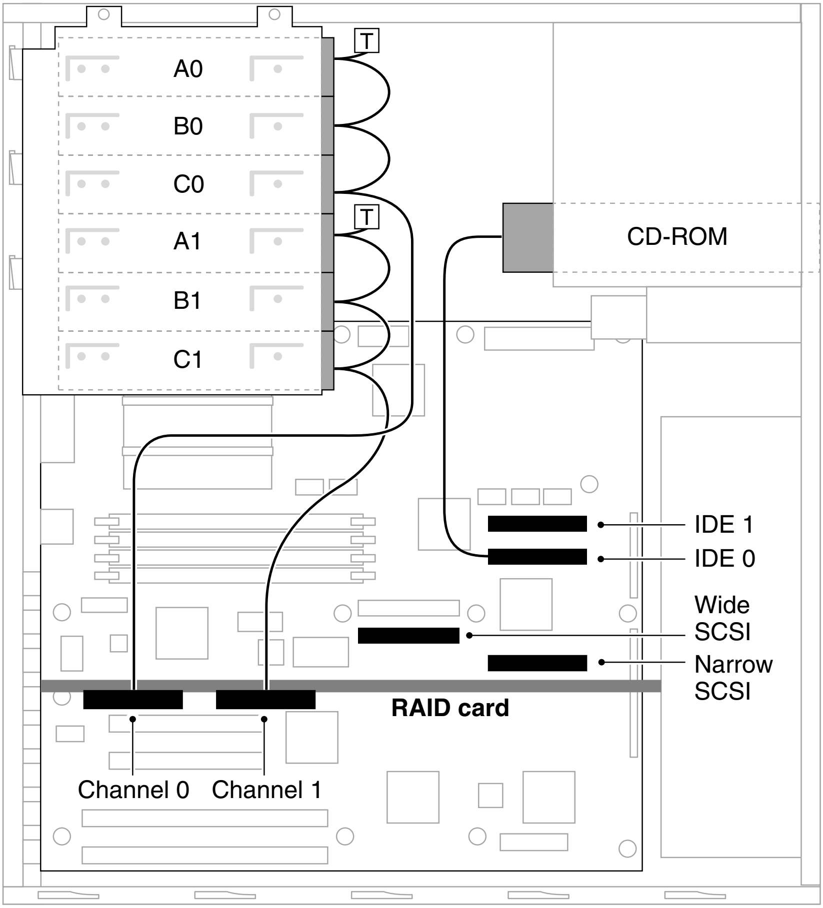
- "Cabling for a RAID system with IDE CD-ROM (no tape drive)" on page 127
- "Cabling for a RAID system with IDE CD-ROM and SCSI tape drive" on page 128
- "Cabling for a non-RAID system with CD-ROM (no tape drive)" on page 129
- "Cabling for a non-RAID system with CD-ROM and tape drive" on page 130

ATTENTION

For customers who buy a new CallPilot 2.0 702t server, the tape drive is installed at the factory by default. As a result, the configurations that show "no tape drive" are not applicable for these customers.

For customers who are upgrading from CallPilot 1.07 to CallPilot 2.0, the 702t server may not have a tape drive if a tape drive was not purchased either with the original CallPilot system or as part of a later hardware upgrade.

Cabling for a RAID system with IDE CD-ROM (no tape drive)



Note 1: A "T" indicates an active wide terminator.
Note 2: The CD-ROM is connected to the IDE 0 (PRI IDE).

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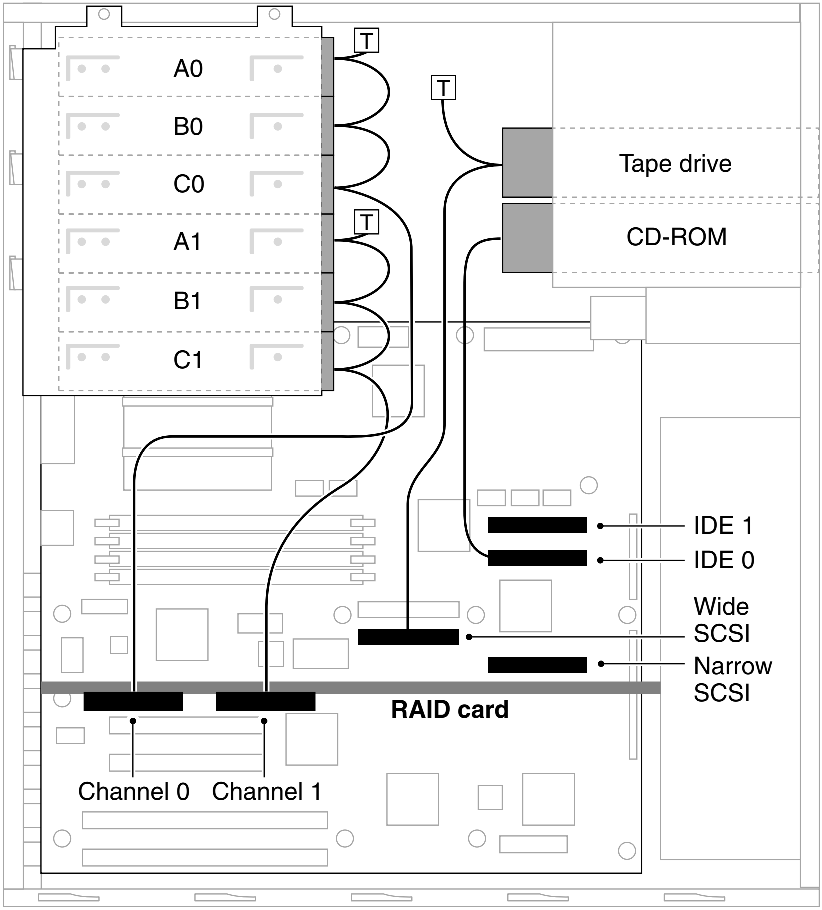
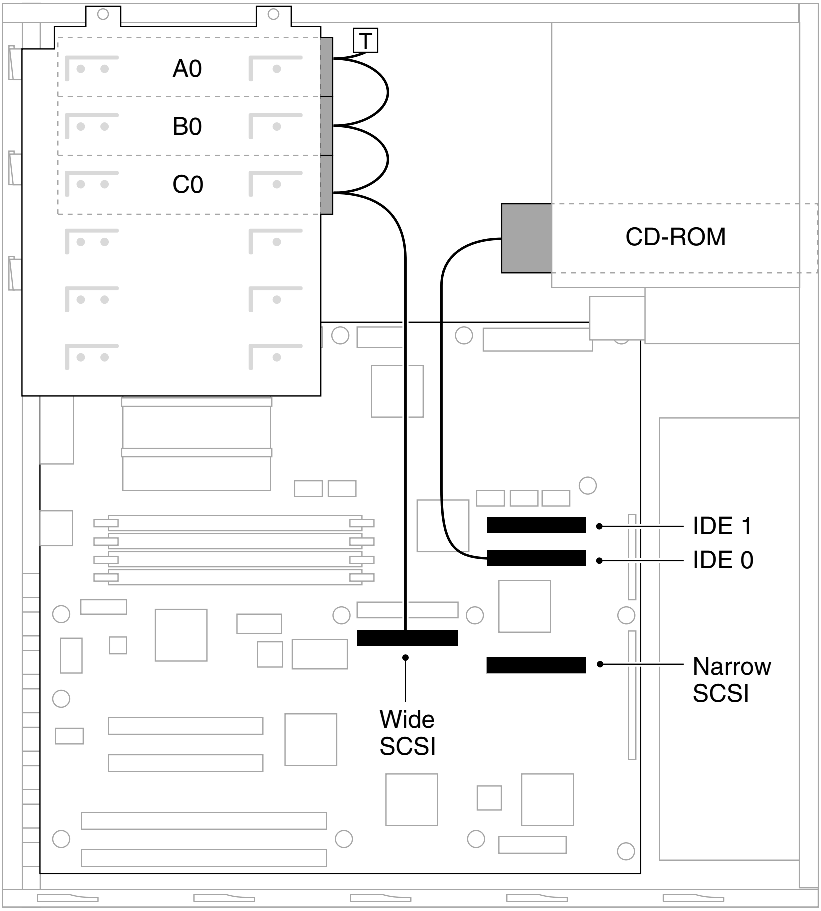
Cabling for a RAID system with IDE CD-ROM and SCSI tape drive



Note 1: A "T" indicates a wide active terminator.
Note 2: The CD-ROM is connected to IDE 0.

G100812

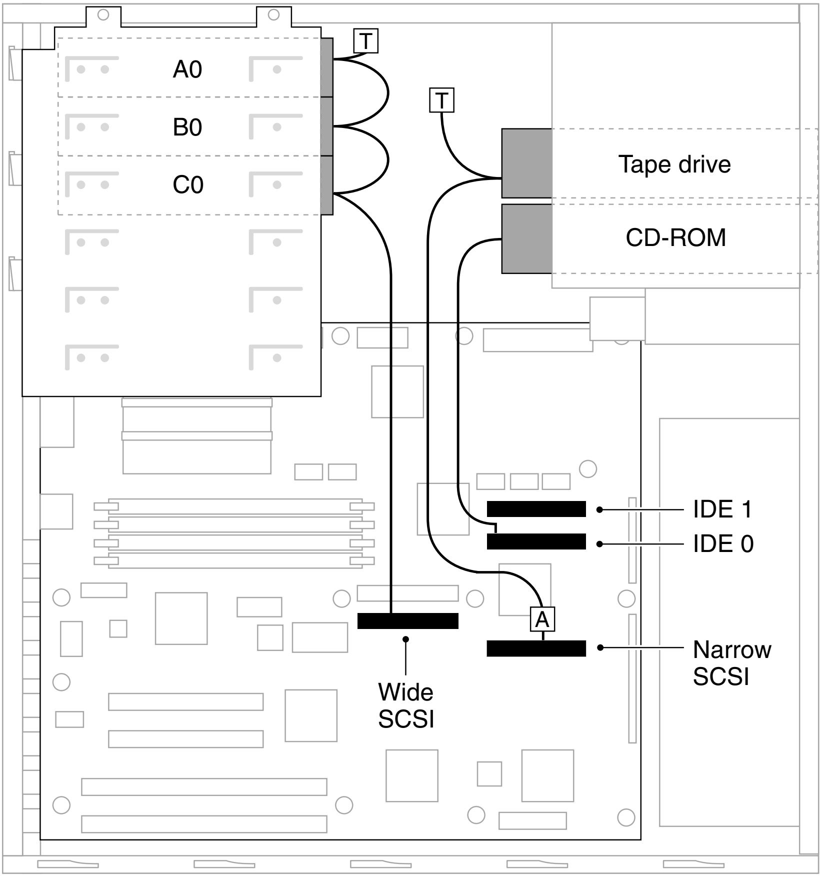
Cabling for a non-RAID system with CD-ROM (no tape drive)



Note 1: A "T" indicates an active wide terminator.
Note 2: The CD-ROM is connected to IDE 0.

G100815

Cabling for a non-RAID system with CD-ROM and tape drive



Note 1: A "T" indicates an active terminator.

Note 2: An "A" represents a narrow-to-wide adapter that connects the narrow SCSI controller to a wide (68-pin) SCSI cable.

Note 3: New tape drive kits (NTUB55AB) use the cabling configuration shown in this diagram. 702t servers with an already-installed tape drive may have a narrow SCSI cable for the tape drive and the adapter at the tape drive connection.

Note 4: The CD-ROM is connected to IDE 0.

G100814

Replacing or installing hard drives

Introduction

The internal peripheral bay has space for six drives, each 1 inch high.

You can install 1-inch high peripherals that consume up to 11 watts of power and run at a maximum ambient temperature of 50°C in this bay.

The system supports a variety of single-ended SCSI devices. As shipped from your supplier, the system contains at least one 4 Gbyte-wide SCSI hard drive. The wide SCSI cable supplied with the system has connectors for eight devices, and the wide SCSI bus supports only 14 peripheral devices in addition to the host adapter itself on the baseboard.

CAUTION

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

SCSI drive cabling

If you are installing a SCSI drive, the system includes a standard 68-pin wide (16-bit) SCSI ribbon cable that supports up to eight SCSI devices. The system also includes a wide-to-narrow adapter used to connect the tape drive cable to the 68-pin wide SCSI connector on the baseboard, if required.

Unique SCSI ID

You must assign a unique SCSI ID to the SCSI drive. Use the configuration jumpers on the front of the drive to change the ID of the drive. The SCSI microcontroller on the baseboard is always set to SCSI ID 7.

Active termination of SCSI cables

Hard drives generally provide active termination and termination power. The last two drives in the SCSI channels must provide termination power to the active terminator.

Bus termination for SCSI drives

When you install a SCSI cable, you must provide active SCSI bus termination at the end of the cable. If you leave the cable installed without active termination, this can cause the SCSI bus to be unreliable. You must also ensure that termination is removed or disabled in all other devices on the bus.

The last SCSI device on the cable must be the active bus termination or a separate active termination device.

To replace a hard drive

1. Power down the server.
2. Remove the side cover.
3. Disconnect the power and signal cables from the drives in the 3.5 inch bay.
4. Remove and save the three screws holding the bay to the chassis.
5. Swing the bay out to the left of the chassis.
6. Slide the bay upward to disengage its tabs from the chassis.
7. Remove the bay from the chassis, and place it on an antistatic surface.
8. Remove the screws that attach the drive to the bay.
9. Remove the faulty hard drive from the bay, and place the drive on an antistatic surface.
10. Remove the new drive from its protective wrapper, and place it on an antistatic surface.
11. Record the drive model and serial numbers in your equipment log.

12 Set the SCSI ID by setting any jumpers or switches, referring to Nortel Networks specifications and the drive manufacturer's instructions. See "Hard drive location and SCSI ID configuration" on page 136 for required SCSI ID settings.

13 To terminate the SCSI bus, follow these steps:

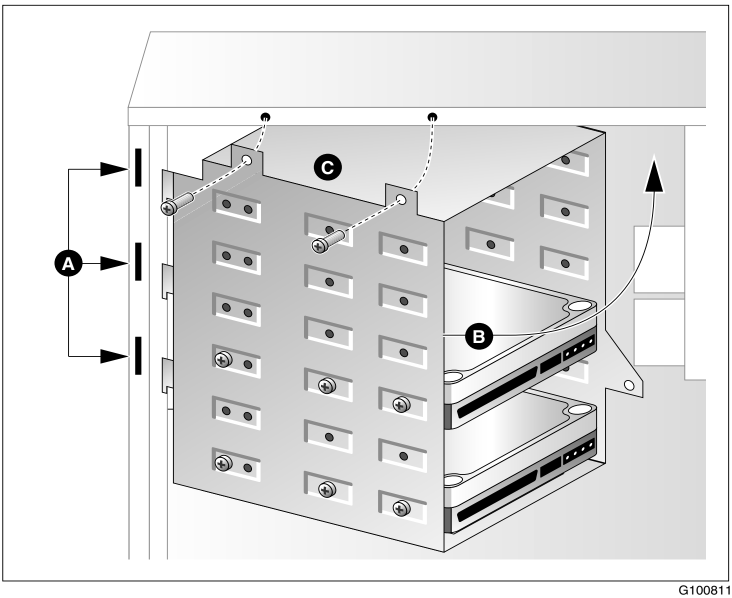
a. If the drive is *not* the last device on the SCSI cable, disable the SCSI termination.

b. If the drive *is* one of the last two drives on the SCSI cable, ensure that the SCSI termination power is enabled.

c. Set the drive parity jumper to Enable Parity.

14 If you removed the drive that was installed at the end of the SCSI cable, ensure the device that is now the last SCSI device on the cable is properly terminated.

15 To reinstall the bay in the chassis, insert the tabs on the bay into their slots in the chassis. Refer to "A" in the following diagram. Slide the bay downward until the tabs interlock with the slots.



16 Swing the bay to the right into the chassis. Refer to “B” in the above diagram.

17 Secure the bay with the screws you removed earlier, and tighten the screws firmly. Refer to “C” in the above diagram.

18 Attach power and signals cables to all drives installed in the bay. Connect the SCSI signal cable to the wide connector on the baseboard or to the RAID controller, as appropriate.See “SCSI and IDE cabling illustrations” on page 126.

For proper cooling and air flow, neatly fold and secure the excess signal cable so that the cable does not drape across the baseboard or add-in boards. Use a tie wrap or cable clip to tie back the cable.

19 Reinstall the side cover.

20 Do one of the following steps:

a. If this is a RAID system, then rebuild the new hard drive.

b. If this is a non-RAID system, run the SCSI Select utility to configure the new hard drive.

Result: Hard drive replacement is complete.

To install an additional hard drive

1 Disconnect power and signal cables from all drives installed in the bay.

2 Remove and save the three screws holding the bay to the chassis.

3 Swing the bay out to the left of the chassis.

4 Slide the bay upward to disengage its tabs from the chassis.

5 Remove the bay from the chassis, and place it on an antistatic surface.

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

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

8 Set the SCSI ID by setting any jumpers or switches, referring to Nortel Networks specifications and the drive manufacturer’s instructions. See “Hard drive location and SCSI ID configuration” on page 136 for required SCSI ID settings.

9 To terminate the SCSI bus, follow these steps:

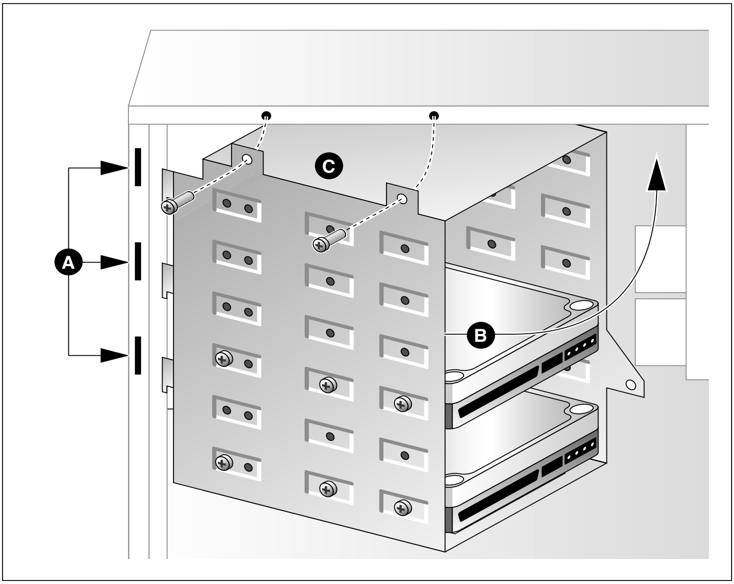
a. If the drive is *not* the last device on the SCSI cable, disable the SCSI termination.

b. If the drive *is* one of the last two drives on the SCSI cable, ensure that the SCSI termination power is enabled.

c. Set the drive parity jumper to Enable Parity.

10 Install the hard drive component-side facing down in the bay. Align the screw holes in the drive with those in the bay, and secure the drive to the bay with four screws.

11 To reinstall the bay in the chassis, insert the tabs on the bay into their slots in the chassis. Slide the bay downward until the tabs interlock with the slots. See “A” in the diagram below:



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12 Swing the bay to the right into the chassis. See “B” in the diagram above.

13 Secure the bay with the screws you removed earlier, and tighten the screws firmly. See “C” in the diagram above.

14 Attach power and signals cables to all drives installed in the bay. Connect the SCSI signal cable to the wide connector on the baseboard or to the RAID controller, as appropriate. See "SCSI and IDE cabling illustrations" on page 126.

For proper cooling and air flow, neatly fold and secure the excess signal cable so that the cable does not drape across the baseboard or add-in boards. Use a tie wrap or cable clip to tie back the cable.

15 Reinstall the side cover.

16 Do one of the following steps:

a. If this is a RAID system, then hard drives must be added in pairs. Configure the new RAID pair as described in Chapter 9, "Performing RAID maintenance."

b. If this is a non-RAID system, run the SCSI Select utility to configure the new hard drive.

Hard drive location and SCSI ID configuration

RAID system

Location of drives in internal drive bays	SCSI channel	SCSI ID	System pack label
Top slot	0	0	A-0
Second slot from top	0	1	B-0
Third slot from top	0	3	C-0
Fourth slot from top	1	4	A-1
Fifth slot from top	1	5	B-1
Sixth slot from top (bottom slot)	1	6	C-1

See "SCSI and IDE cabling illustrations" on page 126 for more information.

Non-RAID system

Location of drives in internal drive bays	SCSI channel	SCSI ID	System pack label
Top slot	0	0	A-0
Second slot from top	0	1	B-0
Third slot from top	0	3	C-0

Note: In a non-RAID system, the server has only three hard drives installed.

See "SCSI and IDE cabling illustrations" on page 126 for more information.

Replacing or installing a tape drive

Introduction

Follow the appropriate procedure:

- "To replace a faulty tape drive" on page 139
- "To install a new tape drive (no tape drive previously installed)" on page 140

Risk of electrical damage
Use only tape drives approved by Nortel Networks.

Filler panels and EMI shields

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

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 Networks technical support representative.

1 Set the SCSI ID to 2.

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 "SCSI and IDE cabling illustrations" on page 126).

3 Enable Parity Checking.

4 Enable Termination power (TPWR).

5 Leave the remaining settings at the default values.

To replace a faulty tape drive

1 Courtesy stop CallPilot, and then power down the server.

2 Ensure that the replacement tape drive's settings are as described in "To configure the tape drive" on page 138.

3 Remove the side and front system covers, and place the front cover on a flat surface.

4 Disconnect the faulty drive's power and signal (SCSI) cables.

5 Squeeze the plastic rail tabs toward each other as you carefully slide the faulty drive forward out of the bay.

6 Place the device on an antistatic surface.

7 Remove and save the four screws and two slide rails.

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

8 Install the slide rails on the new tape drive.

9 Install the new tape drive in the tape drivebay.

10 Reconnect the tape drive's power cable and SCSI cable. If you need assistance with this, refer to one of the following diagrams:

- "Cabling for a RAID system with IDE CD-ROM and SCSI tape drive" on page 128
- "Cabling for a non-RAID system with CD-ROM and tape drive" on page 130

Result: The tape drive is installed.

11 Replace the server covers.

12 Test the tape drive.

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

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

1. Courtesy stop CallPilot, and then power down the server.
2. Ensure that the tape drive settings are as described in “To configure the tape drive” on page 138.
3. Remove the side and front system covers, and place the front cover on a flat surface.
4. Remove the slide rails for the tape drive from the side of the tape drive bay.

   Note: If a 702t server is purchased without a tape drive, the server is shipped with the tape drive slide rails attached to the side of the tape drive bay inside the server.
5. Install the slide rails on the new tape drive.
6. Remove the screws and filler panel from the tape drive bay, and set them aside.
7. Push the tab on the left side of the EMI metal shield to the right to disengage it from the chassis, and save the shield.
8. Install the tape drive in the tape drive bay.
9. For a RAID system, refer to the diagram in “Cabling for a RAID system with IDE CD-ROM and SCSI tape drive” on page 128 for a cabling example. Cable the tape drive as shown in the diagram and described in these substeps:

   a. Connect one end of the SCSI cable to the server’s wide SCSI controller.

   b. Attach a wide SCSI terminator to the other end of the SCSI cable.

   c. Connect one of the middle connectors of the SCSI cable to the tape drive.

10 For a non-RAID system, refer to the diagram in “Cabling for a non-RAID system with CD-ROM and tape drive” on page 130 for a cabling example. Cable the tape drive as shown in the diagram and described in these substeps:

a. Connect a narrow-to-wide SCSI adapter to the server’s narrow SCSI controller.

b. Connect a 68-pin SCSI cable to the narrow-to-wide SCSI adapter on the motherboard.

c. Attach a wide SCSI terminator to the other end of the SCSI cable.

d. Connect one of the middle connectors of the SCSI cable to the tape drive.

11 Attach the power cable to the tape drive.

Result: The tape drive is installed.

12 Replace the server covers.

13 Test the tape drive.

Replacing the CD-ROM drive

Introduction

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

Risk of electrical damage
Use only CD-ROM drives approved by Nortel Networks.

To replace the CD-ROM drive

1. Courtesy stop CallPilot, and then power down the server.
2. Set the new CD-ROM drive's jumper settings to indicate “Master/Single.”

   Note: Refer to the CD-ROM drive manufacturer's documentation for specific jumper settings.
3. Remove the side and front system covers, and place the front cover on a flat surface.
4. Disconnect the faulty drive's power and signal (IDE) cables.
5. Squeeze the plastic rail tabs toward each other as you carefully slide the faulty drive forward out of the bay.
6. Place the device on an antistatic surface.
7. Remove and save the four screws and two slide rails.

   Note: If you plan to leave the bay empty, install a filler panel and stainless steel EMI shield on the bay.
8. Install the new CD-ROM drive in the CD-ROM drive bay.

9 Reconnect the CD-ROM drive's power cable and IDE cable. If you need assistance with this, refer to one of the following diagrams:

- "Cabling for a RAID system with IDE CD-ROM (no tape drive)" on page 127
- "Cabling for a RAID system with IDE CD-ROM and SCSI tape drive" on page 128
- "Cabling for a non-RAID system with CD-ROM (no tape drive)" on page 129
- "Cabling for a non-RAID system with CD-ROM and tape drive" on page 130

Result: The CD-ROM drive is installed.

10 Replace the server covers.

11 Test the CD-ROM drive.

Replacing the floppy disk drive

Introduction

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

Risk of electrical damage
Use only floppy drives approved by Nortel Networks.

To replace the floppy disk drive

1. Courtesy stop CallPilot, and then power down the server.
2. Disconnect the disk drive's power and signal cables.

   Note: The connectors are usually keyed to allow you to easily reconnect them to the drive. If they are not, insert both cables so that the red wires are closest to the center of the drive.
3. Remove and save the screw securing the drive and carrier assembly to the 5.25-inch drive bay.
4. Slide the assembly back toward the power supply to disengage the tabs from the slots in the bottom of the 5.25-inch drive bay.
5. Remove the assembly from the chassis, and place it component-side up on an antistatic surface.
6. Remove the four screws that hold the bracket to the drive, and set them and the bracket aside.
7. Place the drive in an antistatic protective wrapper.
8. Remove the disk drive from its protective wrapper, and place it component-side up on an antistatic surface.
9. Record the drive model and serial numbers in your equipment log.

10 Place the drive carrier on the component side of the drive to align the four mounting holes.

11 Attach the brackets to the drive with four screws of the appropriate size and length (reuse the screws you removed before). Tighten the screws firmly. See “Installing the floppy disk drive” on page 146.

12 Position the drive/bracket assembly under the bottom 5.25-inch bay.

13 Slide the assembly toward the front of the system, and engage the bracket tabs in the slots under the bottom bay.

Note: The bottom of the drive/bracket assembly must accept the tab that sticks out from the inside of the front panel. Make sure that the front of the drive fits flush in the front opening of the system.

14 Secure the assembly to the 5.25-inch bay with the screw you removed earlier. Tighten the screw firmly.

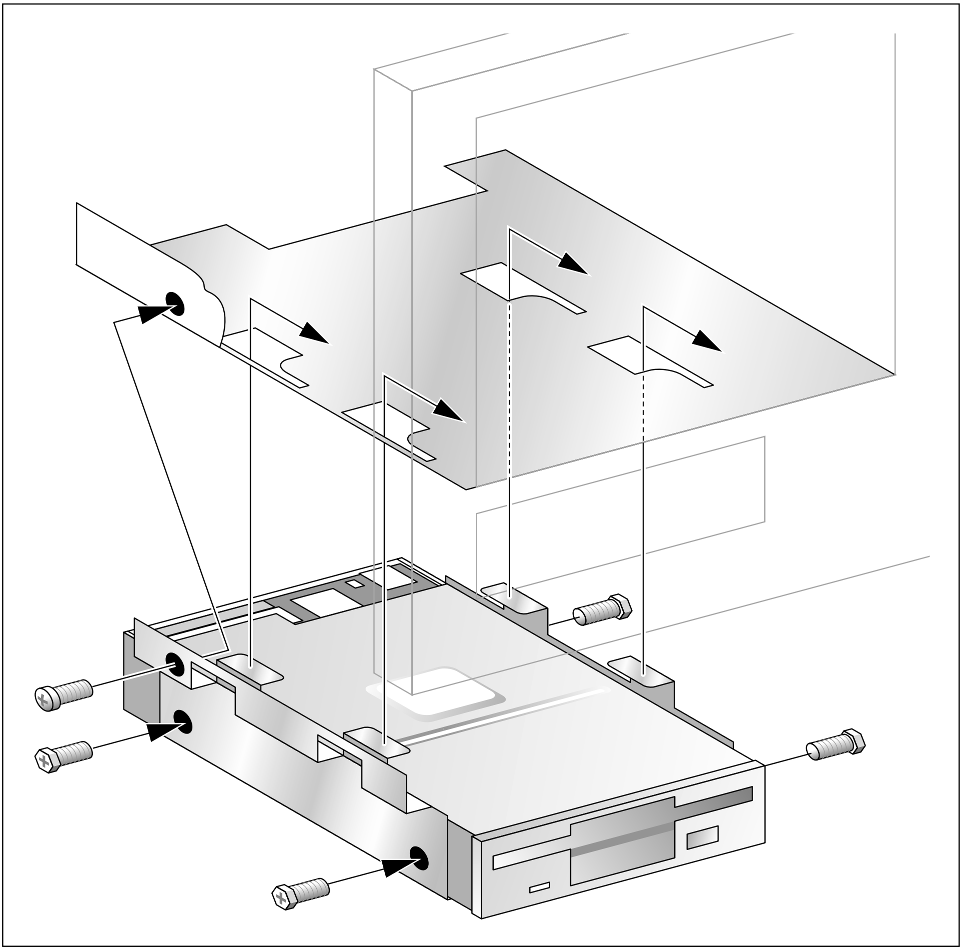
15 Connect the signal and power cables to the drive.

Note: The red stripe on the signal cable must face toward the center of the drive.

16 Reinstall the side cover.

17 Test the new floppy drive.

Installing the floppy disk drive



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Chapter 9

Performing RAID maintenance

In this chapter

RAID overview

Introduction

Redundant Arrays of Inexpensive Disks (RAID) is a technology that can combine two or more drives for fault tolerance and performance.

RAID Level 1

The RAID controller is a PCIRAID SCSI card that provides high-performance disk mirroring. CallPilot uses RAID Level 1.

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

System backups

Perform regular tape backups of the CallPilot server. Although RAID provides a high level of data security through redundancy, you must restore from backup tape if the RAID controller card fails or if both hard drives in a RAID system pack fail.

RAID software

The Windows NT operating system supports mirroring in software without a hardware RAID controller. This software-only approach is not supported and is not recommended.

Section A: Replacing the RAID controller card

In this section

Replacing the AcceleRAID 352 RAID controller card

Introduction

This section provides instructions for replacing the AcceleRAID 352 RAID controller card.

Note: CallPilot cannot be upgraded in the field from non-RAID to RAID.

CAUTION

Risk of data loss
If the existing RAID controller card has failed, the data on the hard drives may be corrupted. A procedure for replacing the AcceleRAID controller card is provided here for reference purposes. However, you must contact Nortel Networks technical support for further instructions before you begin.

CAUTION

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

Materials you need

Before replacing the RAID card, gather the following tools:

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

To replace the Mylex AcceleRAID352 RAID controller card

1. Ensure that an updated backup tape is made.
2. Power down the server, and unplug the AC power cord.
3. Ensure that the antistatic strap is connected properly.
4. Remove the chassis cover.
5. Locate the installed RAID card and note its PCI slot.
6. Disconnect all cabling from the RAID card.
7. Use an adhesive label or a piece of tape to label each cable with its connection.
8. Loosen the screw located at the top of the card's faceplate.
9. Remove the card from the chassis.
10. Unpack the replacement Mylex AcceleRAID352 RAID card.
11. Insert the replacement card in the appropriate PCI slot (PCI slot 4, which is the top PCI slot).
12. Apply downward pressure until the card is evenly and securely seated in the slot.
13. Secure the card by tightening the screw at the top of the faceplate.
14. Connect RAID channel 0 to the RAID card. See "SCSI and IDE cabling illustrations" on page 126.
15. Connect RAID channel 1 to the RAID card. See "SCSI and IDE cabling illustrations" on page 126.
16. Replace the chassis cover.
17. Plug in the AC power cord and power up the server. If the server does not start up, contact your Nortel Networks technical support representative.

Upgrading from DAC960 to AcceleRAID352

The DAC960 RAID controller card is no longer being manufactured. It has been replaced with the Mylex AcceleRAID352 controller card.

CAUTION

Risk of data loss

The procedure to upgrade from a DAC960 RAID controller card to an AcceleRAID352 controller card requires assistance from Nortel Networks technical support.

Also note that if the existing RAID controller card has failed, the data on the hard drives may be corrupted.

Contact Nortel Networks technical support for further instructions.

Section B: Maintaining an AcceleRAID352 RAID system

In this section

Installing AcceleRAID352 RAID Global Array Manager software

Introduction

The Global Array Manager (GAM) has several utilities and monitoring functions. Once launched, GAM maintains a real-time Error log and Event Viewer, and also includes functions that can be found in the EzAssist software that is embedded in the controller.

To control and monitor the AcceleRAID352 RAID card controller within Windows NT, you need the Mylex Global Array Manager software installed.

ATTENTION

The Mylex Global Array Manager software is installed at the factory for new CallPilot servers that have the AcceleRAID352 RAID controller card installed.

Unless you find a problem with this software or you are upgrading to an AcceleRAID352 RAID controller card, it is not necessary to install this software at a customer site.

To install the Mylex Global Array Manager software

1. Start the server, and then log on to Windows NT.
2. Insert the CallPilot 2.0 OS Recovery CD (or Upgrade CD) into the CD-ROM drive.
3. On the My Computer applet, right-click the CD-ROM drive, and then select Explore.
4. Access the \Drivers\Misc\RAID\AR352\GAM\ directory, and then run Setup.
5. Follow the instructions on the screen.

Rebuilding an AcceleRAID352 RAID hard drive

Introduction

In RAID level 1, two equal-capacity disks mirror one another. Both drives run simultaneously with one disk serving as the backup copy of the other disk. If one drive fails, the other continues to run. When you physically replace a failed drive with a new one, the data on the operating drive of the system pack must be copied onto the new drive to rebuild it. RAID automatically performs this rebuild process when the replacement drive is accessed.

If you want to start the initiation process sooner or monitor the rebuilding process, follow the steps in the procedure below.

ATTENTION The screen captures are provided for illustration purposes only. Based on the configuration of your server, the screens may not be identical.

Before you begin

Perform this procedure in response to the system message that a hard drive has failed. The message displays information about drive location. Perform this procedure while the system is powered on.

To rebuild a hard drive in a RAID system

1 Replace the failed hard drive, as follows:

a. Shut down and power off the CallPilot server.

b. Remove the failed hard drive.

c. Install the replacement hard drive.

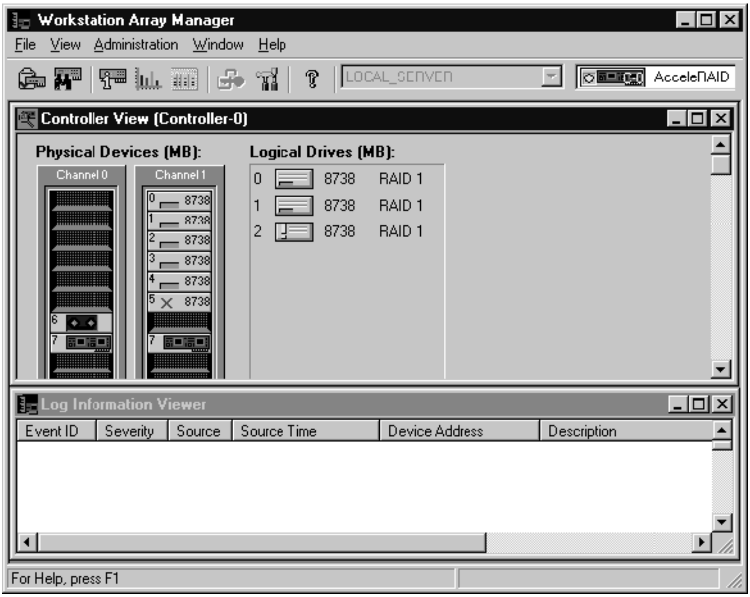
d. Power up the server.

Result: POST messages from the RAID controller warn you that the system is operating in critical mode (that is, with some drives offline).

2 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

3 From the Windows desktop, select Start → Programs → Mylex Workstation Array Manager.

Result: The Workstation Array Manager window appears. In the example below, the secondary hard drive in logical drive 2 (channel 1, ID 5) was faulty and has been replaced. The new hard drive is offline, and logical drive 2 is still in critical state because the new hard drive has not yet been rebuilt.



4 In the Workstation Array Manager window, double-click the offline hard drive (in the example in this procedure, this is the device at channel 1 ID 5).

Result: The Disk Device Information window appears.

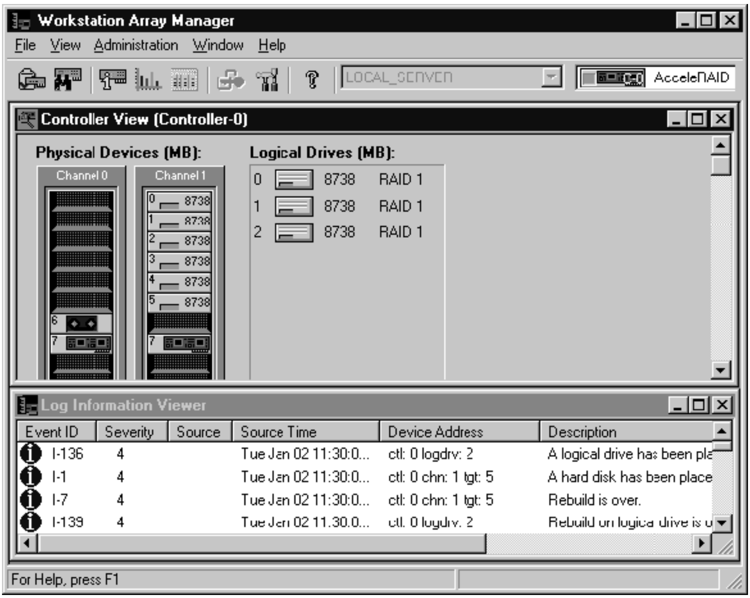
5 In the Disk Device Information window, click Rebuild to start the disk resynchronization process.

Result: The Rebuild Status window appears.

When the rebuild is complete (each drive takes up to 45 minutes), the following dialog box appears to inform you that the rebuild is complete:

6 Click OK in the Rebuild Message dialog box.

Result: The Workstation Array Manager window is updated. In the example in this procedure, the physical drive at Channel 1 ID 5 is now online, as is logical drive 2.



7 Close the Workstation Array Manager window.

Result: You have completed the rebuild procedure.

Configuring an AcceleRAID352 RAID system

Introduction

Before configuring the Mylex PCI RAID card, you must have access to the driver disk.

For firmware updates (see “To flash upgrades in the AcceleRAID352 controller” on page 168), you must also have firmware and utility versions.

The minimum version of the RAID controller BIOS/Firmware and utility is specified below:

AcceleRAID 352	Version
Firmware	6.00.00
EzAssist	2.01-06

Drive coercion

The RAID controller Mylex AcceleRAID352 includes a feature called Drive Coercion. This feature allows drive capacities from different vendors to appear to be the same size.

Drive coercion also allows you to replace a dead existing drive with a drive of the same capacity from a different manufacturer, even if it is slightly smaller physically. This feature rounds up the actual capacity to an integral number of chunks (the truncation factor). The truncation factor is in the range of five percent of the hard drive. System pack sizing is not required while creating system packs with this controller.

RAID EzAssist utility

To configure the AcceleRAID controller, regardless of whether an operating system is installed on your computer, the RAID EzAssist utility can be run from the Mylex controller's BIOS at any system boot time.

To enter the EzAssist utility and configure the RAID, follow the instructions in "To configure RAID using Mylex AcceleRAID 352" below.

To configure RAID using Mylex AcceleRAID 352

Newer Mylex RAID cards have an option that you must set before you configure them. Complete the following steps to properly configure your RAID card.

1 Power on the system.

Result: The AR352 messages appear.

2 When the message `Press Alt-M for BIOS options` appears, press Alt+M simultaneously.

Result: The AR352 BIOS options appear.

3 Use the arrow keys to move to the 2 GB Drive Geometry option, and then press Enter.

Result: The system prompts you to use 8 GB Drive Geometry and to confirm the change.

Note: Your controller may already be configured as 8 GB Drive Geometry. If it is already configured, press Esc to exit and restart.

4 Confirm the change, and then press Esc to escape this menu.

To configure the RAID system packs

1 Power up the system.

Note: If you have BIOS level 14 on the 702t server, press the space bar to skip the memory check and start faster.

Result: The system starts and messages such as the following appear:

```
Mylex AcceleRAID 352 BIOS version x.xx-xx (Month Day,
Year).
Mylex Corporation
```

After the messages appear, the system prompts you to press Alt+R to enter EzAssist.

2 Press Alt+R.

Result: The system restarts and enters EzAssist.

3 Allow EzAssist to scan the SCSI bus(es) and target drives.

Result: After scanning is complete, the following message appears:

```
No existing RAID configuration has been detected.
Would you like to configure a RAID drive now?
```

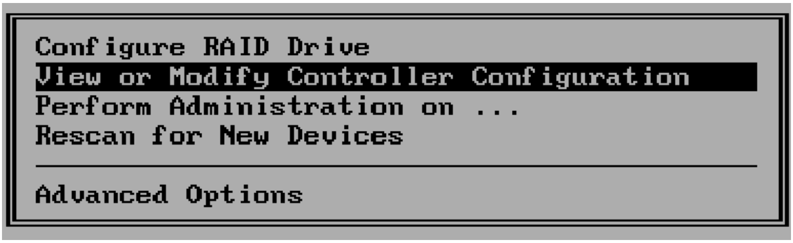
4 Use the arrow keys to select No.

Result: The system prompts you to select the unique controller in the system.

5 Press Enter to select the unique controller.

Result: The main menu appears.

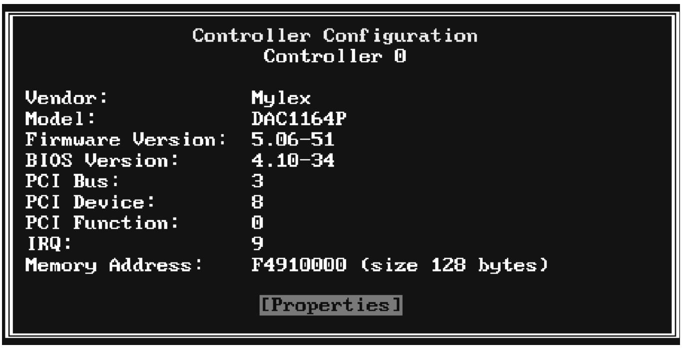
6 From the main menu, use the arrow keys to highlight the View or Modify Controller Configuration option, and then press Enter.



Result: The Controller Configuration window appears.

7 Press Enter to access the Properties.

Result: The Properties menu appears.



8 Press Enter to continue.

9 Use the arrow keys to highlight the menu item “Startup,” and then press Enter.

Result: Ensure the following settings appear (default):

Disk Spin Up: By Controller

Number of Disk Drives per spin: 2

Initial Delay: 0

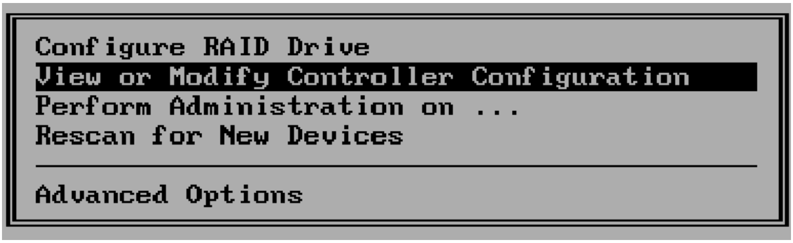
Delay between Spins: 6.

10 Select OK to accept the startup property changes, and then press Enter.

11 Use the arrow key to select Yes at the Save Changes window, and then press Enter.

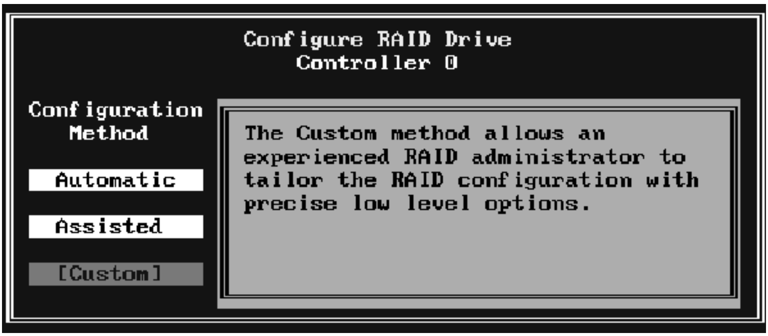
12 Press Esc twice to exit to the Main menu.

13 If no further changes are required, press Esc until the Main menu appears.



14 From the Main menu, choose Configure RAID Drive, and then press Enter.

Result: The Configure RAID Drive menu appears.



15 Select Custom, and then press Enter.

Result: A submenu appears.

16 Select Create a New Disk Array, and then press Enter.

Result: The Disk Array Configuration menu appears.

17 Use the arrow keys to perform the following substeps to set the RAID packs.

For example, for the 702t:

a. Select Drive Channel ID 0:00, and then press Enter to add it to the first pack.

b. Select Drive Channel ID 1:04, and then press Enter to add it to the first pack.

Set the RAID packs according to one of the following tables for the server:

702t RAID system packs

Hard drive bay	SCSI channel	SCSI ID	System pack/Logical drive[a]	Label used in diagrams[b]
Top slot	0	0	0 (primary hard drive)	A-0
Second slot from top	0	1	1 (primary hard drive)	B-0
Third slot from top	0	3	2 (primary hard drive)	C-0
Fourth slot from top	1	4	0 (secondary hard drive)	A-1
Fifth slot from top	1	5	1 (secondary hard drive)	B-1
Sixth slot from top (bottom slot)	1	6	2 (secondary hard drive)	C-1

a. RAID pairs (logical drives or system packs) consist of the following pairs: hard drives 1 and 4, 2 and 5, and 3 and 6.
b. These labels are used in diagrams for clarity and are not used in the AcceleRAID utility's user interface.

18 Press Tab to select Save Array.

19 Press Enter to create the first logical drive.

Result: The system prompts you to define the logical drive.

20 Select No because you must define two more drives.

21 Define the second drive as shown above for the server.

22 Press Tab to select Save Array.

23 Press Enter to create the second logical drive.

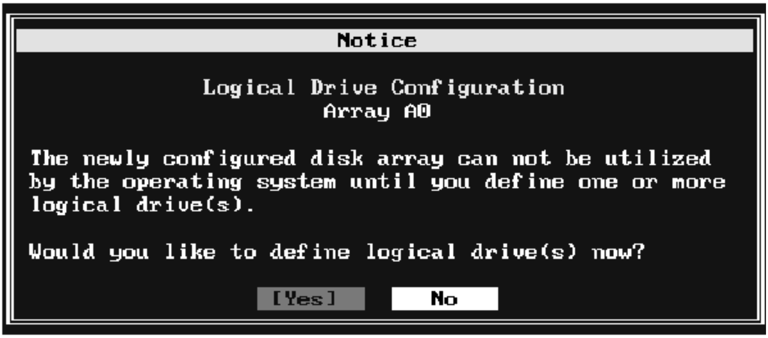
Result: The system prompts you to define the logical drive.

24 If additional drive packs are to be created, select No.

25 Repeat steps 21 to 23 until all packs are created.

26 When the last drive pack has been created, selectYes.

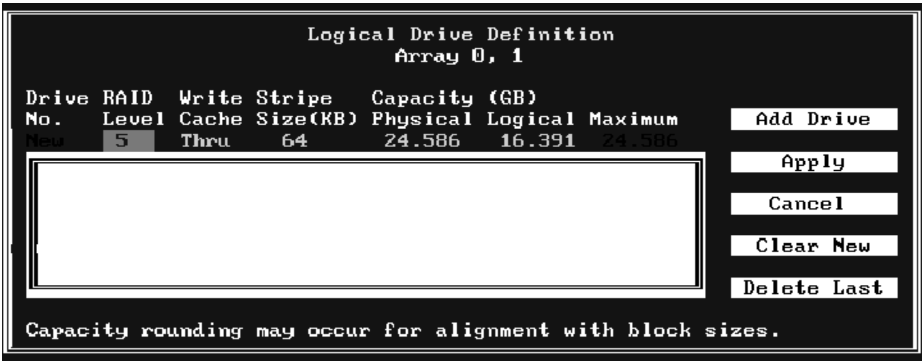
Result: The system prompts you to define the logical drive.



27 Select Yes.

Note: You may be warned that you are combining two drives of different sizes. If this happens, you must ensure that you are using hard drives that are qualified by Nortel Networks for CallPilot.

Result: The Logical Drive Definition window appears.



Note: The preceding window does not reflect a valid CallPilot configuration.

28 Ensure that the RAID Level is 1, and that the Write Cache option is set to Thru (the default).

Note: If these settings differ, you can change them using the +/- keys when the option is highlighted.

29 To add the logical drive, press Tab to switch the focus to the buttons, and then press Enter with Add Drive selected.

Repeat these steps until all logical drives are defined.

30 When all logical drives are defined, apply the configuration to the controller by selecting and pressing Apply.

Result: The System Packs are defined, and the configuration is written to the controller NVRAM.

Note: No drive initialization is necessary if the drives have not been used.

31 Allow the above process to complete, and then press Esc multiple times until the Exit confirmation window appears.

32 Select Yes to exit the EzAssist utility.

Result: The system restarts and is now ready for operating system installation.

To flash upgrades in the AcceleRAID352 controller

Introduction

The RAID card has the supported release of firmware when it is shipped to the CallPilot distributor, so a firmware update at a customer site is not usually required. However, this procedure is provided to support any future circumstances that may require you to upgrade the firmware.

To upgrade the firmware AcceleRAID352 controller

1. Restart the system, and then press Alt+R to enter the EzAssist utility when prompted.
2. On the Main menu, click Advanced Options.
3. Have the disk ready that contains the firmware, BIOS, boot block, or utility image file(s).
4. On the Advanced Options Menu, click Update Flash Code.
5. Insert the disk into the disk drive.
6. Type the path and the name of the file that needs to be flashed in the space provided, and then press Enter.

   Result: The image is read from the floppy disk, and the system prompts you to press Enter.
7. Press Enter to flash the image into the RAID controller.

Splitting AcceleRAID352 RAID drives and upgrading software

Introduction

Use this procedure on a CallPilot server that is configured with an AcceleRAID 352 controller. This procedure breaks the mirroring of the hard drives before an upgrade so that if the upgrade fails, you can quickly return the server to the state it was in before you started the upgrade.

There are three stages to this procedure:

1. Preparing the CallPilot server for the upgrade
2. Performing the CallPilot server software upgrade
3. Resynchronizing the CallPilot server hard drives

ATTENTION

The screen captures are provided for illustration purposes only. Based on the configuration of your server, the screens may not be identical.

Requirements

- As a precaution, ensure that you have a full system tape backup available.
- You need a blank 3.5 inch, 1.44 Mbytes formatted floppy disk to use to back up the RAID configuration.
- The server must have a standard hard drive configuration as documented in “RAID system pack locations and identifications” on page 171.

Tips

- Perform a RAID status check and consistency check (see “To check the status of the RAID system” on page 173, and “To check the consistency of the logical drives” on page 175) at least one day before the planned upgrade date. If you find errors, this early check gives you time to contact Nortel Networks technical support (if necessary), and resolve the errors before you begin the upgrade.

When you do proceed with the RAID splitting and upgrade procedure, ensure that you once again perform the RAID status check and consistency check to ensure that no new errors have been introduced.

- Ignore the “CallPilot is booting” dialog box that appears after you restart the server, and log on to Windows NT. You do not need to wait for CallPilot to boot while you are performing maintenance tasks. Also, disregard any dialog boxes that appear if CallPilot does not boot successfully while you are performing maintenance tasks.
- If you are not sure which RAID controller is installed, restart the server and observe which RAID controller is detected in the POST messages.

Timing and checklist

The following table provides general time estimates for completing the steps in this procedure:

Task	Approximate time to complete	Check
Check the status of the RAID system.	5 minutes	❒
Check the consistency of the logical drives.	30 minutes per drive pair **Note:** You can check only one drive pair at a time.	❒
Perform the pre-upgrade steps.	Varies depending on your system	❒
Back up the existing RAID configuration.	10 minutes	❒

Task	Approximate time to complete	Check
Disconnect the secondary hard drives.	10 minutes	❐
Perform the server software upgrade.	Varies depending on your system	❐
Reconnect the offline hard drives.	10 minutes	❐
Resynchronize (rebuild) the offline hard drives.	up to 45 minutes per drive pair **Note:** You can resynchronize only one drive pair at a time.	❐

RAID system pack locations and identifications

The following tables display information required to identify RAID system packs (logical drives).

702t RAID system

The table below indicates the proper hard drive bay, channel, and ID configurations.

Note: SCSI ID 2 is reserved for the SCSI tape drive.

Hard drive bay	SCSI channel	SCSI ID	Logical drive	Label used in diagrams[a]
Top slot	0	0	0 (primary hard drive)	A-0
Second slot from top	0	1	1 (primary hard drive)	B-0

Hard drive bay	SCSI channel	SCSI ID	Logical drive	Label used in diagrams[a]
Third slot from top	0	3	2 (primary hard drive)	C-0
Fourth slot from top	1	4	0 (secondary hard drive)	A-1
Fifth slot from top	1	5	1 (secondary hard drive)	B-1
Sixth slot from top (bottom slot)	1	6	2 (secondary hard drive)	C-1

a. These labels are used in diagrams for clarity and are not used in the AcceleRAID utility's user interface.

Preparing the CallPilot server for the upgrade

This stage includes the following steps:

1. Check the status of the RAID system.
2. Check the consistency of the logical drives.
3. Perform the pre-upgrade steps.
4. Back up the existing RAID configuration.
5. Disconnect the secondary hard drives.

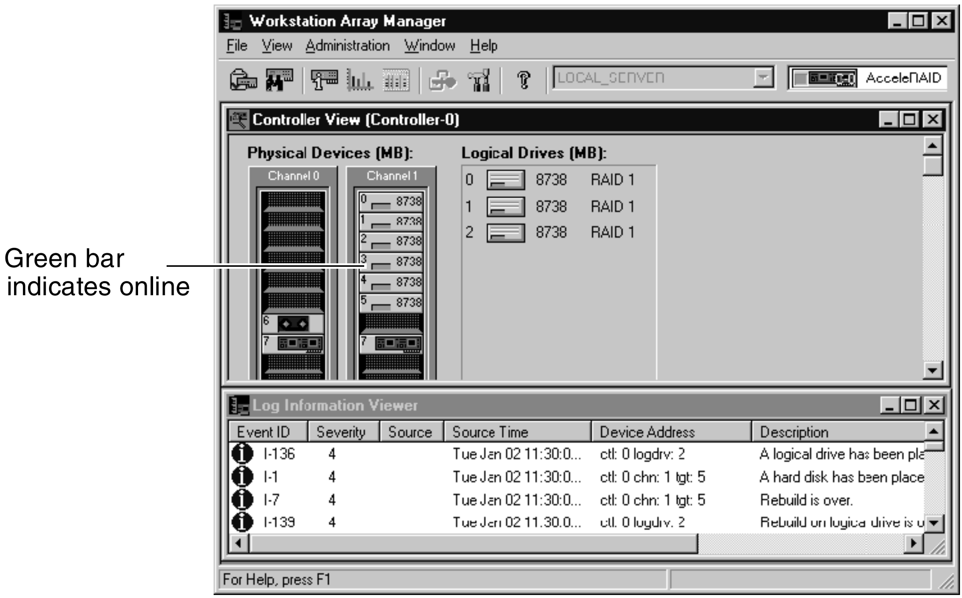
To check the status of the RAID system

All the drives configured in the RAID controller must be operating and online. If any of the logical drives are in the critical state, the RAID splitting procedure will not work and data loss can occur if it is used. To ensure that the RAID controller and all drives are fully operational, check their status using the Mylex Workstation Array Manager software, as follows:

1 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

2 From the Windows desktop, select Start → Programs → Mylex Workstation Array Manager.

Result: The Workstation Array Manager window appears.



3 Check that all hard drives are in the online state. A green bar indicates that a hard drive is online.

If any hard drives are not online, follow steps 3 to 9 in “Resynchronizing the CallPilot server hard drives” on page 184. Then return to this procedure.

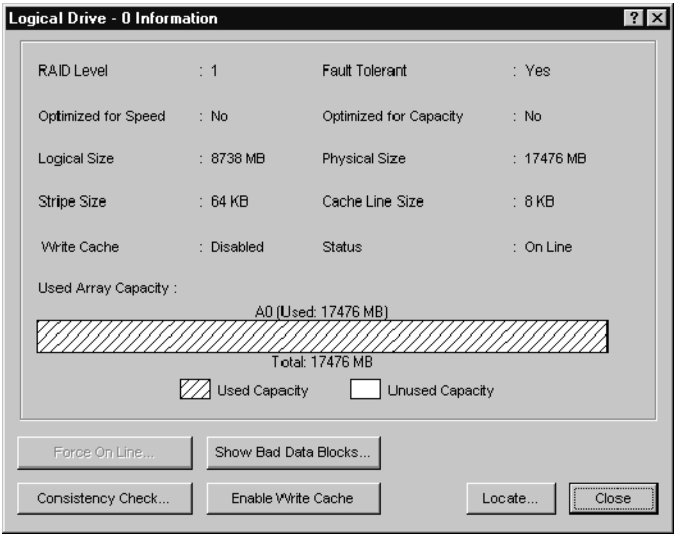
Note: If a hard drive does not successfully go to the online state, verify the hard drive jumper settings and cabling connections, and then try again to rebuild the hard drive. If you cannot make the hard drive go to the online state, replace the faulty hard drive (see “Replacing or installing hard drives” on page 131 for hard drive configuration instructions and, if necessary, instructions on how to replace the hard drive).

To check the consistency of the logical drives

You must verify that each pair of drives is correctly synchronized before continuing with the RAID splitting procedure. To verify that the drives are correctly synchronized, use the Mylex Workstation Array Manager software. Run a consistency check on each configured logical drive, as follows:

1 In the Workstation Array Manager window, double-click the icon for logical drive 0. Each logical drive represents a mirrored pair of hard drives.

Result: The Logical Drive-0 Information window appears.



2 Click Consistency Check to start a consistency check on the logical drive.

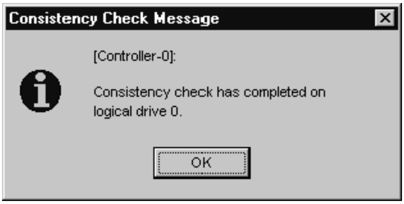
Result: The system prompts you to select what should be done if inconsistent data is found on the logical drive.

3 Click No.

Note: You must not restore the consistency at this time. By selecting No, you only receive a warning if inconsistent data is found on the logical drive.

Result: The consistency check starts and the progress bar starts to advance.

When the consistency check is completed, the following dialog box appears if the consistency check was OK:



Note: If the consistency check reports errors, stop this procedure and contact Nortel Networks technical support to correct the problem.

4 Click OK.

Result: You return to the Logical Drive Information window.

5 Click Close.

Result: You return to the Workstation Array Manager window.

6 Repeat steps 1 to 5 for the remaining logical drives on the server (in this example, drives 1 and 2).

7 After all drives have been checked, close the Workstation Array Manager window to exit the program.

To perform the pre-upgrade steps

Follow the instructions in Part 4 of the *CallPilot Installation and Configuration* binder.

Note: Do not upgrade the server software at this time.

To back up the existing RAID configuration

It is important to back up the current configuration to a floppy disk before you make any changes to the configuration of the RAID controller. This enables you to recover the configuration of the RAID controller if any mistakes are made while executing the procedure.

1 Shut down and restart the CallPilot server.

2 While the server is restarting, the RAID controller is detected, and a prompt appears to “Press Alt-R for RAID Configuration Options.” Press Alt-R to launch the RAID controller configuration program.

   Result: The Mylex Raid EzAssist program starts. A Notice message may appear before the RAID controller selection window appears.

   Note: If you miss the “Press Alt-R” prompt, you can press Reset to restart the server before the system finishes booting to Windows NT. If you reach the Windows NT Operating System selection screen, you have missed the “Press Alt-R” prompt.

3 From the RAID controller selection window, press Enter to select the AcceleRAID 352 controller.

   Result: A pop-up menu appears. The remainder of this document refers to this first menu as the main menu.

4 Insert a floppy disk that you want to use to back up the RAID configuration.

5 Select Advanced Options, and then press Enter.

   Result: The advanced options pop-up menu appears.

6 Select Backup Configuration, and then press Enter.

   Result: The system prompts you to enter a filename for the RAID controller configuration backup.

7 Enter a filename for the RAID controller configuration backup (for example, a:\original.cfg), and then press Enter.

   Result: The RAID configuration is backed up on the floppy disk.

8 Remove the floppy disk from the floppy drive.

9 Press Esc to return to the main menu.

10 Press Esc to return to the RAID controller selection window.

Result: You return to the RAID controller selection window.

11 Press Esc to exit the Mylex RAID EzAssist program.

Result: A message appears indicating that you are about to exit RAID EzAssist and asking for confirmation.

12 Select Yes, and then press Enter.

Result: A message appears indicating that you can either power off the system or select OK to reboot.

13 Select OK to reboot the server.

Result: The server restarts.

14 Disable the secondary drives (see the following procedure).

To disable the secondary hard drives

1 While the server is restarting, the RAID controller is detected and a prompt appears to “Press Alt-R for RAID Configuration Options.” When this prompt appears, press Alt-R.

Result: The Mylex Raid EzAssist program starts.

Note: If you miss the “Press Alt-R” prompt, you can press the Reset button to restart the server before the system finishes booting to Windows NT.

ATTENTION If you reach the Windows NT Operating System selection screen, you have missed the “Press Alt-R” prompt.

2 From the RAID controller selection window, press Enter to select the AcceleRAID 352 controller.

Result: The main menu appears.

3 Select “Perform Administration on”, and then press Enter.

Result: The administration pop-up menu appears.

4 Select Physical Device, and then press Enter.

Result: The Physical Drive Selection window appears. All hard drives are online.

CAUTION

Risk of lost or corrupted data

All hard drives must be online before you continue with the rest of this procedure.

5 In the Physical Drive Selection window, select the fourth hard drive, and then press Enter.

Result: The device pop-up menu appears.

CAUTION

Risk of data corruption

Ensure that you select a pre-upgrade drive for this step. If this is a standard configuration and you have followed the instructions in this procedure, the fourth, fifth, and sixth hard drives are the pre-upgrade drives. If this is not correct for your system, contact Nortel Networks technical support.

6 Select Advanced Options, and then press Enter.

Result: The advanced options pop-up menu appears.

7 Select Make Drive Offline, and then press Enter.

Result: A message appears warning that making a drive offline may cause data corruption. For this procedure, disregard this message.

8 Select Yes, and then press Enter.

Result: The system prompts you to confirm.

9 Select Yes, and then press Enter.

Result: You return to the Physical Drive Selection window. The hard drive that was selected is now set to Offline.

10 Repeat steps 6 to 10 for the fifth and sixth hard drives.

Result: The pre-upgrade hard drives (fourth, fifth, and sixth) are offline.

11 Press Esc to return to the administration pop-up menu.

Result: You return to the administration pop-up menu.

12 Press Esc to return to the main menu.

Result: You return to the main menu.

13 Press Esc to return to the RAID controller selection window.

Result: You return to the RAID controller selection window.

14 Press Esc to exit the Mylex RAID EzAssist program.

Result: A message appears indicating that you are about to exit RAID EzAssist and asking for confirmation.

15 Select Yes, and then press Enter.

Result: A message appears indicating that you can either power off the system or select OK to reboot.

16 Power off the server.

To disconnect the secondary hard drives

Physically disconnect the secondary hard drives to ensure that these hard drives are not updated during the upgrade and are preserved as a backup. The disconnected hard drives are automatically marked as offline when you restart the server.

1 Ensure that you have shut down and powered off the CallPilot server.

2 Disconnect the secondary hard drives, by labelling and then disconnecting the SCSI cable for channel 1 from the RAID card. Be careful not to damage the RAID card. See the following cabling diagram for the 702t server:

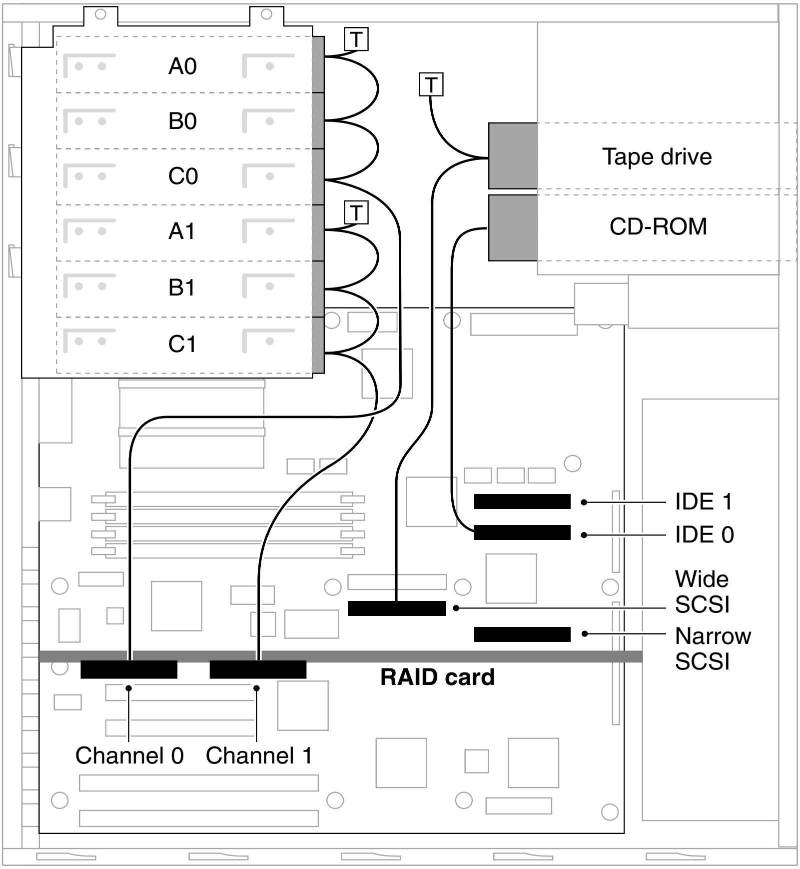
CAUTION

Risk of equipment damage and data loss

Ensure you first power off the server and use an ESD wrist strap.

If you decide to remove the drives, be sure to label them with their SCSI channel and ID, and store them in antistatic bags and suitable foam material.

If you remove the drives and then label drives incorrectly (and, therefore, are not able to reinstall the drives in the same locations), you may not be able to recover your system using these drives.



Note 1: A "T" indicates a wide active terminator.
Note 2: The CD-ROM is connected to IDE 0.

G100812

3 Power up the server.

Note: During the bootup, the system reports that three hard drives are offline, and, as a result, three logical drives are running in critical state. This is normal. It indicates that the hard drives are no longer being mirrored.

Performing the CallPilot server software upgrade

You can now perform the upgrade operation. Only one hard drive of each pair is updated. This allows you to maintain a copy of the system in its previous state in case there are problems during the upgrade process.

To perform the CallPilot server software upgrade

1 Upgrade the CallPilot server software. Follow the instructions in Part 4 of the *CallPilot Installation and Configuration* binder.

2 After the upgrade is completed, ensure that you test the upgrade before you resynchronize the hard drives. See "Testing the CallPilot installation" in Part 3 of the *CallPilot Installation and Configuration* binder.

3 Once the upgrade is completed and tested, there are two options available:

- If the upgrade is successful, continue with "Resynchronizing the CallPilot server hard drives" on page 184 to keep the upgraded software.
- If the upgrade fails, follow the steps in "Reverting to the pre-upgrade system (if the upgrade fails)" on page 188.

CAUTION

Risk of data loss

You can run CallPilot for any period of time before making this decision. However, during this time, there is no disk redundancy. Therefore, if a hard drive fails during this time, any new data is lost.

Resynchronizing the CallPilot server hard drives

After you upgrade the server software and test the upgrade, follow the steps below to resynchronize the hard drives.

To resynchronize the CallPilot server hard drives

1 Shut down and power off the CallPilot server.

2 Reconnect the hard drives by reconnecting the SCSI cable for channel 1. For cabling details, see the diagram in “To disconnect the secondary hard drives” on page 180.

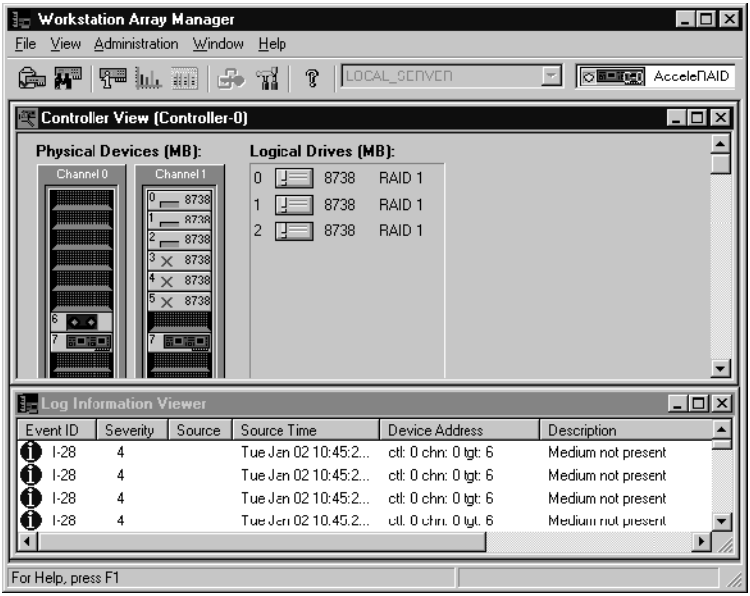
3 Power up the server.

Result: POST messages from the RAID controller warn you that the system is operating in critical mode (that is, with some drives offline).

4 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

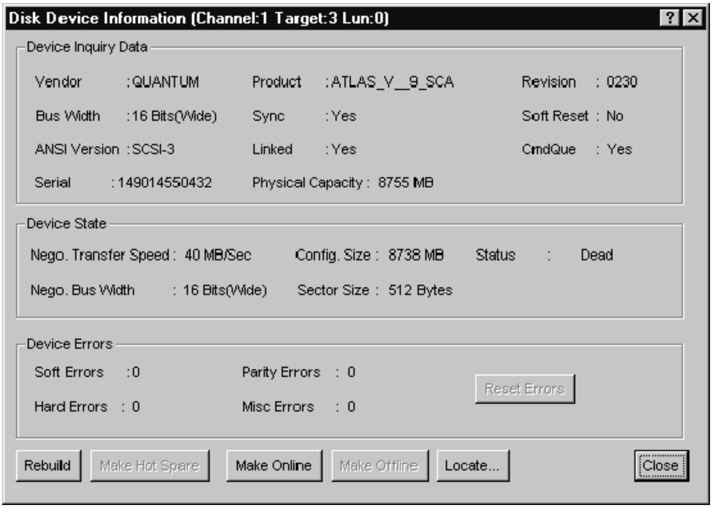
5 From the Windows desktop, select Start → Programs → Mylex Workstation Array Manager.

Result: The Workstation Array Manager window appears. Logical drives 0, 1, and 2 are in critical state because the physical drives are not mirrored. The fourth, fifth, and sixth hard drives are offline.



6 In the Workstation Array Manager window, double-click the first offline hard drive (in the example in this procedure, this is the device at channel 1 ID 3).

Result: The Disk Device Information window appears.



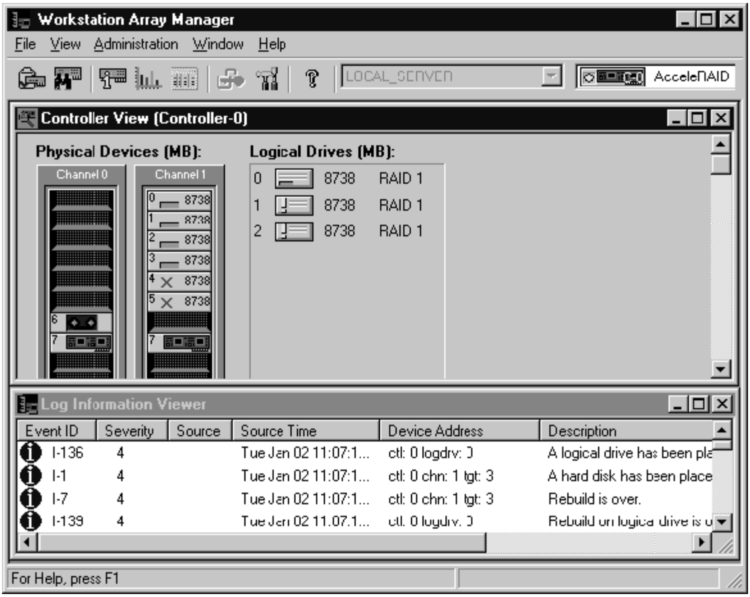
7 In the Disk Device Information window, click Rebuild to start the disk resynchronization process.

Result: The Rebuild Status window appears.

When the rebuild is complete (each drive takes up to 45 minutes), the following dialog box appears to inform you that the rebuild is complete:

8 Click OK in the Rebuild Message dialog box.

Result: The Workstation Array Manager window is updated. In the example in this procedure, the physical drive at Channel 1 ID 3 is now online, as is logical drive 0.



9 Repeat steps 6 to 8 for the remaining two offline drives.

Result: All the physical drives and logical drives are online.

10 Once all drives have been rebuilt, close the Workstation Array Manager window.

Result: You have completed the upgrade procedure.

Reverting to the pre-upgrade system (if the upgrade fails)

This section describes how to restore the CallPilot server to the state it was in before you began the upgrade. This procedure includes the following steps:

1. Disconnect the failed upgrade hard drives.
2. Clear the current RAID configuration.
3. Reconnect the pre-upgrade hard drives.
4. Enable the pre-upgrade hard drives.
5. Verify that the pre-upgrade hard drives are functioning properly.
6. Reconnect the failed upgrade hard drives.
7. Resynchronize the hard drives to finish restoring the pre-upgrade system.

To disconnect the failed upgrade hard drives

1 Ensure that you have powered off the CallPilot server.

2 Disconnect the failed upgrade hard drives by labeling and then disconnecting the SCSI cable for channel 0. For cabling details, see the diagram in “To disconnect the secondary hard drives” on page 180.

CAUTION

Risk of lost or corrupted data

Ensure that all hard drives are disconnected before you continue with the rest of this procedure.

To clear the current RAID configuration

1 Power up the CallPilot server.

2 While the server is restarting, the RAID controller is detected and a prompt appears to “Press Alt-R for RAID Configuration Options.” When this prompt appears, press Alt-R.

Result: The Mylex Raid EzAssist program starts.

Note: If you miss the “Press Alt-R” prompt, you can press Reset to restart the server before the system finishes booting to Windows NT. If you reach the Windows NT Operating System selection screen, you have missed the “Press Alt-R” prompt.

3 From the RAID controller selection window, press Enter to select the AcceleRAID 352 controller.

Result: The main menu appears.

4 Select Advanced Options, and then press Enter.

Result: The advanced options pop-up menu appears.

5 Select Clear Configuration, and then press Enter.

Result: A warning message appears stating that this will erase all RAID configuration information. Ignore this message for this procedure.

6 Select YES to continue.

Result: The system erases the RAID configuration.

7 Press Esc to return to the main menu.

Result: You return to the main menu.

8 Press Esc to return to the RAID controller selection window.

Result: You return to the RAID controller selection window.

9 Press Esc to exit the Mylex RAID EzAssist program.

Result: A message appears indicating that you are about to exit RAID EzAssist and asking for confirmation.

10 Select Yes, and then press Enter.

Result: A message appears indicating that you can either power off the system or select OK to reboot.

11 Power off the server.

To reconnect the pre-upgrade hard drives

1 Ensure that you have powered off the CallPilot server.

2 Reconnect the pre-upgrade hard drives for the 702t server by reconnecting the SCSI cable for channel 1.

Note: For cabling details, see the diagram in "To disconnect the secondary hard drives" on page 180.

To enable the pre-upgrade hard drives

1 Power up the CallPilot server.

2 While the server is restarting, the RAID controller is detected and a prompt appears to "Press Alt-R for RAID Configuration Options." When this prompt appears, press Alt-R.

Result: The Mylex Raid EzAssist program starts.

Note: If you miss the "Press Alt-R" prompt, you can press Reset to restart the server before the system finishes booting to Windows NT. If you reach the Windows NT Operating System selection screen, you have missed the "Press Alt-R" prompt.

3 From the RAID controller selection window, press Enter to select the AcceleRAID 352 controller.

Result: The main menu appears.

4 Select "Perform Administration on," and then press Enter.

Result: The administration pop-up menu appears.

5 Select Physical Device, and then press Enter.

Result: The Physical Drive Selection window appears. All hard drives are offline.

CAUTION

Risk of lost or corrupted data

All hard drives must be offline before you continue with the rest of this procedure.

6 In the Physical Drive Selection window, select the fourth hard drive, and then press Enter.

Result: The device pop-up menu appears.

CAUTION

Risk of data corruption

Ensure that you select a pre-upgrade drive for this step. If this is a standard configuration and you have followed the instructions in this procedure, the fourth, fifth, and sixth hard drives are the pre-upgrade drives. If this is not correct for your system, contact Nortel Networks technical support.

7 Select Advanced Options, and then press Enter.

Result: The advanced options pop-up menu appears.

8 Select Make Drive Online, and then press Enter.

Result: A message appears warning that making a drive online may cause data corruption. For this procedure, disregard this message.

9 Select Yes, and then press Enter.

Result: The system prompts you to confirm.

10 Select Yes, and then press Enter.

Result: You return to the Physical Drive Selection window. The hard drive that was selected is now set to Online.

11 Repeat steps 6 to 10 for the fifth and sixth hard drives.

Result: The pre-upgrade hard drives (fourth, fifth, and sixth) are online, and the first three hard drives are disconnected and offline.

12 Press Esc to return to the administration pop-up menu.

Result: You return to the administration pop-up menu.

13 Press Esc to return to the main menu.

Result: You return to the main menu.

14 Press Esc to return to the RAID controller selection window.

Result: You return to the RAID controller selection window.

15 Press Esc to exit the Mylex RAID EzAssist program.

Result: A message appears indicating that you are about to exit RAID EzAssist and asking for confirmation.

16 Select Yes, and then press Enter.

Result: A message appears indicating that you can either power off the system or select OK to reboot.

17 Power off the server.

To verify that the pre-upgrade hard drives are functioning properly

1 Power up the CallPilot server, and then log on to Windows NT.

2 Wait for the System Ready Indicator dialog boxes to indicate that CallPilot is ready to accept calls. This can take up to 15 minutes.

3 Test the CallPilot system. See Chapter 5, “Testing the CallPilot installation,” in Part 3 of the *CallPilot Installation and Configuration* binder.

4 Do one of the following:

- If the system is still not working properly, then there may be a RAID, hard drive, or software problem with the old data. Contact Nortel Networks technical support.

- If the system is working properly, then continue with “To reconnect the failed upgrade hard drives” below.

To reconnect the failed upgrade hard drives

1 Shut down and power off the CallPilot server.

2 Reconnect the failed upgrade hard drives by reconnecting the SCSI cable for channel 0. For cabling details, see the diagram in “To disconnect the secondary hard drives” on page 180.

To resynchronize the hard drives to finish restoring the pre-upgrade system

1 Rebuild the offline hard drives by following steps 2 to 10 in “Resynchronizing the CallPilot server hard drives” on page 184.

Result: The CallPilot server is restored to its pre-upgrade state.

2 Test the CallPilot system. See Chapter 5, “Testing the CallPilot installation,” in Part 3 of the *CallPilot Installation and Configuration* binder.

Section C: Maintaining a DAC960 RAID system

In this section

Maintaining DAC960 RAID hard drives

Introduction

RAID hard drives must be checked for errors on a weekly basis. Errors can be reviewed with the help of the DAC Admin Windows NT software utility that is installed on the server.

To review errors detected on a RAID hard drive

1 Click the Start Menu.

2 Click Run.

3 Type **dacadm.exe**.

4 Click OK.

Result: This starts the DACAdmin software utility.

5 Click the Configuration menu.

6 Choose Drive Information on the Configuration menu.

Result: A list of all hard drives connected to the RAID controller appears.

Note: Hard drives marked ONL are online and part of a RAID System pack.

7 Click on a drive to see a summary of errors.

a. If there are ten or more soft errors per day, replace the drive.

b. Hard errors should not occur during normal operation. Contact your Nortel Networks customer support representative if errors are accumulating.

c. Miscellaneous Errors are typically due to cabling or termination problems on the SCSI bus. Verify jumper settings on all SCSI devices and ensure that cabling is secure.

d. When the total number of errors reaches 127, the controller marks the drive DED. DED means offline. The drive must be replaced.

8 Repeat step 7 on all hard disk drives listed.

9 Close the configuration menu.

10 Exit from the DAC Admin software utility.

Rebuilding a DAC960 RAID hard drive

Introduction

In RAID level 1, two equal-capacity disks mirror one another. Both drives run simultaneously with one disk serving as the backup copy of the other disk. If one drive fails, the other continues to run. When the failed drive is physically replaced with a new one, the data on the operating drive of the system pack must be copied onto the new drive to rebuild it. RAID automatically performs this rebuild process when the replacement drive is accessed.

If you want to start the initiation process sooner, or monitor the rebuilding process, follow the steps in the procedure below.

ATTENTION

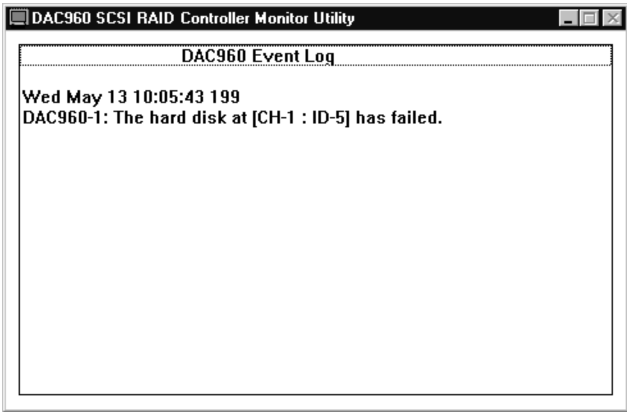
The screen captures are provided for illustration purposes only. Based on the configuration of your server, the screens may not be identical.

Before you begin

Perform this procedure in response to the system message that a hard drive has failed. The message displays information about drive location. Perform this procedure while the system is powered on.

To rebuild a hard drive in a RAID system

1 Observe the warning message given by the DAC Monitor software that indicates a hard drive failure.



2 Record the SCSI channel SCSI ID of the drive that failed from the information in the DAC Monitor window.

3 Identify which drive failed using this information and referring to "RAID system pack locations and identifications" on page 204.

4 Shut down the server, and then power down the server.

5 Remove the failed hard drive.

6 Replace with a new hard drive.

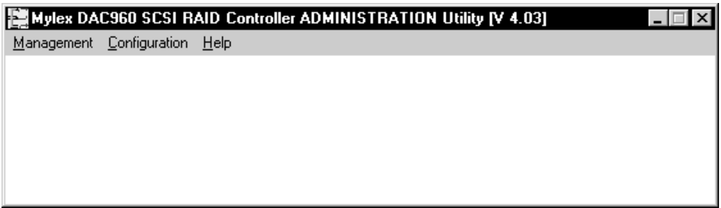
7 Power up the server.

   Result: POST messages from the RAID controller warn you that the system is operating in critical mode (that is, with some drives offline).

8 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

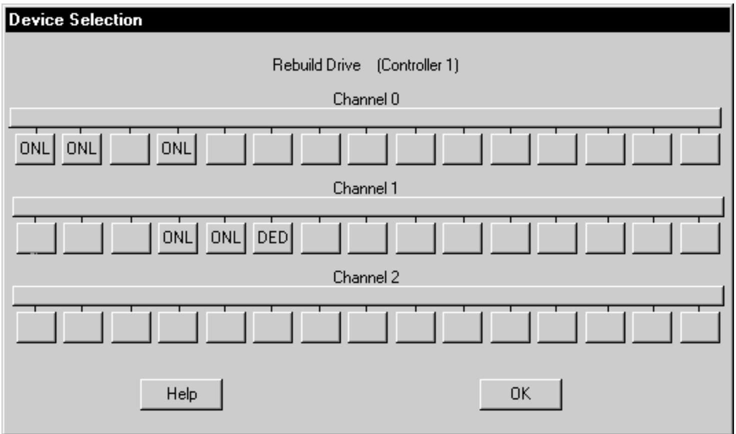
9 Run the DAC Administration utility. If there is no desktop shortcut, run the dacadm.exe program that is located in the directory C:\Winnt\System32 or D:\Winnt\System32 (the program location depends on the location of the Windows NT operating system).

Result: The DAC Administration utility window appears.



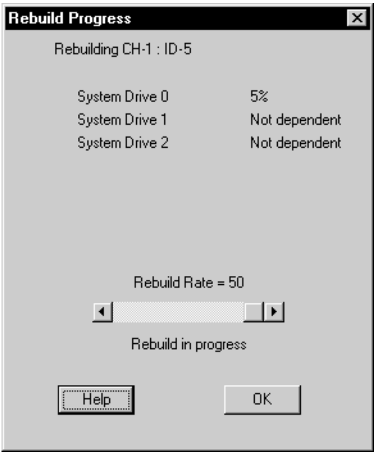
10 From the Management menu, select Rebuild Drive.

Result: The Device Selection dialog box appears.

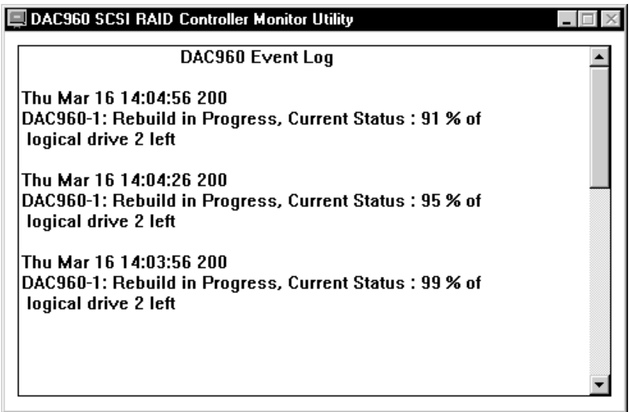


11 Start from the left side of the dialog box and click on the first dead drive (marked DED) to start rebuilding that drive.

Result: The Rebuild Progress dialog box appears.



If you are running the DAC Monitor program, the monitor window pops up and informs you of the progress of the rebuild.



When the rebuild finishes (each drive takes approximately 45 minutes), a dialog box appears to inform you that the rebuild is complete.

12 Click OK in the Rebuild Drive dialog box, and then click OK in the Rebuild Progress dialog box to return to the Device Selection dialog box.

Result: The rebuilt drive is shown as being online (ONL).

13 In the Device Selection dialog box, click OK to return to the DAC Administration utility window.

14 Close the DAC Administration utility window to exit the utility.

Configuring a DAC960 RAID system

Introduction

This section provides instructions for configuring a RAID system. This involves the following main procedures, which are provided in this section:

1. Configure the RAID system packs (create and arrange system packs, and specify system drive sizes).
2. Initialize the RAID system packs.
3. Back up the RAID configuration.

Before you begin

Ensure you review the following sections before you begin:

- “Requirements” on page 203
- “RAID system pack locations and identifications” on page 204
- “RAID system pack sizing” on page 205

Requirements

Before you configure the RAID system, ensure that the file \daccf.exe is on the CallPilot 2.0 OS Recovery or the OS Upgrade CD-ROMs in the \Drivers\Misc\RAID\DAC960\DOSCFG\DACCFG directory, and is version 4.78 or better. You have the OS Recovery CD if you purchased a new CallPilot 2.0 system. You have the OS Upgrade CD if you upgraded from CallPilot 1.07 to 2.0.

Note: If your disk is outdated, you must obtain the latest version from your Nortel Networks customer support representative.

CAUTION

Risk of loss of system functionality

You must use the DAC960 Utility provided by Nortel Networks. Other software can cause a loss of system functionality.

RAID system pack locations and identifications

The following tables display information required to identify RAID system packs in the RAID configuration procedure.

702t RAID system

Note: Both drives A-0 and A-1 provide the termination for the SCSI channels.

Hard drive bay	SCSI channel	SCSI ID	System pack	System pack label
Top slot	0	0	A	A-0
Second slot from top	0	1	B	B-0
Third slot from top	0	3	C	C-0
Fourth slot from top	1	4	A	A-1
Fifth slot from top	1	5	B	B-1
Sixth slot from top (bottom slot)	1	6	C	C-1

RAID system pack sizing

The RAID system limits the actual capacity of any system pack to the size of the smallest drive in its pack. As drives are replaced, a mirrored set may consist of two drives of different sizes, possibly from different manufacturers. To support the replacement of a failed disk drive with that of another manufacturer, an engineering restriction specifies the size of the system pack.

To continue configuring the RAID system, calculate the drive size as follows:

2 x smallest drive in the pack

For example, if System Pack A has a nominal capacity of 4 Gbytes (2 x 2 Gbytes), enter a system drive size of 4096. Since RAID Level 1 (mirroring) is used, the resulting capacity is half of what you calculated.

The following tables specify the system pack sizes to enter when you configure RAID systems. These sizes apply for currently qualified disk drives and may change in the future.

702t RAID system

Qualified disk drive make/model	Physical drive capacity	Size of RAID system pack to specify	Resulting RAID level 1 capacity
Seagate ST32155	2048 Mbytes	4096 Mbytes	2048 Mbytes
Seagate ST32272	2048 Mbytes	4096 Mbytes	2048 Mbytes
Seagate ST34371	4096 Mbytes	8192 Mbytes	4096 Mbytes
Seagate ST34573	4096 Mbytes	8192 Mbytes	4096 Mbytes
Seagate ST39173	8192 Mbytes	16384 Mbytes	8192 Mbytes
Seagate ST39175	8192 Mbytes	16384 Mbytes	8192 Mbytes

Note: The DAC Config software is generic. Ignore the trailing letters of the disk drive models.

Setting the RAID controller card BIOS options

Newer Mylex RAID cards (with version 3.5x firmware or better) have an option that must be set before configuring them. Complete the following steps to properly configure your RAID card.

1 Start up the server.

Result: When you power on the system, you see the DAC960 messages being output to the display.

2 When you see the message `Press Alt-M for BIOS options`, press the Alt and M keys simultaneously.

Result: You are presented with a DAC960 BIOS options menu.

3 Use the arrow keys to move to the option titled “2 GB Drive Geometry,” and then press Enter.

Result: The system prompts you to use 8 Gbyte drive geometry.

4 You are asked to confirm the change. Confirm, and then press Esc to escape this menu.

Result: Your system can now fully utilize hard drives up to 8 Gbytes in size.

Note: With earlier revisions of the RAID card (v2.6x and lower) , this drive geometry option is not available, and as such, free disk space may show up at the end of the first (primary) disk in the Windows NT Disk **Administrator**. This is normal and can be ignored.

To configure RAID system packs

1 Insert the CallPilot 2.0 OS Recovery or OS Upgrade CD into the CD-ROM drive, and then power up the computer.

Note: For this procedure to work, the computer BIOS must have booting from CD-ROM enabled. You may need to enter the BIOS setup to enable booting from CD-ROM.

Result: The system boots and the “MS-DOS 6.2 Start Menu” appears.

2 Use the up and down arrow keys to select “8. Other Utilities (BIOS, firmware, Etc.)...” and press Enter.

Result: The “*** Other Utilities ***” menu appears.

3 Press 3 to select “3. Mylex DAC960 RAID Card Configuration Utility.”

Result: The DAC960 Configuration Utility main menu appears.

4 Select New Configuration, and then press Enter.

Result: The New Configuration menu appears.

5 Select Define Pack, and then press Enter.

Result: The Pack Definition menu appears.

6 Select Create Pack, and then press Enter.

Result: The cursor control moves to the disk configuration layout so you can select which drives constitute the first system pack.

7 Use the tables in “RAID system pack locations and identifications” on page 204 to identify the SCSI ID and Channel Number for hard drive A-0.

Use this information to select the drive that will be A-0, and then press Enter.

Result: The device is labeled A-0 and is the first drive for System Pack A. The drive's state is changed from RDY to ONL.

8 Use the tables in "RAID system pack locations and identifications" on page 204 to identify the SCSI ID and Channel Number for hard drive A-1. Use this information to select the drive that will be A-1, and then press Enter.

Note: You may be warned that you are combining two drives of different sizes. If this happens, you must ensure that you are using CallPilot qualified hard drives, as well as the approved version of the DAC960 Configuration & Utilities disk (see "Requirements" on page 203).

Result: The device is labeled A-1 and is the second drive for System Pack A. The drive's state is changed from RDY to ONL.

9 Press Esc to close this pack.

Result: The cursor control moves to the Pack Definition menu.

10 Repeat steps 6 to 9 for System Pack B (if applicable), and then for System Pack C (if applicable).

Note: There is no need to press Esc after you finish creating the last System Pack. The last System Pack is automatically closed, and the cursor control moves to the Pack Definition menu.

11 Select Arrange Pack, and then press Enter.

12 Select a drive from System Pack A (for example, A-0), and then press Enter.

Result: The System Pack is arranged.

13 Repeat step 12 for a drive in System Packs B and C (if applicable).

Result: When all System Packs are arranged, the system returns you to the New Configuration menu.

14 Select Define System Drive, and then press Enter.

Result: The System Drive Definition menu appears.

15 Select Create System Drive, and then press Enter.

Result: The system prompts you to choose which RAID Level to use.

16 Select RAID 1, and then press Enter.

Result: The system prompts you to enter the size of the first system pack.

17 Enter the size of the system pack as specified in "RAID system pack sizing" on page 205, and then press Enter.

Result: The system prompts you to confirm that you want to create this system drive.

18 Select Yes.

Result: The system pack is created and listed with its settings.

19 Repeat steps 16 to 18 for the remaining system packs. When you finish, press Esc to exit to the Create System Drive window.

Result: The system packs are defined.

20 Press Esc until you return to the DAC960 Configuration Utility main menu.

Result: The system prompts you to save this new configuration.

21 Select Yes, and then press Enter.

Result: The configuration is saved.

To initialize the RAID system packs

The initialization of the system packs (system drives) completes the configuration of the RAID system. This takes from 1 to 5 hours, depending on the size of the hard drives.

1 From the DAC960 Configuration Utility main menu, select Initialize System Drive, and then press Enter.

Result: The Initialize System Drive menu appears.

2 Select "Select System Drive," and then press Enter.

Result: The configured system packs appear.

3 Use the arrow keys to navigate to a system drive. Press Enter to select the drive. Repeat this step for each system drive.

Result: A check mark indicates a selected drive.

4 Press Esc.

Result: The Initialize System Drive menu appears.

5 Select Start Initialize, and then press Enter.

Result: The system prompts you to confirm that you want to initialize this system drive.

6 Select Yes, and then press Enter.

Result: The system drives are initialized. This takes from 1 to 5 hours, depending on the size of the hard drives and the number of hard drives. All system drives are initialized simultaneously.

When the initialization is complete, the system prompts you to press any key to continue.

7 Press any key to continue.

Result: The configuration is saved.

8 Continue with “To back up the RAID configuration” below.

To back up the RAID configuration

1 Select Tools from the DAC960 Configuration Utility main menu, and then press Enter to display the Tools menu.

2 Select Backup/Restore conf, and then press Enter.

Result: A cautionary message appears.

3 Press any key to acknowledge the cautionary message.

Result: The system displays the Backup and Restore Configuration submenu.

4 Select Backup Configuration, and then press Enter.

Result: The system displays the Enter File Name pop-up window.

5 Type **a:** and the name of the backup file (for example, a:\raidback), and then press Enter.

CAUTION

Risk of data loss

You must save this file to drive A on a floppy disk; otherwise, you may not be able to restore the RAID configuration if the RAID card fails.

Ensure the floppy disk is stored in a safe and accessible location.

Result: The system displays a warning, `Existing file, if any will be overwritten`.

6 Select Yes.

Result: The RAID configuration is backed up on the floppy disk. A message appears when the backup has been successfully completed.

7 Press Esc to return to the Main Menu.

8 Press Esc to exit the DAC960 Configuration Utility.

Result: The system prompts you to confirm that you want to exit.

9 Select Yes, and then press Enter.

Splitting DAC960 RAID drives and upgrading software

Introduction

Use this procedure on a CallPilot server that is configured with a DAC960 RAID controller. This procedure breaks the mirroring of the hard drives before an upgrade so that if the upgrade fails, you can quickly return the server to the state it was in before you started the upgrade.

There are three stages to this procedure:

1. Preparing the CallPilot server for the upgrade
2. Performing the CallPilot server software upgrade
3. Resynchronizing the CallPilot server hard drives

ATTENTION The screen captures are provided for illustration purposes only. Based on the configuration of your server, the screens may not be identical.

Requirements

- As a precaution, ensure that you have a full system tape backup available.
- You need to have either the CallPilot 2.0 OS Recovery CD or the CallPilot 2.0 OS Upgrade CD
- You need a blank 3.5 inch, 1.44 Mbytes formatted floppy disk to use to back up the RAID configuration.
- The server must have a standard hard drive configuration as documented in “RAID system pack locations and identifications” on page 215.

Tips

- Perform a RAID status check and consistency check (see “To check the status of the RAID system” on page 216, and “To check the consistency of the system drives” on page 219) at least one day before the planned upgrade date. If you find errors, this early check gives you time to contact Nortel Networks technical support (if necessary), and resolve the errors before you begin the upgrade.

  When you do proceed with the RAID splitting and upgrade procedure, ensure that you once again perform the RAID status check and consistency check to ensure that no new errors have been introduced.
- Ignore the “CallPilot is booting” dialog box that appears after you restart the server, and log on to Windows NT. You do not need to wait for CallPilot to boot while you are performing maintenance tasks. Also, disregard any dialog boxes that appear if CallPilot does not boot successfully while you are performing maintenance tasks.
- Use the arrow keys to navigate in the DAC960 Configuration Utility window. You can use the mouse to select items in the DAC Administration Utility window.
- If you are not sure which RAID controller is installed, restart the server and observe which RAID controller is detected in the POST messages.

Timing and checklist

The following table provides general time estimates for completing the steps in this procedure:

Task	Approximate time to complete	Check
Check the status of the RAID system.	5 minutes	❐
Check the consistency of the system drives.	30 minutes per drive pair **Note:** You can check only one drive pair at a time.	❐
Perform the pre-upgrade steps.	Varies depending on your system	❐
Back up the existing RAID configuration.	10 minutes	❐
Mark the hard drives dead.	10 minutes	❐
Disconnect the dead hard drives.	10 minutes	❐
Perform the server software upgrade.	Varies depending on your system	❐
Reconnect the dead hard drives.	10 minutes	❐
Resynchronize (rebuild) the dead hard drives.	up to 45 minutes per drive pair **Note:** You can resynchronize only one drive pair at a time.	❐

RAID system pack locations and identifications

The following tables display information required to identify RAID system packs.

702t RAID system

The table below indicates the proper hard drive bay, channel, and ID configurations.

Note: SCSI ID 2 is reserved for the SCSI tape drive.

Hard drive bay	SCSI channel	SCSI ID	System pack label
Top slot	0	0	A-0
Second slot from top	0	1	B-0
Third slot from top	0	3	C-0
Fourth slot from top	1	4	A-1
Fifth slot from top	1	5	B-1
Sixth slot from top (bottom slot)	1	6	C-1

Preparing the CallPilot server for the upgrade

This stage includes the following steps:

1. Check the status of the RAID system.
2. Check the consistency of the system drives.
3. Perform the pre-upgrade steps.
4. Back up the existing RAID configuration.
5. Mark the hard drives dead.

6. Disconnect the dead hard drives.

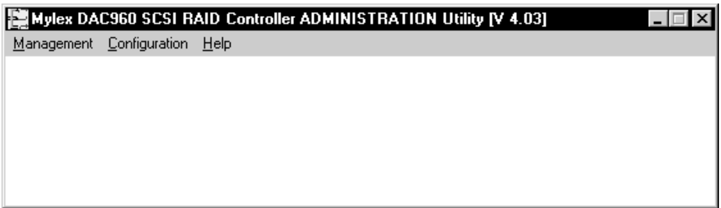
To check the status of the RAID system

All the drives configured in the RAID controller must be operating and online. If any of the system drives are in the critical state, the RAID splitting procedure will not work and data loss can occur if it is used. To ensure that the RAID controller and all hard drives are fully operational, check their status using the DAC Administration Utility, as follows:

1 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

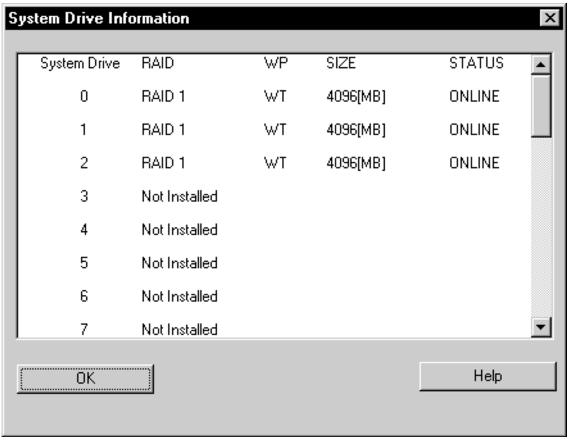
2 Run the DAC Administration Utility. If there is no desktop shortcut, run the dacadm.exe program that is located in the directory C:\Winnt\System32 or D:\Winnt\System32 (the program location depends on the location of the Windows NT operating system).

Result: The DAC Administration Utility window appears.



3 From the DAC Administration Utility window, select Configuration → System Drive Information.

Result: The System Drive Information dialog box appears.



4 Check that all system drives are in the online state.

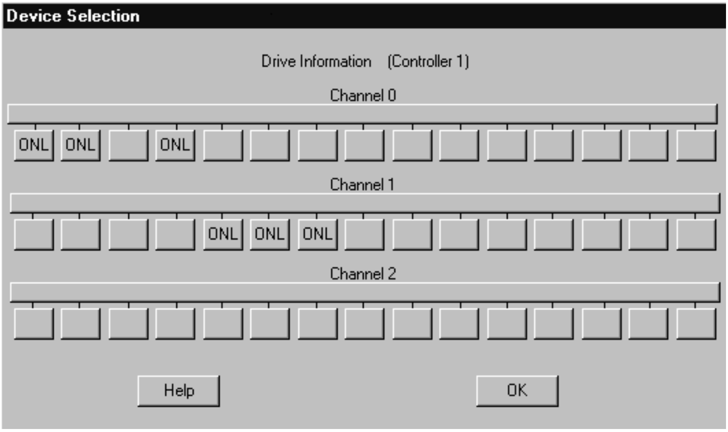
If any system drives are not online, go to the procedure in "Resynchronizing the CallPilot server hard drives" on page 229, and follow steps 6 to 8 to rebuild any hard drives that are not online. Then return to this procedure.

Note: If a hard drive does not successfully go to the online state, verify the hard drive jumper settings and cabling connections, and then try again to rebuild the hard drive. If you cannot make the hard drive go to the online state, replace the faulty hard drive (see "Replacing or installing hard drives" on page 131 for hard drive configuration instructions and, if necessary, instructions on how to replace the hard drive).

5 Click OK to exit from the System Drive Information dialog box.

6 From the DAC Administration Utility window, select Configuration → Drive Information.

Result: The Device Selection dialog box appears.



7 Verify that all the hard drives are labeled ONL (online state). If any hard drives are in any other state, you must return them to the online state before you continue with this procedure.

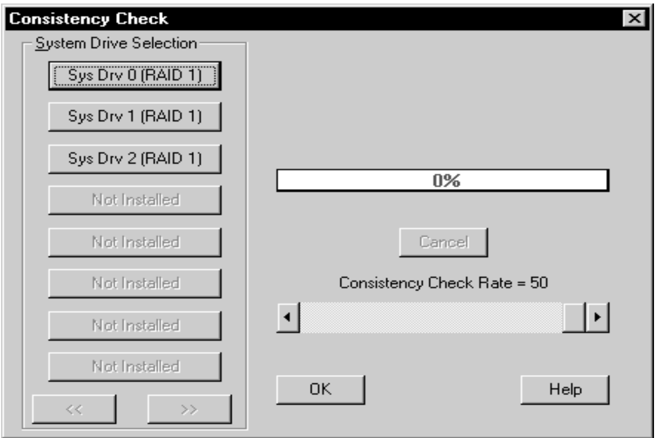
8 Click OK to return to the DAC Administration Utility window.

To check the consistency of the system drives

You must verify that each pair of drives is correctly synchronized before continuing with the RAID splitting procedure. To verify that the drives are correctly synchronized, use the DAC Administration Utility to run a consistency check on each system drive that is configured, as follows:

1 In the DAC Administration Utility window, select Management→ Consistency Check.

Result: The Consistency Check dialog box appears. Each system drive (Sys Drv) represents a mirrored pair of hard drives.



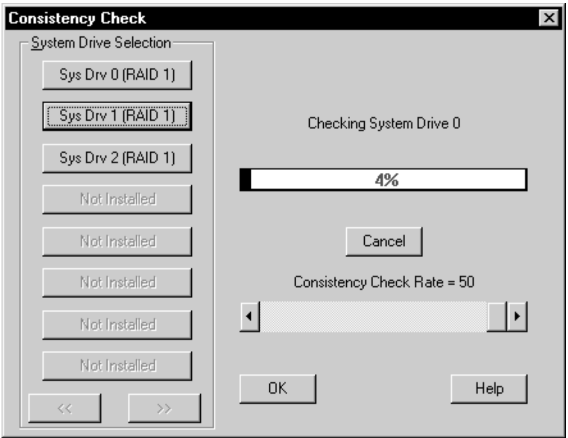
2 Click Sys Drv 0 to initiate a consistency check on the system drive.

Result: The system prompts you to select what should be done if inconsistent data is found on the system drive.

3 Click No.

Note: You must not restore the consistency at this time. By selecting No, you only receive a warning if inconsistent data is found on the system drive.

Result: The consistency check starts, and the progress bar begins to advance.



Note: Messages are also posted to the DACMon application to update the status of the consistency check. If necessary, move the DACMon application window to the side so that the Consistency Check dialog box is visible.

Do not click or select the Consistency Check Rate bar or any other items on the dialog box until the consistency check is completed.

When the consistency check is completed, a dialog box appears with the results of the consistency check. The results should show that the consistency check is OK.

Note: If the consistency check is not OK, stop this procedure and contact Nortel Networks technical support to correct the problem.

4 Click OK.

Result: You return to the Consistency Check dialog box.

5 Repeat steps 2 to 4 for all the system drives on the server.

6 After all hard drives have been checked, click OK in the Consistency Check dialog box to return to the DAC Administration Utility window. Then exit the DAC Administration Utility.

To complete the upgrade readiness checklist

Follow the instructions in Part 4, Chapter 1 of *Upgrading or Installing CallPilot Server Software* in the *CallPilot Installation and Configuration* binder.

Note: Do not upgrade the server software at this time.

To back up the existing RAID configuration

It is important to back up the current configuration to a floppy disk before you make any changes to the configuration of the RAID controller. This enables you to recover the configuration of the RAID controller if any mistakes are made while executing the procedure.

1 Insert the CallPilot 2.0 OS Recovery or OS Upgrade CD into the CD-ROM drive and then power up the computer.

   Note: In order for this procedure to work the computer BIOS must have booting from CD-ROM enabled. You may need to enter the BIOS setup to enable booting from CD-ROM.

   Result: The system boots and the "MS-DOS 6.2 Start Menu" is displayed.

2 Use the up and down arrow keys to select "8. Other Utilities (BIOS, firmware, Etc.)..." and press Enter.

   Result: The "*** Other Utilities ***" menu is displayed.

3 Press 3 to select "3. Mylex DAC960 RAID Card Configuration Utility".

   Result: The DAC960 Configuration Utility main menu appears.

4 Insert the floppy disk that you intend to use for the RAID configuration backup.

5 From the DAC960 Configuration Utility main menu, select Tools and then press Enter to display the Tools menu.

   Note: Use the arrow keys to select menu items in the DAC960 Configuration Utility.

6 Select Backup/Restore conf, and then press Enter.

Result: A cautionary message appears.

7 Press any key to acknowledge the cautionary message.

Result: The system displays the Backup and Restore Configuration submenu.

8 Select Backup Configuration, and then press Enter.

Result: The system displays the Enter File Name pop-up window.

9 Type **a:** and the name of the backup file (for example, a:\raidback), and then press Enter.

CAUTION

Risk of data loss

You must save this file to drive A on a floppy disk; otherwise, you may not be able to restore the RAID configuration if the RAID card fails.

Ensure the floppy disk is stored in a safe and accessible location.

Result: The system displays a warning: `Existing file, if any will be overwritten`.

10 Select Yes.

Result: The RAID configuration is backed up on the floppy disk. A message appears when the backup has been successfully completed.

11 Press any key to continue.

12 Remove the RAID configuration backup floppy disk.

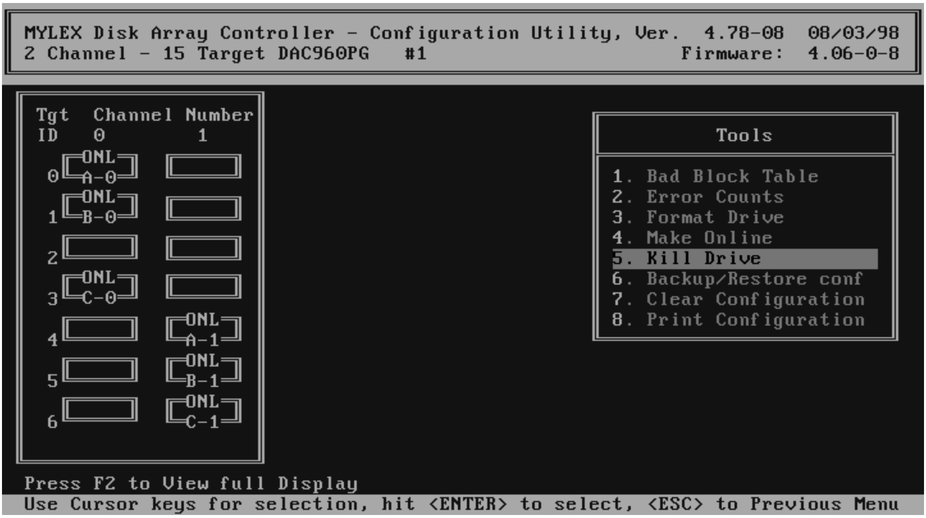
13 Press Esc to return to the Main Menu.

To mark the hard drives dead

Each system drive is made up of a pair of drives that are mirror images of each other. To break the mirroring so that one of the drives of each pair is no longer updated, you must mark one drive dead in each pair.

1 From the DAC960 Configuration Utility main menu, select Tools and then press Enter.

Result: The Tools menu appears.



2 From the Tools menu, select 5. Kill Drive, and then press Enter.

Result: The cursor is active on the left side of the screen so that you can select which drive to kill.

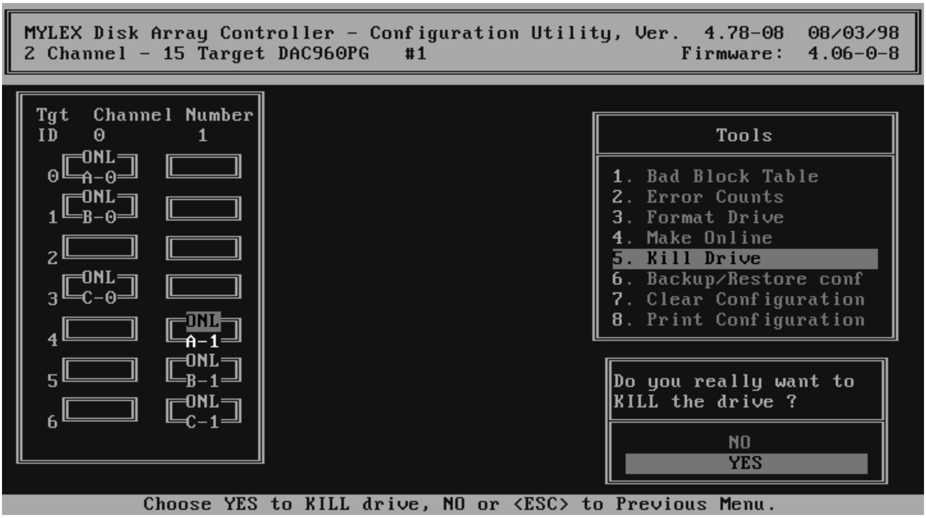
The left side of the screen displays the six physical hard drives in the server. All of the drives should be marked as Online (ONL). The drives form three packs: A, B, and C. Each pack consists of two drives: A-0 and A-1, B-0 and B-1, C-0 and C-1.

3 Select drive A-1, and then press Enter.

Result: A message appears at the bottom of the screen warning you that if this is not a redundant drive, data will be lost. For this procedure, disregard this message. The data on the drive is not destroyed, and you can recover the pre-upgrade system from this drive, if necessary.

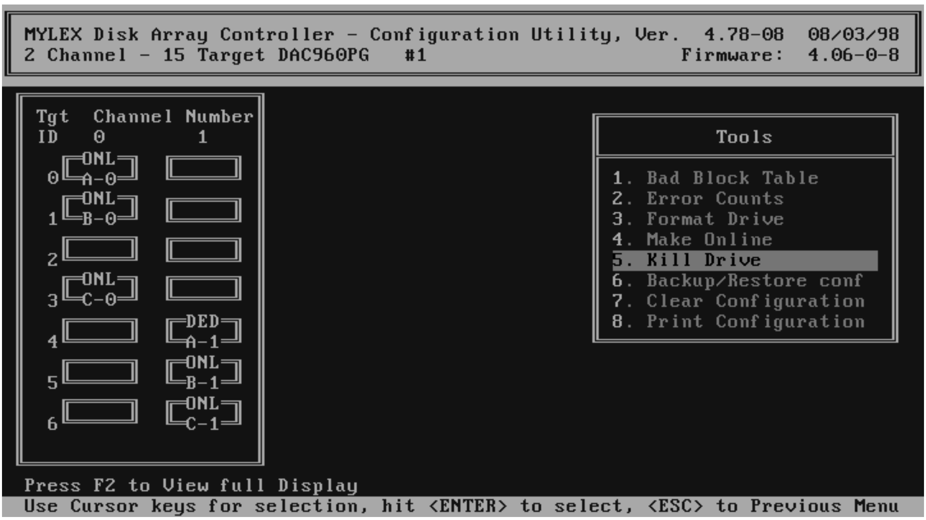
4 Press Enter to continue with the process of marking the drive dead.

Result: A confirmation prompt appears in the bottom right corner.



5 Select YES, and then press Enter to mark the drive dead.

Result: The screen is updated to record that the drive has been marked dead (DED).



6 Repeat steps 3 to 5 for drives B-1 and C-1.

7 Press Esc to return to the main menu.

8 Press Esc to exit the DAC960 Configuration Utility.

Result: A prompt appears in the bottom right corner of the screen asking you to confirm that you want to exit.

9 Disregard the reminder to save the configuration. Select YES, and then press Enter to exit from the RAID configuration software without saving the configuration.

10 Remove the CallPilot 2.0 OS Recovery CD-ROM or the CallPilot 2.0 OS Upgrade CD-ROM.

To disconnect the dead hard drives

Physically disconnect the hard drives marked DED to ensure that these hard drives are not updated during the upgrade and are preserved as a backup.

1 Shut down and power off the CallPilot server.

2 Disconnect the hard drives marked DED by disconnecting the SCSI cable for channel 1 from the RAID card. Be careful not to damage the RAID card. See the cabling diagram on page 227 for the 702t server:

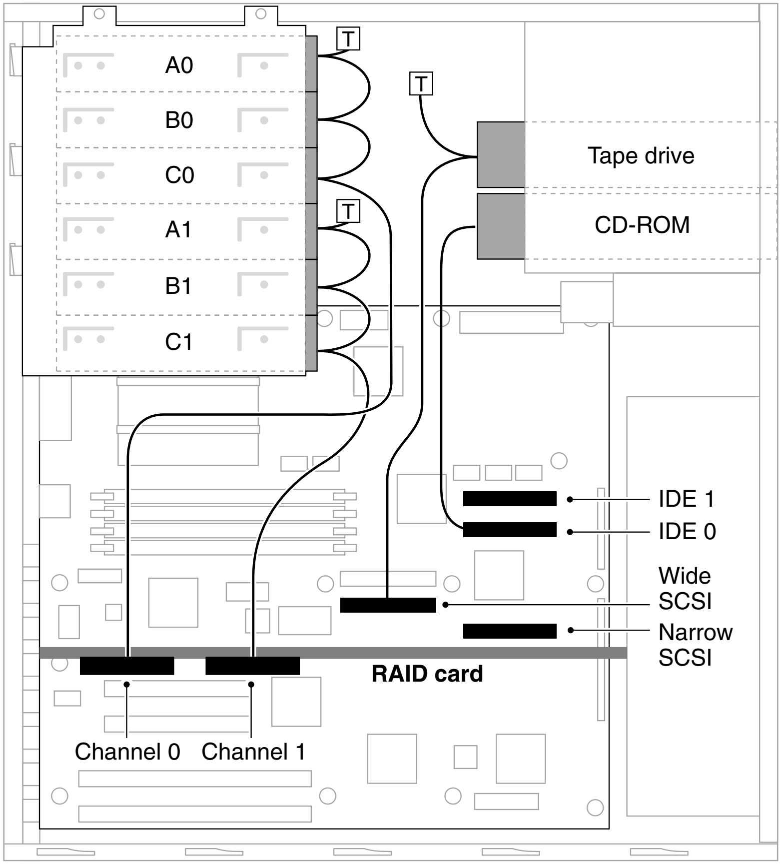
CAUTION

Risk of equipment damage and data loss

Ensure you first power off the server and use an ESD wrist strap.

If you decide to remove the drives, be sure to label them with their SCSI channel and ID, and store them in antistatic bags and suitable foam material.

If you remove the drives and then label drives incorrectly (and, therefore, are not able to reinstall the drives in the same locations), you may not be able to recover your system using these drives.



Note 1: A "T" indicates a wide active terminator.
Note 2: The CD-ROM is connected to IDE 0.

G100812

3 Power up the server.

Note: During the bootup, the system reports that three hard drives are dead, and, as a result, three system drives are running in critical state. This is normal. It indicates that the disks are no longer being mirrored. If you run the DACMon Utility, it also reports that three hard drives are dead and that they are not being replaced by a hot standby.

Performing the CallPilot server software upgrade

You can now perform the upgrade operation, and only one disk of each pair will be updated. This allows you to maintain a copy of the system in its previous state in case there are problems during the upgrade process.

To perform the CallPilot server software upgrade

1 Upgrade the CallPilot server software. Follow the instructions in Part 4 of the *CallPilot Installation and Configuration* binder.

2 After the upgrade is completed, ensure that you test the upgrade before you resynchronize the hard drives. See “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

3 Once the upgrade is completed and tested, there are two options available:

- If the upgrade is successful, continue with “Resynchronizing the CallPilot server hard drives” on page 229 to keep the upgraded software.
- If the upgrade fails, follow the steps in “Reverting to the pre-upgrade system (if the upgrade fails)” on page 231.

CAUTION

Risk of data loss

You can run CallPilot for any period of time before making this decision. However, during this time, there is no disk redundancy. Therefore, if a hard drive fails during this time, any new data is lost.

Resynchronizing the CallPilot server hard drives

After you upgrade the server software and test the upgrade, follow the steps below to resynchronize the hard drives.

To resynchronize the hard drives

1 Shut down and power off the CallPilot server.

2 Reconnect the hard drives by reconnecting the SCSI cable for channel 1. For cabling details, see the diagram in “To disconnect the dead hard drives” on page 226.

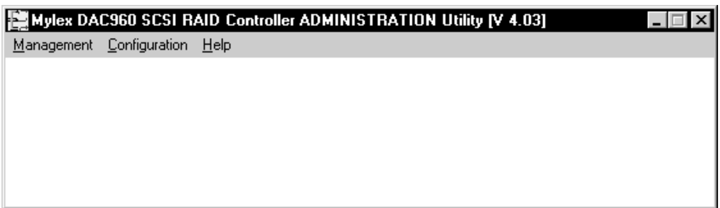
3 Power up the server.

Result: POST messages from the RAID controller warn you that the system is operating in critical mode (that is, with some drives offline).

4 Log on to the CallPilot server as **Administrator** (or any other user ID that has administrative privileges).

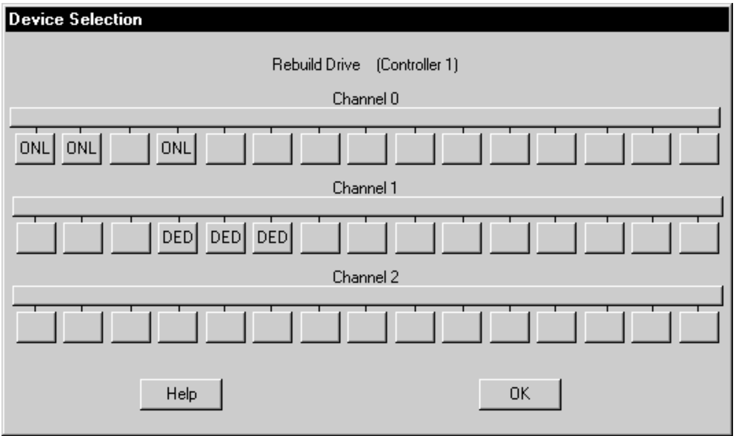
5 Run the DAC Administration Utility. If there is no desktop shortcut, run the dacadm.exe program that is located in the directory C:\Winnt\System32 or D:\Winnt\System32 (the program location depends on the location of the Windows NT operating system).

Result: The DAC Administration Utility window appears.



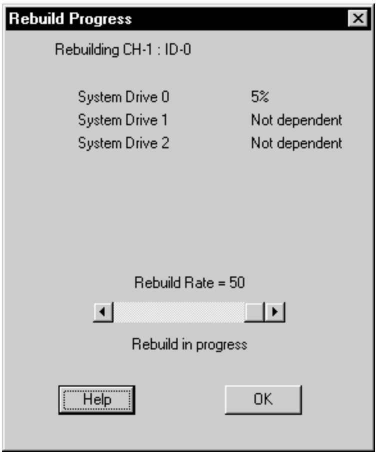
6 From the Management menu, select Rebuild Drive.

Result: The Device Selection dialog box appears.

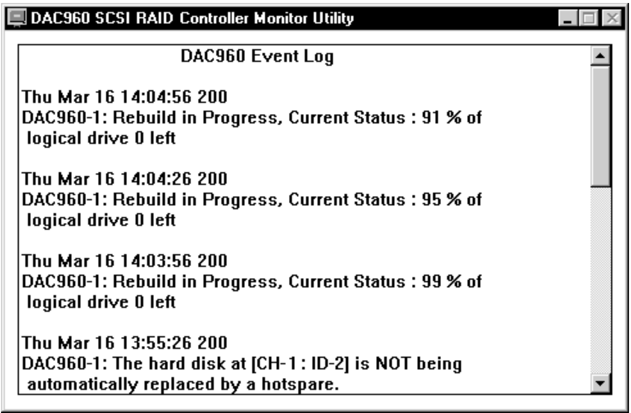


7 Start from the left side of the dialog box and click the first dead drive (marked DED) to start rebuilding that drive.

Result: The Rebuild Progress dialog box appears.



If you are running the DAC Monitor program, the monitor window pops up and informs you of the progress of the rebuild.



When the rebuild finishes (each drive takes up to 45 minutes), a dialog box appears to inform you that the rebuild is complete.

8 Click OK in the Rebuild Drive dialog box, and then click OK in the Rebuild Progress dialog box to return to the Device Selection dialog box.

Result: The rebuilt drive is shown as being online (ONL).

9 Repeat steps 7 and 8 for the remaining two dead drives.

10 Once all hard drives have been rebuilt, click OK in the Device Selection dialog box to return to the DAC Administration Utility window. Then exit the DAC Administration Utility.

Result: You have completed the upgrade procedure.

Reverting to the pre-upgrade system (if the upgrade fails)

This section describes how to restore the CallPilot server to the state it was in before you began the upgrade. This procedure includes the following steps:

1. Mark the failed upgrade hard drives dead.
2. Reconnect the pre-upgrade hard drives.

3. Enable the pre-upgrade hard drives and restore the pre-upgrade software.

To mark the failed upgrade hard drives dead

1 Insert the CallPilot 2.0 OS Recovery or OS Upgrade CD into the CD-ROM drive, and then power up the computer.

Note: For this procedure to work, the computer BIOS must have booting from CD-ROM enabled. You may need to enter the BIOS setup to enable booting from CD-ROM.

Result: The system boots, and the "MS-DOS 6.2 Start Menu" appears.

2 Use the up and down arrow keys to select “8. Other Utilities (BIOS, firmware, Etc.)...” and press Enter.

Result: The “*** Other Utilities ***” menu appears.

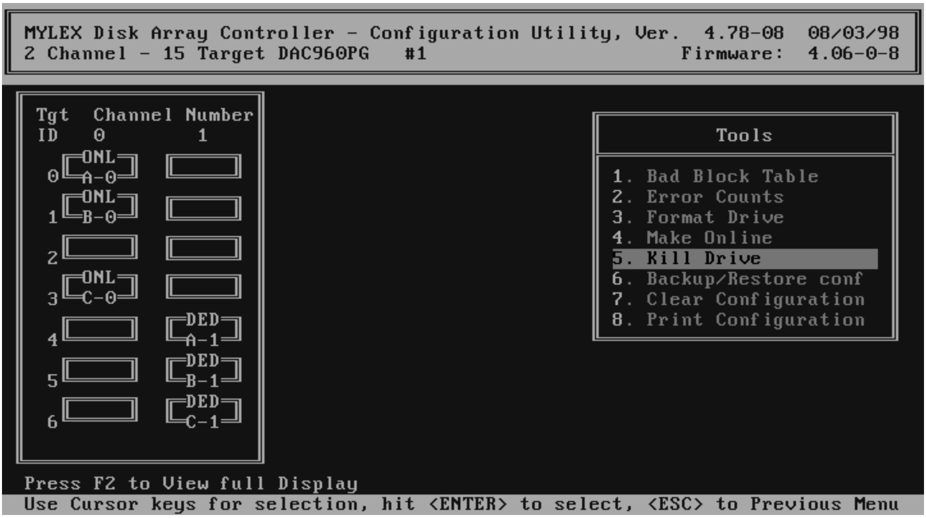
3 Press 3 to select "3. Mylex DAC960 RAID Card Configuration Utility."

Result: The DAC960 Configuration Utility main menu appears.

4 From the main menu, select Tools, and then press Enter.

Result: The Tools menu appears.

The left side of the screen displays the six physical hard drives in the server. The drives form three packs: A, B, and C. Each pack consists of two drives: A-0 and A-1, B-0 and B-1, C-0 and C-1. Drives A-0, B-0, and C-0 should be ONL. Drives A-1, B-1, and C-1 should be DED.



5 From the Tools menu, select 5. Kill Drive, and then press Enter.

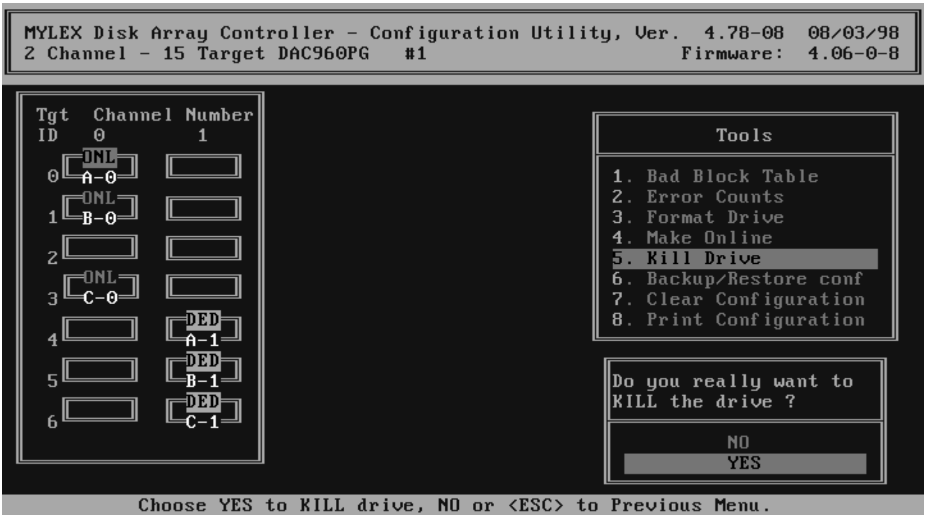
Result: The cursor is active on the left side of the screen so that you can select which drive to kill.

6 Select drive A-0, and then press Enter.

Result: A message appears at the bottom of the screen warning you that if this is not a redundant drive, data will be lost. For this procedure, disregard this message.

7 Press Enter to continue with the process of marking the drive dead.

Result: A confirmation prompt appears in the bottom right corner of the screen.

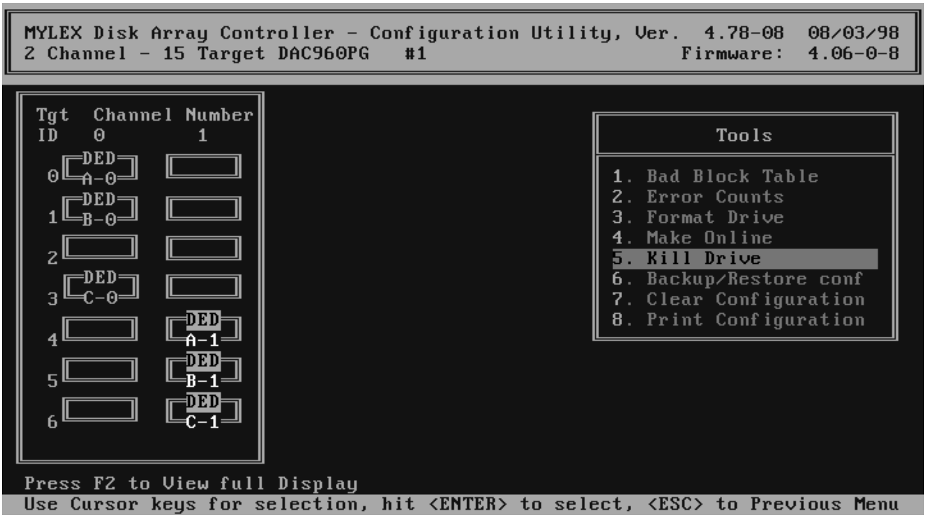


8 Select YES, and then press Enter to mark the drive dead.

Result: The screen is updated to record that the drive has been marked dead (DED).

9 Repeat steps 6 to 8 for drives B-0 and C-0.

Result: All hard drives are marked dead (DED).



10 Press Esc until you exit the utility.

Note: Leave the CallPilot 2.0 OS Recovery CD-ROM or the CallPilot 2.0 OS Upgrade CD-ROM in the CD-ROM drive.

To reconnect the pre-upgrade hard drives

1 Shut down and power off the CallPilot server.

2 Reconnect the pre-upgrade hard drives:

- Reconnect the SCSI cable for channel 1. For cabling details, see the diagram in “To disconnect the dead hard drives” on page 226.

To enable the pre-upgrade hard drives and restore the pre-upgrade software

CAUTION

Risk of lost or corrupted data

All hard drives must be dead (DED) before you begin this procedure. If you are not sure if all the hard drives are dead, see “To mark the failed upgrade hard drives dead” on page 232.

Note: Because all the hard drives are marked DED, there is a five minute timeout of the system while the drives are scanned.

1 Insert the CallPilot 2.0 OS Recovery or OS Upgrade CD into the CD-ROM drive, and then power up the computer.

   Note: For this procedure to work, the computer BIOS must have booting from CD-ROM enabled. You may need to enter the BIOS setup to enable booting from CD-ROM.

   Result: The system boots, and the "MS-DOS 6.2 Start Menu" appears.

2 Use the up and down arrow keys to select “8. Other Utilities (BIOS, firmware, Etc.)...” and press Enter.

   Result: The “*** Other Utilities ***” menu appears.

3 Press 3 to select "3. Mylex DAC960 RAID Card Configuration Utility."

   Result: The DAC960 Configuration Utility main menu appears.

4 From the DAC960 Configuration Utility main menu, select Tools, and then press Enter.

   Result: The Tools menu appears.

5 From the Tools menu, select 4. Make Online, and then press Enter.

   Result: The cursor is active on the left side of the screen so that you can select which drive to make online.

6 Select drive A-1, and then press Enter.

Result: A warning message appears at the bottom of the screen indicating that this may cause unpredictable results. Disregard this warning for this procedure.

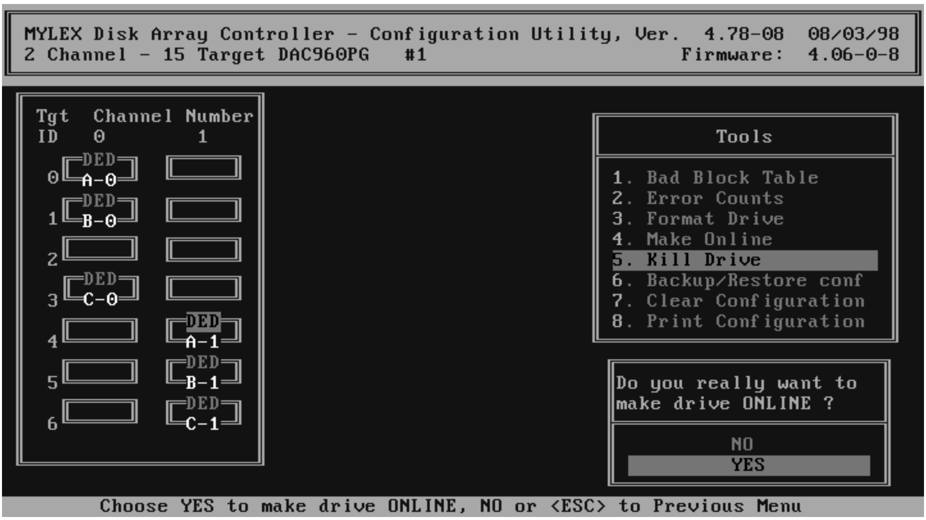
CAUTION

Risk of data corruption

Ensure that you select a pre-upgrade drive for this step. If this is a standard configuration and you have followed the instructions in this procedure, the fourth, fifth, and sixth hard drives are the pre-upgrade drives. If this is not correct for your system, contact Nortel Networks technical support.

7 Press Enter to continue.

Result: A confirmation prompt appears in the bottom right corner of the screen.

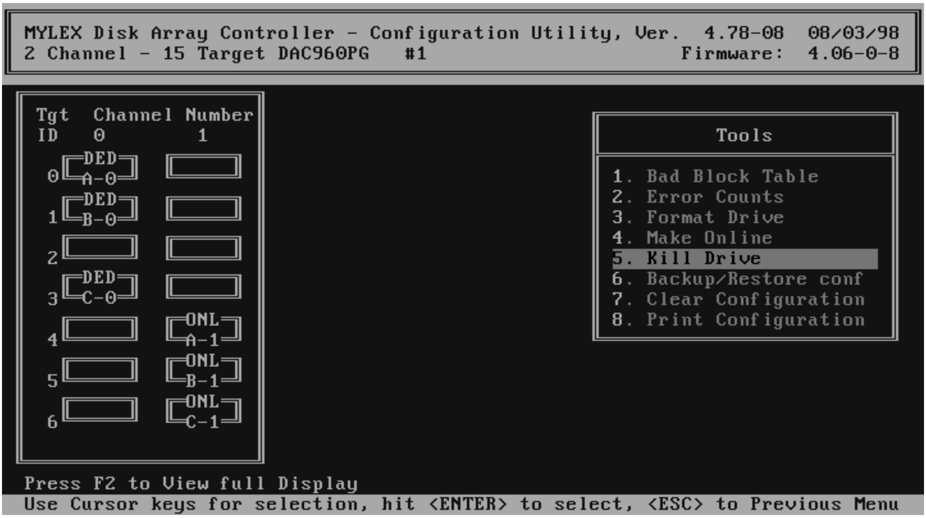


8 Select YES, and then press Enter to bring the drive online.

Result: The left portion of the screen is updated to show that drive A-1 is now online (ONL).

9 Repeat steps 6 to 8 for drives B-1 and C-1.

10 Before continuing, verify that drives A-0, B-0, and C-0 are dead (DED), and drives A-1, B1, and C-1 are online (ONL), as in the following example:



11 Press Esc to return to the main menu.

12 Press Esc again to exit the utility.

Result: A prompt appears in the bottom right corner of the screen asking you to confirm that you want to exit.

13 Disregard the reminder to save the configuration. Select YES, and then press Enter to exit from the RAID configuration software without saving the configuration.

14 Remove the CallPilot 2.0 OS Recovery CD-ROM or the CallPilot 2.0 OS Upgrade CD-ROM.

15 Restart the CallPilot server.

16 Rebuild the DED hard drives by following steps 4 to 10 on page 229.

Result: These steps resynchronize the dead drives with the online pre-upgrade drives. The CallPilot server is restored to its pre-upgrade state.

17 Test the CallPilot system. See the chapter “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

Chapter 10

Replacing or adding voice processing boards

In this chapter

DSP numbering and location

Introduction

DSPs are the voice processing components of the MPC-8 card and the MPB16-4 board. The DSPs are numbered to distinguish each DSP in CallPilot maintenance programs such as the Maintenance Admin applet in CallPilot Manager.

Each MPC-8 card is referred to as a DSP. The MPB16-4 boards also have built-in or embedded DSPs. Each DSP supports up to eight multimedia channels.

MPB16-4 DSP numbering and location

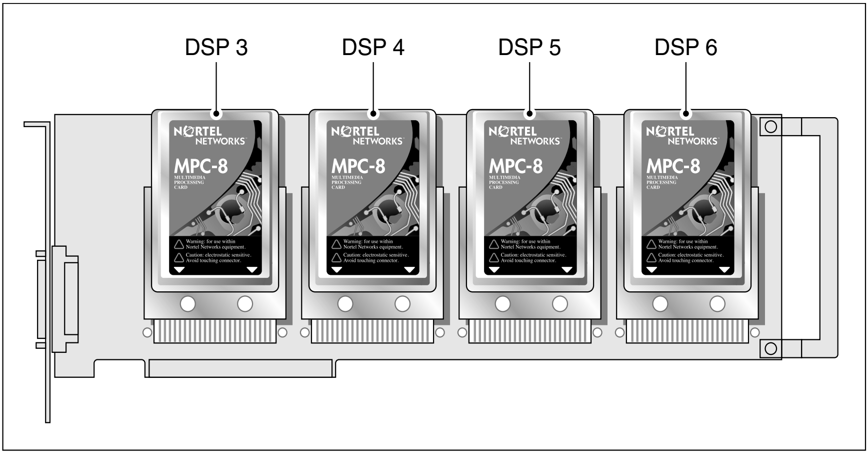
MPB16-4 boards have two embedded DSPs and can support up to four optional MPC-8 (DSP) cards. The DSP numbering starts with the embedded DSPs and then continues with the MPC-8 cards going from left to right.

ATTENTION

Since CallPilot 1.07, the CallPilot server is shipped with the MPB16-4 board fully loaded (all four optional MPC-8 cards installed). The number of multimedia channels actually available for use is controlled by the keycode.

The pictures on the following page illustrate the DSP numbering on the first two MPC16-4 boards.

First MPB16-4



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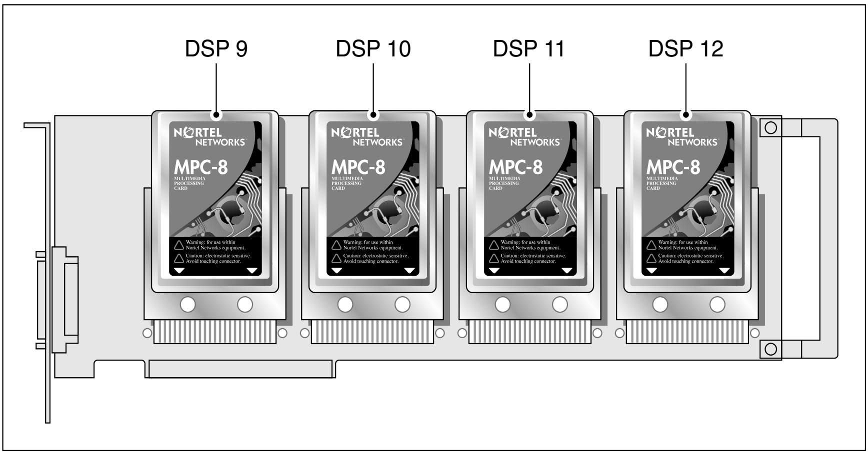
Second MPB16-4



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SCbus cabling

Introduction

The SCbus cable supports the voice bus for CallPilot servers that use MPB16-4 boards. It is connected to the MPB16-4 boards in the CallPilot server.

Supported SCbus cable

A 2-drop SCbus cable (NTRH2011) is provided. The number of connectors (two) corresponds to the maximum number of MPB16-4 boards supported on this server.

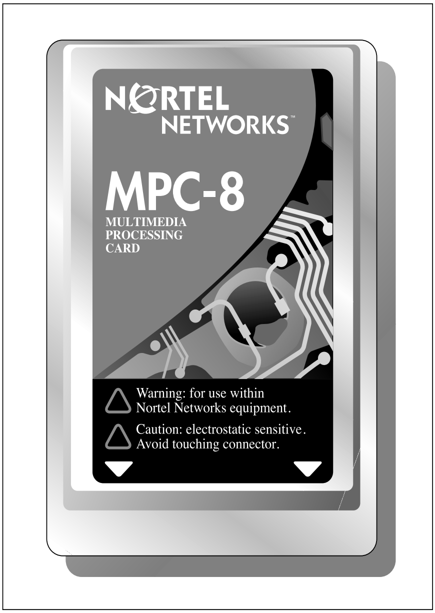
Replacing or adding MPC-8 cards

Introduction

This section describes how to replace or install an MPC-8 card. For help with identifying DSPs, see “DSP numbering and location” on page 242.

MPC-8 card (NTRH01AA)

The MPC-8 card is a credit-card-sized PC card that plugs into an MPB16-4 board. Below is a picture of an MPC-8 card.



G101540

Before you begin

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 card or board on an antistatic surface until you are ready to install it.

1. Courtesy stop all CallPilot channels.
2. Power down the server and all peripheral devices.
3. Disconnect the power cables from the server and from all peripheral devices.
4. Disconnect the peripheral devices.
5. Remove the server cover.

   For instructions on removing the server cover, see “Removing the side cover” on page 117.

To replace or add an MPC-8 card

DANGER

Risk of electrical shock

Ensure the server is powered down and the AC power cords are disconnected, as described in “Before you begin” on page 246.

Note: You have the option of installing the MPC-8 cards into an MPB16-4 board while the board is already installed in the server. However, the board must be secured to the server by its retaining screw for stability. If you cannot easily access the MPC-8 bay, you can remove the MPB16-4 board, and then install the MPC-8 cards into the board outside of the server.

1 If you are replacing a faulty MPC-8 card, remove it from the MPB16-4 board.

2 Slide the new MPC-8 card with its label side up into the first available bay on the MPB16-4 board. Use firm pressure but do not force the card in (the pins may bend).

   Note: See “DSP numbering and location” on page 242 for the order of MPC-8 cards installed in the MPB16-4 board.

   Note: If the card is placed upside down or label side down, it will not slide completely into the bay. Do not force the card in. If you cannot install the card, contact Nortel Networks for a replacement card.

3 Replace the server cover.

4 Reconnect the peripheral devices. If you need additional instructions, refer to Part 2 of the *CallPilot Installation and Configuration* binder.

5 Reconnect the power cables to the server and to the peripheral devices.

6 Restart the server, and then log on to Windows NT.

7 Run the Configuration Wizard to detect the new hardware. If you have increased the channel capacity or changed the number of different

multimedia channels, add the new DNs or update the media allocation as required, or both.

Result: The MPC-8 card installation procedure is completed.

8 Test the multimedia channels to ensure the new MPC-8 card is functioning properly.

Refer to “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

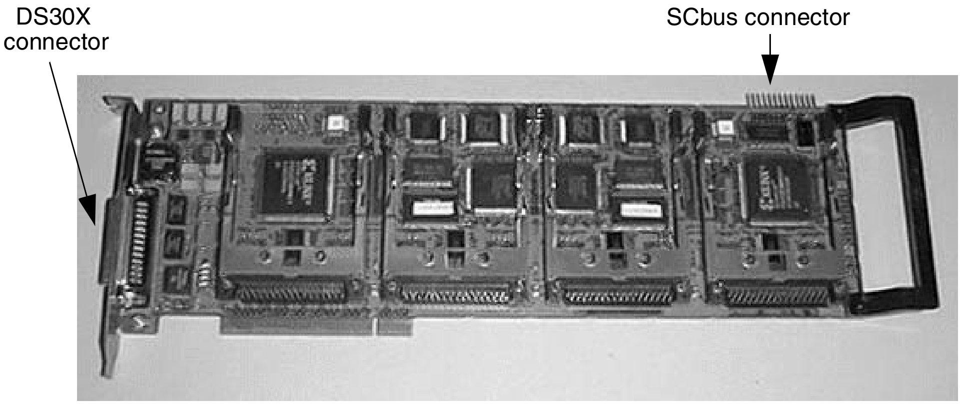
Replacing or adding MPB16-4 boards

Introduction

This section describes how to replace or add MPB16-4 boards.

MPB16-4 (NTRH20BA)

The following picture shows an MPB16-4 board with no optional MPC-8 cards installed.



Before you begin

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 card or board on an antistatic surface until you are ready to install it.

1 Courtesy stop all CallPilot channels.

2 Power down the server and all peripheral devices.

3 Disconnect the power cables from the server and from all peripheral devices.

4 Disconnect the peripheral devices.

5 Remove the server cover.

For instructions on removing the server cover, see “Removing the side cover” on page 117.

To replace an MPB16-4 board

DANGER

Risk of electrical shock

Ensure the server is powered down and the AC power cords are disconnected, as described above in “Before you begin.”

1 Unpack the new MPB16-4 board.

2 Disconnect the SCbus cable from the faulty MPB16-4 board.

Note: If there is only one MPB16-4, there is no SCbus cable installed.

3 Disconnect the DS30X cable from the faceplate of the faulty MPB16-4 board.

4 Remove the faulty MPB16-4 board from its slot, and save the retaining screw.

5 Remove any optional MPC-8 cards from the faulty MPB16-4 board, and install the cards in the new MPB16-4 board.

Note: If some MPC-8 cards were identified as faulty, ensure that these are replaced with new MPC-8 cards in this step.

6 Press the new MPB16-4 board firmly into its slot.

Note: Ensure that you carefully slide the MPB16-4 board past the protective foil strips, as they are easily damaged.

7 Secure the board using the retaining screw that you removed earlier.

8 Reconnect the SCbus cable to the new MPB16-4 board.

Note: If there is only one MPB16-4, the SCbus cable is not used.

9 Reconnect the DS30X cable to the faceplate of the new MPB16-4 board.

10 Replace the server cover.

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

11 Replace the front bezel and lock it.

12 Reconnect the peripheral devices. If you need additional instructions, refer to Part 2 of the *CallPilot Installation and Configuration* binder.

13 Reconnect the power cables to the server and to the peripheral devices.

14 Restart the server, and then log on to Windows NT.

15 Run the Configuration Wizard to detect the new hardware.

Result: The MPB16-4 board replacement procedure is completed.

16 Test the multimedia channels to ensure the new MPB16-4 board is functioning properly.

Refer to “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

To install an additional MPB16-4 board

DANGER

Risk of electrical shock

Ensure the server is powered down and the AC power cords are disconnected, as described in "Before you begin" on page 250.

To install an additional MPB16-4 board in a server that already has at least one MPB16-4 board, follow these steps:

1. Unpack the new MPB16-4 board.
2. Install any MPC-8 cards that have been ordered for the new MPB16-4 board.
3. Identify the slot where the new MPB16-4 board will be installed. For slot assignment information, see "Slot assignments" on page 290.
4. Remove the slot cover where the new board will be installed.

   Save the retaining screw. You will reuse it to secure the new board.
5. Press the new MPB16-4 board firmly into its slot.

   Note: Ensure that you carefully slide the MPB16-4 board past the protective foil strips, as they are easily damaged.
6. Secure the board using the retaining screw you removed earlier.
7. Connect the SCbus cable to the two MPB16-4 boards.
8. Replace the server cover.

   Note: Be careful not to pinch any cabling when sliding the server cover back on.
9. Replace the front bezel and lock it.
10. If necessary, reconfigure the DS30X cabling to support the new capacity. Refer to Part 3 of the *CallPilot Installation and Configuration* binder for details.

11 Reconnect the peripheral devices. If you need additional instructions, refer to Part 2 of the *CallPilot Installation and Configuration* binder.

12 Reconnect the power cables to the server and to the peripheral devices.

13 Restart the server, and then log on to Windows NT.

14 Run the Configuration Wizard to detect the new hardware.

Note: If you have increased the channel capacity or changed the number of different multimedia channels, add the new DNs or update the media allocation as required, or both.

Result: The MPB16-4 board installation is complete.

15 Test the multimedia channels to ensure the new MPB16-4 board is functioning properly.

Refer to “Testing the CallPilot installation” in Part 3 of the *CallPilot Installation and Configuration* binder.

Chapter 11

Replacing network cards

In this chapter

Maintaining the onboard network card

Onboard network card

If the onboard network card fails, it cannot be replaced by an add-in network card in the expansion slots. Contact Nortel Networks technical support for assistance.

Replacing the CLAN card

Introduction

The CLAN card is an expansion card installed in a PCI slot. A CLAN network is required to support Unified Messaging applications.

To replace the CLAN card

1 Power down the server.

2 Unplug the AC power cord.

3 Remove the chassis cover.

4 To make access to the internal components easier, turn the server over on its side.

5 Locate the CLAN Ethernet card to be removed, and unplug its network cabling.

6 Remove the screw that fastens the card in the chassis.

7 Gently pull the card out (use a slight rocking motion).

8 Remove the new Ethernet card from its protective packaging.

Note: Place the old Ethernet card into the protective packaging.

9 Line up the new Ethernet card with the slot (PCI or ISA, as appropriate).

Note: Make sure the end-plate tab is lined up with the opening in the chassis.

10 Press the card into the slot.

CAUTION

Risk of equipment damage

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

11 Secure the card to the server chassis with the fastening screw.

12 Stand the server up and replace the chassis covers.

13 Plug in the AC power cord.

14 Power up the server.

15 Remove the old network card driver if appropriate.

16 Install the network adapter software.

17 Optimize the binding order.

18 Restart the server.

19 Test the CLAN card by confirming that you can connect to the CallPilot server over the CLAN.

Chapter 12

Replacing DIMMs and the CPU

In this chapter

Replacing baseboard DIMMs

Introduction

The baseboard supports either fast page mode (FPM) dynamic RAM (DRAMs) or extended data out (EDO) 3.3 V 60 ns. DRAM Dual Inline Memory Modules (DIMMs):

- from 8 Mbytes to 512 Mbytes of memory, using up to four single-banked DIMMs
- from 16 Mbytes to 1 Gbyte of memory, using up to four double-banked DIMMs

DIMM sizes and compatibility

Contact your Nortel Networks sales representative or customer support representative for a list of approved, Nortel Networks-qualified DIMMs for the platform you are using.

Before you begin

Before you remove baseboard DIMMs, power down the server and remove the side panel.

To remove baseboard DIMMs

CAUTION

Risk of equipment damage

Use extreme care when removing a DIMM. Too much pressure can damage the socket slot. Apply only enough pressure on the plastic ejector levers to release the DIMM.

1 Gently push the plastic ejector levers out and down to eject a DIMM from its socket.

2 Hold the DIMM only by its edges; be careful not to touch its components or gold-edge connectors. Carefully lift it away from the socket, and store it in an antistatic package.

3 Repeat to remove other DIMMs as necessary.

To install baseboard DIMMs

1 Hold the DIMM only by its edges when you remove it from its antistatic package.

2 Orient the DIMM so that the two notches in the bottom edge of the DIMM align with the keyed socket.

CAUTION

Risk of equipment damage and data corruption

Use extreme care when installing a DIMM. Too much pressure can damage the socket. DIMMs are keyed and can be inserted in only one way.

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

Replacing the CPU

Introduction

The CPU is an Intel Pentium II processor running at up to 450 MHz. The baseboard has two single-edge connectors (SEC) for two Intel Pentium II processors. You can upgrade the CPU in the future.

For dual CPU servers

Each release of a processor model is accompanied by a stepping number (or version number).

For 702t servers that are to run with dual processors, the second processor must be within one release (either plus or minus) of the stepping of the installed CPU.

For example, if the installed server is stepping 3, the second CPU must be a stepping 2, 3, or 4 only.

To remove the existing CPU

CAUTION

Risk of equipment damage

Take precautions to protect computer boards. Electrostatic discharge (ESD) can render boards damaged or unusable. Wear an ESD wrist strap.

1 Power down the server and remove the side cover.

DANGER

Risk of personal injury

If the system has been running, any installed processor and heat sink on the processor board(s) is hot. To avoid a burn, be careful when removing or installing baseboard components that are located near processors.

2 Pinch the latches at either side of the existing CPU, and press in until they snap into the closed (unlocked) position.

3 Pull the CPU straight out.

To install a CPU

1 Pinch the latches at either side of the existing CPU, and press in until they snap into the closed (unlocked) position.

2 Pull the processor straight out.

3 Remove the new CPU from its protective package.

4 Pull the latches gently out to the open (locked) position.

5 Align the CPU with the SEC on the baseboard.

6 Press the CPU firmly into place until you hear the snap that indicates the processor is in place. The latches automatically click open to hold the CPU locked in place.

Chapter 13

SSU and BIOS

In this chapter

Overview

Introduction

BIOS defines the compatibility of your PC with expansion hardware. Each BIOS has a corresponding SSU release. The proper SSU floppy disk is identified by the Intel software version number.

All systems configured by Nortel Networks manufacturing are shipped with at least the minimum vintage BIOS and corresponding SSU. However, new BIOS may be issued to fix discovered bugs or to support new hardware standards and options.

Minimum vintage

If the SSU/BIOS firmware does not meet minimum vintage requirements, it must be updated.

To determine BIOS vintage

1 Power on the server.

2 Read the BIOS version on the display.

BIOS and SSU releases

The following are tested and supported releases of BIOS and SSU for the server:

Server	Intel SSU/ Release	Intel BIOS Release	When to use
702t	3.0	12.0	No upgrade required if already at this release.

Backing up the BIOS and SSU upgrade disks

Introduction

Since the SSU software holds server configuration for individual systems, make a backup copy of the BIOS and SSU upgrade software.

Before you begin

Before you can back up the BIOS/SSU upgrade, you must have the BIOS and SSU upgrade software on a floppy disk.

You also need two blank floppy disks for the backup copies.

To back up the BIOS and SSU

1. Write-protect the BIOS upgrade floppy disk.
2. Insert the BIOS upgrade floppy disk into drive A.
3. Type **diskcopy a: b: *N***, and then press Enter.
4. When prompted to insert the destination disk, insert a blank floppy disk, and then press Enter.

   Note: If prompted to insert the source disk, insert the original upgrade disk.
5. When prompted, `Copy another disk (Y/N)?`, type **N**.
6. Remove the disk from the disk drive.
7. Label the backup copy with the information on the original disk.
8. Repeat the procedure for the SSU upgrade.

Recovering the BIOS

Flash memory description

Flash memory contains a protected area that, in most cases, cannot be corrupted. Code in this area starts the server from drive A when the BIOS is corrupted. BIOS corruption is generally detected by the POST diagnostics at system startup.

BIOS recovery description

The recovery procedure automatically loads flash memory from the BIOS files on the BIOS recovery disk.

To recover the BIOS

1 Insert the BIOS recovery disk in drive A.

Note: The disk is shipped with the server. Call your Nortel Networks customer support representative if you need a disk.

2 Power up the server.

3 Type option **1**, and then press Enter.

Result: The BIOS is updated, and the server restarts.

4 Power down the server, and remove the power cord from the system for 60 seconds.

5 Remove the server side cover.

6 Move the CMOS Clear jumper (J3J2) to the Erase position (from pins 1-2 to pins 2-3).

Result: This replaces the contents of the NVRAM with the manufacturing default settings.

7 Restart the system.

Result: The system displays a message that the CMOS area has been cleared when the operation is complete.

8 Power down the server.

9 Move the CMOS Clear jumper to the Protect position (from pins 2-3 to pins 1-2).

Result: This protects the contents of the NVRAM.

10 Replace the side cover.

11 Power up the server.

12 Reconfigure the system with SSU, as outlined in “Configuring your system using SSU” on page 277.

Crisis recovery

To recover from a corrupted CMOS

If the system behaves abnormally (for example, it does not start up or it freezes during the startup process), the CMOS may be corrupted. To correct this, follow these steps:

1 Power down the server.

2 Remove the server cover and access the motherboard.

3 Move the J3J2 jumper to pins 2 and 3 (by default, the jumper is set to pins 1 and 2).

4 Power up the server.

Result: A message appears stating that the CMOS has been cleared.

5 Power down the server.

6 Reset the J3J2 jumper to pins 1 and 2.

7 Replace the server cover.

8 Power up the server.

9 Perform the CMOS setup. Refer to “Upgrading and configuring the BIOS” on page 272 for more information.

To recover from a corrupted BIOS

In situations of a corrupt BIOS or an unsuccessful BIOS update, the 702t server can boot in recovery mode. To boot in recovery mode, follow these steps:

1 Power down the server.

2 Remove the server cover and access the motherboard.

3 Move the boot option jumper J3J2 (pins 9-11) into the recovery boot position (pins 10-11). The jumper connects pins 9 and 10 by default (normal BIOS).

   Note: Recovery mode requires a memory DIMM module in the first socket.

4 Insert the Nortel Networks 702t BIOS disk in drive A.

5 Power up the server.

   Note: During this process, video is not initialized.

   Result: A high-pitched beep tone announces the start of the recovery process. The entire process takes from 2 to 4 minutes.

   A successful update ends with two high-pitched beep tones.

   A failed update is indicated by a long series of short beep tones. This indicates that some of the BIOS files may be corrupted.

6 After a successful update, power down the server.

7 Move the recovery jumper back to pins 9 and 10.

8 Power up the server.

9 Verify that the BIOS version matches the version that was updated.

   Note: The CMOS is not cleared when the system BIOS is updated.

Upgrading and configuring the BIOS

BIOS update availability

Obtain BIOS upgrades from your Nortel Networks distributor.

BIOS upgrade floppy disk

You must perform the Intel server BIOS upgrade using a bootable floppy disk. This disk must load the MS-DOS extended memory driver, himem.sys.

Before you begin

The process of upgrading the BIOS includes four steps:

1. Make the BIOS disk bootable.
2. Update flash memory for BIOS upgrades.
3. Clear the NVRAM.
4. Run SSU to reconfigure the system and memory.

To make the BIOS upgrade disk bootable

1 From the C:\> prompt, type **sys a:**, and then press Enter.

2 Type **copy C:\dos\himem.sys a:**, and then press Enter.

3 Create a config.sys file on the floppy disk to load himem.sys. The config.sys file must contain the following line:
device=\himem.sys

To upgrade the BIOS

1 Power down the server.

2 Insert the update disk in drive A.

3 Power up the server.

Result: The upgrade process starts automatically following the system startup.

4 Follow the instructions, depending on which version of the BIOS is currently installed on the target machine.

5 Power down the server after the update process is complete.

6 Remove the BIOS update disk from the drive.

7 Continue with the next procedure to clear the NVRAM and update the flash memory.

To clear the NVRAM

1 Power down the server.

2 Move the BIOS recovery jumper from pins 1–2 to pins 2–3.

3 Insert the BIOS recovery disk in drive A.

4 Power up the server.

Result: When the recovery process has run its course, the system displays a message to state that the NVRAM has cleared.

5 Power down the server.

6 Remove the disk from drive A.

7 Set the BIOS recovery jumper from pins 2–3 back to pins 1–2.

8 Replace the side cover.

9 Power up the server.

10 Reconfigure the system with SSU.

11 Start up from the hard disk.

12 Continue with the next procedure to configure the BIOS.

To configure the BIOS

1 Power up the server.

Result: The system displays server startup messages.

2 Press F2 to display the Setup screen.

3 Press BIOS Default (F9) to load the default BIOS settings.

4 Ensure the BIOS settings are set to the following values:

	Setting	Set To
Main	CPU Speed Setting	350 Mhz or 450 Mhz depending on CPU speed
Advanced	Use Multiprocessor Spec	1.4
Server	PCI IRQs to I/O APIC Mapping	Disabled

5 Select Save and Exit to save the correct BIOS settings and return to the Main Menu.

SSU overview

Introduction

The System Setup Utility (SSU) configures computer systems with ISA and PCI cards.

Purpose of the SSU

The SSU automates the configuration process for systems, maintains system parameters, and stores those parameters in non-volatile RAM. If the SSU is used to assign all system resources, there should be no conflicts between adapter cards.

When to use the SSU

You must execute the SSU every time ISA or PCI adapter cards are physically added, removed, or moved in your system. Use SSU when you

- initially set up and configure the system
- encounter a configuration error message at powerup
- add or remove system hardware

The SSU operates on information provided by the configuration files, configuration registers on PCI cards, and NVRAM in the system memory.

Record the SSU settings

Record the SSU settings in the system log. If the default values ever need to be restored, you must run the SSU to reconfigure the system.

SSU upgrade floppy disk

The SSU must be run from a bootable floppy disk. This disk must load the MS-DOS extended memory driver, as well as a mouse driver.

To make the SSU disk bootable

1. From the C:\> prompt, type **sys a:** and then press Enter.
2. Type **copy C:\dos\himem.sys a:** and then press Enter.
3. Create a config.sys file on the floppy disk to load himem.sys. The config.sys file must contain the following line:

   device=\himem.sys

Configuring your system using SSU

Introduction

To run the SSU, restart your system using the Nortel Networks 702t Meridian Application Server System Setup Utility disks (Version 3.0). There are three disks.

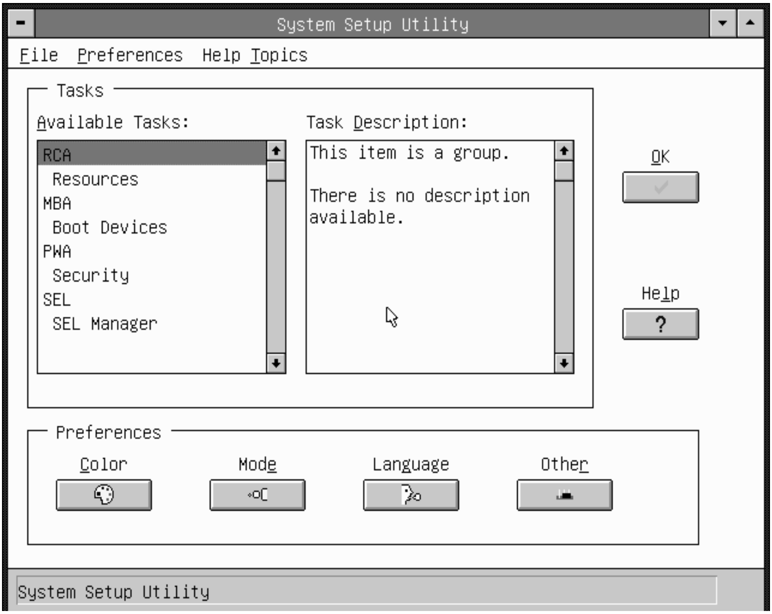
To configure the system using SSU

1. Reboot the CallPilot server from the SSU Version 3 floppy disk.
2. Insert the floppy disks as requested.
3. The system detects the mouse and keyboard, and then boots into the SSU banner window. Confirm that this is Version 3.x or greater.

   Note: The following descriptions assume that you have a mouse attached. If not, you can use the Tab or arrow keys to maneuver around the SSU windows.

4 Press Enter.

Result: The System Setup Utility window appears.

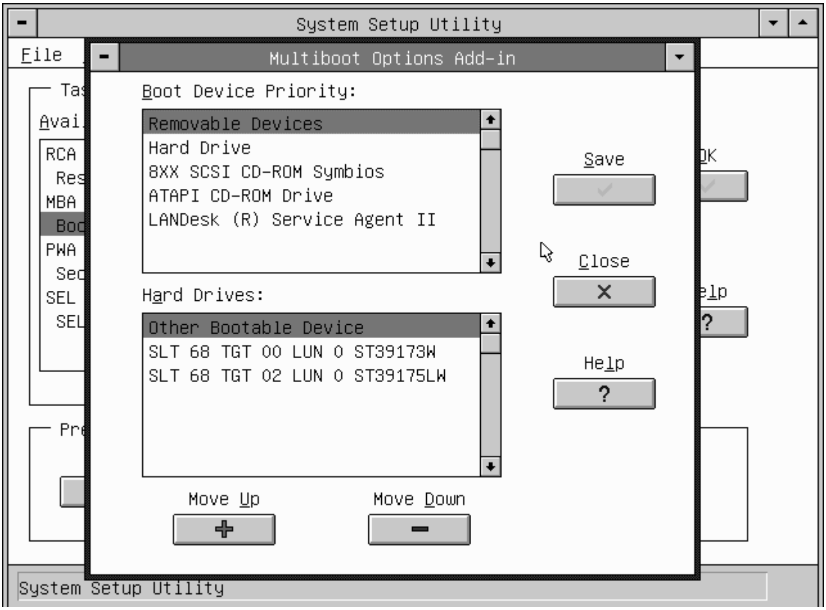


Note: You may have a later version of the SSU. The menus can differ slightly, but the steps are the same.

The box on the left describes the Available Tasks, and the box on the right provides help on the highlighted task. Indented items, under the Available Tasks heading, are configurable. The headings are not.

5 Double-click the Boot Device Task.

Result: A Multiboot Options Add-in menu that defines the boot devices and order appears.



6 You can move the Boot Device Priority item up and down by using the Move Up (+) or Move Down (-) buttons. Arrange the Boot Device Priority in the following order: Removable Devices, Hard Drive, 8XX SCSI CD-ROM Symbios, ATAPI CD-ROM, and LANDesk.

Note: Do not make any adjustments in the Hard Drives window.

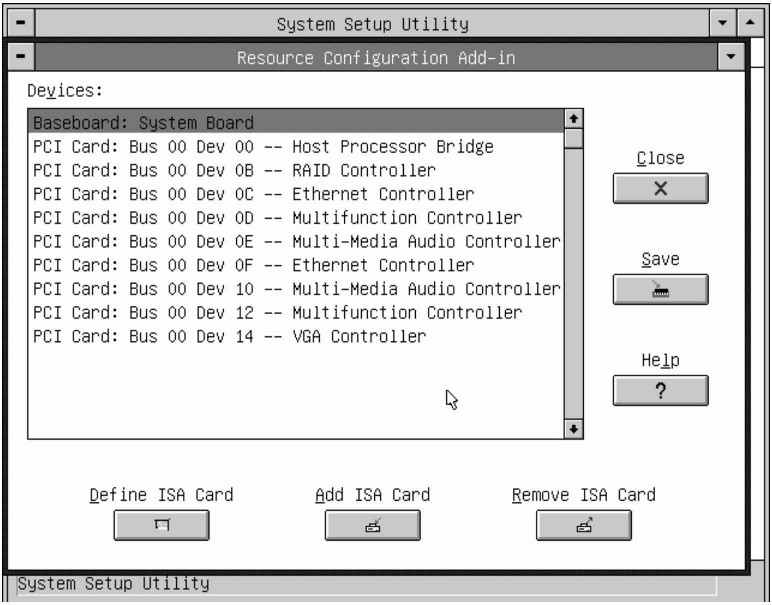
7 Save and Close the window.

Note: Do not select the Security window and enter any passwords.You may lock yourself out of the server.

8 To add a Resource, double-click the Resource under the Available Tasks window.

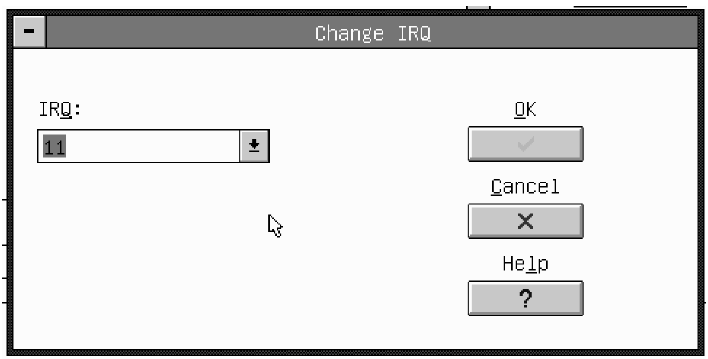
9 A window pops up asking to restore the configuration from a backup file. Click No.

Result: The Resource Configuration Add-in window appears.



10 To change the IRQ of a PCI card, double-click that card (for example, the network card). A submenu appears. Double-click within the IRQ window within the PCI board window.

Result: The Change IRQ window appears.



11 Set the IRQ using the pull-down menu, and then press + Add/Change.

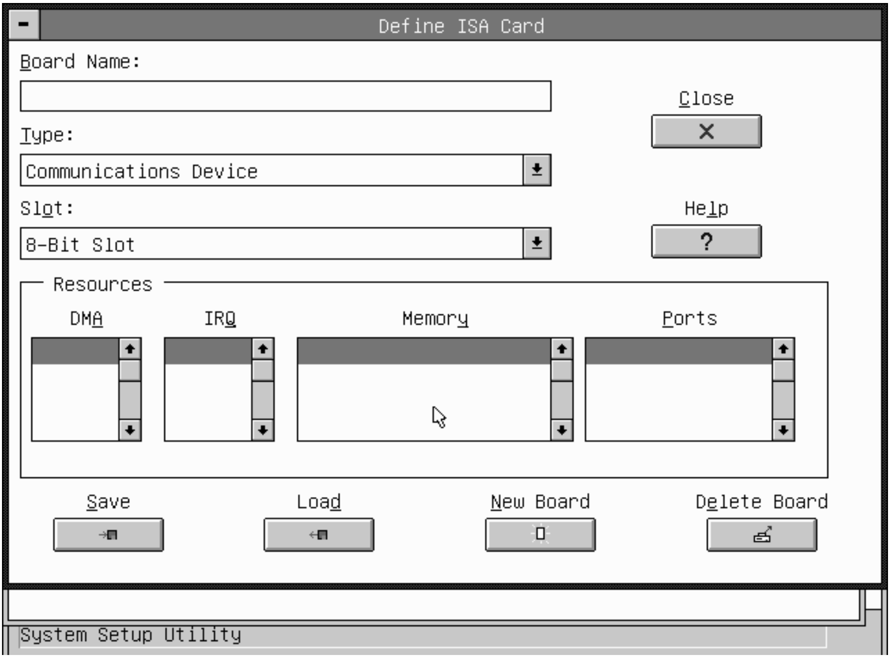
Result: You have completed changing the IRQ.

12 Click OK.

Result: The resource window appears.

13 To add an ISA card (such as a DSE card), click Define ISA card.

Result: The Define ISA Card window appears.



14 Enter a description in the Board Name box:

- For T1 board, enter **T1 ISA Board**.
- For DSE board, enter **VB2000 Board**.

15 Select Connections Device from the Type pull down menu.

16 Double-click the IRQ sub-window.

17 Change the IRQ to the appropriate IRQ for the connections device.

The following table shows the Resource List with the IRQs:

IRQ	Resource	
0	Baseboard: System Board	Timer
1	Baseboard: System Board	Keyboard (may be listed as Chipset)
2	Unused	
3	Baseboard: System Board	Serial Port 2 (COM 2)
4	Baseboard: System Board	Serial Port 1 (COM 1)
5	PCI Card: Bus 00 Dev 0C	Reserved for connections cards when they are used. Otherwise, this is available for Ethernet Controller (CLAN).
6	Baseboard: System Board	On-Board Floppy Controller
7	Baseboard: System Board	Parallel Port (LPT1)
8	Baseboard: System Board	RTC (Real Time Clock)
9	Baseboard: System Board	ACPI SCI Interrupt
10	PCI Card: Bus 00 Dev 0F	Ethernet Controller (ELAN)
11	PCI Card: Bus 00 Dev 0E	Available for application
12	Baseboard: System Board	PS/2 mouse
13	Baseboard: System Board	Math coprocessor
14	Baseboard: System Board	On-Board IDE Controller
15	PCI Card: Bus 00 Dev 0D	Multifunction Controller - SCSI Controller

IRQ	Resource	
15	PCI Card: Bus 00 Dev 0C	Multifunction Controller - SCSI Controller
15	PCI Card: Bus 00 Dev 12	Multifunction Controller - USB Controller

18 Click Add/Change in the IRQ sub-window.

19 Click Close in the define ISA card window.

20 To end, click Close, or continue to add cards as needed.

Appendix A

702t reference material

In this chapter

Server features

Introduction

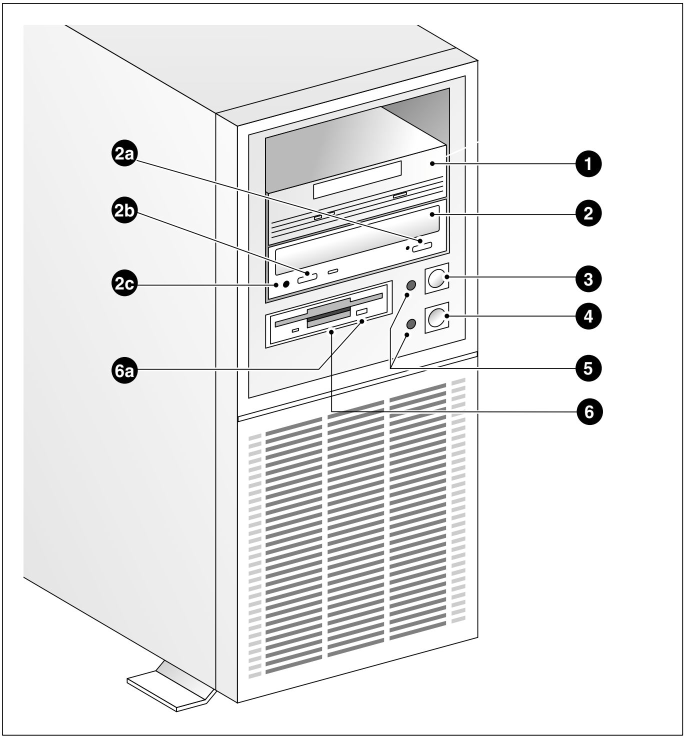
This section provides a general overview of the 702t server.

Server dimensions

Height	49 cm (19.3 in.)
Width	21 cm (8.3 in.) (chassis), 25 cm (10 in.) with feet
Depth (distance from front to back)	45 cm (17.75 in.)
Clearance front	21.59 cm (8.5 in.)
Clearance rear	12.70 cm (5 in.)
Clearance side	7.62 cm (3 in.). You require additional side clearance for service.
Weight of fully loaded system with 6 SCSI drives, 6 Populated boards, and CD-ROM, Floppy, and Tape drives	22.05 kg (48.50 lbs)

Front panel features

This diagram shows the front panel features of the 702t server.



This table describes the details shown in the preceding diagram.

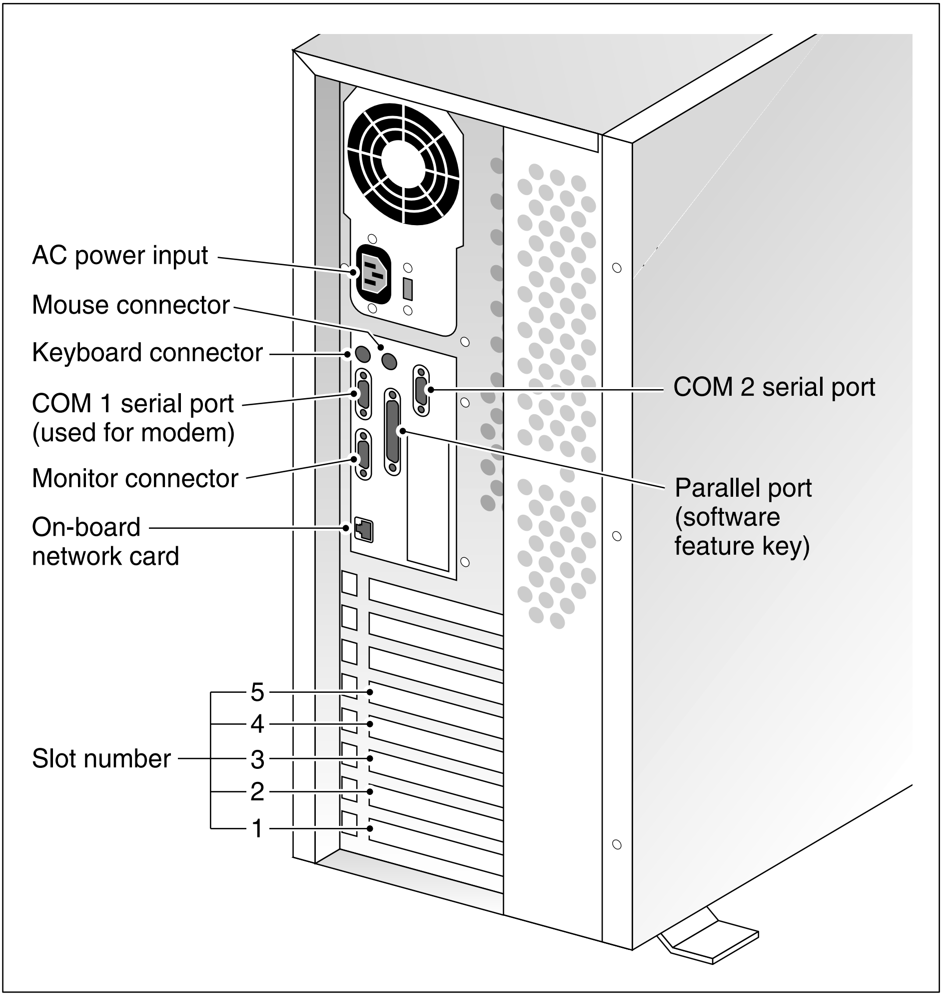
Part	Function
1. Backup tape drive	Allows backup of hard drive data.
2. CD-ROM drawer	Holds CD-ROM disk.
2a. Drawer push button	Push in to open the CD-ROM drawer; push again to close the drawer.
2b. Volume control	Controls headphone volume for audio output.

Part	Function
2c. Headphone jack	Jack for audio output from CD-ROM.
3. ON/OFF push button	Turns the power to server on or off.
4. Reset push button	Momentarily disconnects the power to the server. Do not use for restart; use the software restart instead.
5. Indicator lights	Indicate when the server is powered up and the disk drives are active.
6. Floppy drive	Drive for 3 1/2” disks.
6a. Floppy eject button	Ejects the floppy disk.

Rear panel diagram and slot locations

Rear panel diagram

See “Slot assignments” on page 290 for slot assignments.



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Slot assignments

Introduction

The slot assignment tables show the following:

- the physical location of boards inside the server, relative to other boards
- the order in which boards are installed (for example, board #1, 2, 3, and so on)
- how the boards are represented in CallPilot Manager applications (for example, in the Maintenance Administration page)
- the maximum capacity for each switch connectivity

Note: Your server may vary depending on what was ordered from Nortel Networks. Therefore, your server may not have all of the slots populated.

Slot definition and slot numbering

In these tables, the term “slot” refers to the available slot openings in the chassis, not the PCI or ISA connectors inside the server.

For the 702t server, the slots are numbered from the bottom of the server to the top. Slot 1 is the bottom slot in the chassis if the chassis is standing on its feet.

Slot assignments with RAID

Slot number	CallPilot-assigned board label[a]	Meridian 1	Succession CSE 1000
[b]Onboard network card		ELAN	ELAN
Slot 5	BRD05	RAID	RAID
Slot 4	BRD04	CLAN	CLAN
Slot 3	BRD03	MPB16-4 board #2 (optional)	MPB16-4 board #2 (optional)
Slot 2[c]	BRD02	MPB16-4 board #1	MPB16-4 board #1
Slot 1	BRD01	Not used	Not used

a. In some CallPilot Manager applications, the CallPilot-assigned board label appears. This label corresponds to the slot number. For example, BRD05 refers to the board in slot 5.

b. The onboard network card is built onto the motherboard. This card does not have a slot.

c. The first MPB16-4 board must be installed in slot 2.

Slot assignments without RAID

Slot number	CallPilot-assigned board label[a]	Meridian 1	Succession CSE 1000
[b]Onboard network card		ELAN	ELAN
Slot 5	BRD05	Not used	Not used
Slot 4	BRD04	CLAN	CLAN
Slot 3	BRD03	MPB16-4 board #2 (optional)	MPB16-4 board #2 (optional)
Slot 2[c]	BRD02	MPB16-4 board #1	MPB16-4 board #1
Slot 1	BRD01	Not used	Not used

a. In some CallPilot Manager applications, the CallPilot-assigned board label appears. This label corresponds to the slot number. For example, BRD05 refers to the board in slot 5.

b. The onboard network card is built onto the motherboard. This card does not have a slot.

c. The first MPB16-4 board must be installed in slot 2.

IRQ mapping table

The following table lists the assignments for each Interrupt Request (IRQ). You do not need this information for installation, but it may be useful for troubleshooting:

IRQ	Slot or device
0	Timer
1	Chipset
2	System/unused
3	Serial Port 2 (COM2)
4	Serial Port 1 (COM1)
5	For Meridian 1 or CSE 1K, available for CLAN in slot 4 as needed.
6	Floppy controller
7	Parallel port (LPT1)
8	Real Time Clock
9	ACPI SCI Interrupt
10	On-board network card
11	Slots 2 and 3 - MPB16-4 boards
12	PS/2 Mouse
13	Math coprocessor
14	Primary EIDE controller

IRQ	Slot or device
15	Slot 5 - RAID/On-Board SCSI controllers **Note:** Both SCSI controllers are on IRQ 15, which allows the SSU to automatically resolve any IRQ conflict.

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CallPilot

Installation and Configuration
Part 5: 702t Server Maintenance and Diagnostics

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